INDUCTION OF LABOUR

CONTENTS

TABLES

INDUCTION OF LABOUR

PLEASE NOTE THAT THIS GUIDELINE IS PLANNED TO BE REVIEWED IN EARLY 2023.

PLEASE CONTINUE TO REFER TO THIS GUIDELINE FOR OPERATIONAL DETAIL AND REFER TO THE TIMING OF BIRTH

FOR SPECIFIC OBSTETRIC INDICATIONS (TOBA) GUIDELINES 2022 AND PRIORITISATION TOOL: INDUCTION OF LABOUR FOR RECOMMENDATIONS/CONSIDERATIONS ON TIMING OF BIRTH AND PRIORITISING OF CASES.

PLEASE ALSO REFER TO THE NATIONAL INDUCTION OF LABOUR GUIDELINES FOR ADDITIONAL INFORMATION.

ORAL MISOPROSTOL REPLACES DINOPROSTONE FOR CERVICAL RIPENING AND AS AN APPROVED METHOD FOR INDUCTION OF LABOUR IS CURRENT IN THIS GUIDELINE.

DEFINITION

Induction of labour (IOL) is the process of starting labour artificially, as opposed to waiting for labour to start naturally by itself.

BACKGROUND

For induction of labour to be considered and to be offered, there must be evidence that such an intervention carries benefits for the mother and/or her baby and this requires careful consideration of the clinical evidence in discussion with the woman. In all cases, there is a clear need for the provision of information to allow women to make a fully informed choice.

It is also imperative that the most accurate information is obtained concerning the gestational age of the pregnancy. In most instances, there will be reliable menstrual data supported by evidence from an ultrasound (USS) examination made in the early weeks of pregnancy.

The LMP date should agree with the USS dates within the following margin of error

< 12 weeks	+/- 5 days
12-20 weeks	+/-7 days[1]

Otherwise the USS date should be taken as the women's agreed estimated due date (EDD).

If, after discussion of the relevant issues, the woman chooses to decline the offer of IOL, further discussion is required regarding the measures needed for ongoing monitoring of the pregnancy (see section 1.4).

It is also important to inform the woman that induction of labour is not always successful, and she should be given information as to the likely management should the intervention prove unsuccessful (see section 5.2).

1.2 INDICATIONS

IOL is indicated when the maternal and/or fetal risks of continuing pregnancy outweigh the risks of IOL and birth. Specific circumstances are considered in section 2.

1.3 CONTRAINDICATIONS

Contraindications to IOL are consistent with vaginal birth contraindications. Specific circumstances where IOL is to be performed with caution are described in sections 5.5-5.8

1.4 CARE IF IOL DECLINED

Women who decline IOL should have their decision respected. Usually, these are women who have been offered IOL for prolonged pregnancy.

At 41 weeks or later gestation, it has been shown for those women who[2:]

- waited for labour to start naturally – 38% would choose to wait next time
- were induced – 73% would choose an IOL next time

No form of increased antenatal monitoring has been shown to reduce perinatal mortality associated with post term pregnancy. However, it is recommended from 42 weeks, to offer increased antenatal monitoring[3] consisting of twice weekly:

- Cardiotocography (CTG)[4]
- Ultrasound assessment of amniotic fluid volume using:
  - estimation of maximum amniotic pool depth[4,5] or
  - Amniotic fluid index[6,7]
- Umbilical arterial Doppler ultrasound[6]

1.5 ATTENDANCE BY LEAD MATERNITY CARER

When there is a decision between the secondary maternity team, the lead maternity carer (LMC) and the woman for the LMC to remain involved in the midwifery care of a woman having an induction, Birthing Suite will:

- Be responsible for negotiating with the LMC and the woman, a clear written management plan for the initiation of the induction and the ongoing management of the induction.[72]
- Assist the LMC to provide care according to the clear written management plan for the induction and the wishes of the woman, until such time as labour is established and the LMC is in attendance[72] or until the woman wants continuous support from her LMC.[73]
- Provide the LMC reasonable notice of the need to be available to attend to the woman[72] including if the woman wants continuous support from her LMC.[73]

The care plan is woman centred and sets out specific midwifery decisions and actions in an effort to meet the woman's goals and expectations.[73]

The midwife updates the CCO with the care plan in order for the birthing suite workload to be planned.

1.6 MEMBRANE SWEEPING

Membrane sweeping refers to the digital separation of the fetal membranes from the lower uterine segment during vaginal examination. This movement helps to separate the cervix from the membranes and helps to stimulate the release of prostaglandins, encouraging spontaneous onset of labour. Table 1 outlines considerations for membrane sweeping.

TABLE 1 Membrane sweeping considerations

Indication	Is not a method of IOL. Is used to reduce the need for formal IOL by encouraging spontaneous labour.
Risk/Benefit	From 38-40 weeks onwards, significantly reduced pregnancies beyond 41 weeks.[8] Repeated membrane sweeping has been found to decrease the proportion of post term pregnancies.[9] Reduced need for formal IOL[10], particularly in multiparous women.[9] Limited data on risk in Group B Streptococcus (GBS) carriers.[11] No evidence of increased risk of maternal or neonatal infection.[8] Associated with discomfort[8,9], vaginal bleeding and irregular contractions.[8] Most women would choose membrane sweeping again.[9]
Recommendations	Consider offering membrane sweep at 39-40 weeks, especially to low risk multiparous women.[12] Advise of the benefits of repeated membrane sweeping. If the cervix is closed and membrane sweeping is not possible, cervical massage in the vaginal fornices may achieve similar effect.[13]

SPECIFIC CIRCUMSTANCES

Considerations for specific IOL indications are outlined in the following sections:

2.1 PROLONGED PREGNANCY

TABLE 2 Prolonged pregnancy

Risk/Benefit	The risk of fetal death increases significantly with gestational age.[78] • At 37-40 weeks gestation; 0.16%.(1.58 per 1000) • ≥ 41 weeks gestation; 0.22% (2.2 per 1000) IOL at 41 weeks or beyond compared with awaiting spontaneous labour for at least one week is associated with:[7] • Fewer perinatal deaths; 1/3285 (0.03%) versus 11/3238 (0.34%) • No significant difference in the risk of caesarean section for women induced at 41 and 42 weeks • Lower risk of meconium aspiration syndrome at 42 weeks (3.0% vs. 4.7%) and significantly lower risk at 41 weeks (0.9% vs. 3.3%) Most women prefer IOL at 41 weeks over serial antenatal monitoring.[14]

Recommendations	For women with uncomplicated pregnancies, IOL is offered at agreed EDD+10, or as soon as practicable after that date.[13, 15] From 42 weeks, women who decline IOL are offered increased antenatal monitoring consisting of twice weekly CTG and ultrasound estimation of amniotic fluid index and umbilical arterial Doppler ultrasound[6]. However, there is no evidence that this reduces the risk of stillbirth. Exact timing of IOL depends on the women's preferences and local circumstances.

2.2 PRETERM PRE-LABOUR RUPTURE OF MEMBRANES

TABLE 3 Preterm pre-labour rupture of membranes

Risk/Benefit	**Gestation between 34 $^{+0}$ – 36 $^{+6}$** IOL vs expectant management: • Reduces chorioamnionitis.[16, 17] • Reduces maternal length of hospital stay.[16] • Insufficiently sized studies to determine difference in: – Neonatal sepsis.[16, 17] – Respiratory distress.[17] – Newborn intensive care resource use.[17] Decreased neonatal intensive care unit (NICU) length of stay and hyperbilirubinaemia are demonstrated if birth occurs after, rather than before, 34 weeks.[18] **Gestation less than 34 weeks** Birth before 34 weeks is associated with increased neonatal mortality[19], adverse neonatal outcomes[19] including; respiratory distress syndrome[18], intraventricular haemorrhage[18], necrotising enterocolitis[18] and other long term complications.[19] Mortality and morbidity increase with decreasing gestational age.[19]
Recommendations	**Gestation between 34 $^{+0}$ – 36 $^{+6}$** Decision should be made by the obstetric SMO, based on discussion with the woman and her partner and on the availability of NICU facilities. **Gestation less than 34 weeks** IOL is not recommended unless there are additional obstetric or fetal indications.[13]
Guideline	Preterm Pre-Labour Rupture of Membranes (GLM0028)

2.3 TERM PRE-LABOUR RUPTURE OF MEMBRANES

TABLE 4 Term Pre-labour rupture of membranes (PROM)

Risk/Benefit	Spontaneous labour commences.[20] • Within 24 hours in 70% of women. • Within 48 hours in 85% women. • This may decrease the need for close electronic fetal monitoring (EFM) monitoring, but close monitoring is recommended after PROM for >24hr. Maternal and neonatal infection rates are increased with increasing time interval from ROM to delivery. IOL compared with expectant management reduces rates of chorioamnionitis and endometritis, with no change in the rate of assisted delivery or caesarean section.[21] Rates of admission to NICU and need for post-natal antibiotics are reduced.
Recommendations	**Vaginal examination (VE) is contraindicated in the absence of contractions. If required, a sterile speculum examination is the examination of choice.** Women should be offered IOL at 24 hours post PROM, or as soon as practicable after that time. Women should be offered intrapartum IV antibiotics to reduce the risk of GBS infection, to be commenced at the start of the augmentation process. If meconium stained liquor or known GBS positive status are present IOL should be expedited. Oral Misoprostol can be used for cervical ripening.
Guideline	Pre-Labour Rupture of Membranes at Term (GLM0043) Group B Strep Management and Prophylactic Antibiotics (GLM0032)

2.4 PREVIOUS CAESAREAN SECTION

TABLE 5 Previous caesarean section

Risk/Benefit	There is a 2-3 fold increased risk (overall risk of 1.5%) of uterine rupture and around a 1.5 fold increased risk (0.75%) of caesarean section in induced and/or augmented trial of labour compared with spontaneous labour.[22] The **current evidence is inconclusive** regarding risk of rupture with IOL with prostaglandins vs. non-prostaglandin methods. The National Institute of Child Health and Development (NICHD)[23] study of prostaglandin induction compared with non-prostaglandin induction incurred a non-significantly higher risk of uterine rupture of 1.4% versus 0.9%, whereas in an analysis of nationally collected data from Scotland[24], prostaglandin induction compared with non-prostaglandin induction was associated with a statistically significantly higher uterine rupture risk of 0.9% versus 0.3%.
Recommendations	The additional risks in induced Trial of Labour (TOL) mean that: • although IOL is not contraindicated it should only be preceded by detailed obstetric assessment, maternal counselling and a documented plan completed by the obstetric SMO.[25] • the preferred first option for IOL in the setting of previous caesarean section is a Balloon Catheter IOL
Guideline	Birth After Previous Caesarean Section (GLM0017)

2.5 OBSTETRIC CHOLESTASIS

TABLE 6 Obstetric cholestasis

Risk/Benefit	A discussion should take place with women regarding induction of labour with hospital birth recommended. • Emerging research [9,1] refutes the popular practice of 'early' (37 weeks of gestation) induction of labour aimed at reducing late stillbirth. Instead, an individual management plan should be made regarding the timing and risks of birth with the woman, doctor and her LMC on an individual basis [10] This section is under review. Please refer to the Obstetric Cholestasis Guideline for current evidence and Timing of birth – GLM0005 • Recommendations: - Bile salts > 100 or ALT > 200: Timing of delivery to be discussed - Bile Salts > 40 or worsening liver functions: Offer IOL at 38weeks. - Bile Salts =< 40: Offer IOL at 40 weeks Women should be also informed of the increased risk of maternal morbidity (increased operative vaginal and caesarean birth) from intervention before Close electronic fetal monitoring (EFM) should be offered during established labour.

Recommendations	Decision to induce should be made by the obstetric SMO on an individual basis in discussion with the woman and her LMC.
Guideline	Obstetric Cholestasis (GLM0005)

2.6 DIABETES

TABLE 7 Gestational Diabetes (GDM) and pre-existing diabetes mellitus (DM)

Risk/Benefit	27% of stillbirths, without any known congenital abnormality, in women with pre-existing diabetes occur after 37 completed weeks.[27] In women with GDM on insulin, comparing IOL in the 38th week with expectant management showed:[28] • Reduced macrosomia in the IOL group, 10% vs 23% • No difference in the caesarean section rates • A non-significant increase in shoulder dystocia in the expectant group Diet controlled, mild GDM is associated with good pregnancy outcome.[29] • No data on risk of perinatal loss after 40 weeks is available
Recommendations	Until quality evidence is available, or the introduction of the New Zealand National Guideline at CDHB: **Pre-existing Type 1 and 2 DM** Offer IOL at 38 weeks (or beyond) if control remains optimal with no evidence of fetal macrosomia or other pregnancy concern. The decision to offer IOL before this time should be made at an Obstetric SMO level in association with the Obstetric physician. **GDM on Insulin and/or Metformin** Offer IOL at 39 weeks or beyond if control remains optimal with no evidence of fetal macrosomia or other pregnancy concern. Offer IOL from 38 weeks in the setting of sub-optimal control, fetal macrosomia or any other signs of fetal compromise. **GDM on diet and exercise alone** Offer IOL at 40 weeks or beyond, dependent on individual circumstances.
Guideline	Type 2 Diabetes Mellitus (GLM0023) Type 1 Diabetes Mellitus (GLM0024) Gestational Diabetes (GLM0025)

2.7 HYPERTENSIVE DISORDERS OF PREGNANCY

TABLE 8 Hypertensive disorders of pregnancy

Risk/Benefit	Pre-eclampsia: The only cure for pre-eclampsia is birth.[8, 13, 30] In pregnancies < 34 weeks there is a clear association between preterm birth and increased neonatal morbidity with no apparent decrease in maternal morbidity. In severe preeclampsia there is a lack of evidence to support expectant management beyond 34 weeks. IOL is associated with high rates of intrapartum caesarean section. In mild preeclampsia there is clear evidence of clinical benefit of immediate, ie within 24 hours, birth after 36 weeks gestation.[31] In non-severe hypertension: • IOL reduced the risk of progression to more severe maternal disease to 31% in IOL group compared to 44% in those expectantly managed: [32]No differences in composite neonatal outcome. • No differences in mode of birth.
Recommendations	The decision regarding birth should be made once the woman is stable, appropriate senior personnel are present and a full antenatal steroid course has been completed if clinically appropriate. In cases of severe pre-eclampsia or deteriorating clinical picture, birth should not be delayed in order to complete steroid course. See the Preterm Labour guideline (GLM0027). If expectant monitoring is occurring the obstetric team responsible for the woman's care should advise and document clinical thresholds to trigger immediate birth. Consider individual circumstances and risks of prematurity when determining the timing of birth. Consider IOL where hypertension is initially diagnosed after 37 weeks. Offer IOL, unless a caesarean section is required for other obstetric indications.[33,34]
Guideline	Pre-Eclampsia (GLM0003) Magnesium Sulphate for Neuroprotection in Preterm Births (GLM0041)

2.8 TWIN PREGNANCY

TABLE 9 Twin pregnancy

Risk/Benefit	Please see Twin Pregnancy and Birth Guideline GLM0064
Recommendations	Please see Twin Pregnancy and Birth Guideline GLM0064

2.9 INTRAUTERINE GROWTH RESTRICTION (IUGR)

TABLE 10 Intrauterine growth restriction (IUGR)

Risk/Benefit	Defined as occurring when a fetus has failed to reach its growth potential and may be associated with serious intrapartum and neonatal complications.[39,40] It results mostly from chronic placental insufficiency and these fetuses are identified by the presence of growth below the 10th customised centile which is usually associated with umbilical artery Doppler abnormalities and reduced amniotic fluid volume.[39,41] The optimal timing of birth in a preterm fetus with growth restriction is controversial, requiring careful consideration of the severity of the growth restriction and its impact on fetal wellbeing balanced against the gestational age.
Recommendations	• **All decisions for, and timing of birth, must be made in consultation with both the Obstetric and Neonatal SMO.** • In the preterm IUGR fetus with umbilical artery Absent or Reduced End Diastolic Velocity (AREDV) detected prior to 32 weeks of gestation, birth is recommended when Ductus venosus (DV) Doppler becomes abnormal or Umbilical Vein (UV) pulsations appear, provided the fetus is considered viable and after completion of steroids. Even when Ductus venosus is normal, delivery is recommended by 32 weeks of gestation and should be considered between 30–32 weeks of gestation. **THESE BIRTHS SHOULD TAKE PLACE BY CAESAREAN SECTION.** • If the Middle Cerebral Artery (MCA) Doppler is abnormal birth should be recommended no later than 37 weeks of gestation. **THESE BIRTHS SHOULD TAKE PLACE BY CAESAREAN SECTION.**

2.10 SMALL FOR GESTATIONAL AGE

TABLE 11 Small for gestational age

Risk/Benefit	Defined as an estimated fetal weight (EFW) less than the 10th customised centile (using GROW software accessed at www.gestation.net).[42] • At present there is no effective intervention to alter the course of SGA except birth. Timing of birth is therefore a critical issue in order to balance the risks of prematurity against those of continued intrauterine stay; death and organ damage due to inadequate tissue perfusion[43.] Gestational age is a critical determinant in decision making. Various tools exist to predict survival in very preterm births, such as the prematurity risk evaluation measure (PREM) score.[44] • The consensus view from the recent Disproportionate Intrauterine Growth Intervention Study at Term (DIGITAT) is that the optimum time for induction in SGA pregnancies is at around 38 weeks' - this was associated with the lowest perinatal morbidity.[73,74] This recommendation also is in keeping with findings from population-based studies which suggest that delivery of SGA infants at 38 weeks of gestation may be associated with lower perinatal mortality compared with later delivery.[75] Data from DIGITAT also showed that a policy of induction of labour in SGA babies at term (greater than 37 weeks') was not associated with increased risk of Caesarean section.[74]
Recommendations	• **Decisions for all SGA IOLs should be made in conjunction with the Obstetric (+/- Neonatal) SMO.** • In the SGA fetus detected after 32 weeks of gestation with normal umbilical artery Doppler, a senior obstetrician should be involved in determining the timing and mode of birth of these pregnancies. **Birth should be offered at 38 weeks of gestation**[51] • In the SGA fetus with normal umbilical artery Doppler or with abnormal umbilical artery PI but end–diastolic velocities present, induction of labour can be offered but rates of emergency caesarean section are increased and close EFM is recommended from the onset of uterine contractions[51] • Early admission is recommended for women in spontaneous labour with a SGA fetus in order to instigate close EFM[45]. **Method of induction of labour** • The optimum mode of induction of labour for these infants may be with a Foley catheter, as this reduces the risk of hyper stimulation with fetal heart changes[76] which the SGA fetus may not tolerate as well as an appropriately-grown fetus. For all pregnancies complicated by abnormal dopplers, refer to above section: ***Intrauterine growth restriction.***

2.11 MATERNAL AGE

TABLE 12 Maternal age

Risk/Benefit	There is a continuum of risk for both mother and baby with rising maternal age with numerous studies reporting multiple adverse fetal and maternal outcomes associated with advanced maternal age. Multiple studies have established maternal age as a risk factor for stillbirth.[46] [47] [48] Women 40 years old or older had a large increase in risk, especially at term gestation. At 39-40 weeks of gestation this equates to 2 in 1000 for women aged 40 years or above compared to 1 in 1000 for women aged younger than 35 years old, representing a 2-fold increase in risk. The relative risk of stillbirth was 3-fold higher for women 40 years old or older than women younger than 35 years of age by 41 weeks gestation.[45]
Recommendations	Offer IOL to women of age 40 years or older at or beyond 39^{+0} weeks.

2.12 IN-VITRO FERTILISATION (IVF) PREGNANCY

TABLE 13 In-vitro fertilisation (IVF) pregnancy

Risk/Benefit	Pooled results from studies suggest there is nearly a 70% increased risk in perinatal death for IVF singletons compared with natural conceptions [49]. However, out of all assisted reproductive techniques, only women who conceived with IVF had a statistically significant four-fold increased risk of stillbirth compared with fertile women.[50] This would suggest that the increased risk of stillbirth is associated with treatment-related factors to a greater degree than infertility/subfertility itself.
Recommendations	Offer IOL to women with IVF pregnancies at 40 weeks BUT not following other assisted reproduction techniques (ART).

2.13 RECURRENT ANTEPARTUM HAEMORRHAGE (APH)

TABLE 14 Recurrent APH

Risk/Benefit	There are few high quality clinical trials to guide management of APH. The optimum timing of birth for women presenting with unexplained recurrent APH and no maternal and/or fetal compromise has therefore not been established.
Recommendations	• If there is no evidence of maternal and/ or fetal compromise expectant management is an option with increased fetal surveillance. • Where there is evidence of maternal and/or fetal compromise a SMO must be consulted to determine the timing and mode of birth in consultation with the woman and her LMC.

2.14 INTRAUTERINE FETAL DEATH

Fetal Loss Package from 20 Weeks (Ref.2400130)

THE FOLLOWING ARE NOT CONSIDERED INDICATIONS FOR IOL

3.1 SUSPECTED FETAL MACROSOMIA IN THE ABSENCE OF DIABETES

TABLE 15 Suspected fetal macrosomia in the absence of diabetes

Risk/Benefit	Defined as estimated fetal weigh more than the 90th centile on customised charting. Literature review of 20 studies reported that the probability of detecting a macrosomic fetus in an uncomplicated pregnancy is variable, ranging from 15% to 79% with sonographic estimates of birth weight.[51] A systematic review (n=3751 women) compared expectant management with IOL in cases of suspected fetal macrosomia[52] reported no significant differences in maternal or fetal outcomes. Summary statistics for nine observational studies suggested that, compared with IOL, woman with suspected fetal macrosomia who experienced spontaneous onset of labour had a lower incidence of caesarean birth (OR 0.39, 95% CI 0.30 to 0.50).[53]
Recommendations	**Suspected fetal macrosomia in the absence of diabetes is not an indication for IOL.**

3.2 PELVIC ARTHROPATHY (SPD)

TABLE 16 Pelvic arthropathy (SPD)

Risk/Benefit	Pelvic arthropathy of pregnancy or Symphysis Pubis Dysfunction (SPD) is a condition described in terms of symptoms and signs. These occur due to physiological relaxation of the pelvic ligaments and increasing joint mobility in pregnancy. There appears to be no correlation between levels of discomfort and disability and degree of relaxation. Treatment is generally conservative and birth is curative in the majority by 6 months postpartum.
Recommendations	• Women should be counselled that there is a significant delay between birth and resolution of pain. • **SPD is not an indication for IOL**.

3.3 HISTORY OF PRECIPITATE LABOUR

TABLE 17 History of precipitate labour

Risk/Benefit	Precipitate labour is defined as expulsion of the fetus within less than 3 hours of commencement of contractions[54] and has an incidence of about 2% in women with spontaneous, non-augmented labours.[55] No studies were identified that compared induction of labour with no induction of labour in women with a history of precipitate labour, and thus there is no evidence to suggest that inducing labour can prevent precipitate labour.
Recommendations	• Induction of labour to avoid a birth unattended by healthcare professionals should not be offered. • **History of precipitate labour is not an acceptable indication for IOL.**

3.4 MATERNAL REQUEST

TABLE 18 Maternal request

Risk/Benefit	Induction of labour at term without medical indication continues to be widely criticised on the basis that it is an unnecessary intervention and it carries risks. There is no direct evidence to determine the effects of induction of labour on maternal request and evidence on induction of labour at 37-40 completed weeks without a medical indication is also limited. Meta-analysis (n=1300 women) of available trials[56] found no significant difference in perinatal death with expectant versus IOL groups as above, however the induction group was significantly less likely to have caesarean birth (RR 0.58 95% CI 0.34 to 0.99), but more likely to require assisted vaginal birth (RR 1.7, 95% CI 1.23 to 2.39).
Recommendations	• IOL should not be offered on maternal request alone. • **Maternal request is not an indication for IOL.**

PRE INDUCTION OF LABOUR ASSESSMENT

Complete the following:

- Review of maternal history.
- Confirmation of gestation.
- Perform baseline temperature, pulse and blood pressure measurements.
- Perform urinalysis if the woman has diabetes, hypertension or if there has been previous proteinuria.
- For women with pre-eclampsia, other medical conditions and other medical complications of pregnancy, ensure that blood is taken on day of IOL and results are available.
- Abdominal palpation to confirm presentation and engagement.
- Perform a baseline CTG for at least 30 minutes AND until the CTG is normal. If the CTG is ABNORMAL the on-call obstetric team must be consulted.
- Where the presenting part is found not to be cephalic either on abdominal palpation or vaginal examination, the obstetric team must be consulted for further assessment.
- Vaginal examination to assess cervix and complete Bishop's score. See section 4.1.

4.1 CERVICAL ASSESSMENT

The Bishop score is used to assess the cervix. Each feature is scored and the scores are then summed.

The state of the cervix is one of the most important predictors of successful IOL.[57]

The cervix is unfavourable if the score is 6 or less.[57]

TABLE 19 Bishop score label

BISHOP SCORE					Canterbury District Health Board Te Poari Hauora ō Waitaha BIRTHING SUITE
Score *(circle)*	**0**	**1**	**2**	**3**	**Score**
Dilatation (cm)	<1	1-2	3-4	>4	
Length (cm)	>4	3-4	1-2	<1	
Consistency	Firm	Intermediate	Soft	-	
Position	Posterior	Central	Anterior	-	
Level	-3	-2	-1 or 0	+1 or +2	
				Total Bishop Score:	

Ref.2403811 (7338) Authorised by: CMM Birthing Suite September 2020

METHODS OF INDUCTION OF LABOUR

Methods used for IOL include:

- Medical methods
  - Oral Misoprostol
  - Oxytocin infusion
- Surgical methods
  - Artificial rupture of membranes (ARM)
- Mechanical methods
  - Transcervical catheter (Foley)

5.1 MANAGEMENT AT CWH

These are booked by completion of Induction of Labour Referral form (Ref.2402443). The original form must be held in the woman's medical records. There are usually 3 available spaces for IOL and 1 space for Balloon Catheter insertion Monday – Friday. If there is need for additional capacity, this must be in consultation with the Birth Suite Associate Charge Midwife Manager (ACMM) and the on-call obstetric SMO of the required day. Admission for IOL is at staggered times with one woman at each of these times: 0630hrs, 0730hrs and 0900hrs. Women who are suitable for Balloon Catheter insertion are booked in the 1000hrs slot and depending on the indication, may be able to go home. The effect will be assessed the next morning. The woman is to contact her LMC or Birthing Suite if:

- The catheter falls out
- She has regular painful contractions, 5 minutes apart for a first baby, or 10 minutes apart for any subsequent babies
- Membranes rupture
- Baby seems to be moving less
- She has fresh vaginal bleeding

Once a date has been booked, the woman is admitted to Birthing Suite at prearranged time of either 0630, 0730, 0900 or 1000hrs, following the pathway for induction of labour (see section 4).

5.2 'UNSUCCESSFUL' IOL

Defined as the inability to perform an ARM after maximal dose of oral misoprostol is achieved OR 24 hours post Foley's catheter insertion.

In all cases of 'unsuccessful' IOL, the team should re-evaluate the clinical situation and re-affirm that the clinical indication for IOL still exists.

If the decision is made that birth is still required, then the following are options for management.

- **Rest day**
  The woman is given a 24 hour 'rest period' in which time she may go into spontaneous labour. Failing that, then the induction regime can be restarted.
- **Alternative method induction**
  For those women who have had an unsuccessful trial of oral misoprostol, a Foley's catheter induction will be offered.

  For those women who have an unsuccessful trial of Foley's IOL, a trial of oral misoprostol is appropriate, assuming there are no contraindications to this i.e. previous caesarean section (see section 2.4).
- **Caesarean section**
  For some women it may be more appropriate to discuss the option of caesarean section including the potential risks and complications of surgery and impact on future pregnancies.

5.3 UTERINE HYPERSTIMULATION

Uterine hyperstimulation occurs in 1 - 5% of IOLs and may present as tachysystole (> 5 contractions in 10 minutes) or hypertonus (contractions lasting > 2 minutes), with or without changes in the fetal heart rate pattern.[13]

5.3.1 Uterine Hyperstimulation during Oral Misoprostol induction:

WITHOUT significant FHR abnormality

- Maintain or initiate EFM throughout
- Arrange prompt obstetric review

WITH significant FHR abnormality

- Maintain or initiate EFM throughout
- Place women in left lateral
- IV fluids as required
- Arrange URGENT obstetric review and consider tocolysis (*see section 5.3.3*)
- Consider fetal scalp lactate if appropriate

5.3.2 Uterine Hyperstimulation during Oxytocin induction:

WITHOUT significant FHR abnormality

- Maintain EFM throughout
- Arrange prompt obstetric review
- Consider reducing oxytocin infusion rate to titrate contractions to 3-4 in 10 minutes

WITH significant FHR abnormality

- Maintain EFM throughout
- Stop oxytocin infusion immediately
- Place woman in left lateral
- IV fluids as required
- Arrange URGENT obstetric review and consider tocolysis (*see section 5.3.3*)
- Obstetrician to document plan for the time of recommencement and recommended dose of Oxytocin infusion
- Consider fetal scalp lactate if appropriate
- Re-start infusion at the previous dose increment prior to onset of hyperstimulation to titrate contractions to 3-4 in 10 minutes.

5.3.3 Tocolysis

Acute tocolysis may be achieved as per CWH tocolysis protocol by using:

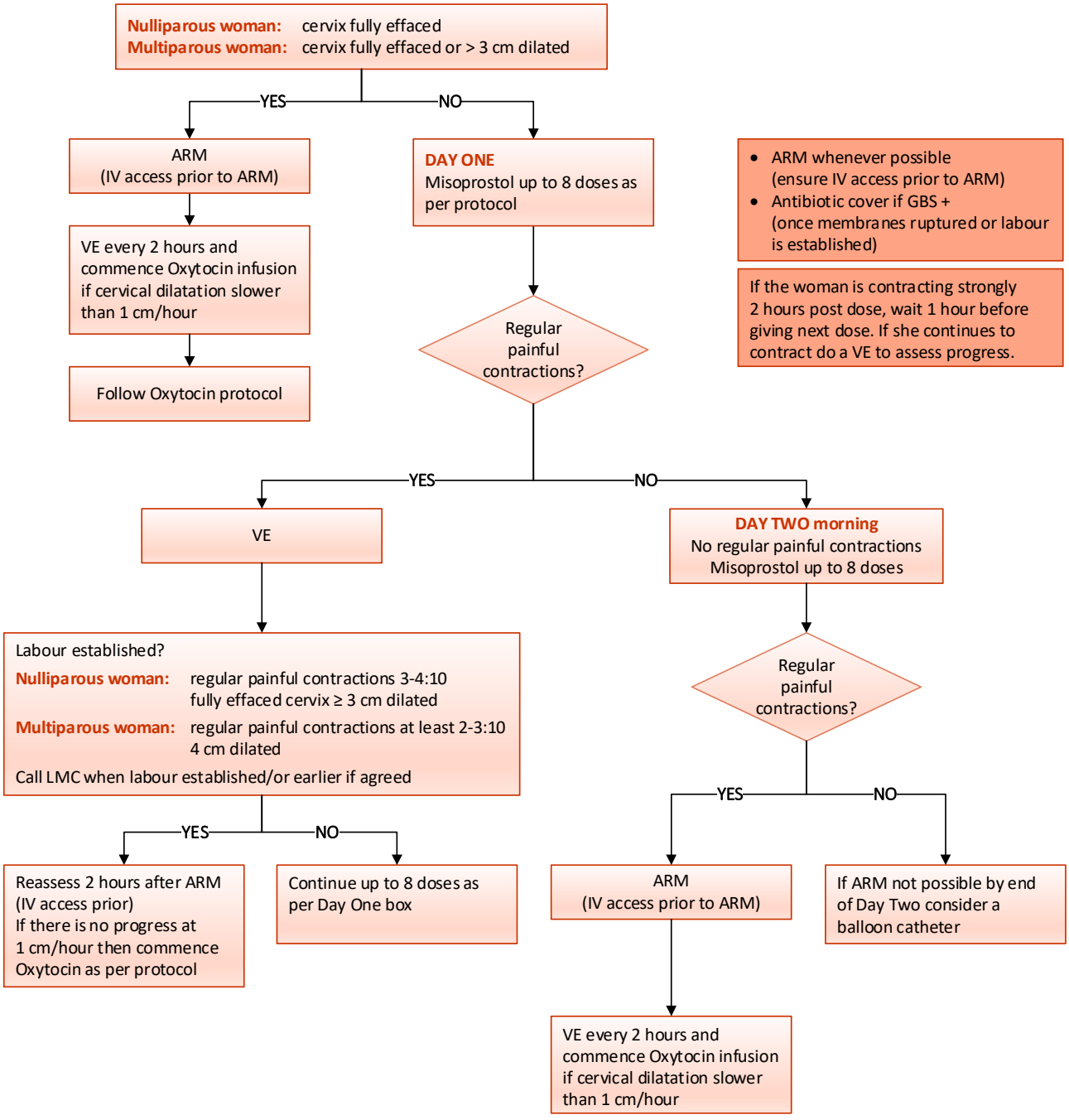
- Terbutaline 250 microgram subcutaneous (SC) (0.5 mL of 500 microgram/mL vial),
- OR 250 microgram IV over 5 minute (0.5 ml of 500 mcg vial diluted in 5 mL 0.9% Sodium Chloride)

If significant FHR abnormality persists urgent caesarean section delivery may be indicated.

5.4 INDUCTION OF LABOUR PROCESS

TABLE 20 Induction of labour process

- Decision made for induction of labour after a 3-way conversation between obstetrician/woman and whanau/LMC
- Verbal and written information given to the woman and the woman is aware she will be having VEs 2-hourly in established labour
- Timing of IOL and procedure agreed
- Woman's and whanau's questions are answered



5.5 ORAL MISOPROSTOL

Oral Misoprostol promotes cervical ripening and stimulates uterine contractions.

TABLE 21 Oral Misoprostol

CONSIDERATION	ORAL MISOPROSTOL
Indications	Unfavourable cervix
Contraindications	Contraindications to IOL are consistent with vaginal birth contraindications. Specific circumstances where IOL is to be performed with caution are described in sections 5.5-5.8
Cautions	Prostaglandin hypersensitivity Abnormal CTG IUGR and/or oligohydramnios High parity > 3 [58] Malpresentation Previous caesarean or any major uterine surgery[58, 59, 60] **only after assessment and documented plan by Obstetric SMO** Multiple pregnancies[59,60] Ruptured Membranes[60] Oxytocin administration[58,59,60] Cardiovascular disease[60] Raised intraocular pressure, glaucoma[60]
Risk/Benefit	Incidence of CS in not increased.[67] Risk of hyperstimulation is higher if oxytocin is also used.[69]
Dosage	See Oral Misoprostol Induction of Labour Pathway below (Ref.2407461)
Administration	See Oral Misoprostol Induction of Labour Pathway below (Ref.2407461)
Monitoring	Continuous EFM in established labour
Ongoing management	See Oral Misoprostol Induction of Labour Pathway below *See section 5.4 Induction of Labour Process*

Oral Misoprostol Induction of Labour Pathway

Misoprostol Induction of Labour Pathway

Canterbury District Health Board
Te Poari Hauora ō Waitaha

West Coast District Health Board

Decision is made for Induction of Labour after a consultation involving the woman, her LMC and the obstetric team.

- For certain indications, eg. post-dates, when a paper referral may be done, and a face-to-face consultation will occur on the day of induction – CMM to arrange.
- Verbal IOL information and IOL Patient Information leaflet given to woman prior to admission if possible or may be sent electronically in advance. Laminated information also available on Birthing Suite.
- LMC/Obstetrician books induction via CMM and provides completed IOL form including Bishops score (if the woman consents)
- Timing of IOL and procedure agreed and communicated with woman.
- Oral misoprostol is prescribed on woman's drug chart prior to day of IOL, either via the induction of labour protocol in MedChart prior to commencement or midwife to record a phone order via MedChart.

STEP 1: Woman presents to Assessment area on Birthing Suite at agreed IOL time (0630, 0730, 0900 or 1000) on day of IOL as arranged.

- Written consent obtained for oral misoprostol induction of labour.
- 20 minute CTG and MEWS commenced by core midwife prior to first dose of misoprostol.
- If CTG abnormal woman, discussion with RMO in relation to progressing depending on concerns.
- VE for Bishops score is indicated, unless it has been performed in last 48 hours or is declined by the woman. This is required to ensure Misoprostol is being administered appropriately, and to measure effect in the case of labour not establishing. This may be deemed inappropriate in the case of vaginismus or previous sexual abuse.
- First dose given (prepared as per 'Misoprostol instructions for dilution using tablet'). Let the woman squirt the fluid from the syringe into her mouth and swallow, to ensure she gets full dose.
- 40 minute CTG post 1st dose.

STEP 2: The next dose of misoprostol tablet in solution is administered two hours after the last dose.

- 20 minute CTG before each subsequent dose.
- If the woman is contracting strongly 2 hours after a given dose, wait one hour before VE. If not fully effaced continue with next misoprostol dose. If contractions decrease in the hour give a further dose of misoprostol.
- **Note:** Assessing whether to perform a VE if the woman is not contracting should be based on the overall clinical picture, however it may be likely that not contracting could mean no VE and continuation of misoprostol pathway. Scenario of regular contractions could mean VE with intent of ARM if fully effaced. If not fully effaced proceed to next dose of misoprostol. Clinical judgment to guide decision making context.
- Perform ARM when cervix is fully effaced or ≥ 3 cm.
- Antibiotic if GBS is detected (once established/ROM).
- In case of SROM if cervix not effaced, continue with misoprostol pathway, especially if the woman is not contracting.

Repeat STEPS 1 and 2 to a maximum of 8 doses in 20 hours or until:

- Primip: once regular contractions and fully effaced cervix, 3 cm dilated or SROM; ARM if not.
- Multip: has regular contractions and progressing cervical dilation +/- ROM, ARM if not occurred.
- Call LMC when woman transferring from assessment to Birthing Suite.
- Site IV line.
- Continuous CTG.
- MEWS as per established labour protocol/partogram.
- If SROM and not in labour, wait 2 hours and reassess situation. If the woman is not in labour, continue with misoprostol pathway.

- **Maximum number of doses of 25 mcg is 8 in 20 hours. Allow a 4-6 hour break between each round of 8 misoprostol doses.**
- **Misoprostol given PO, has a half-life of 20-40 minutes.**
- **If hyperstimulation occurs refer to IOL guideline (GLM0035).**
- **ARM as soon as cervix is fully effaced.**
- **The Obstetrician should be notified immediately if any unwarranted effect from misoprostol.**

Alternative to oral misoprostol

- Foley catheter is placed in the cervix with the balloon inflated with 40-60 mLs water.
- Criteria for this – previous C/S, IUGR / abnormal dopplers or if used to commence ripening process.
- Woman presents to Assessment area on Birthing Suite at arranged time.
- 20-minute CTG and MEWS commenced by core midwife.
- Foley insertion.
- Depending on the indication and risk the woman may go home after placement with instructions.
- Evaluation of cervix next day 12-24 hours by midwife in Assessment area. If the balloon is still in situ and/or cervix is unripe consider oral misoprostol with Foley remaining.
- Perform ARM, start Oxytocin if necessary.
- **Note**: when woman returns to Birthing Suite after previous Foley insertion and if still in place – aim to remove Foley and ARM if able. If not possible commence misoprostol pathway. Care provided by midwives.

Ref.2407461 Authorised by: Maternity Operational Group Chair March 2021

5.6 OXYTOCIN INFUSION

Oxytocin stimulates the smooth muscle of the uterus producing rhythmic contractions.

TABLE 22 Oxytocin infusion

CONSIDERATION	CLINICAL PRACTICE POINT
Indications	IOL using ARM and intravenous Oxytocin infusion is the preferred method once the cervix is favourable.[61]
Cautions	If not already ruptured, it is preferable to undertake an ARM prior to initiation of Oxytocin infusion. Oxytocin is however recommended with intact membranes in the presence of HIV and/or Hepatitis B and/or C infection only after obstetric review and documented management plan. Oxytocin should be used with caution in women with previous uterine scar or high parity (greater than 4).[69]
Risks/Benefit	Compared to IOL with oral misoprostol: • Increased the need for epidural71 • Restricts mobility Is associated with lower infection rates both in mother and baby when membranes are ruptured at time of IOL.[62] Oxytocin induced contractions are reported as being more painful.
Consideration	Clinical practice point
Monitoring	Provide one-to-one midwifery care. Use continuous EFM once oxytocin infusion commenced[69,63] Titrate dose to achieve 3-4 strong regular contractions in 10 minutes. Assess maternal observations and FHR prior to any increase in the infusion rate. Maternal observations (more frequently if clinically indicated) • Temperature 2 hourly • BP hourly • Pulse hourly • Vaginal loss hourly Maintain fluid balance as water intoxication may result from prolonged infusion[69] (rare with the use of isotonic solutions). Assess pain relief requirements.
Assessment of progress	Commence the partogram with the start of the oxytocin infusion.

Refer to the Progress in Labour Guideline (GLM0062)

5.6.1 Oxytocin administration

TABLE 23 Oxytocin administration

CONSIDERATION	OXYTOCIN ADMINISTRATION
Preparation	Oxytocin 10 international units in 500 ml 0.9% Sodium Chloride Administer Oxytocin through an infusion pump via a sideline to a main infusion of 0.9% Sodium Chloride Set infusion pump at 3 mLs/hr (= oxytocin 1 milli unit/min).
Administration	Increase the rate of infusion every 20 minutes according to the regime below until labour established, unless documented otherwise by obstetric team. Mark changes to dose clearly and contemporaneously on the CTG AND the woman's partogram.
Management	Fetal and maternal wellbeing should be assessed prior to commencement of the oxytocin infusion. Oxytocin prescription must be completed by the obstetric team. Use the Oxytocin Infusion label (Ref.2404217) on the Oxygen and Infusion chart (C260131). Commence EFM prior to infusion and continue until birth. The dose should be increased at 20-minute intervals or shorter intervals as documented by the obstetric team.[33] The aim is to achieve 3 to 4 regular, moderate to strong contractions in 10 minutes, lasting 45 to 60 seconds. Palpate uterine contractions every 15-30 minutes. If infusion is ceased for insertion of an epidural, recommence infusion at rate being infused at cessation unless otherwise indicated by uterine activity. If the infusion is stopped, the obstetric team is to be consulted prior to recommencing infusion (with the exception of epidural siting). The infusion is to be recommenced at the previous dose then titrated to achieve a rate of 3-4 regular to strong contractions, lasting 45 to 60 seconds (see section 5.3 regarding hypertonic uterine contractions). Document incremental increases/decreases, in woman's clinical notes and on partogram/CTG.
Side effects	Cardiovascular disturbances (eg. bradycardia, tachycardia)[69] Headache[69] Gastrointestinal disorders (eg. nausea, vomiting)[69]
Cease infusion if	Uterine activity becomes hypertonic[69] Resting uterine tone increases[69] Abnormal EFM (link FHR Monitoring guideline(GLM0010)) Consult with obstetric team before recommencing infusion.

5.6.2 Oxytocin regimen

TABLE 24 Oxytocin regimen

10 international units Oxytocin® in 500mls 0.9% Sodium Chloride

TIME AFTER STARTING (minutes)	RATE OF INFUSION (mL/hour)	OXYTOCIN DOSE (milli unit/minute)
0	3	1
20	6	2
40	12	4
60	24	8
80	36	12
100	48	16
120	60	20
140	72	24
160	84	28
180	96	32

Continued consultation with the obstetric Registrar occurs throughout administration. If any concerns, consult immediately.

5.7 ARTIFICIAL RUPTURE OF MEMBRANES (ARM)

TABLE 25 Artificial rupture of membranes considerations

Indications	Favourable cervix – Bishop score 7 or more.[64] May be used alone especially in a multiparous woman (may initiate contractions) or in combination with Oxytocin infusion.[64]
Cautions	Caution should be exercised where the head is high due to risk of cord prolapse.[13]
Risk/Benefit	May shorten length of labour by speeding up contractions.[65] Nulliparous women with ARM and **immediate** oxytocin compared with delayed oxytocin (commenced 4 hours post ARM) showed:[66] • Increased rate of established labour 4 hours post ARM • Shorter ARM to birth interval • Increased rate of vaginal birth within 12 hours Increased satisfaction with the induction process and the duration of labour.
Monitoring	Prior to ARM, assess for possible cord presentation. Immediately after ARM, examine to ensure there is no cord prolapsed. Monitor FHR immediately following procedure.[69] Document liquor colour and consistency. Encourage mobilisation to promote onset of uterine contractions in

	multiparous women for 1 hour maximum. Following ARM recommend oxytocin in: • Multiparous women: if regular uterine contraction haven't established after 1 hours • Nulliparous women: immediately following ARM

5.8 TRANSCERVICAL CATHETERS

Transcervical catheters (eg. Foley) are used to ripen the cervix through:

- Direct dilation of the canal, or
- Indirectly by increasing prostaglandin and/or oxytocin secretion

TABLE 26 Transcervical catheter considerations

CONSIDERATION	COMMENT
Indications	May be particularly useful where the cervix is unfavourable and prior to Oral Misoprostol. May be considered in women with previous CS or major uterine surgery. May be an option for outpatient management of women with low risk pregnancies
Cautions	Contraindication: • Low lying placenta[76] Cautions: • Antepartum bleeding[33] • Rupture of membranes[33] however in context of woman with previous scar where misoprostol is also a relative contraindication, Foley may be used. In theses antibiotics should be commenced at insertion of balloon /1st vaginal examination • Inflammation of the cervix[33] Catheter should be removed at 24 hours after insertion due to risk of infection. Document removal in the woman's clinical record.
Risk/Benefit	Low cost and no specific storage or temperature requirements.[76] No evidence of an increased risk of chorioamnionitis or endometritis although data is limited.[76] May be associated with slight vaginal bleeding. In women with a very unfavourable cervix, use seems to reduce unsuccessful IOL when compared to IOL with oxytocin alone.[76] Low risk can have Foley inserted (under Foley procedure conditions) and go home
Monitoring	Monitor FHR as appropriate to individual clinical circumstances. Obstetric review occurs 24 hours post insertion, or as required before.

GENERAL RISKS ASSOCIATED WITH INDUCTION OF LABOUR

IOL may increase the risk of the following conditions outlined in table 27 (below)

TABLE 27 Risk factors associated with IOL

RISK	GOOD PRACTICE POINT
Unsuccessful IOL	The criteria for unsuccessful IOL are generally not agreed.[13] Recommended care options include:[13] • Review the individual clinical circumstances • Assess fetal wellbeing using CTG • Discuss options for care with the woman • If appropriate consider discharging home for 24 hours (the 'rest day') followed by second attempt at IOL • Offer alternate method, eg. further dinoprostone or Foley's catheter • Caesarean section in some instances, after all other options have been explored
Uterine hyper contractility	See section 5.3
Epidural analgesia	Because IOL is the artificial commencement of labour, contractions occur without the release of beta-endorphins which help to reduce a woman's pain perceptions. IOL is reported to be more painful, leading to increased use of spinal/epidural analgesia.[66,67] The use of analgesia is 3.6 times more likely with IOL than spontaneous labour in nulliparous woman.
Postpartum Haemorrhage (PPH)	In low risk women IOL is associated with a 20% higher risk of PPH and severe PPH, regardless of the method used for IOL.[68] The use of ARM in conjunction with IV oxytocin is associated with more PPH when compared to other methods of IOL.[69]
Assisted birth	A Cochrane review of 12 trials involving 6227 women IOL was associated with increased rates of instrumental birth, RR 1.1[70]
Cord prolapse	Is a potential risk at the time of membrane rupture especially with ARM.[13] Is an obstetric emergency.[13] Precautions should include: • Assessment of engagement of the presenting part. • Caution during ARM if the baby's head is high.
Uterine rupture	Uterine rupture is an uncommon event with IOL.[13] Uterine rupture is a life-threatening event for mother and baby. If suspected, prepare for a category one caesarean section, followed by uterine repair or hysterectomy.

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Adapted from Queensland Maternity & Neonatal Clinical Guideline, Induction of Labour, Queensland Government 2011

APPENDIX 1 INDUCTION OF LABOUR REFERRAL (REF.2402443)

Te Whatu Ora
Health New Zealand
Waitaha Canterbury
MATERNITY SERVICES

NHI ..... WARD .....
SURNAME .....
FIRST NAME .....
DOB ..... AGE .....
(or affix patient label)

Induction of Labour Referral

Woman's contact details: Home phone: ..... Mobile: .....
Email: .....

Gravida: ..... Parity: .....

Menstrual cycle: ☐ Regular Cycle length: ..... days ☐ Irregular
EDD by LMP: ...../...../..... ☐ Certain ☐ Uncertain
EDD by USS: ...../...../.....
Agreed EDD: ...../...../.....

☐ BMI: .....
☐ AMA
☐ IVF at term *(as per Te Whatu Ora Waitaha guideline)*
☐ VBAC
☐ COVID admission in pregnancy
☐ GDM diet / metformin / insulin *(circle)*

TO ACCOMPANY ALL REFERRALS

Maternity Booking Form
☐ Accompanies referral ☐ Already submitted

LMC/PRIVATE CONSULTANT DETAILS

LMC name: .....
Consultant name: .....
Contact details: .....
.....
.....
.....

☐ Access Agreement Holder Instructions completed and signed *(see over – page 2)*

ALL OTHER REFERRALS FOR INDUCTION REQUIRE OBSTETRIC REVIEW

Indication and relevant information: .....
.....
.....
.....
.....

Agreed plan for birth: .....
.....
.....
.....
.....

METHOD OF IOL ☐ Oral misoprostol ☐ Balloon catheter

CWH USE ONLY

Meets criteria: ☐ Yes ☐ No
IOL booked: ☐ 0700 hrs ☐ 0730 hrs ☐ 1600 hrs ☐ 1630 hrs

☐ Balloon Catheter insertion booked 1000hrs
☐ Gestation: .....
☐ TOBA guideline discussed with LMC
☐ LMC informed of IOL/ Balloon Catheter date
☐ LMC to inform woman Date: ...../...../.....

Referred by: .....
Signature: ..... Date: ...../...../.....

Ref.2402443 Authorised by: Charge Midwife Manager Birthing Suite Page 1 of 2 Version 6 January 2023

INDUCTION OF LABOUR REFERRAL C210034

NHI ..... WARD .....
SURNAME .....
FIRST NAME .....
DOB ..... AGE .....
(or affix patient label)

Induction of Labour Referral

ACCESS AGREEMENT HOLDER INSTRUCTIONS

Please CONTACT me to inform me when my client:

☐ Has significant changes following review

☐ Is requesting one-to-one midwifery care from LMC Midwife

NOTE

Please be aware that the effect of oral misoprostol on the cervix can lead to sudden changes that can result in babies being born before there is time to call the LMC or before the LMC is able to attend.

Signed (LMC): .....

Date: ……/……/……

CONTACT LOG

DATE	TIME	PERSON CONTACTED	COMMENTS	SIGNATURE

APPENDIX 2 MISOPROSTOL INSTRUCTIONS FOR DILUTION USING TABLETS

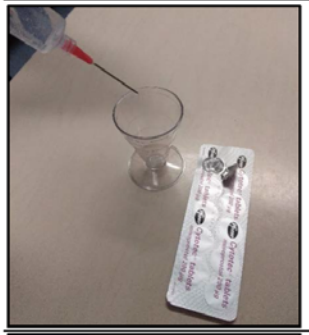
Instructions for Dilution of Misoprostol Tablet

Canterbury District Health Board
Te Poari Hauora ō Waitaha

MATERNITY SERVICES

1. You will need:
   - Non-sterile gloves
   - 1 x 20 mL syringe
   - 1 x plastic medicine cup
   - 2 x 10 mLs Water for Injection
   - 1 x drawing up needle
   - 1 x packet of misoprostol tablets (1 x tablet dissolved for each administration)
   - 1 x 3 mL BD oral syringe

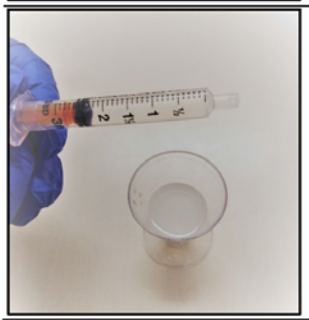
2. Open 2 x 10 mL water for injection ampoules and draw up into 20mL syringe with drawing up needle.



3. Take ONE misoprostol 200mcg tablet out of the blister pack and place it into the empty medicine cup.
4. Add 20 mL water for injection from the 20mL syringe to the medicine cup and mix until the tablet has dispersed.

NOTE: sediment in the solution is from fillers in the tablet and does not change the dilution of the medicine.

5. Open a 3 mL BD oral syringe, ensure tablet is fully dispersed then draw up **2.5mL** of mixture out of measuring cup.



6. Ask the women to **immediately** squirt the **2.5 mL** dose of fluid from the syringe into her mouth and swallow to make sure she gets the full dose
7. Discard the remaining mixture in the medicine cup and then rinse the cup and oral syringe out with tap water. Keep the medicine cup and all equipment for next dose.
8. Once the course of misoprostol is complete all equipment including the measuring cup, oral syringe, 20 mL syringe, draw up needle etc. should be discarded.

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