Document No: **978951**

TITLE: Induction and Augmentation of Labour

Contents

1. Purpose

To provide optimal care throughout the antenatal, intrapartum and postnatal period for the woman and their baby, during the induction of labour process. This guideline aims to prevent inappropriate induction of labour and provide a standard care pathway for those who are induced.

2. Scope

This guideline applies to all Te Whatu Ora Lakes Obstetric medical staff, employed midwives, midwifery students and to all Lead Maternity Carers (LMC's) who have an Access Agreement with Te Whatu Ora Lakes, and the women they provide care to.

3. Definitions

AC	Abdominal Circumference
ARM	Artificial Rupture of Membranes
ART	Assisted Reproductive Technology
BMI	Body Mass Index
BPP	Biophysical Profile
CTG	Cardiotocograph
CPR	Cerebroplacental Ratio
DR	Dawes-Redman Criteria – for CTG analysis
EDD	Estimated Date of Delivery
EFW	Estimated Fetal Weight
FGR	Fetal Growth Restriction
ICSI	Intracytoplasmic Sperm Injection
IOL	Induction of Labour: the process of starting labour artificially as opposed to waiting for labour to commence naturally.
IVF	In-Vitro Fertilisation
LMC	Lead Maternity Carer
LMP	Last Menstrual Period
LSCS	Lower Segment Caesarean Section
MCA	Middle Cerebral Artery
MOH	Ministry of Health
O&G	Obstetrics & Gynaecology
PI	Pulsivity Index
PROM	Pre-labour Rupture of Membranes
SGA	Small for Gestational Age
USS	Ultrasound Scan
UA	Umbilical Artery
UtA	Uterine Artery

4. Overview

Induction of labour (IOL) is the process of artificially starting labour, instead of waiting for labour to start naturally.

Because IOL requires intervention it should only be considered and offered when there is evidence that it will benefit the health of a pregnant woman and/or fetus and that the health of both might be adversely affected if the pregnancy continues.

- IOL has risks and those risks, as well as the perceived benefits of the procedure and the likelihood of adverse outcomes, should be discussed with the woman to enable her/them to make an informed choice regarding whether or not labour is induced.

- It is important to individualise all decisions about IOL as some women may have several risk factors for adverse outcomes that present a cumulative risk.

- Prior to a decision for IOL it is important that accurate information is obtained to establish a gestational age of the pregnancy. Ideally there will be a reliable menstrual history supported by evidence from an early pregnancy ultrasound scan (USS).

- Early term birth (37 and 38 weeks' gestation) is associated with poorer neonatal and childhood outcomes compared with babies born at 39 to 41 weeks' gestation. Unless there is an evidence-based indication supporting earlier planned birth, continue expectant management to 39 weeks' gestation or more (MOH 2019)

- If, after discussion, 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 4.3).

- As part of the consent process it is also important to inform the woman that IOL is not always successful, and provide information about the likely management should labour not start with this intervention (see Section 10, 'Unsuccessful IOL').

4.1 Indications

IOL is indicated when the maternal and/or fetal risks of continuing the pregnancy outweigh the risks of IOL and birth. Specific circumstances are considered in Section 5 below.

4.2 Contraindications

Contraindications to IOL are the same as those for vaginal birth. Specific circumstances where IOL is not recommended are described in Section 5 below.

4.3 Care if IOL is Declined

A woman may decline advice for IOL, usually when this has been offered for prolonged pregnancy.

No form of increased antenatal monitoring has been shown to reduce perinatal mortality associated with post-term pregnancy. However, it is recommended to offer, from 42 weeks (via Day Assessment Unit or Taupo Maternity Unit), additional antenatal monitoring consisting of twice weekly cardiotocography (CTG).

4.4 Membrane Sweeping

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

Membrane sweeping is not a method of inducing labour but is the only intervention shown to reduce the need for formal IOL. Consider offering membrane sweeping at term to reduce the frequency of pregnancies continuing beyond 41+0 weeks' gestation (MOH, 2019).

- If offering membrane sweeping, consider performing it from around 39 weeks' gestation.
- Advise women there is no evidence of increased risk of maternal or neonatal infection.
- There may be some discomfort, vaginal bleeding and irregular contractions.
- If the cervix is closed and membrane sweeping is not possible, cervical massage around the vaginal fornices may achieve a similar effect.

4.5 Attendance of Lead Maternity Carer

If IOL is planned, the roles of care providers should be mutually agreed upon by the woman, the LMC and O&G Consultant and clearly documented in the clinical records. Especially if IOL is to be managed completely by Core Midwives.

When a decision is made between the hospital maternity team, the Lead Maternity Carer (LMC) and the woman for the LMC to provide midwifery care during IOL, Core Midwives 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.
- Assist the LMC to provide care according to the management plan for IOL and the wishes of the woman, until such time as labour is established and the LMC is in attendance[4] or until the woman wants continuous support from her LMC.
- Provide the LMC reasonable notice of the need to be available to attend to the woman[4] including if the woman wants continuous support from their LMC.

The LMC updates the Core Midwives with the care plan so the Birthing Suite workload can be planned and an effort made to meet the woman's/person's goals and expectations.

5. Specific Circumstances for IOL

5.1 Prolonged Pregnancy - ≥ 41 Week's Gestation

Risk/Benefit	• Prolonged pregnancy (≥ 42 weeks) is associated with increased duration of labour, caesarean section for failure to progress and for fetal distress, operative vaginal delivery, post-partum haemorrhage (PPH) and large for gestational age babies. • The risk of stillbirth significantly increases in pregnancies which proceed beyond 42 weeks, and some studies have shown increased risk between 41-42 weeks. • The majority of pregnancies, which go beyond 42 weeks, however, are associated with good outcome for mother and baby. • N.B.: Women who are obese (BMI>30) have a higher rate of prolonged pregnancy
Recommendation	• For women with uncomplicated pregnancies; o offer serial membrane sweeps from term and then offer IOL at 41+5 to 42 weeks after review of dates. o refer to on call Obstetrician at 41+1 weeks with USS of growth and liquor having been done near 41 weeks. • Women who decline IOL at 42 weeks should be offered increased antenatal monitoring from 42 weeks (see below). However, there is no evidence that this reduces the risk of sudden stillbirth and this should be discussed with the woman. Discuss case with the appropriate team O&G Consultant.
Monitoring	• From 42 weeks via Day Assessment Unit or Taupo Maternity Unit; o twice weekly assessment of CTG should occur until delivery

5.2 Hypertension in Pregnancy

Risk/Benefit	Hypertension in pregnancy includes chronic hypertension, gestational hypertension and pre-eclampsia. There is an association between hypertension in pregnancy and increased maternal morbidity and mortality (Ministry of Health, 2017).
Recommendation	• For women with chronic hypertension and low risk of adverse outcomes, consider expectant management beyond 37 weeks' gestation with increased monitoring. • For women with gestational hypertension diagnosed after 37+0 weeks' gestation, consider IOL, to reduce the risks of severe hypertension, severe pre-eclampsia, HELLP syndrome, abruptio placenta, pulmonary oedema, severe renal impairment, and fetal growth restriction. • For women with pre-eclampsia diagnosed after 37+0 weeks' gestation, offer IOL.
Monitoring	Ongoing monitoring of symptoms, blood pressure, urinalysis, blood testing and assessment for fetal growth.
Guideline	Pre-eclampsia / Eclampsia Guideline - 196593

5.3 Advanced Maternal Age

Risk/Benefit	• Women who are older in pregnancy are at higher risk of pregnancy related complications, such as diabetes and hypertension. • The risk of stillbirth increases slightly for women who are 35 years of age or older. • The PMMRC reported that, in New Zealand in 2016, there was an association between maternal age of 40 years or older and perinatal death (PMMRC 2018). • There is currently insufficient high quality evidence to make a recommendation for IOL for maternal age to improve adverse outcomes.
Recommendation	• Inform women of the potential pregnancy complications in women aged 35 years or older and the association found in the PMMRC data on perinatal mortality in women aged 40 years or older. • For women of aged 40 years and over, consider offering IOL at around 40 weeks gestation.

5.5 Diabetes in Pregnancy

Risk/Benefit	• Diabetes in pregnancy is associated with an increased risk of adverse perinatal outcomes. • Timely diagnosis, treatment and continued follow-up are essential to prevent or minimise these adverse outcomes. • There is insufficient high quality evidence to show that IOL reverses these outcomes.
Recommendation	• Gestational Diabetes: continue expectant management to at least 40 weeks' gestation, in the setting of good glycaemic control, normal fetal growth and no obstetric complications. Assess timing of birth individually where women have; - poorly controlled gestational diabetes, - fetal growth is > 90th percentile or - there are maternal and/or fetal comorbidities and consider planning delivery for 38 to 39 weeks. • Type 2 Diabetes: continue expectant management to 39 weeks' gestation, unless there are obstetric or fetal indications for earlier birth or diabetes complications, such as vascular disease. • Type 1 Diabetes: manage on a case-by-case basis.
Monitoring	• In practice, women with pregnancies complicated by either pre-existing diabetes or gestational diabetes are monitored within the diabetic service • The Obstetric and Diabetes team will plan the IOL
Guidelines	• Diabetes in Pregnancy – Gestational Diabetes Mellitus - 2121097 • Diabetes in Pregnancy – Type 1 and Type 2 Diabetes - 2656754

5.6 Decreased Fetal Movements

Risk/Benefit	Maternal perception of fetal movement has long been used as an indicator of fetal wellbeing. Decreased or reduced fetal movement is associated with adverse perinatal outcomes. There is currently insufficient high-quality evidence to make a clear recommendation about IOL for this condition.
Recommendation	Specialist medical opinion should be sought and further management individualised where there is concern due to decreased fetal movements (DFM). For women with DFM, in the presence of normal maternal and fetal assessment, continue expectant management.
Guideline	Decreased Fetal Movements - 2927914

5.7 Pre-labour Rupture of Membranes (PROM) ≥ 37 Week's Gestation

Risk/Benefit	• The risk of infection increases with the duration membranes are ruptured prior to birth. • There is a risk of maternal morbidity due to infection, definite or probable early-onset neonatal sepsis and admission to special or intensive care setting.
Recommendation	• For women with PROM, share information with them as early as practical after rupture of membranes to support informed decision-making. • Women should be offered IOL at 24 hours post PROM, or as soon as practicable after that time. • Unless immediate IOL is planned, avoid digital vaginal examination. • 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 neonates are at risk of early-onset neonatal group B streptococcal sepsis offer immediate IOL. • If liquor is meconium stained, consider immediate IOL. • Oral Misoprostol can be used for cervical ripening.
Monitoring	• For women who choose expectant management, identify and document a plan for ongoing maternal and fetal wellbeing assessment, and provide the opportunity to revisit the offer of IOL at any time. • Consider additional maternal and fetal monitoring as time goes on. • If any concerns about maternal or fetal wellbeing arise, then the clinician should re-discuss the benefits of IOL in light of the new context and re-offer IOL.
Guideline	• Pre-labour Rupture of Membranes - 43549

5.8 Obstetric Cholestasis

Risk/Benefit	• A multifactorial condition characterised by itching of the skin in the absence of a rash with abnormal liver function tests, neither of which has an alternative cause and both of which resolve after birth. • Systematic reviews found association with stillbirth only in women whose bile acids were ≥100 (MOH, 2019). • Individualised care required based on clinical considerations i.e. symptoms, gestational age at diagnosis and serum bile concentration in consultation with an Obstetrician. • Clinicians should be aware that fetal ultrasound and/or cardiotocography (CTG) do not predict or prevent stillbirth in Cholestasis.
Recommendation	• In women with peak bile acids 19–39micromol/L (mild Cholestasis) and no other risk factors, advise them that the risk of stillbirth is similar to the background risk. Consider options of planned birth by 40 weeks' gestation or ongoing antenatal care according to national guidance. • In women with peak bile acids 40–99 micromol/L (moderate Cholestasis) and no other risk factors, advise them that the known risk of stillbirth is similar to the background risk until 38–39 weeks' gestation. Consider planned birth at 38–39weeks' gestation. • In women with peak bile acids 100micromol/L or more (severe Cholestasis), advise them that the risk of stillbirth is higher than the background risk. Consider planned birth at 35–36 weeks' gestation. • Advise women with Cholestasis and a twin pregnancy that the risk of stillbirth is higher compared with a twin pregnancy without Cholestasis.

5.9 Twin Pregnancy

Risk/Benefit	• Twin pregnancy is associated with higher rates of anomaly, preterm birth, pre-eclampsia, FGR, GDM and complicated birth. • There is a lack of high quality evidence to confirm benefits and harms of IOL or expectant management.
Recommendation	In alignment with reviewed international guidelines (MOH 2019); • For women with an uncomplicated monochorionic diamniotic twin pregnancy, consider offering IOL between 36 and 37 weeks' gestation. • For women with an uncomplicated dichorionic twin pregnancy, consider offering IOL between 37 and 38 weeks' gestation.

5.10 Small for Gestational Age (SGA) / Fetal Growth Restriction (FGR)

Isolated small for gestational age (SGA) is defined as estimated fetal weight (EFW) <10th centile.

Fetal growth restriction (FGR) is defined as either early onset or late onset:

Early Onset FGR: Diagnosed < 32+0 weeks is defined as;

- EFW customised or AC < 3rd centile OR
- UA with absent or reversed end-diastolic flow OR
- EFW customised or AC < 10th centile plus one or more of….
  - UA Doppler PI > 95th centile
  - UtA Doppler mean PI > 95th centile or bilateral notching

Late Onset FGR: Diagnosed ≥ 32+0 weeks is defined as;

- EFW customised or AC < 3rd centile OR two or more of the following…
- EFW customised or AC < 10th centile
- Slowing of fetal growth: decline in EFW or AC of > 30 centiles from 28+0 weeks gestation
- Any of: US Doppler PI > 95th centile or CPR < 5th centile or UtA mean PI >95th centile or bilateral notching

Risk/Benefit	Risk of neonatal mortality and morbidity
Recommendation	**FGR ≥ 32+0 weeks** • Isolated SGA: EFW and/or AC 3rd to <10th centile with normal UA, CPR and UtA Dopplers – IOL at 40+0 weeks (not earlier than 39+0). • FGR: EFW or AC < 3rd centile, two of three: EFW or AC < 10th centile, slowing fetal growth, abnormal UA, CPR or UtA Doppler – IOL by 38+0 weeks • FGR at high risk of deterioration – birth as soon as possible.
Monitoring	Fetal movement monitoring, twice weekly cardiotocograph (CTG), ultrasound scan and Doppler studies
Guideline	Prevention, Detection and Management of SGA or IUGR Fetus - 1561674

5.11 Reduced Liquor Under 41 Weeks Gestation

Risk/Benefit	• Decreased amniotic fluid volume (oligohydramnios) is usually associated with adverse perinatal outcomes and other pregnancy complications. • There is no high-quality evidence to confirm the benefits or harms of IOL or expectant management in the setting of isolated reduced liquor. • The finding of reduced liquor warrants a full clinical assessment, including history and examination of the woman to exclude spontaneous rupture of membranes (SROM) and identification of other antenatal risk factors.
Recommendation	In women with reduced liquor as an isolated finding at <41 weeks' gestation, in the presence of normal maternal and fetal assessment, consider expectant management.
Monitoring	• Clinicians could consider confirming the diagnosis with a repeat ultrasound scan. Single deepest pocket appears to be the most reliable measure to predict adverse outcomes. • If reduced liquor is persistent, then consider regular follow-up clinical assessment.

5.12 Antepartum Haemorrhage of Unknown Origin

An antepartum haemorrhage (APH), is defined as bleeding from the genital tract from 24 weeks' gestation up until the birth of the baby. It may be caused by placenta praevia, placental abruption, local tissue damage etc. but it is considered to be of unknown origin when a cause is not found.

Risk/Benefit	• APH of unknown origin is associated with adverse perinatal outcomes, such as preterm birth, stillbirth, fetal anomalies and SGA. • APH is an indication for assessment by an obstetric specialist and may require increased monitoring of the pregnancy (e.g. SGA, routine enquiry for intimate partner violence). • If placental abruption was clinically diagnosed, most clinicians would recommend birth. However, there is no high-quality evidence to confirm the benefits or harms of IOL or expectant management for APH of unknown origin. • There is currently insufficient high quality evidence to make a clear recommendation about IOL for this condition.
Recommendation	In women with antepartum haemorrhage of unknown origin, in the presence of normal maternal and fetal assessment, consider expectant management. If placental abruption is clinically diagnosed, birth would be recommended.
Monitoring	Assessment by an Obstetric Specialist and consider increased monitoring for SGA and routine enquiry for intimate partner violence.

5.13 Previous Stillbirth

Risk/Benefit	• Large studies have shown an increased risk of recurrent stillbirth in a subsequent pregnancy but do not identify gestation at the first or any subsequent stillbirths and therefore cannot help with decision-making around timing of induction for a stillbirth (MOH, 2019). • Many causes of stillbirth remain unknown, stillbirth is difficult to predict or prevent and maternal risk factors may still be present in the subsequent pregnancy. • The anxiety of women who have experienced a previous stillbirth and the impact of that experience may affect decision-making in their current pregnancy.
Recommendation	Consider expectant management or IOL, based on a review of risk factors for recurrence and any other antenatal risk factors, and guided by maternal choice.

5.14 Intrauterine Fetal Death

Please refer to the Perinatal Loss Guideline: Second and Third Trimester Care (EDMS 2053162).

6. The Following are not Considered Indications for IOL

6.1 Assisted Reproductive Technology (ART)

Risk/Benefit	• ART refers to procedures that involve the in-vitro handling of both human oocytes and sperm, or embryos, with the objective of establishing a pregnancy. • There is no high-quality evidence to confirm the benefits or harms of IOL or expectant management of pregnancies conceived through ART (MOH, 2019).
Recommendation	• In women who conceive using ART, in the absence of other risk factors or pregnancy complications, do not offer IOL.

6.2 Suspected Fetal Macrosomia without Diabetes

Risk/Benefit	Defined as estimated fetal weight greater than the 90th centile **AND** AC (abdominal circumference) > 90th centile on customised growth chart. Antenatal estimates of fetal weight are often inaccurate. It is important to provide information to pregnant women about the difficulty of assessing fetal size and diagnosing fetal macrosomia and the benefits and harms of IOL and expectant management.
Recommendation	In women with suspected macrosomia, in the absence of pregnancy complications, consider expectant management. IOL is not recommended.

6.3 Maternal Obesity

Risk/Benefit	There is an association with the degree of maternal obesity and the risk of stillbirth, with increasing risk as BMI increases, but there is no clear cut-off. There is no high-quality evidence to confirm the benefits or harms of IOL or expectant management in pregnant women with obesity.
Recommendation	For pregnant women with obesity, in the absence of other risk factors or pregnancy complications, do not offer IOL.

6.4 No Medical Indication

Risk/Benefit	• There is insufficient evidence to allow comment on the risks associated with IOL where there is no medical indication i.e. for maternal request. • IOL should not be considered an option in the absence of a medical indication unless there is compelling psychological or social reasons, the woman has a favourable cervix and she is fully aware of the potential risks involved.
Recommendation	IOL is not recommended in the absence of a medical indication. Manage maternal requests for IOL on a case by case basis.

7. Pre Induction of Labour Assessment

Prior to commencing IOL, complete the following:

- Review the maternal history
- Confirm the gestation
- Perform baseline observations: temperature, pulse, blood pressure etc. as per MEWS.
- 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 the day of the IOL and results are available.
- Abdominal palpation to confirm presentation and engagement and auscultate fetal heart rate.
- Perform a baseline CTG for at least 30 minutes AND until the CTG is normal (Dawes-Redman (DR) can be used but CTG remains insitu for required length of time even if DR criteria have been met). If the CTG is abnormal the on-call obstetric team must be consulted.
- Vaginal examination (if required) to assess cervix and complete Bishop's score (see below).
- 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.

Cervical Assessment

- The Bishop score is a method used to assess the state of the cervix.
- Each feature is scored and the scores are then totalled, using Bishop Score Sticker (below).
- The state of the cervix is one of the most important predictors of successful IOL.
- The cervix is unfavourable if the score is 6 or less.

Bishop Score Sticker

BISHOP SCORE:	**CERVICAL RIPENING / INDUCTION OF LABOUR (Unfavourable Score = ≤ 6)**			
Date:		Time:		
Score	0	1	2	3
Dilation cm.	< 1	1 - 2	3 - 4	> 4
Length of cervix cm.	3	2	1	0
Station	- 3	- 2	- 1 or 0	+1 or +2
Consistency	Firm	Medium	Soft	-
Position	Posterior	Mid	Anterior	-
Score =	PG Gel Dose:		Misoprostol:	
	ARM:		Synto:	
	Foleys Balloon:			
Print Name:		Designation:		

8. Booking Induction of Labour

These are booked by completing an Induction of Labour Booking Form in Badgernet.

If the IOL is urgent (e.g. required within 48 hours) text or call the Clinical Midwife Manager.

Process:

- Complete the Induction of Labour Booking Form in Badgernet following discussion with the Obstetric Team, who will determine the timeframe for IOL to be booked for. (Obstetric Team simply complete the IOL Booking Form).
- Induction of Labour Referrals will be reviewed by a Clinical Midwife Manager. The on call Obstetrician will be consulted if needing to triage or prioritise due to higher demand than capacity.
- The Clinical Midwife Manager will book the IOL and communicate the outcome (i.e. date of IOL) by text message to the LMC.

Please note:

- There are usually two available spaces for IOL each day, Monday to Friday.
- If there is need for additional capacity (i.e. an additional one or IOL over the weekend), this must be in consultation with the Rotorua Birthing Unit Clinical Midwife Manager and the on-call Obstetric SMO of the day.
- Admission for IOL is at 0730hrs.
- Once a date has been booked, the woman presents and is admitted to the Rotorua Birthing Unit at the pre-arranged time (unless any issues necessitating hospital care arise prior to this).

9. Methods of Induction of Labour

Methods used for IOL include:

- Medical methods: Oral Misoprostol, Prostaglandin gel, Oxytocin infusion
- Surgical methods: Artificial rupture of membranes (ARM)
- Mechanical methods: Transcervical catheter (Foley) (Balloon Catheter)

9.1 Oral Misoprostol

ORAL MISOPROSTOL	
Indications	• Unfavourable cervix
Contraindications	• Vaginal birth contraindicated (e.g. placenta praevia/accreta, transverse lie, etc.) • Known allergy to misoprostol • Informed consent cannot be obtained
Cautions	• Prostaglandin hypersensitivity • Previous caesarean or any major uterine surgery - **only after assessment and documented plan by Obstetric SMO** • Abnormal CTG • IUGR and/or oligohydramnios • High parity > 3 • Malpresentation • Multiple pregnancies • Oxytocin administration • Cardiovascular disease • Raised intraocular pressure, glaucoma
Advantages	• Reduces number of vaginal examinations required which reduces the risk of infection and enhances woman's/person's experience • More effective than prostaglandin gel (Dinoprostone) at inducing labour • Reduced caesarean section when compared with other prostaglandins • The risk of hyperstimulation is the same as the risk with other prostaglandins • Can be used with or without intact membranes • Most women (65%) establish in labour within < 25 hours (Te Whatu Ora Mid-Central, 2022).
Dosage	The dose is 25 micrograms every 2 hours until labour is established with a maximum of 8 doses (200mcg) in 20 hours.
Administration	See Preparation and Administration of Oral Misoprostol (below) See Misoprostol - Instruction for Dilution Using Tablets (Appendix 1.)
Monitoring	Complete a CTG in all of the follow situations: • Prior to giving a dose of misoprostol (at least 20 minutes) • Following first dose of misoprostol (for at least 40 minutes) • Contracting regularly with increasing intensity, frequency and duration • Established labour (continuous CTG)

Process of Administering Oral Misoprostol

Prior to Admission

1. Decision is made for IOL after a consultation involving the woman, the LMC and an Obstetrician.
2. Information about IOL is provided to the woman prior to admission, if possible.
3. Arrange for the woman to present to Birthing Unit **before 0730hrs** on the day of IOL.
4. Oral Misoprostol is prescribed by a doctor on the medication chart prior to the woman arriving;
   The dose is 25 micrograms every 2 hours until labour is established with a maximum of 8 doses (200mcg) in 20 hours.

Woman presents to Birthing Unit

5. The core Midwife completes a midwifery assessment (including CTG of at least 20 minutes' duration and MEWS) to ensure there are no contraindications and no change in the clinical picture that needs to be escalated to the Obstetric team.
6. Consider performing a baseline VE (i.e. only if contractions prior to admission or if a multip) and document Bishop Score – unless performed in last 48 hours or woman declines.
7. If cervix is fully effaced (and >3cm dilated in a multip) perform an ARM. If not suitable for Misoprostol or ARM, consider balloon catheter or prostaglandin.
8. Inform LMC of any changes or that IOL is to proceed.
9. Verbal consent for Misoprostol must be obtained from the woman and documented by the health professional administering the medication, as Misoprostol is not licensed for IOL in New Zealand - however, its use is well supported by evidence.
10. Prior to giving the first dose of Misoprostol, insert an intravenous (IV) line and take and send bloods for Full Blood Count (FBC) and Group & Hold (G&H)

Day One – First Dose

11. Prepare and give first dose of Misoprostol (as per 'Preparation and Administration of Oral Misoprostol')
12. Continue CTG for 40 minutes after 1st dose (not required after subsequent doses unless clinically indicated) to check for hyperstimulation and fetal response

Next Dose of Misoprostol

13. Perform a CTG for 20 minutes prior to the next dose of Misoprostol – usually this will be 1 hour and 40 mins from the last dose of Misoprostol.
14. If a woman is contracting strongly 2 hours after being given a dose, wait for a further one hour before considering giving the next dose. If still contracting strongly perform a VE to assess progress.

Further Doses and Management

15. Administer the next dose of Misoprostol 2 hours after the last dose (after 20min CTG) and give repeated Misoprostol doses 2 hourly (up to 8 doses in 20 hours) until in established labour.
    Established Labour is defined as;
    Primiparous: regular, painful, contractions 3-4:10, fully effaced cervix ≥ 3cm dilated
    Multiparous: regular, painful contractions at least 2-3:10, cervix ≥4cm dilated
16. Call LMC to inform them woman is in established labour (see definition Step 15 above) – note that labour and birth following Misoprostol can occur quickly.
17. Perform ARM when indicated: ensuring this is not within 2 hours of Misoprostol being given (to reduce the risk of hyperstimulation) and in consultation with the Obstetric SMO and Birthing Unit Coordinator to ensure safe staffing and patient acuity. (Ensure IV access is patent prior to performing ARM).
18. If membranes rupture spontaneously and there are contractions, perform a VE to assess. If not in labour wait 2 hours and reassess. If not in labour at that time continue Misoprostol dosing. Assess for GBS risk and if risk present, commence antibiotics.
19. If there is spontaneous rupture of membranes but no regular uterine activity, continue with Misoprostol. Start antibiotics immediately if at increased risk of GBS infection or at 18 hours if not.
20. **NOTE:** if contractions are adequate at 2 hours post Misoprostol and start to become less frequent or reduce in strength after that, continue to give further doses of Misoprostol (up to 8 doses).
21. Maximum of 8 x 25mcg doses in 20 hours. If not labouring after 8 doses, then allow a 4-6 hour break/rest time and restart with a second cycle of Misoprostol the following morning.
22. If hyperstimulation occurs, manage in accordance with Section 11 of this IOL Guideline.
23. Notify an Obstetrician immediately if there is an adverse side-effect from Misoprostol.

Fetal Monitoring for Misoprostol IOL

Complete a CTG in all of the follow situations:

- Prior to giving a dose of Misoprostol (for at least 20 minutes)
- Following first dose of Misoprostol (for at least 40 minutes)
- Contracting regularly with increasing intensity, frequency and duration
- Established labour
- If there are any concerns

Note: Dawes-Redman criteria:

- can be applied to the CTG prior to the administration of the first dose of Misoprostol, but the CTG must remain on for the specified time, even if Dawes-Redman criteria has been met.
- Dawes-Redman criteria should not be applied once Misoprostol has been administered.

- Enter CTG review into Badgernet and request 'Fresh Eyes' on the CTG.
- If the CTG is abnormal, continue monitoring and refer to an Obstetrician.
  (Note: It may be possible to administer the next dose of misoprostol and continue monitoring).
- Continuous CTG is required once in established labour.

Maximum Misoprostol given and labour not established

- Request an Obstetric consultation and offer VE to be able to plan further management
- Only consider ARM if it is 2 hours after the last dose of Misoprostol and after consultation with the Obstetric SMO and Clinical Midwife Manager/Birthing Unit Coordinator and updating the LMC.
- Once ARM has been performed, if required, start oxytocin augmentation 4 hours after last dose of misoprostol
- The woman will be cared for in BU by core Midwives until labour is established, when the LMC will be contacted, if the arrangement is for them to attend to provide midwifery care (MOH, 2015).
- Alternatively, if ARM is not possible, offer resting time and repeat the 8 dose cycle 24 hours after the commencement of the IOL
- If ARM is not possible after two cycles of misoprostol, consider offering balloon catheter method of IOL.

Labour is established with Misoprostol

- Contact the LMC, providing reasonable notice of the need to be available to provide midwifery care. The core midwifery team will provide support to the woman until the LMC arrives and will support the LMC with care related to complexity as required (MOH, 2015).

Preparation and Administration of Oral Misoprostol

Equipment required:

- Pair of non-sterile gloves
- 1 x 20ml syringe
- 1 drawing up needle
- 1 x 3 ml oral syringe
- 1 x paper medicine cup
- 2 x 10 ml Water for Injection
- 1 x packet of Misoprostol 200 microgram tablets (1 x tablet for each administration)
- Medication Added label

Preparation instructions

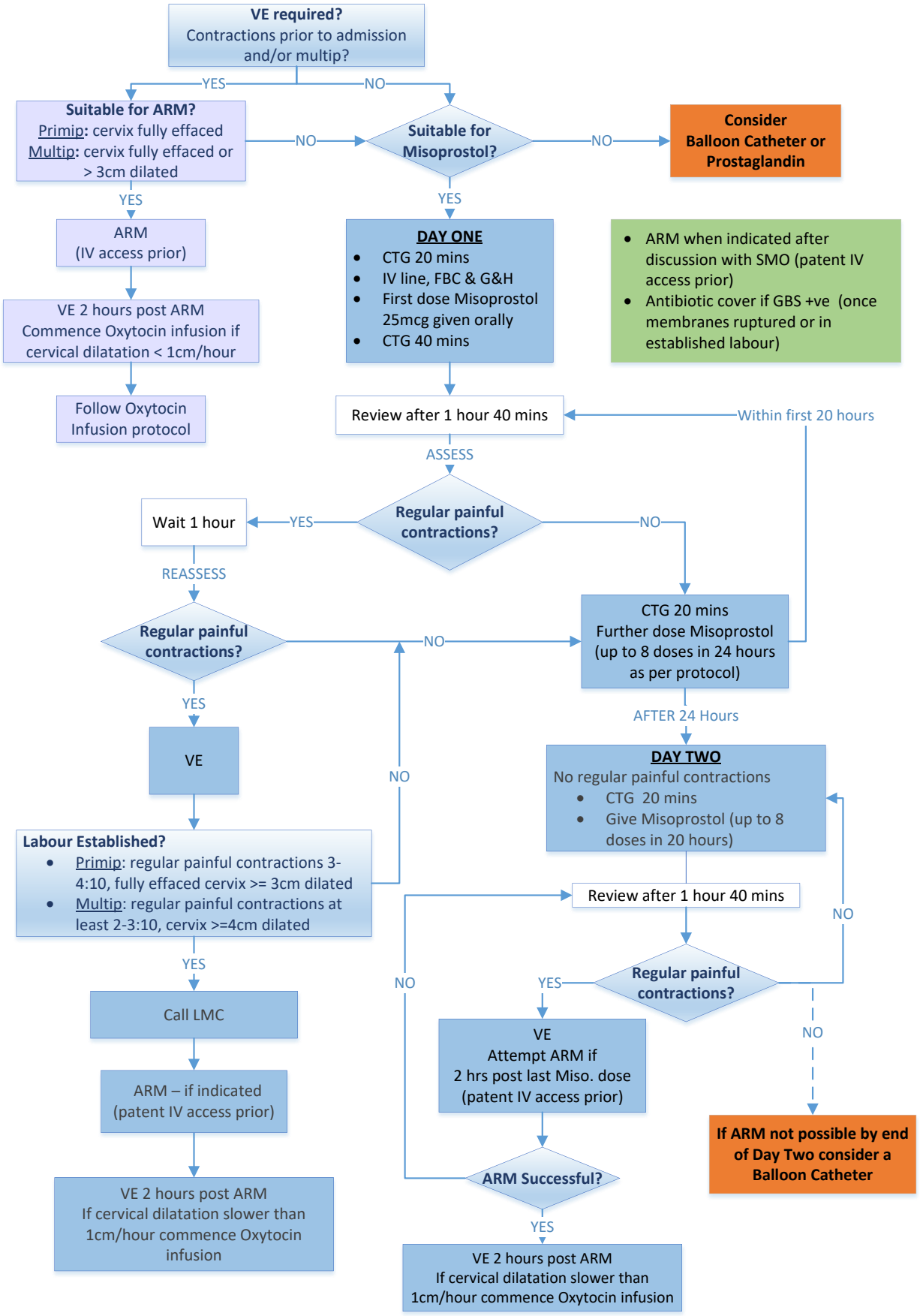
Prepare and give oral solution;

a. Pour contents of 2 x 10ml water for injection ampoules into a medicine measure cup.
b. Draw up 20ml of water into 20ml syringe, via the drawing up needle and discard remainder of water in cup (but keep the cup).
   Note: The ampoules of 10ml water for injection usually contain more than 10mls, therefore the 20mls water needs to be measured
c. Place ONE 200 microgram Misoprostol tablet into the empty medicine cup and add the 20ml of water from the syringe.
d. Use the oral syringe to mix vigorously until tablet is fully dispersed. This stock solution concentration is 10 micrograms per 1mL.
e. Ensure the tablet is fully dispersed then **immediately** draw up **2.5 ml** of the solution into the oral syringe (before the suspension settles)- (2.5mL of stock solution is equal to 25 micrograms).
f. Label the oral syringe with a 'Medication Added' label
g. Shake the oral syringe well immediately before administering the dose.
h. Ask woman to squirt the solution into her mouth and swallow, to ensure they receive the full dose.
i. Discard the remainder of solution and the paper medicine cup. Rinse the oral syringe with tap water and keep this and all the other equipment for the next dose.

See **'**Misoprostol - Instruction for Dilution Using Tablets' (Appendix 1.) for pictorial representation of the above process.

Oral Misoprostol Induction of Labour Process

- A decision is made for IOL in a three-way conversation with woman, LMC & Obstetrician
- Provide the woman with information and ensure the IOL process is understood
- If indicated, perform a VE to determine Bishop Score



9.2 Prostaglandin Gel

PROSTAGLANDIN E_2 GEL (PGE 2) ®	
Indications	• 1st line for cervical ripening for women with parity 4 and 5 needing prostaglandin induction (following consultation with the O&G Consultant on call). • It may also be used as a 2nd line agent if Misoprostol has failed in women with parity 0-3 where amniotomy is not possible.
Contraindications	• Known hypersensitivity to prostaglandin or other constituent of PGE 2 Gel ® • When labour has commenced • Any conditions not conducive to labour • When oxytocic drugs are being given • When the risk of uterine hyper stimulation would be inappropriate e.g. grand multiparity, previous major uterine surgery etc. • Active cardiac, pulmonary, renal or hepatic disease
Cautions	• If uterine activity is already present
Dosage	• Nullip: Bishop Score ≤5 – administer 2mg Prostaglandin gel, reassess in 6 hours No change – give further 2mg Prostaglandin gel Some change – give 1mg Prostaglandin gel • Multip: Administer 1mg Prostaglandin gel. Obstetric SMO may authorise 2mg in special circumstances.
Administration	• Verbal consent obtained from the woman. • Abdominal palpation. • Baseline maternal recordings (P, T, RR, BP) according to and documented on MEWS Chart. • Pre assessment CTG of at least 30 minutes (this must be reassuring). • Ensure prostaglandin is prescribed on the Medication Chart. • VE to assess the Bishops score (document in clinical notes using the 'Bishop Score' label). • Use Prostaglandin gel directly from the fridge where it is stored. • Insert Prostaglandin gel into the posterior vaginal fornix, not endocervical as this increases the risk of hyperstimulation. • Woman must remain semi recumbent post insertion of prostaglandin, during which time a post prostaglandin insertion CTG should be performed for a minimum of 30 minutes to assess fetal wellbeing and uterine activity. • Complete the Bishops score label with PGE2 and dosage in the clinical notes. • Woman may mobilise following the post CTG if maternal and fetal observations are within normal limits. • If repeated administration is necessary and is prescribed by Obstetrician, allow at least 6 hours between doses. • Prostaglandin induction should be carried out in the hospital and the woman should remain in hospital but encouraged to mobilise as freely as possible.
Monitoring	• After administration of vaginal prostaglandin when contractions begin, fetal wellbeing should be assessed with continuous electronic fetal monitoring. Once the CTG is confirmed as normal, intermittent auscultation should be used unless there are clear indications for continuous electronic fetal monitoring as outlined in Care Plan. • Unless uterine activity starts spontaneously, or spontaneous rupture of membranes occurs, the condition of the cervix should be assessed after 6 hours. • If hyperstimulation occurs, see section on Excessive Uterine Activity.

9.3 Oxytocin Infusion

Oxytocin (Syntocinon®) stimulates the smooth muscle of the uterus to produce rhythmic contractions.

OXYTOCIN INFUSION	
Indications	• To induce labour following ARM or SRM and once the cervix is favourable. • Also used to augment labour
Contraindications	• Known hypersensitivity to any constituents of the product • Hypertonic uterine contractions • Vaginal delivery contraindicated • Fetal compromise or malpresentation • Known cephalopelvic disproportion • Placenta previa, vasa praevia, Placental abruption • Cord presentation or prolapse • Not within 6 hours of Prostaglandin gel • Not within 4 hours of administration of Misoprostol
Cautions	• Presence of a uterine scar • High parity (>4) • Avoid prolonged use and monitor fluid intake in women with severe Pregnancy Induced Hypertension (PIH), or pre-eclampsia, severe cardiovascular disorders or oxytocin resistant uterine inertia, due to oxytocin's slight anti-diuretic activity. If any caution applies, then the decision to use oxytocin should be made and documented by an Obstetric Specialist (SMO).
Risks/Benefit	• Restricts mobility and may increase the need for epidural • Contractions are reported as being more painful
Possible Side Effects	• Cardiovascular disturbances (e.g. bradycardia, tachycardia) • Headache • Gastrointestinal disorders (e.g. nausea, vomiting)

Monitoring	• Provide one to one midwifery care
	• Continuous CTG prior to oxytocin infusion and continue until birth.
	• Assess maternal observations and FHR prior to start and any increase in infusion rate.
	• Maternal observations (minimum)
	  ○ Temperature 2 hourly
	  ○ BP hourly
	  ○ Pulse hourly (and printed continuously on CTG trace)
	  ○ Vaginal loss
	  ○ Palpate fundus for contraction strength and resting tone
	  ○ Encourage 2 hourly emptying of bladder
	• Maintain fluid balance as water intoxication may result from prolonged infusion.
	• Assess pain relief requirements.

Assess Progress	• Commence partogram with the start of oxytocin infusion • Vaginal examination 4 hourly or as directed or indicated

9.3.1 Oxytocin Administration

OXYTOCIN ADMINISTRATION	
Preparation	• Ensure Oxytocin (Syntocinon ®) 10 units in 500ml 0.9% Sodium Chloride and maintenance fluids 1000mL 0.9% Sodium Chloride are prescribed on the Medication Chart. • Add Oxytocin (Syntocinon ®) 10 units to 500ml 0.9% Sodium Chloride - apply 'Medication Added Label'. • Set the Baxter infusion pump to 'OXYTOCIN Labour - 1 milli unit per minute' (shown on pump as mUnit/min)'. • Administer via a sideline of a main IV line running 1000mL 0.9% Sodium Chloride at up to 125 mL/hr.
Administration	• Abdominal palpation – to rule out malpresentation. • Vaginal examination to assess the Bishops score (document in clinical record). • Increase the infusion rate according to the relevant regime (see section 9.3.2), unless requested otherwise by the obstetric team. • Mark changes to dose clearly and contemporaneously on the CTG and partogram
Management	• Fetal and maternal wellbeing should be assessed prior to commencement of oxytocin infusion. • Continuous CTG until birth. • Increase the dose of oxytocin at 30 minute intervals, as required. • Aim for a maximum of 3-4 moderate to strong contractions in 10 minutes, each lasting 45 to 60 seconds. • Palpate uterine contractions every 15-30 minutes. • Use the minimum dose possible • The infusion rate may be decreased at any time, if required. • If infusion is stopped for epidural, recommence infusion at rate being infused at cessation, unless otherwise indicated by uterine activity. • If the infusion is stopped for other reasons, the obstetric team is to be consulted prior to recommencing infusion. Recommence at the previous dose then titrate to achieve a rate of 3-4 regular, moderate to strong contractions lasting 45 to 60 seconds • Vaginal examination: either 6 hours after commencing oxytocin OR 4 hours after commencing, if regular uterine contractions and/or membranes rupture. • If regular contractions have been achieved but cervical change has not been achieved after **a total of 4 hours**, then further consultation with the obstetric team is required.
Cease Infusion If..	• Uterine activity becomes too frequent (tachysystole) • Uterine contractions last too long (hypertonus) • Resting uterine tone increases (i.e. the uterus does not relax between contractions) • Abnormal CTG (see Fetal Heart Monitoring Guideline EDMS 2499948) If any of the above occur, follow management in Section 11 - Excessive Uterine Activity, cease infusion and consult with obstetric team before recommencing.

9.3.2 Oxytocin Regime

Use the following regimes for induction or augmentation of labour.

Oxytocin Dose Regime

Oxytocin 10 Units in 500mL 0.9% Sodium Chloride (Normal Saline)

Time After Starting (minutes)	Oxytocin Dose (milliunit/minute)	Rate of Infusion (mL/hour)
0	**1**	3
30	**2**	6
60	**4**	12
90	**8**	24
120	**12**	36
150	**16**	48
180	**20**	60
210	**24**	72
240	**28**	84
270	**32**	96

- The minimum effective dose should be used to achieve 3-4 uterine contractions in 10 minutes, each lasting 45-60 seconds.
- If used safely, adequate contractions will lead to cervical dilatation without fetal or maternal distress.
- Observe closely for tachysystole (>5 contractions in 10 minutes) or hypertonus (contractions lasting longer than 2 minutes or within 60 seconds of each other) that may lead to hyperstimulation (abnormal fetal heart rate). (See Section 11 Excessive Uterine Activity)

9.4 Artificial Rupture of Membranes

ARTIFICIAL RUPTURE OF MEMBRANES	
Indications	• Favourable cervix – Bishop score of 7 or more with presenting part fixed in the pelvis and well applied to the cervix. • May be used as initial method of IOL, especially in a multiparous woman or in combination with oxytocin infusion.
Contraindications	• Low lying placenta, placental praevia or vasa praevia • Non-cephalic presentation
Cautions	• Exercise caution when cephalic (head) presentation is high – due to risk of cord prolapse. Discuss controlled rupture with Obstetrician. • Active vaginal and other infections e.g. genital herpes, HIV, Group B Streptococcus, Hepatitis A, B or C.
Procedure	• Perform abdominal palpation to confirm presentation and engagement of the presenting part. • Confirm there is no cord or vessel presentation on vaginal examination • Rupture the membranes using an amnihook. • Following ARM examine to ensure there is no cord prolapse. • Auscultate the fetal heart rate for more than 30 seconds. • Document liquor colour and consistency. • Encourage mobilisation to promote onset of uterine contractions
Monitoring	• In a primagravida woman, commence Oxytocin as soon as possible following ARM. • Multiparous woman, it is reasonable to consider commencing Oxytocin if there is no uterine activity after 2 hours. • The decision to perform ARM and await onset of contractions may be considered when there is; o a past history of rapid labour o grand multiparity o previous lower segment caesarean section or o when the woman has expressed a strong preference for giving some time to await spontaneous labour after ARM.

9.5 Balloon Catheter

A Balloon Catheter (e.g. Foley) offers a mechanical method for IOL that directly dilates the cervical canal and indirectly increases prostaglandin and/or oxytocin secretion.

BALLOON CATHETER	
Indications	• May be useful where the cervix is unfavourable and prior to oral Misoprostol. • May be considered in women with previous caesarean section or major uterine surgery. • Balloon catheter may be more appropriate in circumstances where the risk of uterine hyperstimulation has more consequences, such as severe SGA.
Contraindications	• Low lying placenta, placental praevia or vasa praevia • Non-cephalic presentation • Prior hysterotomy, classic uterine incision, myomectomy. • Pelvic structural abnormality. • Active genital herpes infection. • Invasive cervical cancer. • Abnormal fetal heart rate patterns. • Polyhydramnios. • Presenting part above the pelvic inlet. • Rupture membranes. • Any contra indication to labour induction.
Cautions:	• Antepartum bleeding • Inflammation of the cervix
Administration	Obstetric Specialist to perform insertion of the balloon catheter on the Birthing Unit. Equipment: • Dressing pack. • Chlorhexidine wash. • Sterile gloves. • 2 sponge forceps. • 30ml syringe. • 30ml sterile water. • Foley catheter with 30ml balloon capacity • Vaginal Speculum. • Catheter spigot. • KY jelly. • Light source.
Procedure	• Verbal consent obtained from the woman. • Advise woman to empty bladder. • Abdominal palpation. • Baseline maternal recordings (P, T, RR, BP) documented in clinical notes. • Pre assessment CTG of at least 30 minutes (this must be reassuring). • Position the woman in lithotomy position. • Vaginal examination to assess the Bishops Score and to decide for insertion with speculum or blind. • Insert a large vaginal speculum (if using). • Wash with chlorhexidine solution. • Put the sponge forceps on the anterior lip of the cervix for traction. • Place the second sponge forceps onto the catheter, on first click only (behind balloon) to aid insertion. • Advance the catheter through the cervix until the balloon sits completely in the cervical canal.

BALLOON CATHETER cont'd	
Procedure cont'd	• Fill balloon with 30ml sterile water. • Remove sponge forceps and check the balloon position with a gentle VE. • Spigot catheter end and secure to woman's thigh. • Ensure the continuing CTG is reassuring post insertion. • Woman may mobilise following the post procedure CTG if maternal and fetal observations are within normal limits.
Monitoring	• Review after 12-24 hours. The woman is to notify staff if: o The catheter falls out (the woman will need to have a VE to assess if ARM able or needs reinsertion). o There are regular painful contractions, 5 minutes apart for a first baby, or 10 minutes apart for any subsequent babies o Membranes rupture o Baby seems to be moving less o There is fresh vaginal bleeding • After 24-hour post insertion, balloon catheter should be removed and the IOL process re-evaluated. Repeat CTG, maternal observations, palpation and VE. Findings all clearly documented in the maternal notes. • Consider using gentle traction BEFORE deflating balloon, however if significant resistance, deflate balloon first.

10. Unsuccessful IOL

- Defined as the inability to perform an ARM after maximum dose of oral misoprostol has been administered OR 24 hours post Balloon Catheter insertion.
- In all cases of 'unsuccessful' IOL, the team should re-evaluate the clinical situation and re-confirm the clinical indication for IOL still exists.
- If the decision is made that birth is still required at this time, then the management options are;

  - **Rest day**
    The woman is given a 24 hour 'rest period' after which the induction regime can be restarted. During this time, she/they may go into spontaneous labour.

  - **Alternative method of induction**
    For those women who have had an unsuccessful trial of oral misoprostol, a Balloon Catheter induction will be offered.

    For those women who have an unsuccessful trial of Balloon Catheter, a trial of oral misoprostol is appropriate, assuming there are no contraindications to this i.e. previous caesarean section (see section 9.1).

  - **Caesarean section**
    In some circumstances it may be more appropriate to discuss and plan for the option of caesarean section, including the potential risks and complications of surgery and impact on future pregnancies.

11. Excessive Uterine Activity

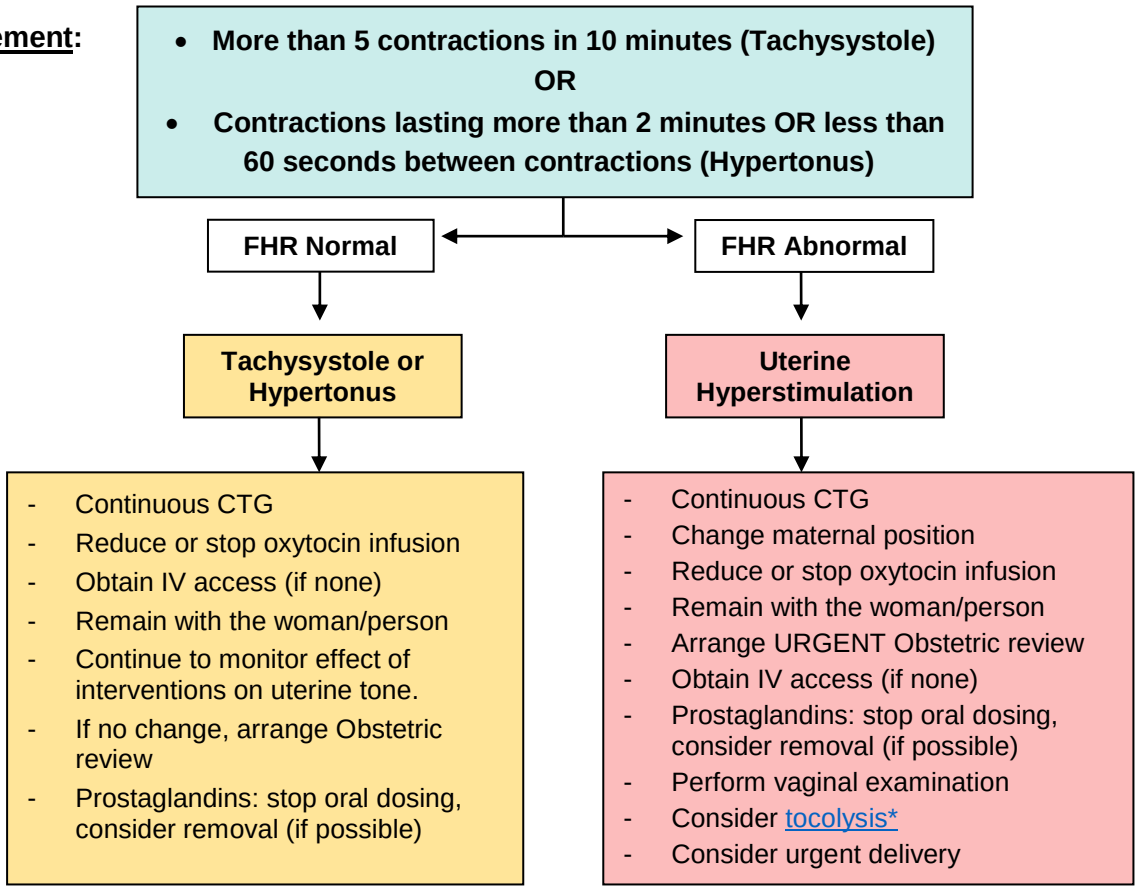
- This may occur as;
  - Tachysystole – more than 5 contractions in 10 minutes
  - Uterine Hypertonus – contractions lasting longer than 2 minutes, OR less than 60 seconds between contractions.
- Early recognition is essential as excessive uterine activity causes poor uterine placental perfusion leading to a decrease in fetal oxygenation and eventually fetal compromise, known as Uterine Hyperstimulation.
- When assessing uterine activity, consider the duration AND frequency of the contractions. The fetus needs 60-90 seconds between contractions to restore normal fetal oxygenation.

Risks:

- Uterine rupture
- Antepartum haemorrhage
- Amniotic embolism
- Precipitate delivery
- Fetal hypoxia
- Postpartum haemorrhage

Management:

Excessive Uterine Activity



- Excessive uterine activity is frequently associated with oxytocin infusions, therefore careful use of oxytocin and accurate CTG monitoring, with 1:1 midwifery care, is required.
- If applicable; remove prostaglandin gel from vagina using a gauze swab on a sponge forcep, do not administer further doses of misoprostol.

Treatment: See Tocolysis Regime (over page)

12. Tocolysis Regime

- **Terbutaline: 500microgram/1mL ampoule**
    - Subcutaneous (SC): Dose: 250micrograms.

      Use 1 mL syringe to draw up 0.5mL (250micrograms) of terbutaline and administer undiluted.

      OR

    - Intravenous (IV): Administer diluted solution over 3 to 5 minutes.
        - Draw up 250microgram terbutaline (0.5mL) using a 1mL syringe and add to 9.5mL of 0.9% sodium chloride in a 10mL syringe (25 micrograms per mL)
        - Give 50 micrograms (2mL) bolus slowly. Dose can be repeated administering up to a maximum of 250 micrograms.
        - N.B.: If maternal pulse > 140bpm, stop IV administration

      (Please note: at time of writing terbutaline ampoules are a Section 29 medication – they need to be prescribed by a medical practitioner and notified to the hospital pharmacy).

- **Glyceryl Trinitrate (GTN) Spray 400micrograms Sublingual:**
    - 1 spray (400micrograms) under the tongue.
    - Repeat after 5 minutes if required. Maximum 2 sprays.

For details of medication contraindications, preparation, administration and monitoring see Appendix 2. Tocolysis Medication

13. Associated Documents

- Bishop Score Sticker
- Fetal Monitoring Guideline (EDMS 2499948)
- Maternity Early Warning System (MEWS) Chart
- Oral Misoprostol Induction of Labour (IOL) Record (EDMS 2947322)
- Perinatal Loss Guideline: Second and Third Trimester Care (EDMS 2053162)

14. References

1. Health NZ (2023) Small for Gestational Age and Fetal Growth Restriction in Aotearoa New Zealand. Wellington
2. Helmerhorst FM, Perquin DA, Donker D, Keirse MJ. Perinatal outcome of singletons and twins after assisted conception: a systematic review of controlled studies. BMJ 2004;328:261.
3. Medsafe. Use of Unapproved Medicines and Unapproved Use of Medicines. https://www.medsafe.govt.nz/profs/RIss/unapp.asp
4. Ministry of Health. *Diagnosis and Treatment of Hypertension and Preeclampsia in Pregnancy in New Zealand* (2017)
5. Ministry of Health (MOH). 2019. Induction of Labour in Aotearoa New Zealand: A clinical practice guideline. Wellington: Ministry of Health.
6. Ministry of Health. Secondary and tertiary maternity services and facilities tier level 2, Service Specification, October 2011
7. New Zealand College of Midwives. Midwives Handbook for Practice. 2008
8. PMMRC. 2018. *Twelfth Annual Report of the Perinatal and Maternal Mortality Review Committee. Reporting mortality 2016*. Wellington: Health, Quality and Safety Commission (HQSC).
9. Royal College of Obstetricians & Gynaecologists (RCOG) Intrahepatic cholestasis of pregnancy Green-top Guideline No. 43 June 2022
10. Wisborg K, Ingerslev HJ, Henriksen TB. IVF and stillbirth: a prospective follow-up study. Human Reprod 2010;25:1312–6.

Authorised by: **Maternity Continuous Quality Improvement (CQI) Meeting**

15. Appendices

Appendix 1. Misoprostol - Instruction for Dilution Using Tablets

Instructions for Dilution of Misoprostol Tablet

Te Whatu Ora
Health New Zealand
Lakes

MATERNITY SERVICES

	**Prepare Equipment** 1. You will need; • Non-sterile gloves • 1 x 20 ml syringe • 1 x paper medicine cup • 2 x 10 ml Water for Injection • 1 drawing up needle • 1 x packet of Misoprostol tablets (1 x tablet dissolved for each administration) • 1 x 3 ml BD oral syringe • 'Medication Added' label
	**Draw Up Water** 2. Open 2 x 10 ml water for injection ampoules and draw up into 20 ml syringe with drawing up needle. (There may be more than 20 ml water in the ampoules so it is important to measure this to get the right volume for dilution).
	**Dissolve Misoprostol Tablet** 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 20 ml syringe to the medicine cup. 5. Open a 3 ml BD oral syringe and, using the oral syringe, mix vigorously 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.
	**Draw Up Solution** 6. Ensure tablet is fully dispersed then, using the oral syringe, **immediately** draw up **2.5ml** of mixture out of the measuring cup before the suspension settles. 7. Label the syringe with a 'Medication Added' label.
	**Administer Misoprostol** 8. Ask the woman/person to squirt the **2.5 ml** dose of fluid from the syringe into the mouth and swallow to make sure the full dose is taken. 9. Discard the remaining mixture and the paper medicine cup. Then rinse the oral syringe out with tap water. Keep the oral syringe and all other equipment for the next dose. 10. Once the course of Misoprostol is complete all equipment, including the oral syringe, 20 ml syringe, drawing up needle etc. should be discarded.

Appendix 2. Tocolysis Medications

TERBUTALINE

CONTRAINDICATIONS

Sympathomimetic amine hypersensitivity

RELATIVE CONTRAINDICATIONS

Cardiac disease, Hyperthyroidism, diabetes.
Severe hypertension (systolic BP ≥160 mmHg).
Mild – moderate hypertension - monitor BP closely.

INDICATION

Uterine hyperstimulation – Hypertonus or Tachysystole cause fetal compromise with no improvement from initial management.

May be used as an alternative to Glyceryl Trinitrate.

SIDE EFFECTS

Tremor, headache, nervousness, cardiovascular effects including arrhythmia, tachycardia, palpitation, muscle cramps, hypokalaemia.

DOSE

Terbutaline dose: 250 micrograms

* please note terbutaline is a **section 29 medication** and is therefore required to be prescribed by a medical practitioner and patient and prescriber details are to be emailed to Rotorua.pharmacy@lakesdhb.govt.nz after using for procurement purposes.

SUBCUT	**Preparation:**	Terbutaline ampoule comes as 500 microgram per 1mL Using 1 mL syringe, draw up 0.5 mL (= 250 micrograms of terbutaline).
	Administration	Administer 0.5 mL (250 micrograms) subcutaneously as a once off stat dose.

IV BOLUS	**Preparation:**	Draw up 250 micrograms of terbutaline (0.5 mL) using 1 mL syringe,. Add to 9.5mL of 0.9% sodium chloride in a 10mL syringe (25 micrograms per mL).
	Administration	Give intravenous terbutaline slowly in 50 microgram (2 mL) boluses up to 250 micrograms in total. (*100 micrograms (4 mL) is usually sufficient).

MONITORING

- Ensure monitoring of maternal pulse while bolus doses are administered
- Stop IV administration if maternal pulse > 140 bpm.

Appendix 2. Tocolysis Medications cont'd

GLYCERYL TRINITRATE

CONTRAINDICATIONS

Acute circulatory failure (shock, circulatory collapse)
Cardiac disease, severe anaemia,
Pronounced hypotension (systolic BP <90 mmHg

POTENTIAL SIDE EFFECTS

Headache, hypotension, palpitations.
Reflex tachycardia or bradycardia.
Rare: nausea, vomiting, flushing.

INDICATION

Tocolysis for persistent uterine hyper-contractility associated with fetal compromise.
(Note: not an approved indication).

May be used as an alternative to terbutaline.

DOSE

SUBLINGUAL	**Administration:**	- 1 metered spray (400 micrograms) administered as spray droplets underneath the tongue (sublingual) – DO NOT INHALE - Repeat after 5 minutes if hypertonus sustained. - No more than 2 metered doses should be given
	Practice Points	- Prime the spray pump before using it for the first time – press the nozzle five times. - The woman should be in a sitting position. - Keep bottle in a vertical position with nozzle head uppermost - Hold nozzle as close to the open mouth as possible and spray under the tongue. - Close the mouth immediately after each dose. - Each bottle is for individual patient use only. Please discard after use.