

MATERNITY UNIT

GUIDELINE:

INDUCTION OF LABOUR

SCOPE:

All midwives and obstetricians working in the Antenatal Clinic and Maternity unit

AUTHOR:

Midwifery Educator

PURPOSE:

To inform those involved in inductions of labour (IOL) of the recommended process in order to maximise effectiveness and safety for women and their babies.

DEFINITIONS:

Induction of Labour is the iatrogenic stimulation of uterine contractions to accomplish birth, prior to the onset of spontaneous labour.

GUIDELINE:

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IOL is recommended when it is considered advisable for the health and well being of the woman and/or her baby.

If an IOL is recommended by the obstetrician and consented to by the woman, the indication and method of induction must also be clearly documented. Any medications must be charted by the obstetrician, in the appropriate place on the woman's medication chart.

Cervical dilatation and effacement are good predictors of the likelihood of vaginal birth when labour is induced. Most induction methods are effective in women with favorable cervixes (Bishop score >6).

Indications for IOL include, but are not limited to:

1. Postdates - ≥ 41 weeks gestation. It is recommended that women are referred to a specialist for a consultation in a timely manner for planned induction by 42 weeks. (Section 88 referral guidelines 2012). It is at this consultation that an assessment, discussion and plan of care will be agreed and documented. Recent studies have suggested that IOL at 41 weeks or beyond is associated with a significantly lower rate of perinatal mortality than expectant management, with no significant increase in the caesarean birth rate. This should be discussed with each woman and the decision made on an individual basis.

Caution should be exercised when using an estimated date of delivery (EDD) from an ultrasound scan performed after 20 weeks gestation. RANZCOG suggest using the sonographically derived gestational age in days to calculate the EDD if it differs from that calculated using the LMP by more than eight percent then the scan date is to be used. Dating scans between 6-9weeks are thought to be the most accurate in dating a pregnancy if dependant on an EDC from an USS and no reliable LMP.

If an IOL is recommended by the obstetrician and consented to by the woman, the indication and method of induction must also be clearly documented. However, if the woman declines the recommended IOL then she should be carefully monitored from 41 weeks, beyond 42 weeks this should include twice weekly CTG and a weekly ultrasound for evaluation of amniotic fluid and dopplers.

2. Intrauterine Growth Restriction (IUGR) – It is recommended that all women should have a **‘GROW’ customised growth chart** and have serial symphysio-fundal height measurements from 24 weeks gestation (age of viability). Any deviations should be referred for growth scans as per GROW recommendations. If IUGR is suspected, <10th centile on this growth chart and failing to gain weight, then this may be an indication for IOL depending upon gestation and obstetric decision making.
3. Rupture of the membranes at term (>37 weeks) or pre-term ROM – see guideline *Pre-labour rupture of the membranes* and *pre-term rupture of the membranes*
4. Fetal compromise – chorioamnionitis, iso-immunisation, fetal compromise on Cardiotocograph (CTG), biophysical profile <4/10 or 2/8 or abnormal Doppler studies on ultrasound.
5. Intrauterine fetal death (IUFD)
6. Hypertensive disorders
7. Fetal abnormalities – e.g. diaphragmatic hernia
8. Multiple pregnancy at term

9. Maternal medical/surgical conditions in pregnancy – e.g. Diabetes, chronic disease, cholestasis (IOL soon after 38 weeks recommended).
10. Obstetric history

Maternal request – Where resources allow, maternal request for IOL should be considered when there are compelling psychological or social reasons and the woman has a favourable cervix. The final decision would be with the obstetrician, in consultation with the woman and her LMC.

Booking an IOL

1. Women, who have been assessed and consented for IOL, must be booked into the day diary at maternity, along with the reason for the IOL.
2. No more than 1 IOL's per day may be booked unless prior arrangements are made via the Midwife Unit Manager or her deputy. If unable to accommodate the IOL's, the obstetrician will be requested to prioritise the urgency of each induction and document the reasons for delay as necessary.
3. IOL's will not be booked routinely at weekends or Public Holidays unless there are extenuating circumstances and sufficient staffing levels to meet acuity.
4. The LMC will be made aware of any changes to planned IOL's in order to inform the woman. If a woman births prior to the planned IOL, the LMC or core midwife must ensure that the planned IOL in the day diary is cancelled.

Special care/caution

Special care is to be taken in the following circumstances:

- History of one or more LSCS
- Maternal cardiac disease or compromise
- Multiple pregnancy
- Polyhydramnios
- High presenting part
- Abnormal fetal heart rate patterns
- Grand multiparity

Contraindications

- Vasa praevia/complete placenta praevia
- Transverse lie
- Breech presentation
- Uterine surgery involving upper uterine segment
- Previous classical LSCS
- Active Genital Herpes infection

Note that all methods of induction carry risks.

Admission for IOL

The LMC will have communicated what involvement she will have with the IOL. She may choose to commence the IOL or provide midwifery care once the woman is in established labour, or she may hand over the midwifery care for the whole labour and birth to the core midwives. This must be

clearly documented (see *NZCOM Transfer Guidelines*) and communicated to core midwives. The woman must know who is responsible for her midwifery care at all times during her IOL.

The core midwife (or LMC) will inform the obstetrician on call of the planned IOL. The method of IOL and plan of care must be recorded in the appropriate places prior to commencement of the IOL. If a midwife is happy to take a verbal order, then the organisational guideline must be followed (see *safe use of medicines*).

Cervical assessments will be performed by the midwife (core or LMC) or obstetrician using the Modified Bishop Scoring system. Whenever possible, the same practitioner should perform the ongoing cervical assessments.

Modified Bishop scoring system

	0	1	2	3
Dilation, cm	Closed	1-2	3-4	5-6
Effacement, percent	0-30	40-50	60-70	≥80
Station *	-3	-2	-1, 0	+1, +2
Cervical consistency	Firm	Medium	Soft	
Position of the cervix	Posterior	Mid-position	Anterior	

*based on a -3 to + 3 scale

Assessment on admission for IOL

1. Baseline observations and abdominal palpation should be performed including a urinalysis.
2. A CTG should be performed for baseline fetal heart monitoring and uterine activity. If the CTG is normal, continue with the IOL. If the CTG is abnormal, notify the obstetrician immediately and continue the CTG.
3. If indicated insert an intravenous line (if the IOL method is syntocinon or there is a high risk factor) and obtain blood tests as indicated, usually a minimum of Complete Blood Count (CBC) and Group and Hold.

Continue the IOL according to the care plan documented by the obstetrician, liaising with the obstetrician on call.

Methods of IOL

a. 'Stripping/sweeping' the membranes

Prior to 'formal' IOL, women may be offered sweeping of the membranes.

This is the digital separation of the chorioamniotic membrane from the wall of the cervix and lower uterine segment during vaginal examination. The exact mechanism of action is not fully understood,

but is thought to release prostaglandins that are produced locally from the chorion and amnion and adjacent decidua.

Stripping or sweeping is performed following informed consent from the women, by inserting the index finger, as far through the internal cervical os as possible, rotating twice through 360°.

The woman needs to be aware that following the procedure if she has any concerns she should contact her LMC. Such problems may be rupture of membranes (ROM), bleeding, decrease in fetal activity, fever, regular contractions commencing, or if discomfort continues between uterine contractions.

Risks include:

- Intra-amniotic infection
- Unplanned ROM
- Disruption of an undiagnosed placenta praevia
- Precipitous labour and birth

Contraindications include:

- History of low lying placenta
- Placenta praevia
- Caution when vaginal infection/colonization is present e.g. Chlamydia, etc.

b. Artificial Rupture of the Membranes (ARM)

If an ARM is the chosen method of IOL, then a syntocinon infusion should be commenced if regular uterine contractions do not occur spontaneously. The timing of the infusion will be at the discretion of the obstetrician but will be discussed and agreed with the woman and her LMC/core midwife.

If the IOL is for urgent medical reasons, then the syntocinon should be commenced whether the membranes are ruptured or not (*see syntocinon protocol*).

Risks associated with amniotomy include:

- Infection;
- Disruption of an occult placenta praevia;
- Rupture of a vasa-praevia;
- Umbilical cord prolapse

c. Transcervical balloon catheter

In a woman with an unfavourable cervix, ripening of the cervix by mechanical means such as a transcervical balloon catheter (Size 16fg foleys catheter) may be considered and discussed with the obstetrician. Between 30 mL and 60 mL of sterile water may be inserted into the foleys balloon. A study showed that a significantly higher proportion of women who received 60 mLs achieved delivery within 12 hours of placement compared with the 30 mL Foley balloon group. There were no differences in the frequencies of caesarean delivery, maternal morbidity, or neonatal outcomes.

The catheter is left in place until it is extruded or for up to 12 hours. Syntocinon is begun after the catheter has been extruded or removed. A randomized trial found that removing non-extruded catheters after 12 hours and beginning syntocinon resulted in significantly more vaginal deliveries within 24 hours than waiting 24 hours before removal and syntocinon induction (60 versus 21 percent), and did not lead to an increased risk of caesarean delivery. For women where prostaglandin is not an option it may be beneficial to leave the catheter insitu for 24 hours i.e. VBAC.

For nulliparous patients, combined therapy (a transcervical balloon catheter and syntocinon) does not appear to have any benefits compared with use of a catheter alone. Time to delivery, delivery in 24 hours and c-section rates are the same. Adding syntocinon causes more discomfort and patients tend to request more pain relief. However, for multiparous patients, adding syntocinon leads to shorter time to delivery without increasing caesarean section rates or increasing the need for pain medication. Consequently, in general, there is no need to add syntocinon for nulliparous patients who have a transcervical balloon catheter in place. However, it should be considered for multiparous patients as it may decrease time to delivery without adverse effect.

d. Syntocinon Infusion

See separate guideline - *Syntocinon intravenous infusion for induction or augmentation of labour.*

Note that oxytocin is less successful for labour induction when used in women with uneffaced and undilated cervixes. A ripening process should be used prior to oxytocin induction when the cervix is unfavourable, such as cervidil.

e. Prostaglandin Gel

Prostaglandin E2 stimulates uterine and gastrointestinal smooth muscle. Contractions produced by the gravid uterus by prostaglandin E2 are similar to those occurring in the term uterus during spontaneous labour.

Prostin E2 is indicated for the IOL in term or near term pregnancies that have favourable induction features and a singleton pregnancy.

Using intra-vaginal PGE2 gel, according to the obstetrician's directions:

- Nulliparous women with a modified Bishops score < 4 give 2 milligrams
- All other patients give 1 milligrams
- Repeat dose of 1–2 milligrams six hourly depending upon response to the initial dose and obstetrician directions
- Do not delay in administering the repeat dose of intra-vaginal PGE2 gel if all recordings are reassuring ie repeat and record baseline observations including a urinalysis and perform a 30 minute CTG monitoring prior to the recommended 6 hour time frame elapsing for the repeat dose of PGE2 (1st dose 8am, 2nd dose no later than 2pm) intra-vaginal PGE2 gel.
- If the woman does not establish in labour then repeat all baseline observations and a CTG after a further 6 hours (earlier if indicated) from the 2nd dose of PGE2, if there is little or no cervical change, then the woman will need to be reviewed by the obstetrician and a decision made as to whether a 3rd dose of PGE2 is administered or the woman may be encouraged to rest over night and be reviewed again in the morning, with a view to further PGE2 administration

- Maximum dose 4 milligrams in 24 hours

If prostaglandins have been used for cervical ripening, it is recommended that further methods of IOL should not commence until 6 hours have elapsed.

Contraindications include:

- Patients with known hypersensitivity to prostaglandin or any constituents of the gel
- Multiple gestation
- Grand multiparity (6 or more previous pregnancies)
- Non-engagement of the fetal head
- Previous uterine surgery (caesarean section, hysterotomy)
- Cephalo-pelvic disproportion
- Fetal heart rate suggestive of compromise
- Obstetric conditions where either maternal or fetal benefit/risk ratios favour surgical intervention
- Unexplained vaginal discharge and/or bleeding during current pregnancy
- Non-vertex position

Administration:

- Only to be used if the woman is not contracting (please distinguish between contractions and ineffective tightening's)
- Prior to administration, an initial baseline CTG monitoring of at least 30 minutes should be reassuring and the Bishops Score should be ≤ 5 .
- A vaginal examination should be performed with informed consent, and the gel should be inserted into the posterior fornix.
- The CTG should be commenced and continued for 30 – 40 minutes post insertion, observing closely for any effects from the prostaglandin:
 - If CTG non-reassuring or side effects noted, contact the obstetrician immediately (using the phone in the DU room if possible). Continue monitoring and ask for further midwifery/nursing help if required.
 - If CTG is reassuring and the woman is low risk, discontinue and encourage the woman to mobilise. Auscultate the fetal heart rate every hour, until uterine contractions are noted. Any deviation from the normal or in high risk pregnancy, CTG monitoring should be discussed with the obstetrician. There is a cordless monitor which may be used so that the woman can mobilise.
 - Continuous CTG monitoring should be performed once contractions are regular, even if these are not painful, unless otherwise agreed with the obstetrician.

Possible Side effects of prostaglandins include:

- Uterine tachysystole (i.e. 5 or more contractions in 10 minutes)
- Hypertonic uterus (contractions lasting longer than 2 minutes or occurring within 60 seconds of each other)
- Maternal fever

- Nausea
- Vomiting
- Diarrhoea
- Fetal bradychardia
- Fetal tachycardia
- Non-reassuring CTG

Note that syntocinon should NOT be used within 6 hours of prostaglandin insertion due to the potential uterotonic effect of combining oxytocin with prostaglandin agents.

f. Cervidil

Each cervidil pessary contains 10mg of dinoprostone and releases approximately 0.3mg per hour. Cervidil promotes cervical ripening in patients at or near term, in whom there is a medical or obstetrical indication for the induction of labour.

Dinoprostone is eliminated from the circulation rapidly, with a half life of less than one minute.

Directions:

1. Avoid contact with skin while handling; wash hands thoroughly with soap and water before and after administration.
2. To remove from the packaging, first tear the foil along the top of the sachet. Do not use scissors or sharp instruments to cut the foil as this may damage the product. Use the retrieval tape to gently pull the product out of the sachet.
3. Insert the pessary immediately after removal from the freezer.
4. One vaginal insert is placed transversely in the posterior fornix of the vagina (**see Appendix 1**), with only minimal water soluble lubricants to aid insertion.
5. The withdrawal tape may be trimmed with scissors but always ensure there is enough outside the vagina to facilitate removal. Do not tuck the end of the tape into the vagina
6. Patients should remain in the recumbent position for 30 minutes after insertion, but thereafter may be ambulatory.
7. Cervidil may be kept in-situ for up to 24 hours.
8. It is important to monitor uterine contractions and fetal condition at frequent intervals following insertion.

The pessary should be removed at least 30 minutes prior to commencing a syntocinon infusion or if any of the following occur:

- Onset of labour – the presence of regular, painful contractions occurring every 3 minutes **irrespective of cervical change**;
- Amniotomy;
- Any suggestion of excessive uterine activity with fetal distress or hypertonic uterine contractions;
- Evidence of fetal distress;

- Evidence of maternal systemic adverse effects such as nausea, vomiting, hypotension or tachycardia
- If there has been insufficient cervical ripening within 24 hours.

Potential adverse reactions include:

Genitourinary: Tachysystole/Uterine hypertonus (2% to 5%), uterine hyperstimulation with fetal distress (3%)

Abdominal pain, diarrhoea, fever, nausea, uterine rupture, vomiting (<1%)

Contraindications:

Hypersensitivity to prostaglandins or any component of the formulation;

- previous uterine surgery or rupture
- any current pelvic inflammatory disease
- when vaginal delivery is not indicated (vasa praevia, active herpes genitalia);
- when labour has commenced
- fetal distress (suspicion or clinical evidence unless delivery is imminent);
- Fetal malpresentation
- patients already receiving oxytocic drugs;
- hyperstimulation;

Use caution with:

- ruptured membranes;
- unexplained vaginal bleeding during this pregnancy;
- nonvertex or nonsingleton pregnancy;
- >3 previous full term deliveries;
- history of hypertonic uterus;
- glaucoma;
- history of asthma;
- epilepsy.

Other warnings/precautions:

- Dinoprostone should be used only by trained personnel in a hospital.

Emergency management of excessive uterine activity

Indications:

- Tachysystole
- Uterine hypertonus contraction
- Fetal distress

Administer salbutamol/terbutaline unless maternal cardiac disease or thyrotoxicosis

1. Note if cervidil in situ – remove asap if indications as above

2. **Salbutamol can be administered via an inhaler** preferably using a spacer device (can be ordered through physiotherapy department). The recommended dose is **2 puffs every 5 minutes, with an upper limit of 12 puffs**. Continue until obstetrician arrives or contraction/s reduce in strength and frequency. Salbutamol injection can be administered subcutaneously 0.25 mg (0.5mls of the 500mg/ml preparation).

Alternatively, terbutaline injection can be administered subcutaneously 0.25 mg (0.5mls of the 500mg/ml preparation).

Monitor maternal and fetal observations every 10 minutes observing for safe parameters of:

- Maternal pulse (<140bpm)
 - Maternal respiratory rate (<24rpm)
 - Foetal heart rate (<180bpm)
3. Position woman to left lateral position and administer oxygen via Hudson facial mask at 4L/min – press emergency call bell for immediate help and call 777 and state obstetric emergency.
 4. Continuous CTG monitoring
 5. Insert 16 Gauge IV leuc if not already in situ and send urgent bloods for CBC and Group and hold if not already been sent.

Failed IOL

There are no standards for what constitutes a failed induction. It is important to allow adequate time for cervical ripening and development of an active labor pattern before determining that an induction has failed. The importance of allowing enough time to progress from the latent phase of labor to the active phase has been illustrated in many studies.

The goal is to minimise the number of caesarean births performed for failed induction in women who are progressing slowly because they are still in the latent phase of labour. Once induced women enter active labor, progression should be comparable to progression in women with spontaneous active labour, or faster.

ASSOCIATED DOCUMENTS:

Appendix 1 - Administration of cervidil

Maternity Unit Guidelines:

- Pre-labour rupture of membranes
- Group B Strep
- Pre-labour rupture of membranes
- Admissions and assessments in the maternity unit
- Fetal monitoring in labour
- Genital Herpes
- Inhibition of pre-term labour

Hauora Tairāwhiti organisational policy:

- Safe Use of Medicines

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Hauora
Tairāwhiti

Sponsor: Woman, Child and Youth

Name: Induction of Labour

Authorised By: HOD - Obstetrics

**Authorised By: Clinical Care Manager
Woman, Maternal, Child & Youth**

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APPENDIX 1:

ADMINISTRATION OF CERVIDILI

Figure 1

