Reference Number: **Version Number: 5**	**Date of Next Review:** **Previous Trust/LHB Reference Number:**

Title: INDUCTION OF LABOUR GUIDELINE

Introduction

Induction of labour is the process of artificially stimulating the uterus to start labour. This can be accomplished by administering oxytocin or prostaglandins to the pregnant woman or by manually rupturing the amniotic membranes.
Women should be appropriately counselled and must be involved in the decision making for Induction of labour.

Objectives

To provide guidance for all health professionals caring for a woman in the process of induction of labour

Scope

This policy applies to all healthcare professionals in all locations including those with honorary contract

Equality Health Impact Assessment	*An Equality Health Impact Assessment (EHIA) has not been completed.*
Documents to read alongside this Procedure	
Approved by	*Maternity Professional Forum and Obstetrics & Gynaecology Quality & Safety*
Accountable Executive or Clinical Board Director	*Ruth Walker, Executive Nurse Director*
Author(s)	*Yulia Nicholson Locum Consultant Obstetrics & Gynaecology* *Louise Protheroe-Davies, Supervisor for Midwives*

Disclaimer

If the review date of this document has passed please ensure that the version you are using is the most up to date either by contacting the document author or the Governance Directorate.

Summary of reviews/amendments

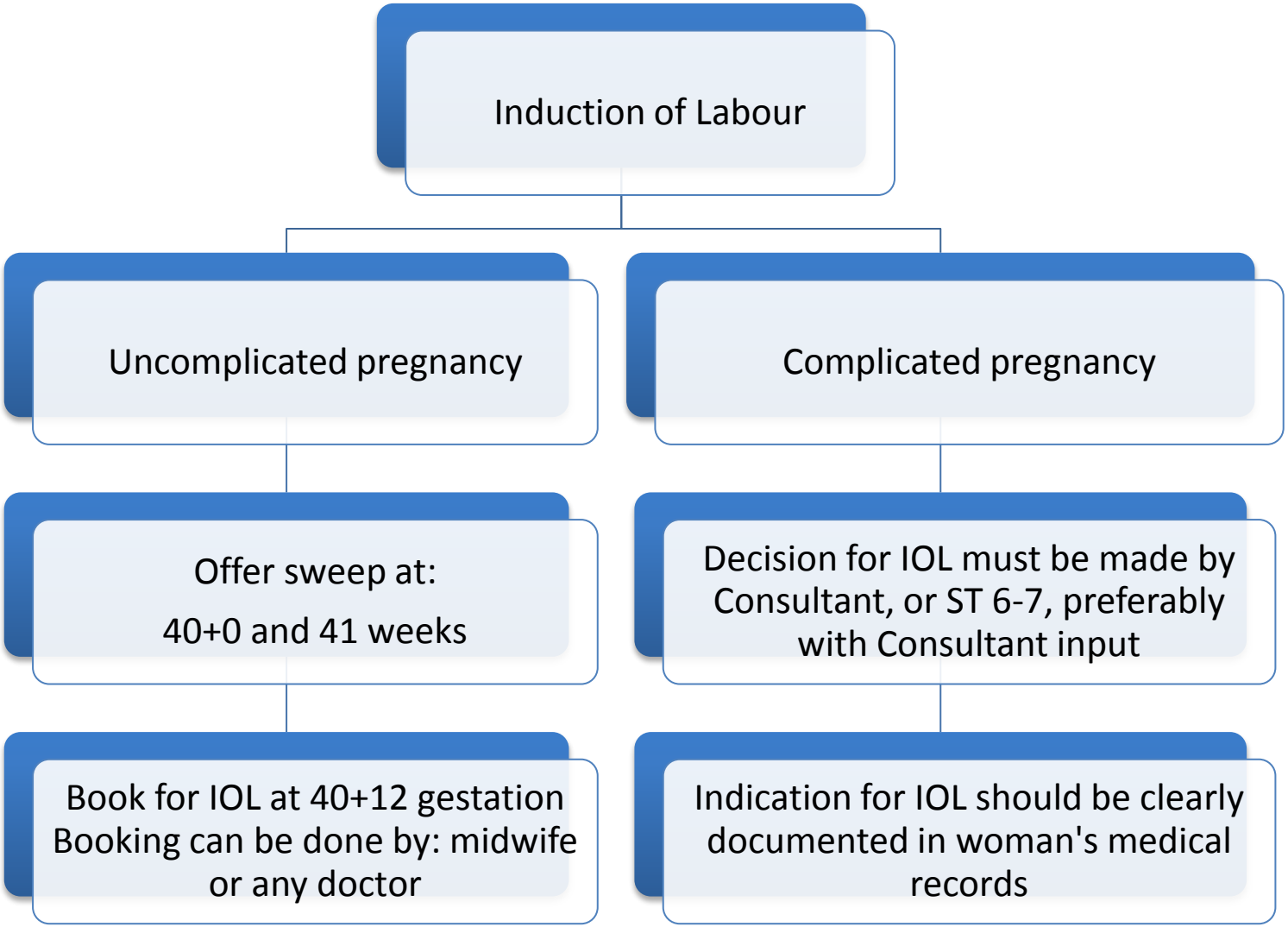
Version Number	Date of Review Approved	Date Published	Summary of Amendments
1	August 2009	Abi Kaye Band 7 Midwife	
2	August 2012	Pina Amin	

3	February 2014	P Amin, A Holmes	
4	January 2016	A Holmes	
5	November 2019	Y Nicholson, Louise Protheroe Davis on behalf of IOL working group.	Inclusion of mechanical methods to induce labour and protocol for outpatient IOL.

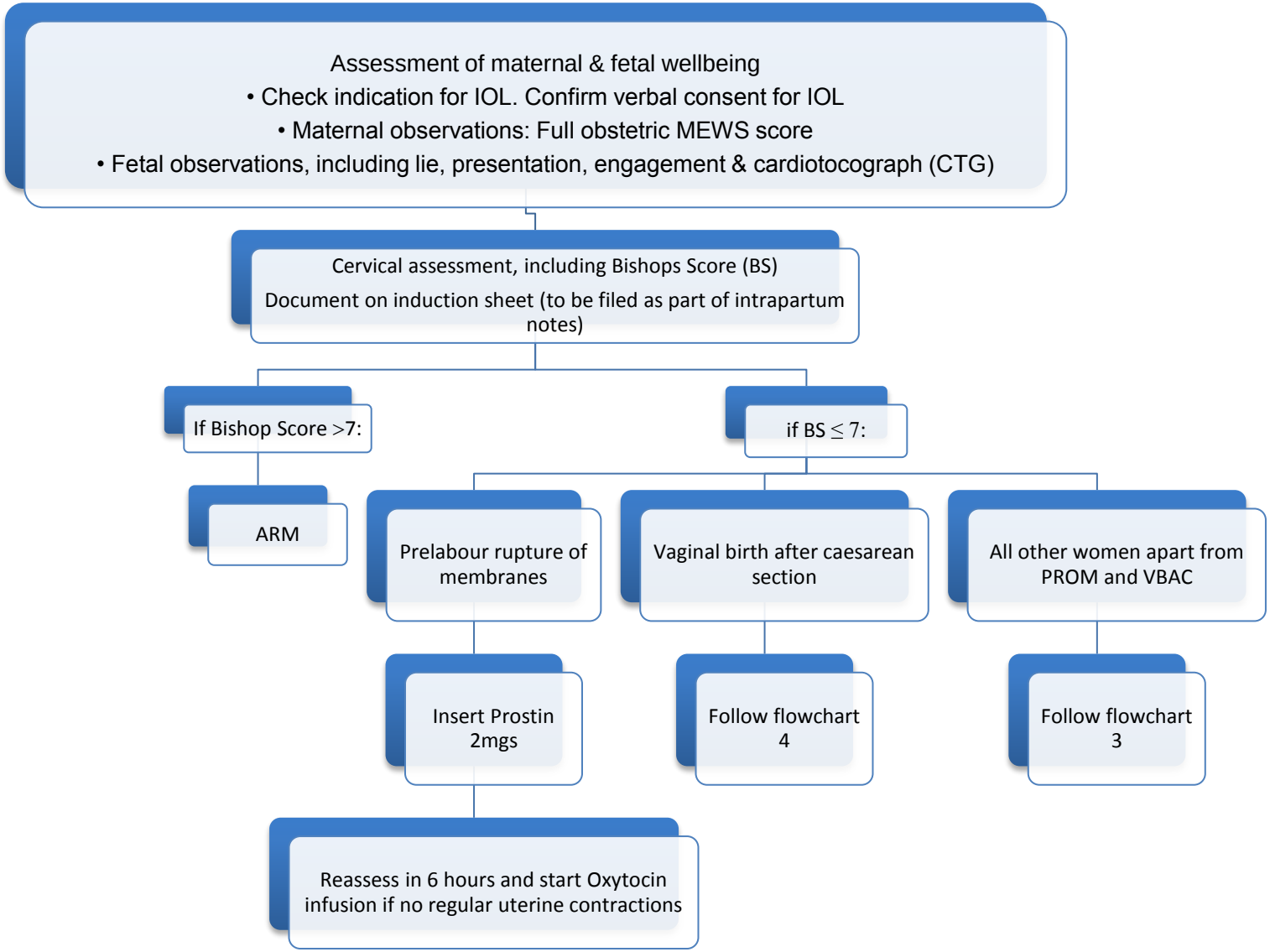
1. Flowcharts
   - 1.1 Planning Induction of Labour
   - 1.2 Method and procedure of Induction of Labour
   - 1.3 Induction with Prostaglandins
   - 1.4 Induction of labour after Caesarean section
   - 1.5 Failed IOL after prostaglandins
   - 1.6 Management of uterine hyperstimulation
2. Overview
3. Objectives
4. Definitions/Abbreviations
5. Roles and responsibilities
   - 5.1 Midwife
   - 5.2 Labour ward coordinator
   - 5.3 Obstetric medical Staff
6. Indication for IOL/Special circumstances
   - 6.1 Prolonged pregnancy
   - 6.2 Obstetric / Medical / Surgical complications
   - 6.3 Maternal request for IOL
   - 6.4 Pre-labour rupture of membranes: preterm and term
   - 6.5 GBS
   - 6.6 Women with previous Caesarean section
   - 6.7 Breech presentation
   - 6.8 Small for gestational age
   - 6.9 Precipitate labour
   - 6.10 Intrauterine Death
   - 6.11 Fetal Macrosomia
   - 6.12 Maternal age
   - 6.13 Recurrent reduced fetal movements
   - 6.14 Obstetric cholestasis
7. Day of admission
8. Assessment prior IOL
   - 8.1 Methods and procedure of IOL
   - 8.2 The Modified Bishop Score
   - 8.3 Membranes sweeping
9. Assessment during Induction of Labour
10. Induction with Prostaglandins
    - 10.1 Propess
    - 10.2 Prostin
11. Induction of Labour in Previous Caesarean Section with Foleys
    - 11.1 Instruments required
    - 11.2 Procedure of Foley's insertion
    - 11.3 Post-insertion
12. Induction of labour with Oxytocin
13. Review

14. References
15. Appendix
    1 Oxytocin regime
    2 Out Patient Induction of Labour

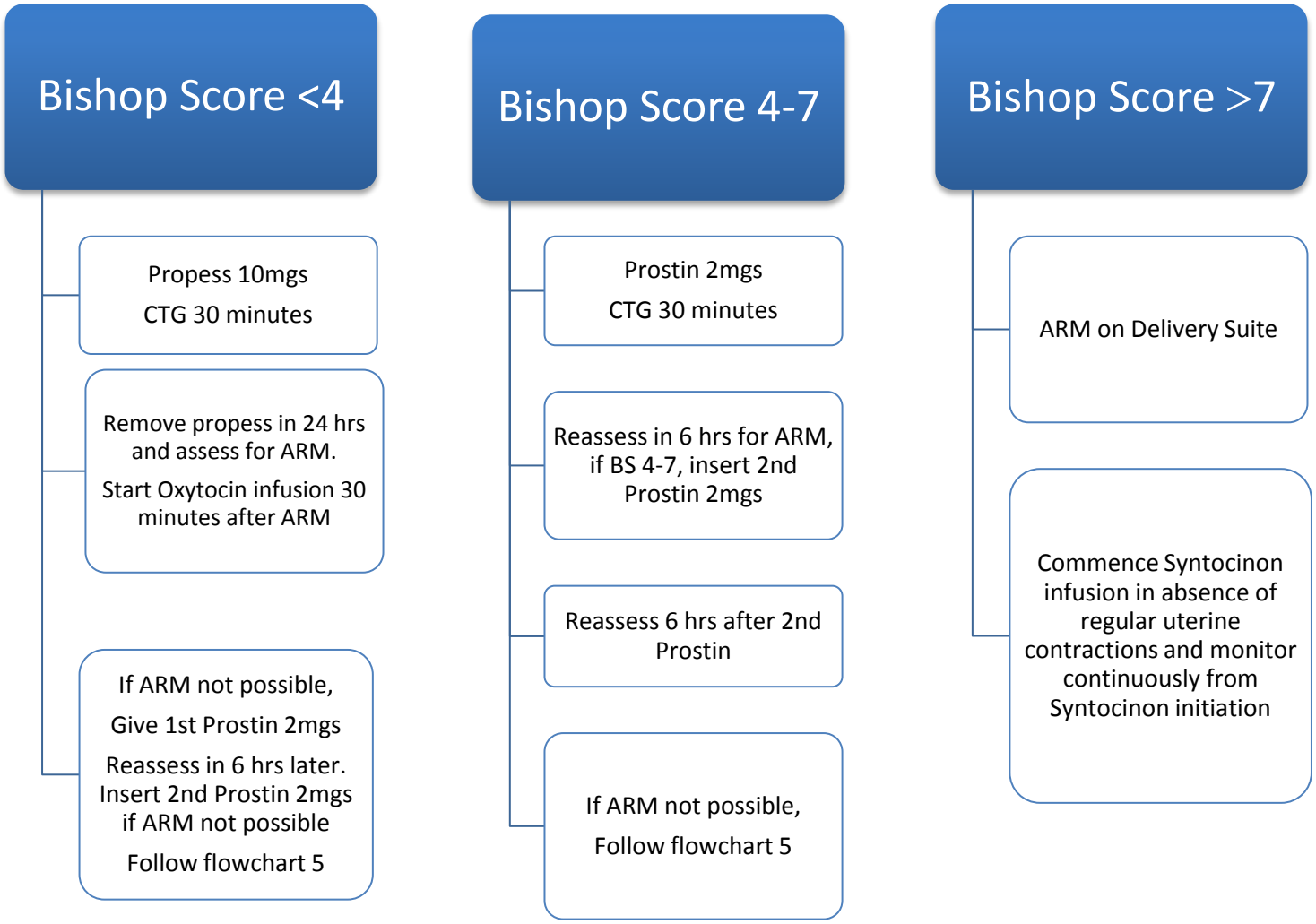
Flowchart 1: Planning Induction of Labour


Induction of Labour
Uncomplicated pregnancy
Complicated pregnancy
Offer sweep at:
40+0 and 41 weeks
Decision for IOL must be made by Consultant, or ST 6-7, preferably with Consultant input
Book for IOL at 40+12 gestation Booking can be done by: midwife or any doctor
Indication for IOL should be clearly documented in woman's medical records

Flowchart 2: Methods and procedure of Induction of Labour

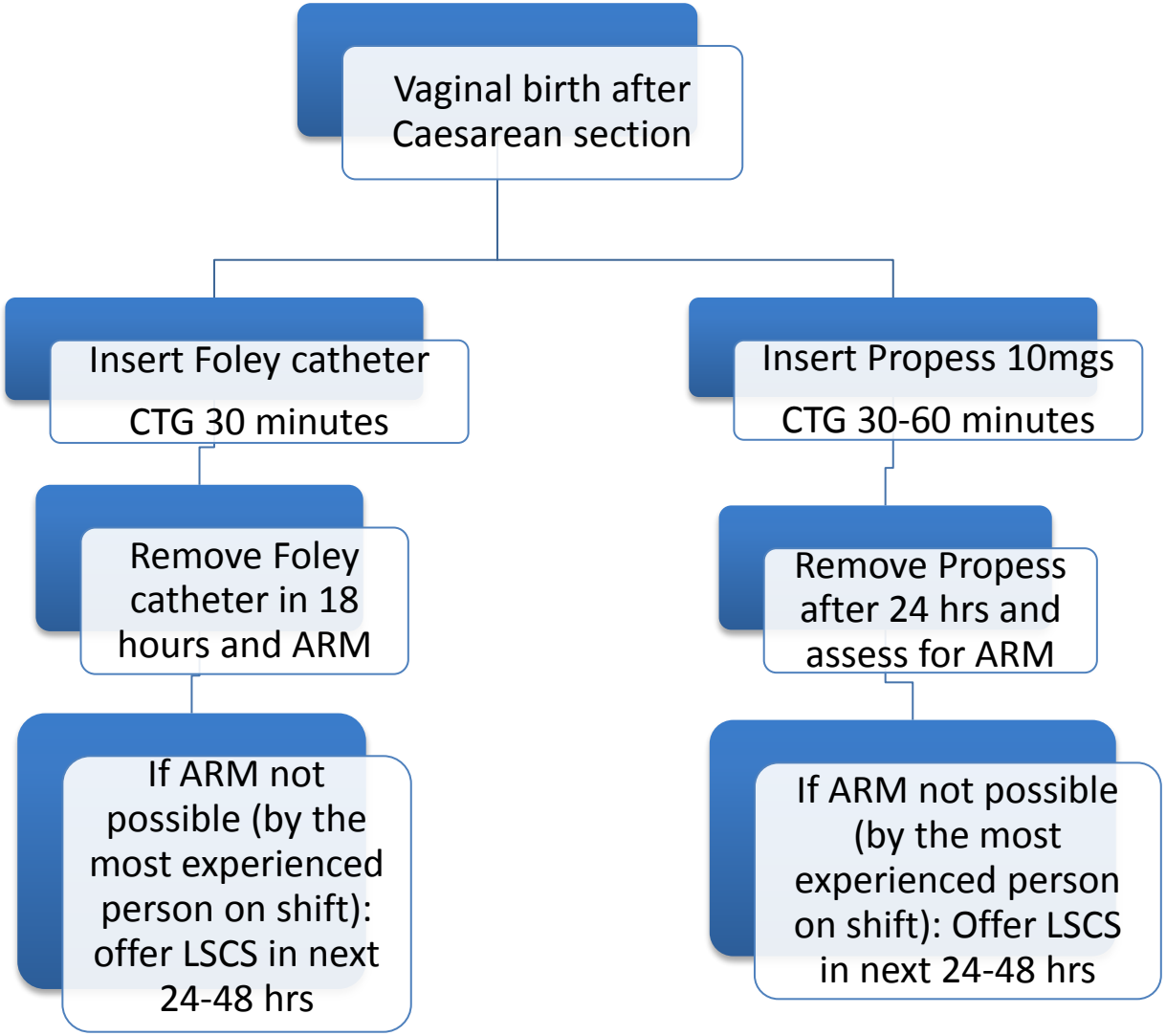

Assessment of maternal & fetal wellbeing
• Check indication for IOL. Confirm verbal consent for IOL
• Maternal observations: Full obstetric MEWS score
• Fetal observations, including lie, presentation, engagement & cardiotocograph (CTG)
Cervical assessment, including Bishops Score (BS)
Document on induction sheet (to be filed as part of intrapartum notes)
If Bishop Score >7:
ARM
if BS ≤ 7:
Prelabour rupture of membranes
Insert Prostin 2mgs
Reassess in 6 hours and start Oxytocin infusion if no regular uterine contractions
Vaginal birth after caesarean section
Follow flowchart 4
All other women apart from PROM and VBAC
Follow flowchart 3

Flowchart 3: Induction of Labour with Prostaglandins (not PROM or VBAC)

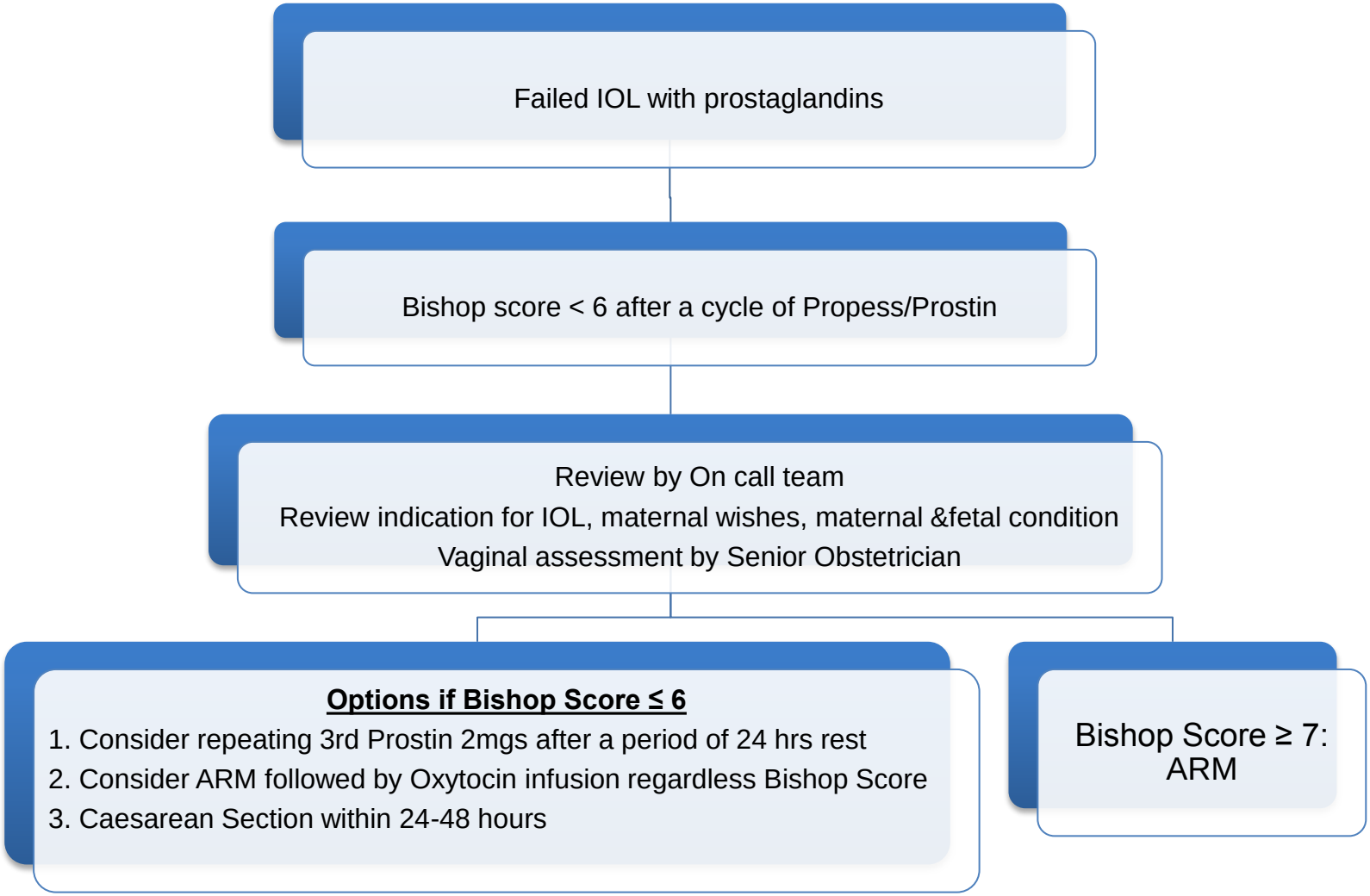


Perform CTG monitoring between 30-60 minutes after prostaglandins (PGs maximum peak time for effect is 40 minutes after administration)

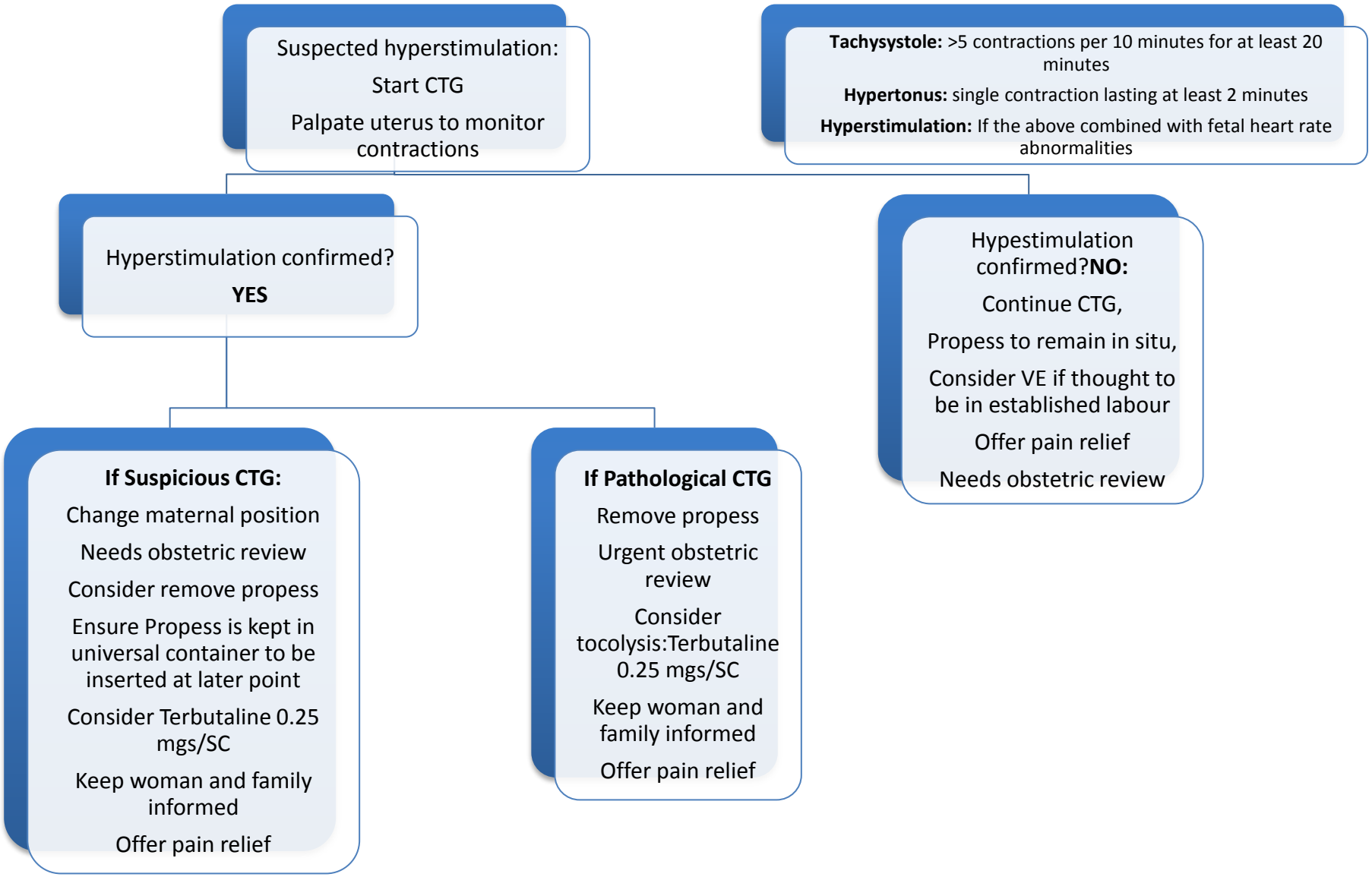
Flowchart 4: Induction of labour after Caesarean section


Vaginal birth after Caesarean section
Insert Foley catheter
CTG 30 minutes
Remove Foley catheter in 18 hours and ARM
If ARM not possible (by the most experienced person on shift): offer LSCS in next 24-48 hrs
Insert Propess 10mgs
CTG 30-60 minutes
Remove Propess after 24 hrs and assess for ARM
If ARM not possible (by the most experienced person on shift): Offer LSCS in next 24-48 hrs

Flowchart 5: Failed IOL after one cycle of prostaglandins (not VBAC)


Failed IOL with prostaglandins
Bishop score < 6 after a cycle of Propess/Prostin
Review by On call team
Review indication for IOL, maternal wishes, maternal &fetal condition
Vaginal assessment by Senior Obstetrician
Options if Bishop Score ≤ 6
1. Consider repeating 3rd Prostin 2mgs after a period of 24 hrs rest
2. Consider ARM followed by Oxytocin infusion regardless Bishop Score
3. Caesarean Section within 24-48 hours
Bishop Score ≥ 7: ARM

Flowchart 1.6: Management of uterine hyperstimulation


Suspected hyperstimulation:
Start CTG
Palpate uterus to monitor contractions
Tachysystole: >5 contractions per 10 minutes for at least 20 minutes
Hypertonus: single contraction lasting at least 2 minutes
Hyperstimulation: If the above combined with fetal heart rate abnormalities
Hyperstimulation confirmed?
YES
Hypestimulation confirmed?NO:
Continue CTG,
Propess to remain in situ,
Consider VE if thought to be in established labour
Offer pain relief
Needs obstetric review
If Suspicious CTG:
Change maternal position
Needs obstetric review
Consider remove propess
Ensure Propess is kept in universal container to be inserted at later point
Consider Terbutaline 0.25 mgs/SC
Keep woman and family informed
Offer pain relief
If Pathological CTG
Remove propess
Urgent obstetric review
Consider tocolysis:Terbutaline 0.25 mgs/SC
Keep woman and family informed
Offer pain relief

2. Overview

Induction of labour is the process of artificially stimulating the uterus to start labour. This can be accomplished by administering oxytocin or prostaglandins to the pregnant woman or by manually rupturing the amniotic membranes.
Induction of labour should be performed only when there is a clear medical indication for it and the expected benefits outweigh its potential harms.
Women should be appropriately counselled and must be involved in the decision-making.

3.Objectives

This document is for use by all the Cardiff and Vale University Health Board employees working in and alongside the Women's Health Directorate caring for all women who require induction of labour.

4. Definitions/Abbreviations

IOL: Induction of labour
Propess®: The trade name for the drug dinoprostone 10 mgs, used for the initiation of cervical ripening
Prostin®: The trade name for the drug dinoprostone 2 and 3mg vaginal gel/tablets.
ARM: Artificial rupture of membranes
S & S: Stretch and sweep of membranes
PPROM: Preterm premature rupture of membranes
PROM: Prelabour rupture of membranes
Syntocinon®: The trade name for the synthetic drug oxytocin, a natural hormone. It works by stimulating the muscles of the uterus to produce regular contractions.
Terbutaline: β2 adrenergic receptor agonist. It is used as a tocolytic, prevents and slows down uterine contractions.
Foley catheter balloon: Device that can be used to soften and open the cervix when labour needs to be induced.

5. Roles and responsibilities

5.1 Midwife

- To provide the majority of care for women during IOL in accordance with UHW standards.
- Provide Induction of Labour information to women and to explain why sweeping of the membranes is recommended and perform the "sweep" in accordance with guidance
- To identify any deviations from normal regarding either woman or baby and escalate appropriately

- Ensure all appropriate documentation is completed which must include documentation of delays in care and reasons for delay

5.2 Labour ward Coordinator

- To allocate staff that have the skills and competencies to meet the needs of the individual women
- Assist midwives to refer women to the obstetric staff as required
- To aid the senior obstetric team to prioritise women awaiting transfer to Delivery Suite.

5.3 Obstetric Medical Staff

- Provide Induction of Labour information to women.
- Ensure all appropriate documentation is completed
- Book admission date to T2 and provide woman with contact details
- Women being induced for medical reasons should be reviewed at starting the process of induction and have an individual management plan made. This plan must include fetal assessment and timing of next review.
- Following discussion with the Labour ward Coordinator; Senior Obstetric staff (ST6-7 or above) will prioritise the women awaiting transfer to Delivery Suite and document in medical records.

6. Indication for IOL/Special circumstances

6.1 Prolonged pregnancy

Women with uncomplicated pregnancies should be offered IOL at **T+12 days** onwards.

Women who decline IOL after 42 weeks should be referred to Birth Choices and offered increased fetal surveillance by twice weekly Cardiotocograph (CTG) and liquor volume assessment.

The stillbirth rate increases from 1 in 1000 at 37 weeks of gestation to 3 in 1000 at 42 weeks of gestation to 6 in 1000 at 43 weeks of gestation.

6.2 Obstetric / Medical / Surgical complications

In the presence of obstetric complications

Refer to relevant guidelines for the management of individual obstetric conditions including hypertensive disorders, diabetes in pregnancy among others. In pre-existing diabetes delivery should be planned between 37 and 40 weeks gestation (NICE, 2015). This will either be by induction of labour or by Caesarean Section depending on obstetric considerations.

In the presence of medical / surgical complications

When there are significant recognised risk factors present, the decision, method and timing of the intervention should be taken by a senior obstetrician.

6.3 Maternal request for IOL

Maternal request for IOL can be considered when there are compelling psychological and/or social reasons and the woman has a favourable cervix. Gestation should be at or greater than 39 weeks. The most current evidence suggests that IOL at 39 weeks is associated with improved perinatal outcomes, fewer maternal hypertensive disorders and a lower caesarean section rate. These cases should be few in number and should be treated individually and be dealt with at Consultant level. In uncomplicated low risk pregnancies, a Consultant Obstetrician should review women requesting IOL at 39 weeks gestation and OPIOL can be offered.

6.4 Prelabour rupture of membranes: preterm and term

IOL reduces the risk of infection when PROM and women who are 37+0 or more should be offered IOL and booked for IOL after 24 hours.

Women undergoing IOL for PROM should only be given 1 induction agent. All women with a bishops score <7 should receive Prostin Gel 2mg. Vaginal examinations should be kept to the minimum and delays in IOL reduced as much as possible. SROM must be confirmed prior to booking IOL.

6.5 GBS

After SROM at term and known GBS in pregnancy, immediate admission should be advised and induction of labour should be planned to commence as soon as practicable.

IAP should be offered immediately to GBS positive women with confirmed SROM at term.

6.6 Women with previous Caesarean section

Options for IOL in women with one previous CS include membrane sweep, amniotomy, prostaglandins and Foley catheter. The use of prostaglandins and oxytocin increases the risk of uterine rupture in women with previous caesarean section.

Women should be informed of the increased risks of emergency CS and uterine rupture related to IOL (NICE 2008). Women booked for IOL with previous CS should have an individualised plan in ANC by a senior Obstetrician. If her clinical condition changes, they should be seen again. This should include the method for IOL, whether mechanical or with prostaglandins.

6.7 Breech presentation

Induction of labour is not recommended if the baby is in the breech presentation (NICE 2008)**.** Refer to Breech Guideline.

6.8 Small for Gestational Age

Refer to the 'Management of the Small For Gestational Age Fetus' guideline for guidance on IOL timings.

If IOL is booked for severe SGA (<5th centile) with reduced liquor or abnormal UA Doppler, this must take place on delivery suite, with continuous monitoring, which should be commenced when uterine contractions start.

6.9 Precipitate labour

Induction of labour to avoid a birth unattended by healthcare professionals could be considered in women with a history of precipitate labour after counselling by a senior obstetrician at a gestation > 39 weeks.

6.10 Intrauterine Death

See respective guidance.

6.11 Fetal Macrosomia

- If the EFW is above 95th centile on personalised GROW chart with a normal GTT, the woman should be referred to Birth Choice clinic for assessment and plan. Until this appointment the woman will be CLC.
- Women should be involved in the decision-making. Use Big Baby Cochrane Chart, which is available in clinic. Ensure counselled about inherent error within scan EFW and that this is greater for 'bigger' babies.

6.12 Maternal age

There is evidence that women ≥40 years of age at conception have a similar stillbirth risk at 39 weeks of gestation to women in their mid 20s at 41 weeks of gestation, at which stage the consensus is that induction of labour should be offered to prevent late stillbirth. However management of each case will be individualised by the consultant team depending on the woman's bishop score, parity and maternal choice and documented in maternity notes[15.3]

Latest research has found that women aged 35 or over having their first child and who were induced at 39 weeks had no higher risk of a caesarean (32%) than women who had standard wait-and-see care (33%) with intervention if necessary[15.4]

Table 1. Absolute risk of stillbirth in women of advanced maternal age between 37–41 weeks of gestation in the USA (RCOG Scientific Impact Paper No 34 February 2013)

	37–38 weeks of gestation	**39–40 weeks of gestation**	**41 weeks of gestation**
< 35 years	1 in 1639 (1 in 1889)	1 in 1020 (1 in 1149)	1 in 1333(1 in 1449)
35-39 years	1 in 1220 (1 in 1493)	1 in 735 (1 in 806)	1 in 775 (1 in 952)
>40 years	1 in 893 (1 in 1064)	1 in 503 (1 in 667)	1 in 403 (1 in 463)

6.13 Recurrent reduced fetal movements

Refer to the 'Management of women with Perceived Reduced Fetal movements' guidelines and individualise woman's care accordingly.

6.14 Obstetric cholestasis

Refer to 'Obstetric Cholestasis' Guideline.

7. Day of admission

Women requiring induction of labour will be admitted to T2 ward. If induction is required on delivery suite, this will be a Senior Obstetrician decision and should be clearly documented in maternal notes.

If any clinical changes or concerns, discuss with senior obstetrician.

If bed capacity or neonatal unit is causing delay in commencement of IOL, the most senior obstetrician must make an individualised risk assessment available with clear documentation in the case notes.

All on-going IOL's in T2 must be recorded on the **'IOL board'** on the delivery suite, the board must be updated on regular basis and be part of the delivery suite morning handover.

In healthy women with uncomplicated pregnancies a light diet should be encouraged during the IOL process. All women should be able to eat until artificial rupture of membranes (ARM), and then diet should be individualised.

Routine Post Dates, low risk women (previously MLU care)

- If not already prescribed, medication should be prescribed in the drug chart. The midwives on the ward area can proceed with the IOL – they do not need any medical clerking.

Women who are having an IOL for fetal or maternal conditions (CLU care)

- **These women should be prescribed their IOL medications including analgesia such as co-codamol in the antenatal clinic when they are booked for their IOL**. A clear plan must be documented in the notes. These women also **do** need to be clerked when they are admitted to T2 ward.

8. Assessment prior IOL

Maternity and fetal monitoring

Prior to commencing the induction of labour process a full antenatal examination must be performed including:

- **Blood pressure**
- **Pulse**
- **Temperature**
- **Respiration rate**
- **Urine**
- **Abdominal palpation**
- **Auscultate the fetal heart rate with a pinnard or sonic aid**
- **CTG**
- **Discussion surrounding fetal movements**

- **All maternal observations should be recorded on the Obstetric Early Warning Chart**

8.1 Methods and procedure of IOL

- **Membrane stretch and sweeping** involves the examining finger passing through the cervix to rotate against the wall of the uterus, to separate the chorionic membrane from the decidua. If the cervix will not admit a finger, massaging around the cervix in the vaginal fornices may achieve a similar effect.
- **Vaginal prostaglandins** are the preferred method of induction of labour, unless there are specific clinical reasons for not using it (in particular the risk of uterine hyperstimulation).
- **Mechanical procedures** (e.g. Foley catheter) can be used when inducing women who have had a previous caesarean section after decision making by senior obstetrician
- **Amniotomy,** is the artificial rupture of the membranes
- **Mifepristone** followed by prostaglandins will only be used in IUD cases (see specific guidance please).

8.2 The Modified Bishop Score

SCORE	0	1	2
Cervical dilatation	**<1**	**1-2**	**3-4**
Length of cervix	**>2**	**1-2**	**<1**
Station	**-3**	**-2**	**-1**
Consistency	**Firm**	**Medium**	**Soft**
Position	**Posterior**	**Central**	**Anterior**

8.3 Membranes sweeping

Stretch and sweep should be offered to all women without SROM 24 – 48 hours **prior to IOL.** Consent should be taken and documented in the medical records. The Bishop Score of the cervix should be documented.

All low risk women should be offered S & S at 40+/40.

Women booked for Consultant Led Care, who are aiming for vaginal birth can be offered S & S from 38+/40. Examples of these women are – Diabetic women, women with hypertensive disorders, women with cholestasis.

9. Assessment during Induction of Labour

- Following the administration of vaginal prostaglandins the CTG should continue for at least **60 minutes**. The peak mechanism of action of

prostaglandins is 40 minutes after administration; therefore women should be on the CTG between 30 and 60 mins after administration. Discontinue CTG if it is classified as normal.

- Medical review should be requested immediately if the CTG is not normal.
- A full assessment of maternal and fetal wellbeing should be repeated regularly depending on the indication for induction of labour.
- A full assessment of both maternal and fetal wellbeing, including CTG would be indicated if the woman reports abdominal pain, painful uterine activity, vaginal bleeding, decreased fetal movements or spontaneous rupture of membranes (SROM).
- If a woman is sleeping, indicating no uterine activity, assessment may be delayed until she wakes.
- A full assessment of both maternal and fetal wellbeing must be performed before the administration of analgesia.
- Prior to vaginal assessment, both preparations of vaginal prostaglandins should be taken to the bedside. The appropriate agent following assessment of Bishop score should be administered at this time and the unused medication returned to the appropriate storage.

10. Induction with Prostaglandins

In the following situations induction of labour with Prostaglandins should only be used if authorised by a consultant: -

- **Uterine scar**
- **Cardiac, pulmonary, renal or hepatic disease**
- **Para 4 or greater.**
- **Multiple pregnancy**
- **Severe IUGR**
- **Severe asthma is a relative contraindication to prostaglandin administration and therefore the decision to use it must be made by the senior obstetrician**

Vaginal prostaglandins are the preferred method of induction of labour in low risk cases, unless there are specific clinical reasons for not using it (see above).

10.1 Propess

Propess is 10mg of PGE2 in a hydrogel polymer pessary within a knitted polyester retrieval system. It is available mainly for use in primigravida with unfavourable cervix (Bishop Score ≤4). Propess will release 0.3mg/hr of active agent over 24 hours. Half-life is 1-3 minutes. Propess is stored in the freezer.

Propess is inserted high into the posterior vaginal fornix. Women should be advised to lie down for 30 minutes following insertion. The CTG should continue for 60 minutes after insertion. The retrieval tape should be placed inside the vagina to reduce the risk of the propess becoming dislodged or accidentally removed.

Propess can be removed by gentle traction on the retrieval tape. It should be removed either:

- 24 completed hours in situ
- At onset of labour, confirmed by vaginal examination
- Prior to Oxytocin infusion (Oxytocin can be commenced 30 minutes after removal)
- If evidence of uterine hyperstimulation (>5 contractions in 10 minutes for at least 20 minutes) **with** evidence of fetal distress. The decision to remove Propess should be taken by SSHO/SpR.

If Propess is removed early or falls out

If the propess falls out a second propess can be inserted. Propess will only deliver a maximum dose of 0.3mg /per hour therefore if the propess is removed after 24 completed hours only 7.2mg will have been absorbed regardless of the number of pessaries used.

Therefore, the 24 hours is up when the propess has been in situ for 24hours, not 24hours from first insertion.

10.2 Prostin Gel

Prostin gel contains 2mg PGE2 in gel form. For use where the Bishop Score is 4 –7. Prostin is stored in the fridge and should be removed immediately prior to use.

- Prostin is inserted high into the posterior vaginal fornix. Women should be advised to lie down for 30 minutes following insertion. The CTG should continue for 60 minutes after insertion.
- Prostin Gel 2 mg can be repeated 6 hours after first insertion if bishops score remains between 4-7.
- A vaginal examination should be performed 6 hours after the second dose to assess Bishop Score and suitability for ARM. If the cervix at this stage is unfavourable for ARM then the opinion of a senior obstetrician should be sought

11. Induction of Labour in Previous Caesarean Section with Foleys

Increased risk of uterine rupture is triple with use of prostaglandin and oxytocin when compared with spontaneous labour in VBAC [15.5]

Therefore a clear plan for induction of labour will be made on the green intrapartum care sheet, including decision making for mechanical or Propess induction of labour.

<u>Insertion of Foleys catheter</u>

11.1 Instruments required:

- Tray with a sterile pack, a Cusco's speculum and aqueous gel.
- Foleys catheter (>12 Fr in size- this can hold 30 mls of saline)
- Bowl with 30 mls of saline.

- 50 mls syringe.
- Mepore or other similar tape.

11.2 Procedure

- Admit to T2 on the induction date and walk over to Room 14/15
- Obtain verbal consent for the procedure
- Perform a CTG for 30 mins (or Dawes-Redman).
- The woman will be placed in a lithotomy position - consider use of Entonox
- A senior obstetrician would perform this procedure with the assistance of a HCA. (Junior medical staff can use the opportunity to learn – with patient consent, and perform procedure when confident).
- Use the Cusco's speculum to visualise the cervix and hold the Foleys catheter with a sponge forceps and insert into the cervix. The distance of insertion should not be more than 3 cms so that the balloon sits in the cervical canal.
- Inflate the catheter balloon with 30mls of normal saline.
- Tape the Foleys to mother's thigh.

11.3 Post-insertion

- After 4 hours of observation the woman can be moved to the sitting room in T2.
- If there is **spontaneous rupture of membranes** and the balloon is in situ –remove the balloon and reassess the woman to consider oxytocin (there is a risk of infection with SROM and the balloon is in situ).
- If the **balloon is expelled** then transfer to delivery suite for **ARM**. If the Balloon is expelled, it is generally due to the cervix dilated to greater than 3-4 cms and indicates that ARM is possible. The decision for timing of ARM should be based on clinical safety grounds-maternal/fetal and Delivery Suite status.
- If the balloon is not expelled at 18 hours, midwife should deflate balloon and remove it and perform ARM.
- If cervix is not favourable for an ARM- for senior obstetrician review and counsel for a caesarean section for failed induction of labour.

12 Induction of labour with Oxytocin

See Appendix 1 for Oxytocin regime in Labour

13 Review

This policy will be reviewed in 3 years. Earlier review may be required in response to exceptional circumstances, organisational change or relevant changes in legislation of guidance.

14 References

15.1 Induction of labour: Clinical guidelines No 70., National Institute for Clinical Excellence (NICE); 2008.

15.2 Induction of labour at or beyond term. Geneva: World Health Organization (WHO); 2011.

15.3 Induction of labour in older mothers, RCOG Scientific Impact paper No 34, February 2013

15.4 NIHR, Randomized Trial of Labor Induction in Women 35 Years of Age or Older, New England Journal of Medicine , 2016

15.5 Uterine Rupture by Intended Mode of Delivery in the UK: A National Case-Control Study, UKOSS 2012

15.6 Foley catheter versus vaginal prostaglandin E2 gel for induction of labor at term (PROBAAT trial): an open- label, randomized controlled trial, Jozwiak M, Oude Rengerink K, Benthem M, et al. Lancet 2012; 378:2095-103.

15.7 A randomized trial of preinduction cervical ripening: dinoprostone vaginal insert versus double-balloon catheter, Cromi A, Ghezzi F, Uccella S, et al. Am J Obstet Gynecol 2012;207:125.e1-7.

15.8 American College of Obstetricians and Gynecologists. ACOG Practice Bulletin no. 115: Vaginal birth after previous cesarean de- livery. *Obstet Gynecol*. 2010;116:450-463.

15.9 Birth after Previous Caesarean Birth, RCOG, Green-top Guideline No. 45, 2015.

15.10 Balloon catheter for induction of labor in women with one previous caesarean and an unfavorable cervix. *Acta Obstet Gynecol Scand*. 2019;00:1-9

15.11 Foley catheter balloon vs locally applied prostaglandins for cervical ripening and labor induction: a systematic review and metaanalysis , Zvi Vaknin. Am J Obstet Gynecol Nov, 2010.

15.12 NHS Maternity Statistics, England 2017-18, October 2018.

16. Appendix 1: <u>OXYTOCIN REGIME</u>

Mix 10 iu of Oxytocin in 500mls of normal saline. Shake and label.

1 unit= 1000 milliunits (MU). Therefore 20 MU in 1ml

PRIMIGRAVIDA		
Time after starting (minutes)	Dose delivery mls/hr	Dose delivery mu/min
0	6 mls/hour	2 mu/min
30	12 mls/hour	4 mu/min
60	24 mls/hour	8 mu/min

90	36 mls/hour	12 mu/min
120	48 mls/hour	16 mu/min
150	72 mls/hour	24 mu/min

Trials have used up to 32MU per minute although the maximum licensed dose is 20 milliunits per minute

MULTIGRAVIDA		
Time after starting (minutes)	Dose Delivery mls/hr	Dose delivery mu/min
0	3 mls/hour	1 mu/min
30	6 mls/hour	2 mu/min
60	12 mLs/hour	4 mu/min
90	24 mLs/hour	8 mu/min

Augmentation is uncommon in a multiparous woman and should only be advised after review by an experienced obstetrician.

Women whose labour has been induced/augmented by oxytocin should have continuous electronic fetal monitoring. The monitoring can be intermittent in case of induction of labour at discretion of senior obstetrician.

If Fetal Heart Rate (FHR) trace is normal, oxytocin can be continued until the woman is experiencing 4 or 5 contractions per 10 minutes. Oxytocin should be reduced if contractions occur more frequently than 5 contractions in 10 minutes.

If FHR trace is classified as suspicious, an obstetrician should review this.

If the FHR trace is classified as pathological, oxytocin should be stopped and a full assessment of the fetal condition undertaken by an experienced obstetrician (Reg/SSpR) before oxytocin is recommenced. Start Oxytocin only after the CTG has returned to Normal or suspicious. Careful clinical judgement is required in this situation and do not hesitate to discuss with consultant obstetrician.

Appendix 2: Out Patient Induction of Labour

Background

Induction of labour is a relatively common procedure with approximately 20-25% of births in the UK being induced (RCOG, 2008)**.** There are many obstetric indicators for induction of labour; however, one of the most common indications is post dates pregnancy. In Cardiff and Vale UHB women are offered induction of labour at term +12 onwards. Women in this situation who have been midwifery led care up to this point and are at low risk of pregnancy and intrapartum complications can be offered induction of labour as an outpatient. There are many benefits for low risk women for outpatient induction theses include:

- Increase in maternal satisfaction
- Reduction in length of antenatal stay in hospital
- Reduced bed occupancy in the maternity unit
- The potential for a reduction in financial costs to the service

Criteria for Out Patient Induction of Labour

- Uncomplicated pregnancy requiring induction for prevention of prolonged pregnancy (Term + 12 days onwards).
- Uncomplicated previous obstetric history
- No more than two previous births
- Woman has transport available and lives within 30 minutes of UHW.
- Woman has access to a telephone
- Woman has no communication issues (language barrier or disability)
- Bishop score <4 on vaginal examination
- Normal pre and post prostaglandin fetal heart rate monitoring.

Information for Women

Information provided to women and their families should be clear and concise, delivered verbally at the point of decision-making and supported by the *Cardiff and*

Vale UHB Outpatient Induction of Labour Leaflet (Appendix 3). The discussion should be documented in the records and include:

- The reasons for induction being offered
- The options in relation to when, where and how induction could be carried out
- The risks and benefits of outpatient induction of labour
- The process of induction of labour
- Arrangements for accessing support and monitoring of maternal and fetal well being
- Alternative options should the woman choose not to have induction of labour
- What options are available to the woman if induction of labour is not successful

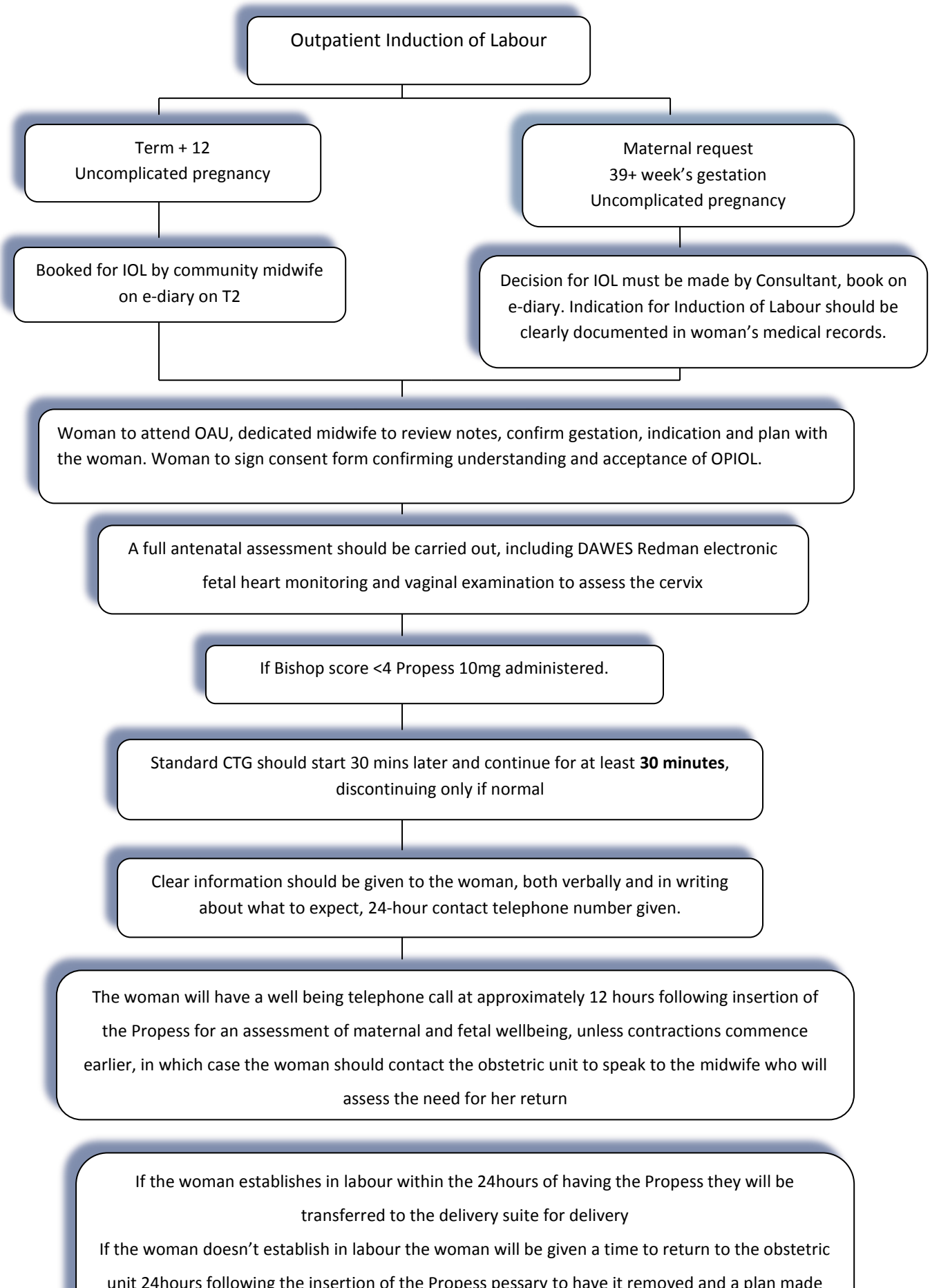
Recommended Pharmacological Method for Outpatient Induction of Labour

One cycle of vaginal PGE2 controlled release pessary (Propess): One dose over 24hours in line with *Cardiff and Vale UHB Induction of Labour Guideline.*

Process for Outpatient Induction of Labour

- IOL booked by community midwife in e-dairy on T2 for Term +12, following discussion and verbal consent. CVUHB Outpatient Induction of Labour leaflet given
- Maternal request IOL to be booked by doctor in e-diary on T2 for 39+-week gestation, following a Consultant review and discussion. This must ensure woman is low risk. CVUHB Outpatient Induction of Labour leaflet given
- On day of IOL woman to contact Obstetric Assessment Unit (OAU) and a time given for her to attend for induction
- On attendance to (OAU), dedicated midwife to review notes, confirm gestation, indication and plan with the woman. Woman to sign written consent form confirming her understanding and acceptance for Outpatient Induction of labour

- A full antenatal assessment should be carried out, including DAWES Redman electronic fetal heart monitoring and vaginal examination to assess the cervix
- The notes and medication chart will need to be presented to a Doctor for medication prescribing, they do not need any medical clerking.
- If Bishop score is <4, Propess 10mg should be administered per vagina
- Following the administration of vaginal prostaglandins the CTG should start 30 mins later and continue for at least **30 minutes**, discontinuing only if normal.
- Clear information should be given to the woman, verbally and in writing about what to expect following the procedure, and the 24 hour contact telephone number for the obstetric unit will be given
- The woman will have a well being telephone call at approximately 12 hours following insertion of the Propess for an assessment of maternal and fetal wellbeing, unless contractions commence earlier, in which case the woman should contact the obstetric unit to speak to the midwife who will assess the need for her return
- If the woman establishes in labour within the 24hours of having the Propess they will be transferred to the delivery suite for delivery
- The woman should be given a time to return to the Obstetric Unit 24 hours following the insertion of the Propess pessary, at which point the pessary will be removed and a plan will be made for continuation of the induction of labour as an inpatient.


Outpatient Induction of Labour
Term + 12
Uncomplicated pregnancy
Maternal request
39+ week's gestation
Uncomplicated pregnancy
Booked for IOL by community midwife on e-diary on T2
Decision for IOL must be made by Consultant, book on e-diary. Indication for Induction of Labour should be clearly documented in woman's medical records.
Woman to attend OAU, dedicated midwife to review notes, confirm gestation, indication and plan with the woman. Woman to sign consent form confirming understanding and acceptance of OPIOL.
A full antenatal assessment should be carried out, including DAWES Redman electronic fetal heart monitoring and vaginal examination to assess the cervix
If Bishop score <4 Propess 10mg administered.
Standard CTG should start 30 mins later and continue for at least **30 minutes**, discontinuing only if normal
Clear information should be given to the woman, both verbally and in writing about what to expect, 24-hour contact telephone number given.
The woman will have a well being telephone call at approximately 12 hours following insertion of the Propess for an assessment of maternal and fetal wellbeing, unless contractions commence earlier, in which case the woman should contact the obstetric unit to speak to the midwife who will assess the need for her return
If the woman establishes in labour within the 24hours of having the Propess they will be transferred to the delivery suite for delivery
If the woman doesn't establish in labour the woman will be given a time to return to the obstetric unit 24hours following the insertion of the Propess pessary to have it removed and a plan made