NHS
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St Richards, Worthing & Southlands Hospitals

Induction and Augmentation of Labour and Use of Oxytocin Guideline

Summary statement: How does the document support patient care?	The purpose of this guideline is to provide good practice evidence for staff in the care of women/people undergoing induction and / or augmentation of labour
Staff/stakeholders involved in development:	Obstetric Consultants, Senior Midwives, Joint Obstetric Guidelines Group.
Division:	Women and Children's
Department:	Maternity
Responsible Person:	Chief of Service
Author:	Labour Ward Lead Consultant, matrons, midwives
For use by:	All Medical and Midwifery staff
Purpose:	To provide evidence based guidance on induction of labour and use of oxytocin
This document supports:	Care Quality Commission Fundamental Standards (2017), NICE Inducing of Labour CG70 (2008), NICE Intrapartum care for healthy women and babies CG190, NICE Intrapartum care for women with existing medical conditions or obstetric complications and their babies NG121 (2019), NICE Insertion of a double balloon catheter for induction of labour in pregnant women without previous caesarean section (2015)
Key related documents:	**UHSussex (SRH & WH) Maternity Guidelines:** Care of Women in Labour, Intrauterine Death Including Induction for Fetal Abnormality, Birth After Caesarean Section, Severe Pre- Eclampsia and Eclampsia, Diabetes in Pregnancy, Preterm Labour and Birth (including Preterm Pre-labour Rupture of Membranes), Caesarean Birth, Management of Women and Neonates with Risk Factors for Neonatal Sepsis (including Group B Streptococcus)
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Version	Date	Author	Status	Comment
1.0	January 2011	Labour ward lead Consultant	Archived	New Trust-wide guideline
2.0	February 2011	Clinical Governance (CNST Lead)	Archived	Admin. update
3.0	Dec 2011	CNST Midwife and IT, Audit & Clinical Effectiveness Midwife	Archived	Amendments made following risk recommendations
4.0	January 2013	CNST Midwife and IT, Audit & Clinical Effectiveness Midwife	Archived	Minor clarifications
5.0	November 2013	Consultant Obstetrician & CNST Midwife	Archived	3 year review and inclusion of Propess inductions discharged overnight
6.0	2017 Oct	JOGG	Archived	3 yearly review with addition of Pathways
7.0	January 2019	Matrons, ward managers and Consultant labour ward leads Clinical effectiveness midwife JOGG	Archived	Full 3 yearly review with addition of new pathway. Addition of Cook's Ripening Balloon to pathway. Appendices updated.
7.1	April 2019	Matrons, Clinical effectiveness midwife JOGG	Archived	Small changes to SOP for CRB removal based upon PDSA cycle. Addition of appendix 6 (CRB removal sticker)
7.2	January 2020	HoM, inpatient matrons, MDT meeting	Archived	Change of CRB volume to 40mls (80ml total) following review of cord prolapse incidents during 2019.
8	October 2020	Labour ward co-ordinator (Gillian Coyle) Patient Safety Midwife (Susanna Colwood), Stacie Glass (Clinical effectiveness midwife)	Archived	Updated following HSIB case recommendations.
8.1	July 2021	Clinical Effectiveness Support Midwife (J. Collard)	Archived (not made live)	Link added to CG20013 Preterm Birth Risk Pathway in section 15.4.

8.2	September 2021	Clinical Effectiveness Support Midwife (J. Collard)	Archived	Clarity added to 6.1 – only an obstetrician can recommend sweeps before 40 weeks. 13.1 All women undergoing IOL to have fluid balance charts.
9.0	June 2022	A. McAvoy, Obstetric Consultant N. Maguire, Obstetric Consultant J. Collard, Clinical Effectiveness Support Midwife	Archived	• Updated to align with NICE NG207 Inducing labour 2021 • Offer IOL by 40 weeks for those with a BMI ≥30kg/m^2 added in line with RCOG (2019) GTG no. 72 Care of Women with Obesity in Pregnancy
9.1	January 2023	C. Parr, Clinical Governance Lead	Archived	• Clarification of Bishop score. • Dawes Redman can be used as method of assessing fetal wellbeing with use of dinoprostone if no uterine activity. • ARM primary method of induction in line with NICE. • Neonatal sepsis obs updated to align with CG11100 Management of risk factors for neonatal Sepsis. • Statement regarding Dawes Redman added.
9.2	July 2023	Claire Parr Maternity Governance Lead	LIVE	• Amendment to 11.9- low threshold for scanning post balloon removal and prior to ARM for women / people with risk factors.

The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician.

If in doubt contact a senior colleague or expert.

Contents

Induction and augmentation of labour and use of oxytocin guideline

1.0 Aims

- To provide clear evidence-based guidance for midwives and obstetricians with regard to indications for induction of labour and the process for induction in a variety of clinical situations.
- To provide clear guidance on the process for augmentation of labour in the first and second stage of labour.
- To ensure the best possible outcome for mother/birth parent and baby

2.0 Scope

This guideline applies to all midwives and obstetricians.

For induction of labour following intrauterine death please refer to CG1120 Intrauterine death including induction for a fetal abnormality.

3.0 Responsibilities

Midwives and obstetricians:

- To access, read, understand and follow this guidance.
- To use their professional judgement in application of this guideline.

Management:

- To ensure the guideline is reviewed as required in line with Trust and National recommendations.
- To ensure the guideline is accessible to all relevant staff and disseminated widely.

4.0 Abbreviations used in this guideline

UH Sussex – University Hospitals Sussex	**PPROM** Preterm pre-labour rupture of membranes
QDS Four times per day	**FSE** Fetal scalp electrode
FHR Fetal heart rate	**CTG** Cardiotocograph
IOL Induction of labour	**ARM** Artificial rupture of membranes
DAU Day assessment unit	**SROM** Spontaneous rupture of membranes
IV Intravenous	**VTE** Venous Thromboembolism
BAC Birth after Caesarean	**PROM** Prolonged Rupture of Membranes
IM Intramuscular	**VBAC** Vaginal birth after caesarean
CRB Cervical Ripening Balloon	**MIS** Maternity Information System

5.0 Introduction

Population studies indicate that the risk of stillbirth increases from 1 per 3000 ongoing pregnancies at 37 weeks to 3 per 3000 ongoing pregnancies at 42 weeks and to 6 per 3000 ongoing pregnancies at 43 weeks.

NHS Maternity Statistics, England - 2020-21 - NHS Digital showed that 34% of women/people in England had their labours induced.

UH Sussex (SRH & WH) data for 2021- 22 showed that of 4626 birthing women/people, 32.04 % (1482) had their labour induced. This compares to 45% (2087) who had spontaneous labour and 22.85% (1057) that had caesarean birth with no labour.

Of these women/people that were induced:

- 56.14% (832) had a spontaneous vaginal birth.
- 27.80% (412) had a caesarean section.
- 16.06% (238) had an instrumental birth (medical assistance to birth vaginally).

Staff should be aware that according to the MBRRACE-UK 2020 report on perinatal mortality, women/people from some minority ethnic backgrounds or who live in deprived areas have an increased risk of stillbirth and may benefit from closer monitoring and additional support. The report showed that across all births (not just those induced):

- Compared with white babies (34/10,000), the stillbirth rate is
  - More than twice as high in black babies (74/10,000)
  - Around 50% higher in Asian babies (53/10,000)
- The stillbirth rate increases according to the level of deprivation in the area the mother lives in, with almost twice as many stillbirths for women/people living in the most deprived areas (47/10,000) compared with the least deprived areas (26/10,000).

6.0 Information and decision making

At the booking appointment, the clinician should signpost the woman/person to online maternity information. This information provision should be documented on the Maternity Information System (MIS).

At 38 weeks women/people should be informed that most women/people will go into labour spontaneously by 42 weeks. See table 1 below:

Gestational age at which labour started, as a proportion of labours which started spontaneously		
Gestational age (weeks)	**Proportion of spontaneous labours that started at this gestational age**	**Cumulative proportion of spontaneous labours that started by this gestational age**
31 weeks and under	2.40%	2.40%
32+0 to 36+6 weeks	5.30%	7.70%
37+0 to 37+6 weeks	5.10%	12.80%
38+0 to 38+6 weeks	12.10%	24.90%
39+0 to 39+6 weeks	25.40%	50.30%
40+0 to 40+6 weeks	32.50%	82.80%
41+0 to 41+6 weeks	16.20%	99.00%
42+0 weeks and over	0.90%	100%

Table 1: NHS Hospital Episode Statistics / Maternity Services Data 2019-20

Explain to women/people that induction of labour is a medical intervention that will affect their birth options and their experience of the birth process. This could include that:

- The reasons for induction being offered.
- When, where, and how induction can be carried out.
- The risks and benefits of IOL in specific circumstances and the proposed induction methods.
- The alternative options if the woman/person chooses not to have an IOL with clear documentation as to why the woman/person declines and the discussions that have taken place along with plan of action (see Section 18.0). This should also include a plan for follow up with senior involvement at regular intervals to give the woman/person opportunities to discuss plan going forward.
- That induction may not be successful and what the woman's options would be.
- The alternative options if the woman/person chooses not to have induction of labour, or decides at a later stage, that she no longer wishes to proceed with the induction process.
- The clinician should signpost the woman/person to online maternity information.
- Women/people should be informed when their IOL is booked that there is a possibility that their induction may not be undertaken on the day offered depending on the unit activity.
- The decision to delay any induction should be made jointly between the labour ward coordinator and the obstetric consultant in line with escalation guidance.
- If an IOL is delayed, a plan should be made by the obstetric consultant and documented in the Delayed Induction Book. This should include whether a CTG should be offered (including frequency) whilst awaiting IOL. If the woman/person is not admitted, they should be contacted every 6 hours by the co-ordinator to update the situation and asked to ring Triage if they have any concerns regarding themselves or fetal wellbeing.

It is also important that women/people are made aware that induction of labour involves:

- Vaginal examinations to assess the cervix are needed before and during induction, to determine the best method of induction and to monitor progress.
- Their choice of place of birth will be limited, as they may be recommended interventions (for example, oxytocin infusion, continuous fetal heart rate monitoring and epidurals) that are not available for home birth or in midwife-led birth units.
- There may be limitations on the use of a birthing pool.
- There may be a need for an assisted vaginal birth (using forceps or ventouse), with the associated increased risk of obstetric anal sphincter injury (for example, third- or fourth-degree perineal tears). The woman/person should be made aware that this risk also exists with a spontaneous onset of labour.
- Pharmacological methods of induction can cause hyperstimulation – this is when the uterus contracts too frequently or contractions last too long, which can lead to changes in fetal heart rate and result in fetal compromise. This can usually be treated with a dose of terbutaline which can help to relax the uterus to stop the contractions.
- The arrangements for support and pain relief as an induced labour may be more painful than a spontaneous labour. This should include all forms of analgesia and a discussion of the risks and benefits of each.
- Their hospital stay may be longer than with a spontaneous labour.

All involved clinical staff need to invite the woman/person to ask questions and involve them in any decision making. When offering induction of labour:

- Give pregnant women/people time to discuss this information with others (for example, their partners, birthing companion or family) if they wish to do so before making a decision.
- Ensure women/people have the opportunity to ask questions, and time to think about their options.
- Recognise that women/people can decide to proceed with, delay, decline or stop an induction. Respect the woman/person's decision, even if healthcare professionals disagree with it, and do not allow personal views to influence the care they are given. Record the woman/person's decision on the Maternity Information System (MIS).
- Women/people should be made aware that there may be delays to the induction process at times when acuity is high, and that this is to allow safe 1:1 care.

Induction of labour can be booked via labour ward and antenatal clinic and recorded on MIS.

7.0 Methods of induction of labour

As of January 2019, UH Sussex (SRH & WH) offers the following methods for preparing for and inducing labour:

- Membrane sweep.
- Cervical balloon catheter for cervical ripening (see Section 11.0) – this is currently first line choice for inducing labour however, this should be in discussion with the woman/person to decide the most favourable method in their circumstances and counselled on the risks vs benefits accordingly.
- Dinoprostone vaginal PGE2 (Prostin/Propess) (see Section 12.0)
- Artificial rupture of membranes (see Section 13.0)
- Oxytocin (Syntocinon) IV infusion (see Section 14.0)

The risks and benefits of different methods to induce labour should be discussed with the woman/person. Include that:

- Dinoprostone vaginal PGE2 (Prostin/Propess) can cause hyperstimulation (see NICE Appendix C: Risks of hyperstimulation associated with different pharmacological methods of inducing labour).
- When using pharmacological methods of induction, uterine activity and fetal condition must be monitored regularly.
- If hyperstimulation does occur, the induction treatment will be stopped by giving no further medication, or by removal of vaginally administered products when possible. Terbutaline may also be considered to help relax the uterus.
- There are differences in the ease with which different vaginal products can be removed, for example, dinoprostone controlled-release vaginal delivery systems (Propess) can be more easily removed than gel or vaginal tablets (Prostin).
- Hyperstimulation can be treated with tocolysis, but hyperstimulation caused by misoprostol may be more difficult to reverse. Misoprostol is not currently recommended for routine use in UH Sussex (SRH & WH).
- Mechanical methods are less likely to cause hyperstimulation than pharmacological methods.
- Follow the manufacturers' guidance on the use of Propess or Prostin preparations for the induction of labour, including when to remove dinoprostone controlled-release vaginal delivery systems.

The following do not have available evidence to support the use as a method of inducing labour:

- Oral dinoprostone
- Intravenous dinoprostone
- Extra-amniotic dinoprostone or PGF2
- Intracervical dinoprostone
- Vaginal PGF2
- Intravenous oxytocin alone
- Hyaluronidase
- Corticosteroids
- Oestrogen
- Relaxin
- Mifepristone (except in combination for intrauterine fetal death)
- Vaginal nitric oxide donors.

Be aware that the available evidence does not support the following methods for induction of labour:

- Herbal supplements
- Acupuncture
- Homeopathy
- Castor oil
- Hot baths
- Enemas
- Sexual intercourse

7.1 Situations when induction of labour should not be routinely undertaken

- History of precipitate labour.
- Suspected large baby.
- Maternal/birthing parent request alone (without risk factors).
- Fetal growth restriction with compromise (abnormal dopplers).
- Breech presentation, however it may be considered if the birth needs to be expedited, and external cephalic version is unsuccessful, declined or contraindicated, and the pregnant woman/person chooses not to have a planned caesarean birth. This would not be recommended at UH Sussex (SRH&WH) but if requested by the woman/person would need to be discussed with obstetric consultants.

The decision for IOL for women/people with additional risk factors (including IOL prior to 41 weeks) should be made by the obstetric consultant or there should be documented evidence of a discussion with an obstetric consultant.

There should be a documented plan in the maternal notes to include timings of obstetric reviews and plans for fetal surveillance.

8.0 Assessment before commencing induction including membrane sweeps

Before commencing induction of labour, including membrane sweeps, ensure the position of the baby and the woman/person's condition are suitable for induction the following should be performed.

- Assess maternal/birthing parent wellbeing.
- Review the antenatal notes in the Maternity Information System.
- Check the gestation dates by the dating scan and the indication for induction of labour.
- Confirm no evidence of a low-lying placenta on previous scans before membrane sweeping and induction of labour.
- Abdominally assessing the level and stability of the fetal head in the lower part of the uterus at or near the pelvic brim.
- Confirming a normal fetal heart rate pattern using either intermittent auscultation if low risk or antenatal cardiotocography interpretation (until Dawes Redman criteria met) if risk factors present.
- Confirming the absence of significant uterine contractions (not Braxton-Hicks) using cardiotocography or palpation if cardiotocograph is not indicated. Be mindful that a toco does not indicate strength or duration of contraction, factors such as

misplacement or maternal position can fail to detect contractions accurately. Manual palpation of contractions should always be performed assessing frequency, strength and resting tone between contractions, and this assessment documented.
- The midwife should ensure that women/people have a chance to ask questions and that informed consent is gained and documented in the maternal/birthing parent notes.

For progression to dinoprostone (Prostin/Propess) or Cervical Ripening Ballon or oxytocin (syntocinon) infusion also perform:

- National guidance recommends carrying out an ultrasound scan if there are any concerns about the position of the baby (for example, if it might be in the breech position). At UH Sussex (SRH & WH) a presentation scan is recommended prior to each induction of labour.
- Confirming a normal fetal heart rate pattern using antenatal cardiotocography interpretation (Dawes Redman criteria met).
- Registrar or consultant review for any woman/person with medical, obstetric or social risk factors. For women/people who are assessed as high risk, induction of labour should be obstetrician-led.
- Any concerns regarding this need to be communicated to the Labour Ward coordinator who will discuss the case with the obstetric registrar or consultant on Labour Ward.
- Commence the 'Labour Risk Assessment' within the labour care record. This includes maternal/birthing parent and fetal observations as well as a review of the antenatal notes and Medway.
- Presentation scan to assess for undiagnosed breech.

8.1 Bishop Score

- The Bishop Score is a group of measurements made by doing a vaginal examination, and is based on the station, dilation, effacement (or length), position, and consistency of the cervix.
- During this preliminary vaginal examination, obstetricians and midwives should palpate for umbilical cord presentation and avoid dislodging the baby's head.
- The Bishop score is a numerical value obtained by doing a vaginal examination, and is based on the dilation, effacement (or length), position and consistency of the cervix and the station of the head with respect to the ischial spines of the pelvis. A score of 8 or more generally indicates that the cervix is ready to dilate, (previously the terms 'ripe' or 'favourable' were widely used) and when there is a high chance of spontaneous labour, or response to interventions made to induce labour. For the purposes of this guideline, a Bishop score of less than or equal to 6, or a score greater than 6, was used to help determine choice of pharmacological or mechanical methods to induce labour. (NICE 2021)

	BISHOP SCORE			
Cervical Feature	**O**	**1**	**2**	**3**
Position	Post	centre	Anterior	-
Consistency	Firm	med	Soft	-
Length (cm)	3	2	1	0
Dilatation (cm)	0	1-2	3-4	>4
Station to spines	-3	-2	-1	0

For women in whom the Bishop Score is assessed as 'favourable' or more than 6, artificial rupture of membranes, followed by and intravenous oxytocin infusion can be considered as a primary method of inducing labour. (See section 13.0)

For women/people in whom the Bishop Score is assessed as 6 or less, a Cervical Ripening Balloon Catheter (CRB) will be offered. (See section 11.0)

If the CRB is not recommended, for example high head, or cannot be inserted, offer induction of labour with dinoprostone as vaginal tablet, vaginal gel (Prostin) or controlled-release vaginal delivery system (Propess). (See section 12.0)

9.0 Membrane sweep

At the 38 week antenatal appointment, pregnant women/people should be offered information about the risks associated with pregnancies that last longer than 42 weeks, and their options. The information should cover:

- Membrane sweeping makes spontaneous labour more likely, and so reduces the need for formal induction of labour to prevent prolonged pregnancy.
- What the membrane sweep procedure involves and that it is a vaginal examination to assess the readiness of the cervix (recorded as the Bishop score) will help to decide which method of induction they will be offered first.
- Discomfort and vaginal bleeding are possible from the procedure.
- Induction of labour offered between 41+0 and 42+0 weeks due to increasing likelihood of caesarean birth, the baby needing admission to a neonatal intensive care unit and increased likelihood of stillbirth and neonatal death. (See table 2 below)
- Induction of labour from 41+1 weeks may reduce these risks, but the impact of induction on their birth experience should also be considered when making their decision.

Outcomes	**Induction of labour at 39 weeks**	**Induction of labour at 40-42 weeks**	**Risk difference**
Caesarean birth	About 1,860 per 10,000 women/people would be	About 2,220 per 10,000 women/people would be	About 360 more women/people per 10,000 whose labour was induced at 40-42 weeks would be expected to have a caesarean

	expected to have a caesarean birth (so 8,140 would not).	expected to have a caesarean birth (so 7,780 would not).	birth; so for 9,640 per 10,000 the outcome would be the same irrespective of the timing of induction.
NICU admission	About 1,170 per 10,000 babies would be expected to be admitted to NICU (so 8,830 would not).	About 1,300 per 10,000 babies would be expected to be admitted to NICU (so 8,700 would not).	About 130 more babies per 10,000 whose mothers/birthing parents' birth was induced at 40-42 weeks would be expected to be admitted to NICU; so for 9,870 the outcome would be the same irrespective of the timing of induction.

Table 2: Risks associated with different induction of labour timing strategies NICE 2021

Pregnant women/people aiming for a vaginal birth should be offered a vaginal examination for membrane sweeping from 39 weeks, additional sweeps may be offered if labour does not start spontaneously following the first sweep.

- An obstetrician may make a plan with the woman/person for sweeps before 39 weeks if medically indicated; this should be fully documented on MIS. This needs to be decided on an individual basis.
- Additional membrane sweeping may be offered if labour does not start spontaneously.
- Sweeps can be done in the community or hospital setting by midwives or obstetricians.

Women/people who have BMI 30 or more:

- Women/people with a BMI 30 or more should have IOL discussed at 36-38 weeks and be offered IOL by 40 weeks. Elective induction of labour at term in obese women/people may reduce the chance of caesarean birth without increasing the risk of adverse outcomes; the option of induction should be discussed with each woman/person on an individual basis. RCOG Green-top Guideline No. 72 (2018)

10.0 Required observations during IOL (prior to established labour)

Women/people undergoing IOL should be made aware to contact their midwife, maternity unit (if an out-patient IOL) or obstetrician:

- When contractions begin.
- Contractions start (in an agreed timeframe, depending on the method used).
- Membranes rupture.
- PV bleeding.
- Any other concerns, such as reduced or altered fetal movements, excessive pain or uterine contractions, side-effects or loss of the pessary/CRB.

10.1 Maternal/birthing parent observations

- Maternal/birthing parent observations must include an assessment of temperature, pulse, and blood pressure and respiration rate on admission for IOL.
- A fluid balance chart should be commended for all women/people undergoing induction. (See CG21009 Maternity Fluid Management as an in patient or in labour).
- Antenatal inpatients should have a minimum of 4-hourly observations which should be recorded on the MEOWS chart.

10.2 Fetal observations

- Observe fetal movements.
- Abdominal palpation to establish presentation, lie, and engagement.
- Four-hourly assessment of fetal wellbeing with auscultation of fetal heart or CTG if indicated (see CG1116 Fetal Monitoring Guideline).
- Risk assessment based on individual clinical context.

Once in established labour commence care as per CG1196 Care in labour

11.0 Cervical Ripening Balloon

The CRB is the recommended method of cervical ripening at UH Sussex (SRH & WH) unless otherwise indicated.

The woman/person should be informed that the CRB works over a 12-hour period to ripen the cervix mechanically prior to artificial rupture of membranes (ARM) and as such the next planned examination will not be performed until 12 hours after insertion unless indicated.

11.1 Situations where the CRB should not be used

- Placenta praevia, vasa praevia, or placenta percreta.
- Abnormal lie or breech.
- Prolapsed umbilical cord.
- Previous hysterotomy, classic uterine incision, myomectomy or any other full-thickness upper segment uterine incision (including uterine perforation)
- Pelvic structural abnormality
- Active primary genital herpes infection
- Invasive cervical cancer
- Abnormal fetal heart-rate patterns
- Any contraindication to labour induction
- Ruptured membranes

(Cook Medical G19891 - BALLOON, CERVICAL RIPENING accessed 21/02/22)

11.2 Further considerations

Cook Medical G19891 - BALLOON, CERVICAL RIPENING recommends that CRB should not be used in the following circumstances however this may be considered on an individual basis:

- Multiple gestational pregnancy
- Polyhydramnios
- Presenting part above the pelvic inlet
- Severe maternal hypertension
- Previous lower segment caesarean birth

11.3 Criteria for outpatient CRB

- The benefits and risks of returning home as an outpatient should be discussed with the woman/person, and their decision respected.
- Women/people should be made aware that timing of CRB removal and subsequent planned ARM may be influenced by acuity on labour ward.
- Social considerations - the baby of the woman/person should not be subject to a Child Protection Plan. Discuss plan of care of women/people with babies on a Child Protection Plan with the safeguarding team and community midwife.
- Gestational age of at least 38 weeks.
- Have the capacity to consent.
- The woman/person should have birth partner who will stay with them at home on the day.
- The woman/person should have access to a working phone.
- Cephalic presentation – the fetal head must be engaged in the pelvis.
- The woman/person must be happy to go home and have transport to return.
- Consideration should be given to the distance from home, and road/weather conditions.
- Normal cardiotocograph (CTG) pre and post insertion of the CRB. Dawes Redman analysis can be used pre and post CRB insertion as long as there are no palpable or reported uterine activity.

A plan for outpatient CRB can be made on an individual basis for women/people having consultant-led care with medical or obstetric conditions that do not increase their risk during induction. The discussion must be documented on MIS.

MIS must be reviewed by the on-call obstetric consultant to check suitability for discharge home following the insertion of the CRB.

Ensure the woman/person is aware of both the reasons to contact the hospital and the time to return and ensure DS has an accurate contact number for the woman/person.

They should be given a time to return to Labour Ward 12 hours later and this should be booked through the Labour Ward coordinator. The Labour Ward coordinator must take these women/people into account when they are assessing acuity as they are not suitable for divert in cases of unit escalation. An assessment should be undertaken at 12 hours and if

induction cannot proceed immediately due to acuity there must be a discussion with the co-ordinator and obstetrician, this discussion should be fully documented on MIS including any phone calls made by the woman/person or by the maternity unit to the woman/ person.

11.4 Criteria for inpatient CRB

- Women/people risk assessed as requiring consultant-led care and/or risk factors on assessment should be admitted as an inpatient on the Maternity Ward for observations throughout.
- Low risk women/people being induced solely for prolonged pregnancy (between 41+0 and 42 weeks gestation) who have chosen to remain in hospital should be admitted to the Antenatal Ward.

11.5 Insertion of Cervical Ripening Balloon Catheter

- Perform assessment from section 8.0.
- See Appendix 2 for standard operating procedure.

11.6 Removal of CRB

- See Appendix 2 for standard operating procedure.
- Commence IV oxytocin (Syntocinon) following ARM (see section 14.0).
- A personalised plan to be made if uterine activity present in multiparous women/people e.g. mobilising for 1-2 hours before ARM. This plan should be clearly documented on MIS.

11.7 Spontaneous rupture of membranes (SROM) and CRB

If SROM occurs prior to induction, CRB should not be used. If labour augmentation is required with prostaglandins then Prostin should be prescribed and administered.

If SROM occurs **after** CRB has been inserted it should be removed, observe uterine activity, assess the fetal wellbeing with a CTG and perform a full set of maternal/birthing parent observations (consider if VE indicated as part of these observations). If there are no fetal concerns and uterine activity is insignificant, an IV oxytocin (Syntocinon) infusion should be commenced as soon as possible after removal of the CRB.

If the woman/person is at home, they should be invited into the unit for assessment, if the woman/person declines this, it should be documented on MIS.

11.8 Potential problems following CRB insertion

Risks associated with use of the Cervical Ripening Balloon and labour induction may include, but are not limited to:

- Placental abruption
- Uterine rupture
- Spontaneous rupture of membranes

- Spontaneous onset of labour
- Device expulsion
- Device entrapment and/or fragmentation
- Maternal discomfort during and after insertion
- Failed dilation or need for caesarean birth
- Cervical laceration
- Bleeding
- Risk of pre-term labour and birth in subsequent pregnancy

(Cook Medical G19891 - BALLOON, CERVICAL RIPENING accessed 21/02/22)

11.9 In the event the balloon falls out

If at any point the CRB falls out, an assessment should be performed to ARM and IV oxytocin (Syntocinon) started if there is obvious uterine activity.

If the woman/person is at home, they should be invited into the unit for assessment, if the woman/person declines this, it should be documented on MIS.

There should be low threshold for a presentation scan following balloon removal/falling out and prior to ARM for all women/people with risk factors such as: raised BMI, high head, borderline polyhydramnios.

11.10 Active vaginal bleeding

Active vaginal bleeding requires an urgent obstetric registrar or consultant review, commencement of CTG and immediate removal of the CRB.

If women/people are at home when the bleeding occurs they should phone the maternity unit for advice. They should be asked to attend Labour Ward immediately or call an ambulance if substantial bleeding. This advice should be documented clearly on MIS.

11.11 Women/people who are assessed as unsuitable for ARM 12 hours post-CRB

The obstetrician should consider, discuss and document any of the following options with the woman/person:

- ARM (if possible)
- Rest for 24 hours
- Use of Prostin (BNF guide for dosing)
- Caesarean section

Decision about further management should be in accordance with the woman/person's wishes, and should take into account the clinical circumstances.

The obstetrician should agree and document an individualised management plan following discussion with the woman/person.

11.12 Urinary retention

In some women/people, the CRB may cause temporary urinary retention due to the presence of the uterine balloon. If this occurs, the uterine balloon can be deflated to 20mls. In the presence of urinary retention, the midwife should discuss the plan of care with a registrar / consultant.

11.13 Cord presentation / prolapse

In December 2019, a number of cord presentation/prolapse incidences were investigated following CRB for induction of labour. Although there was no direct link to the use of the balloon, it was decided via multi-disciplinary team decision to reduce the CRB volume to 40mls (for each uterine and vaginal balloon) to see if the volume was causing head displacement. It is the responsibility of the assessing professional to do thorough abdominal and vaginal examinations prior to performing an ARM for suitability. Findings, judgements, and actions taken should be documented in detail on MIS.

Carry out continuous cardiotocography during induction after the membranes have ruptured, if the presenting part is not stable and not well-applied to the cervix. In this situation, discuss the risks and benefits of induction of labour with the woman/person, and if necessary consider caesarean birth. If the presenting part stabilises and the cardiotocogram is normal, use intermittent auscultation unless there are clear indications for further cardiotocography. If the woman/person is at home, they should be invited into the unit for assessment, if the woman/person declines this, it should be documented on MIS.

12.0 Dinoprostone (Prostin /Propess)

If deemed more appropriate, dinoprostone Prostin gel may be administered and should be inserted into the posterior fornix of the vagina. Dinoprostone Propess® may be kept in stock for emergency use when Prostin is unavailable – see BNF here.

Use of dinoprostone (Prostin) should be discussed on an individual basis with the woman/person and a senior obstetrician.

Prostin E2® gel dosing regime (BNF):

- Primigravida (unfavourable Bishop Score): 2mg gel inserted into posterior fornix, followed by 1-2 mg gel if required after 6 hours. Maximum 4 mg per course.
- Multiparous: 1mg gel inserted into posterior fornix, followed by 1-2 mg gel if required after 6 hours. Maximum 3mg per course.

12.1 Post dinoprostone (Prostin) administration

- CTG should be continued for a minimum of 20 minutes. Dawes Redman analysis can be used pre and post dinoprostone (Prostin) as long as there are no palpable or reported uterine activity. Please see Fetal Heart Monitoring (including Fetal Blood Sampling) guideline.

- Following this, if CTG has met criteria, the woman/person can then move around, eat and drink as normal and should be encouraged to be as active as possible.
- The woman/person can then be transferred to the antenatal ward for 4 hourly fetal wellbeing assessments.
- The woman/person should be advised to inform the midwife if she has any concerns, increase in contractions, SROM, vaginal bleeding or decreased fetal movements.
- Bishop Score should be reassessed 6 hrs after insertion of Prostin, to monitor progress, with a view to performing an ARM or senior obstetrician review.

When uterine contractions begin after administering dinoprostone, assess fetal wellbeing and uterine contractions with intrapartum cardiotocography interpretation and:

- If the cardiotocogram is confirmed as normal, review the individual circumstances and, if considered low risk, use intermittent auscultation unless there are clear indications for further cardiotocography.
- If the fetal heart rate is abnormal or there are excessive uterine contractions:
  - Continue or restart continuous cardiotocography.
  - Do not administer any more doses.
  - Remove any vaginal pessaries if possible.
  - Consider terbutaline.
  - Seek obstetric review.

If labour has not established 6 hours after Prostin gel and ARM is not possible, or there are any problems, the woman/person should be referred for obstetric review.

Labour Ward should be informed and transfer arranged if the following occur:

- Labour becomes established
- SROM
- Evidence of fetal compromise
- Contractions greater than 5 in 10 minutes
- Vaginal bleeding
- Maternal/birthing parent complications
- Decreased fetal movements.

12.2 Potential side effects/maternal reaction

- Nausea or vomiting
- Diarrhoea
- Hypotension
- Maternal tachycardia
- Genital oedema
- Hyperstimulation (see guidance on use of Terbutaline in Section 19.0)

If there is any maternal reaction to Prostin the midwife providing care must inform the Labour Ward coordinator and discuss with the on-call obstetric registrar.

13.0 Artificial rupture of membranes (ARM)

For pregnant women/people with a Bishop Score of 6 or more discuss with them that they can have an amniotomy as a primary method of induction of labour. It is advisable to commence an oxytocin infusion immediately, unless they are having uterine contractions. If a woman/person chooses to delay starting this, they should be made aware that this may mean labour takes longer and there may be an increased risk of neonatal infection (NICE 2021). If a pregnant woman/person has chosen not to commence an oxytocin infusion a discussion should be had with a senior obstetrician and individual plan made as to whether the woman or person stays on labour ward or transfers to the antenatal ward. This discussion should be fully documented on MIS.

14.0 Use of intravenous (IV) oxytocin (Syntocinon)

IV Syntocinon should be used:

- When in-coordinate contractions or failure to progress in spontaneous labour is diagnosed (see Care in Labour Guideline).
- During the induction of labour process (in the absence of membranes).

IV oxytocin (Syntocinon) <u>should not be commenced</u> within 6 hours of Prostin administration
IV oxytocin (Syntocinon) must be prescribed by a senior obstetrician/ consultant for all women/people

14.1 Obstetric assessment prior to commencing IV oxytocin (Syntocinon)

A senior obstetrician should perform and document an assessment and individualised management plan in the labour record prior to commencement of IV oxytocin (Syntocinon). This may include the following:

- Parity
- Maternal or fetal risk factors
- Review of CTG
- Abdominal palpation
- Cervical assessment
- Dose schedule for oxytocin (Syntocinon), including frequency of increment.
- When oxytocin (Syntocinon) should be stopped.
- Monitoring arrangements for the woman/person and fetus.
- Time of next re-assessment.

14.2 Maternal and fetal observations during IV oxytocin (Syntocinon) infusion

- A baseline CTG should be taken at least 30 mins prior to commencing oxytocin (Syntocinon).
- All women/people with oxytocin (Syntocinon) must have continuous CTG.
- Apply a fetal scalp electrode (FSE) with consent if external monitoring is ineffective.
- Record maternal pulse hourly and blood pressure, respirations and temperature 4 hourly (more often if any evidence of hypertension).
- Fluid balance hourly with 4 hourly cumulative balance as per CG21009 Maternity fluid management as an in-patient or in labour
- Commence partogram when starting oxytocin (Syntocinon).
- The woman/person should be offered a vaginal examination 4 hours after commencing oxytocin (Syntocinon) in established labour.
- If there is less than 2 cm progress after 4 hours of oxytocin (Syntocinon), further obstetric review is required to consider caesarean section.
- If there is 2 cm or more progress, vaginal examinations should be performed 4 hourly.
- Discuss maternal analgesia choices and review as required.

14.3 Continuous electronic fetal monitoring during IV oxytocin (Syntocinon) infusion

If the FHR trace is normal, oxytocin (Syntocinon) may be continued until the woman/person is experiencing 4 or 5 contractions every 10 minutes. Oxytocin (Syntocinon) should be reduced if contractions occur more frequently than 5 contractions in 10 minutes.

If the FHR trace is classified as suspicious, this should be reviewed by an obstetrician and the oxytocin (Syntocinon) dose should only be increased to achieve 4 or 5 contractions every 10 minutes.

If the FHR trace is classified as pathological, oxytocin (Syntocinon) should be stopped and a full assessment of the fetal condition undertaken by an obstetrician before oxytocin (Syntocinon) is recommenced.

14.4 Indications to stop IV oxytocin (Syntocinon) infusion

- Pathological CTG (or other fetal concerns).
- Prior to transfer to theatre for emergency birth (may be recommenced once in theatre e.g. for instrumental birth).

This should be documented on MIS. **Urgent obstetric review is required with the above indications.**

14.5 Oxytocin (Syntocinon) Infusion rate

IV oxytocin (Syntocinon) will be prescribed as: 10 international units oxytocin (Syntocinon) in 500mls Normal Saline		
TIME	**RATE**	**DOSE**
Start	3 ml/hr	1 milliunits/min
30 mins	6 ml/hr	2 milliunits/min
60 mins	12 ml/hr	4 milliunits /min
90 mins	24 ml/hr	8 milliunits /min
120 mins	36 ml/hr	12 milliunits /min
150 mins	48 ml/hr	16 milliunits /min
180 mins	60 ml/hr	20 milliunits /min

Commence infusion at 3mls per hour.

- Increase the infusion rate every 30 minutes until contractions are 4-5 in 10 minutes.
- Where contractions exceed 5 in 10 minutes, reduce oxytocin (Syntocinon), inform labour ward Co-ordinator and consider tocolysis using Terbutaline 0.25 mg subcutaneously.

If further increase needed, this should be discussed with the available registrar or consultant.

TIME	RATE	DOSE
210 mins	72 ml/hr	24 milliunits /min
240 mins	84 ml/hr	28 milliunits /min
270 mins	96 ml/hr	32 milliunits /min

14.6 Use of IV oxytocin (Syntocinon) during second stage of labour

If a woman/person reaches full cervical dilatation and the contractions are felt to be inadequate; or they have had a prolonged 1st stage, they must be reviewed early in the second stage (or, ideally in late first stage) by the obstetric registrar or consultant for the consideration of a oxytocin (Syntocinon) infusion.

If starting oxytocin (Syntocinon) in the second stage, the infusion rate can start at 12 ml/hr.

14.7 Women/people requiring fluid restriction

For women/people on fluid restriction due to severe pre-eclampsia, use modified oxytocin (Syntocinon) regime (see Appendix 7).

15.0 Special circumstances

15.1 Induction of preterm labour (prior to 37 weeks) with or without rupture of membranes

It is important that a consultant obstetrician or senior registrar fully counsel's women/people when IOL is indicated prior to or at 37 weeks gestation including indication, methods, and the risk / benefits.

If the fetal head is not sufficiently engaged into the pelvis prior to induction, options should be carefully considered and discussed with the woman/person on an individual basis to ensure the best outcome.

Sensitive consideration should be applied for women/people induced due to previous pregnancy loss, ensuring they are fully counselled on the risks and benefits of induction and gestation of induction.

Please see CG20013 Preterm birth risk pathway for managing preterm birth.

15.2 Intrauterine fetal death

Where intrauterine fetal death has been confirmed, care should proceed in accordance with the guideline for intra-uterine fetal death. See CG1120 Intrauterine death including induction for a fetal abnormality

15.3 Fetal abnormality

In cases where there is a known fetal abnormality the neonatal team should be involved before commencing IOL. The woman/person (and partner where appropriate) and the midwife providing care should be fully involved in these discussions and the decisions made.

15.4 Previous caesarean section

The plan for IOL as documented within the Birth After Caesarean Section Guideline should be followed. Use of a CRB can be considered. (See section 11.0)

Advise women/people that they can choose not to have induction of labour or caesarean birth, even when it may benefit their or their baby's health.

15.5 Diabetes

Timing of IOL for diabetes should be managed in accordance with the Diabetes in Pregnancy Guideline and the plan documented on MIS.

15.6 Obesity

Elective induction of labour by 40 weeks in women with a BMI 30kg/m^2 or more may reduce the chance of caesarean birth without increasing the risk of adverse outcomes; the option of induction should be discussed with each woman on an individual basis. RCOG (2018) Green-top Guideline No. 72

15.7 Maternal/birthing parent request

Induction of labour should not routinely be offered on maternal/birthing parent request alone prior to 39 weeks gestation. This decision must be undertaken by, or following consultation with, a senior obstetrician.

Women/people requesting IOL for non-medical reasons should be seen in the hospital Antenatal Clinic to fully discuss the risks and benefits of their request. They should be made aware that early IOL carries an increased risk of failure and requirement for instrumental birth. Early IOL should be discouraged where possible.

16.0 Pre-labour rupture of membranes at 37 weeks or over

If spontaneous rupture of membranes over 37 weeks is reported without contractions the woman/person should be assessed as soon as possible (home assessment or to attend the hospital out of hours). (See appendix 6) Complete the BSOTs 'Antenatal Triage assessment care for ruptured membranes'.

Where women/people have additional risks consider immediate assessment.

- Fetal movement, heart rate and liquor colour should be assessed at this initial contact.

If pre-labour rupture of membranes is confirmed, offer pregnant women/people a choice of expectant management for up to 24 hours, or induction of labour with dinoprostone vaginal PGE2 as soon as possible. Discuss the benefits and risks of these options with the woman, and take into account her individual circumstances and preferences. This discussion should be documented on MIS. The woman/person should be informed that:

- 60% of women/people with SROM labour within 24 hours.
- The risk of serious neonatal infection doubles from 1 in 200 to 1 in 100 after 24 hours of ruptured membranes (i.e. from 0.5% to 1%).
- Delaying starting induction for 24 hours following SROM may mean there is an increased risk of neonatal infection.

16.1 PROM at term with meconium stained liquor

Where there is any meconium-stained liquor the woman/person should be reviewed as soon as possible by an Obstetrician for an individualised plan of care.

16.2 PROM at term with Group B Streptococcus (GBS)

Pregnant women/people with a history of GBS, should be asked to come to Labour Ward and be induced as soon as possible using a oxytocin (Syntocinon) infusion. See CG11100 Management of women/people and neonates with risk factors for neonatal sepsis (inc GBS)

16.3 Expectant management of lower risk PROM

For women/people who choose expectant management after prelabour rupture of the membranes at term (at or over 37+0 weeks), offer induction of labour if labour has not started naturally after approximately 24 hours.

Respect the woman/person's choice if they wish to wait for spontaneous onset of labour for over 24 hours after prelabour rupture of membranes at term. Discuss the woman/person's options for birth from this point onwards with them.

Until IOL is commenced or if expectant management beyond 24 hours is chosen by the woman/person:

- Lower vaginal swabs and maternal C-reactive protein are not indicated.
- Women/people should be advised to record their temperature every 4 hours during waking hours and to report immediately any developing pyrexia or change in the colour or smell of their vaginal loss to detect any infection that may be developing.
- Women/people should be informed that bathing or showering is not associated with an increase in infection, but that having sexual intercourse may be.
- Fetal movement and fetal heart rate should be monitored at initial contact, and every 24 hours following SROM until established labour. Women/people should be advised to report any decrease or change in fetal movements.
- If labour has not started 24 hours after rupture of the membranes, advise the woman/person to give birth where there is access to neonatal services and neonatal sepsis observations should be performed at birth, 1 and 2 hours of age, followed by observations every 2 hours until 12 hours of age (see CG11100 Management of women/people and neonates with risk factors for neonatal sepsis (inc GBS)).

17.0 Unsuccessful induction of labour

Unsuccessful induction is defined as labour not starting despite all efforts / methods (ARM not possible after CRB insertion and / or 2 doses Prostin 6 hours apart).

If induction is unsuccessful, healthcare professionals should discuss this with the woman/person and provide support. The woman/person's condition and the pregnancy in general should be fully reassessed, and fetal wellbeing should be assessed using CTG.

Decisions about further management should be made in accordance with the woman/person's wishes, with obstetric consultant opinion, and should take into account the clinical circumstances. This could include:

- Offering a rest period if clinically appropriate and then re-assessing the woman/person.
- Expectant management
- Further attempts to induce labour with further prostaglandins
- Caesarean birth within the next 24 - 48 hours as long as fetal and maternal/birthing parent well-being is maintained.

For women/people who choose caesarean birth after an unsuccessful induction, recommendations in the CG12030 Caesarean Section Birth should be followed.

The decision and discussions to abandon IOL should be documented on MIS.

18.0 Declining induction of labour for prolonged pregnancy

If a woman/person declines to have induction of labour, their decision should be respected. Healthcare professionals should document the woman/person's decision on MIS and discuss the woman/person's options from this point on, for example expectant management or caesarean birth, and document an agreed care plan.

If there are no additional risk factors and there is a documented discussion of the risks and benefits, women/people do not need to be seen initially by an obstetrician. The plan of care should be documented on MIS by the midwife providing care.

Offer women/people who choose to await the spontaneous onset of labour the opportunity to discuss their decision again at all subsequent reviews, if they wish to do so.

Advise women/people to contact their midwife or maternity unit if they change their mind before their next appointment, or as soon as possible if they have concerns about their baby (for example reduced or altered fetal movements).

If the baby is not born by 40+10 weeks, the woman/person should be reviewed by a member of the obstetric team for an ongoing individualised plan of care.

Pregnant women/people may be offered (from 42 weeks) twice weekly CTG in the Day Assessment Unit and weekly ultrasound scan to review maximum amniotic pool depth. If either of these checks is not within normal limits, immediate referral to an obstetrician (registrar or consultant) should be made.

Advise pregnant women/people that:

- Monitoring only gives a snapshot of the current situation, and cannot predict reliably any changes after monitoring ends, but provides information on how their baby is at the moment and so may help them make a decision on options for birth.

- Adverse effects on the baby (including stillbirth), and when these events might happen, cannot be predicted reliably or prevented even with monitoring.

If there are additional risk factors identified women/people should be offered an appointment with an obstetrician (registrar or consultant level) and/or midwife manager.

19.0 Uterine hyper stimulation

Hyper stimulation has been shown to be rare when using the CRB, although can happen with dinoprostone (see NICE Appendix C: Risks of hyperstimulation associated with different pharmacological methods of inducing labour).

If uterine hyper stimulation occurs (more or equal to 5 contractions per 10 minutes) during induction of labour:

- Carry out a fetal assessment.
- Do not administer any more doses of medicines to induce labour and remove any vaginal pessaries or CRB if possible.

Inform the on-call registrar / consultant and request a review. Tocolysis should be considered **with** abnormal FHR patterns.

The suggested regime is **Terbutaline 0.25 mg** subcutaneously, which should be given after obstetric review - See BNF.

20.0 Uterine rupture

If uterine rupture is suspected during induced labour, carry out an immediate category 1 caesarean birth. (See CG1151 Uterine Rupture)

21.0 Audit and monitoring

CRB audit proforma can be found in Appendix 7.

Adverse outcomes are monitored via patient safety and the incident review process.

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Appendix 1: Cervical Ripening Balloon Pathway

Step 1

Book balloon cervical ripening appointment for delivery suite/CLS at allocated times (usually 2 women each day per site)
Potential additional slot to be discussed with co-ordinator/manager

Step 2

Routine admission assessment (see section 8.0):

- Review pregnancy history on MIS
- Perform maternal observations and record on MEOWS
- Perform and document abdominal palpation and CTG using Dawes-Redman

Step 3: outpatient (low risk women/person)

Procedure:

- Assess suitability for procedure (see section 11.3 & 11.4)
- Discuss procedure and gain maternal consent
- Insert balloon as per standard operating procedure (SOP)
- If ARM deemed more appropriate, proceed to step 4.
- Repeat CTG following balloon insertion using Dawes-Redman
- Perform maternal observations ensuring maternal and fetal wellbeing.
- Enquire about uterine activity, PV loss and fetal movements.
- Assess suitability to return home until balloon removal (12 hours) based upon risk assessment.
- Complete relevant documentation
- Ensure balloon removal and ARM time booked and woman/person aware of contact numbers and signs of concern.

Step 3: inpatient (identified risk factors)

Procedure:

- Assess suitability for procedure (see section 11.3 & 11.4)
- Discuss procedure and gain maternal consent.
- Insert balloon as per standard operating procedure (SOP)
- If ARM deemed more appropriate, proceed to step 4.
- Repeat CTG following balloon insertion using Dawes-Redman
- Complete relevant documentation
- Transfer to Bramber/Tangmere ward
- Assess frequency of and perform maternal observations as per risk assessment.
- Twice daily CTG's
- For obstetric review as usual/as required.

Step 4: Balloon removal (12 hours post insertion)

If outpatient - woman to attend delivery suite 12 hours post insertion for balloon removal, palpation and cervical re-assessment.

- Perform CTG until Dawes Redman criteria met (for a minimum of 20 minutes).Remove balloon.
- Repeat CTG until Dawes Redman criteria met (for a minimum of 20 minutes) in upright maternal position to allow presenting part to descend into pelvis.
- Proceed to ARM if appropriate and follow ARM/SROM pathway.

If inpatient - As above with transfer to on delivery suite for assessment 12 hours post-insertion.

All women/people -

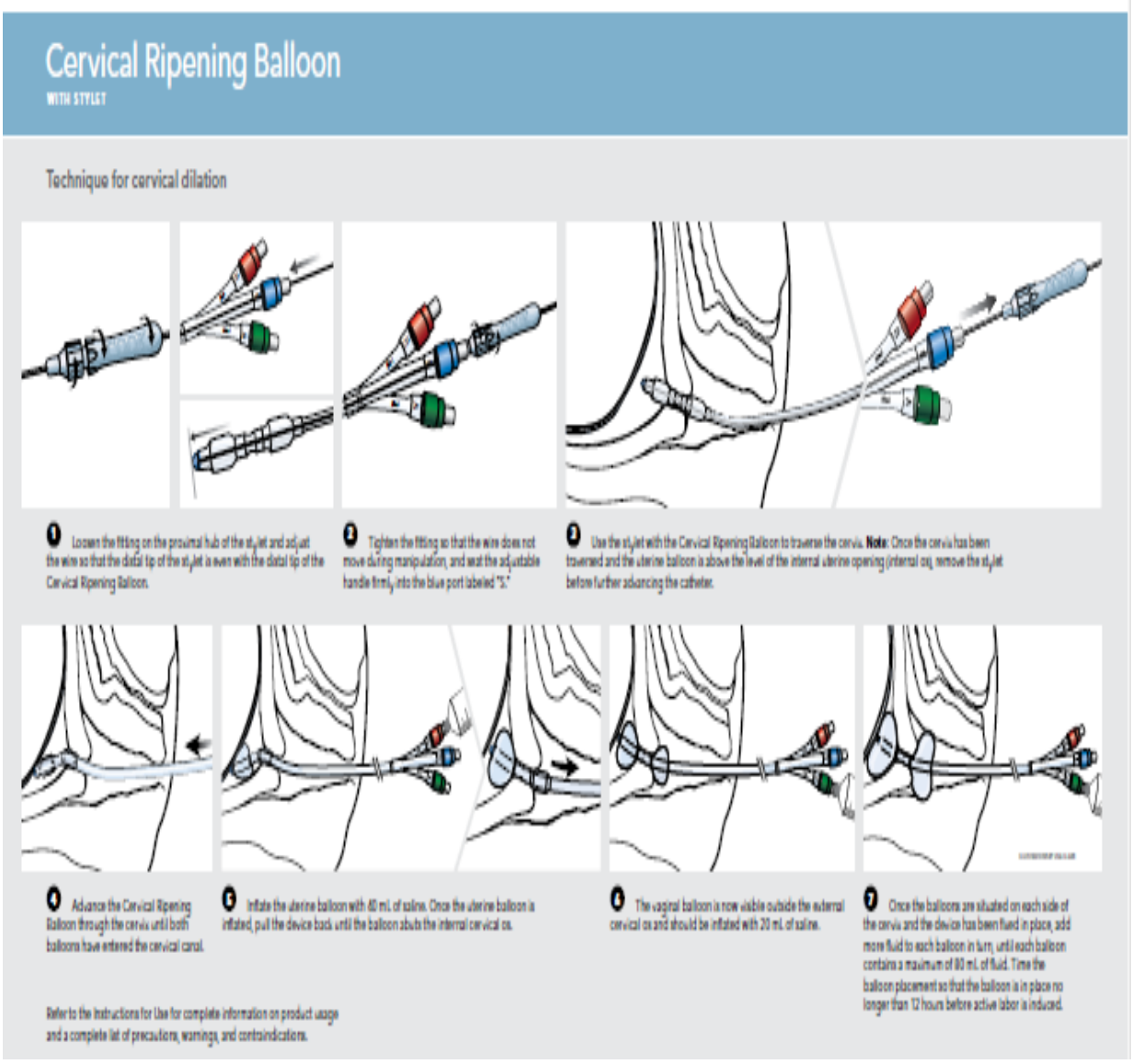
- If ARM not possible, request obstetric review to consider and discuss options such as prostaglandins.
- If SROM, remove balloon and follow SROM pathway.
- If balloon falls out naturally, offer cervical assessment.

Appendix 2: Cervical Ripening Balloon Standard Operating Procedure (SOP)

	Steps	Details
1.	Prepare room	• Ensure appropriate privacy. • Have Entonox available.
2.	Prepare trolley	• Clean trolley. • VE/ catheter pack and Norma sol. • X 2 pairs of Sterile Gloves. • Lubricating Gel. • Normal saline 0.9% 250ml bag. • Scissors. • Blue plastic tray. • 50ml Luer lock syringe and white bung. • Cervical Balloon Catheter (do not open catheter until assessment complete and catheter required). • Pads.
3.	Prepare woman/people	• Discuss procedure. • Gain Consent. • Advise to empty bladder/ urine sample. • Maternal observations and Risk assessment. • Check on MIS for induction of labour plan. • Palpation. • CTG using Dawes Redman.

4.	Insertion of balloon catheter (see diagram below)	• Ensure the trolley is prepared and ready for use.
		• Place woman/person's legs in lithotomy.
		• Wash hands and don gloves.
		• Clean vaginal entrance using the ASNTT.
		• Change Gloves.
		• Perform vaginal examination using Bishop's score assessment.
		• CRB can be inserted digitally or using a speculum to visualise the cervix.
		  ○ **Speculum**: Using a Rampley's sponge holder advance the catheter through the cervix until both balloons have passed the internal os.
		  ○ **Digital**: Keeping fingers in the cervix, guide the catheter through the cervix until both balloons have passed the internal os.
		• Once the uterine balloon is above the level of the internal Os the midwife stabilises the catheter while the assistant removes the stylet before continuing with the procedure.
		• Assistant to Empty Normal saline into large bowl, draw up 40mls of 0.9% Normal saline in the syringe (prepare prior to procedure).
		• Assistant to inflate the uterine balloon (marked U) **red** check flo valve, slowly with 40mls of 0.9% saline.
		• Once the uterine balloon is inflated pull back until the balloon is against the internal OS.
		• The vaginal balloon should now be felt outside the external cervical Os
		• Assistant to inflate the vaginal balloon with 20mls of 0.9% normal saline through the **green** check flo valve (marked V).
		• Once the balloons have been situated on each side of the cervix add more 0.9% normal saline slowly in 20ml increments until each balloon contains 40mls maximum.
		• Use proforma check list to verify quantity in each balloon.
		• Remove legs from lithotomy.
		• CTG using Dawes Redman.
		• Offer sanitary pad and double Netty knickers to secure balloon.

	Steps	Details
5.	Prepare woman/person for the next 12 hours	• Give advice, direct to online maternity information. • Document procedure on MIS, complete proforma and scan in to MIS. • Ensure appointment booked on labour ward for 12 hours. • Give syringe with Bung for removing water from the balloon.
6.	Removal of balloon	• Deflate balloons through the valves & remove catheter. • Perform CTG until Dawes Redman criteria met (for a minimum of 20 minutes) in upright maternal position to allow presenting part to descend into pelvis. • Palpation to assess suitability of ARM and ensure assessment documented on MIS. • Perform a VE to assess suitability for ARM (if no spontaneous rupture of membranes). This includes application of head onto cervix (**THINK cord presentation/prolapse**). • ARM should be performed on labour ward at earliest opportunity after 12 hours, dependent upon workload. If delay in ARM, CRB can be left in place (for up to 24 hours only and only if delay is due to acuity/staffing issues). Repeat CTG as above. • Document procedure in the relevant records. • Repeat CTG as above. • Document procedure and consent on MIS.



Appendix 3: Balloon catheter insertion sticker for notes

Date:	**Reason for IOL:** **Consent gained and documented:**				**University Hospitals Sussex (SRH & WH)**	
Palpation	Lie	Presentation	Position	1/5ths	FH	
CTG	**Dawes Redman Criteria Met : Y / N**				**ARM:** Y / N **Time:** **Liquor : C / M / BS**	
	0	**1**	**2**	**3**	**Uterine Balloon**	**Vaginal Balloon**
Position	Post	Central	Ant		1. **20mls**	2. **20mls**
Consistency	Firm	Medium	Soft		3. **20mls**	4. **20mls**
Length (cm)	3	2	1	0	**Balloon Inserted**	**Time Inserted**:
Dilation (cm)	Closed	1-2	3-4	>4		
Station to spines	- 3	- 2	-1	At Spines	Signature/Stamp 1:	
	Bishop's Score:				Signature/Stamp 2:	

Appendix 4: Balloon catheter removal sticker for notes

University Hospitals Sussex (SRH &WH)	**Cervical Ripening Balloon – Removal** Date: Time on LW:				
CTG 1	FH Baseline : ……bpm Dawes Redman criteria Met: Y / N				
Cervical Ripening Balloon Removed **Time: ……..:…….** Uterine Balloon deflated:……mls Vaginal Balloon deflated:…… mls					
Sit woman upright/mobilise whilst monitoring : wait 20 – 30 mins prior to ARM					
Palpation	Lie	Presentation	Position	1/5ths	FH
V/E	Position	Consistency	Length (cm)	Dilation (cm)	Station to spines
ARM performed: **Y / N** Time: ……:…… Liquor: C / Mec / BS					
CTG 2	FH Baseline : ……bpm Dawes Redman criteria Met: Y / N				
1. Signature: …… **Stamp**: 2. Signature: …… **Stamp**:					

Appendix 5: CRB audit monitoring proforma

Hospital number		
Date of induction		
Planned time of admission		
Gestation		
Parity		
Reason for IOL		
Leaflet given to woman/person	Yes No	
Method of IOL	Balloon ARM* Prostin	
Balloon inserted	Yes No N/A	Time:
Difficult insertion of balloon	Yes No	
If balloon insertion unsuccessful, state reason:		
Prostin inserted	Yes No	Time:
Discharged/transferred to	Home Ward	Time:
Time returned to DS/CLS for ARM	Date:	Time:
Any urinary retention with balloon	Yes No	
Balloon fell out	Yes No	
Balloon removed	Date:	Time:
ARM performed	Date:	Time:
If ARM not possible, state reason		
If ARM delayed, state reason		
Oxytocin (Syntocinon) infusion required	Yes No	Time:
Date and time of birth	Date:	Time:
Mode of birth	SVD Cat 2 CS Instrumental Cat 1 CS	
Reason for LSCS		
Apgars	1 min: 5 mins: 10 mins:	
Maternal comments on process		
Name of clinician completing audit (print / stamp and sign)		
Date of audit		

Scan into MIS once completed

Appendix 6: Pre-labour Rupture of Membranes Pathway

Query SROM

↓

Step 1

Triage assessment to confirm:

- Gestation and history
- Date and time of suspected SROM
- Colour of PV fluid
- Uterine activity
- Fetal movements

↓

Step 2 confirmation

- Arrange community visit if >37 weeks (between 09.00-17.00)
- Arrange hospital assessment if out of hours.
- If <37 weeks arrange hospital assessment and follow CG20013 Preterm Birth Risk Pathway

↓

Step 3 hospital assessment of SROM

Complete BSOTs 'Antenatal Triage assessment care for ruptured membranes'.

- Review pregnancy notes and history.
- Perform maternal observations document on MEOWS.
- Perform CTG to assess fetal wellbeing including FM's.
- Review PV loss.

↓

Confirmed SROM

↓

Step 4 Obstetric review

If BSOTs is green:

- Discuss and offer a choice of expectant management of up to 24 hours or induction with dinoprostone (Prostin) as soon as unit can facilitate. Arrange time for the woman/person to come into the unit.
- If woman/person declines - discuss risks and benefits of augmentation, document this discussion and and offer fetal monitoring.
- If cervix favourable commence oxytocin (Syntocinon) infusion.
- If cervix unfavourable, give dinoprostone (Prostin) and commence oxytocin (Syntocinon) infusion 6 hours after.

If BSOTs yellow, orange or red follow algorithm on the BSOTs card.

Minimum maternal and fetal observations required during oxytocin (Syntocinon) infusion

- Continuous CTG
- Documentation of partogram
- Maternal pulse minimum 1 hourly
- Maternal BP, temperature and respirations minimum 4 hourly
- Fluid balance hourly with 4 hourly cumulative balance as per CG21009 Maternity fluid management as an in-patient or in labour unless more frequent monitoring indicated.

Appendix 7: Reduced volume oxytocin (Syntocinon) regime

Labour induction/augmentation:

Dilute 10 units of oxytocin (Syntocinon) (1ml) with 49 ml Normal Saline and run through a syringe driver at the following rates:

Concentration	Infusion rate
1 milliunits /min	0.3ml/hr
2 milliunits /min	0.6ml/hr
4 milliunits /min	1.2ml/hr
8 milliunits /min	2.4ml/hr
12 milliunits /min	3.6ml/hr
16 milliunits /min	4.8ml/hr
20 milliunits /min	6.0ml/hr
24 milliunits /min	7.2ml/hr
28 milliunits /min	8.4ml/hr
32 milliunits /min	9.6ml/hr

Increase the infusion rate every 30 minutes until regular contraction achieved.
The giving set and adapter must be primed with the oxytocin (Syntocinon) infusion before attaching it to the woman/person to remove the 'dead space' and ensure the correct dose of oxytocin (Syntocinon) is provided.

Reduced volume oxytocin (Syntocinon) regime – following postpartum haemorrhage:

- Dilute 40 units (4 ml) oxytocin (Syntocinon) with 46ml 0.9% Normal Saline and run at 12.5 ml/hr over 4 hours through a syringe driver.

Appendix 8: Recommendation regarding use of Dawes Redman

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WOMEN'S &
REPRODUCTIVE HEALTH
Medical Sciences Division

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Use of the Dawes Redman computerised CTG analysis system (DR-CTG)
In labour, latent labour or induction of labour or after a 'Stretch and Sweep' procedure

The Dawes-Redman system was not designed for use in labour. A separate system is being built which we hope will be reliable in that context but it is not yet ready for use.

This leaves the frontier between non-labour and labour as undefined territory.
An obvious difficulty is the definition of when labour begins. All professionals can find this difficult to assess at least in some cases.

Given the uncertainty, we recommend that Dawes Redman should not be used in this context, including the latent phase of labour. We have not studied the issue in detail and the relationship between computerised FHR patterns and outcome is not clearly defined, as it is when the woman is certainly not in labour.

If it is used like this and the outcome is unexpectedly poor we cannot say that this is a malfunction of the analysis because we have not designed it for this purpose.

In relation to the use of prostin gels and in the general context of Induction of Labour:

1. DR-CTG can be used before the first prostin is given providing there is no uterine activity. A post-prostin DR-CTG can be performed provided there is NO uterine activity of any description.
2. It can be used before or after a 'stretch and sweep' procedure provided there are no signs of latent or early labour. This also applies to mechanical (non-pharmacological) methods of cervical dilatation e.g. Foley catheters or Dilapan.
3. DR-CTG is particularly useful during induction of labour, in association with fetal growth restriction subject to the caveats above.

But remember that DR-CTG is not valid in the latent phase of labour.

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