Induction of labour

Target audience	Maternity staff
Patient group	Pregnant women/people. The term 'women/pregnant people' is used within this document to include women, girls, trans men, and non-binary and intersex people, who are pregnant or have recently been pregnant.

Contents

Section 1 – abbreviations

AFE	amniotic fluid embolism
AFI	amniotic fluid index
ANC	antenatal clinic
APH	antepartum haemorrhage
ARM	artificial rupture of the membranes
ART	assisted reproductive technology
BLS	basic life support
BS	Bishop Score
CEFM	continuous electronic fetal monitoring
CMW	community midwife
CS	caesarean section
CTG	cardiotocography
DCDA	dichorionic diamniotic
DCU	daycare unit
DM	diabetes mellitus
DVP	deepest vertical pool
EDD	estimated due date
ERCS	elective repeat caesarean section
FGR	fetal growth restriction
FH	fetal heart
GBS	Group B Streptococcus
IBD	inflammatory bowel disease
IDDM	insulin-dependent diabetes mellitus
IOL	induction of labour
IUD	intrauterine death
IVF	In-vitro fertilisation
LV	liquor volume
MCDA	monochorionic diamniotic
mcg	micrograms
ml	millilitres
NHSL	NHS Lanarkshire
NND	neonatal death
OC	obstetric cholestasis
PAPP-A	pregnancy-associated plasma protein A
PDIOL	post-dates induction of labour
PE	pulmonary embolism
PET	pre-eclamptic toxaemia
PID	pelvic inflammatory disease
PP	presenting part
PPROM	pre-labour premature rupture of membranes
PROM	pre-labour rupture of membranes
RFM	reduced fetal movements
SB	stillbirth
SC	subcutaneous
SD	shoulder dystocia
SPD	symphysis pubis dysfunction
SRM	spontaneous rupture of the membranes
T	term/estimated due date/40+0
T1DM	Type 1 diabetes mellitus
T2DM	Type 2 diabetes mellitus

UAD	umbilical artery doppler
UHW	University Hospital Wishaw
USS	ultrasound scan
VBAC	vaginal birth after caesarean section
VE	vaginal examination
VTE	venous thromboembolism

Section 2 – introduction

Induction of labour (IOL) is common and associated with increased intervention. Local data suggests a doubling of the caesarean birth (CB) rate with IOL compared with spontaneous labour. IOL should not be confused with augmentation whereby labour progress is enhanced with administration of an oxytocin infusion.

Section 3 – aims

- to provide a standard care pathway for women for whom IOL has been recommended.
- to provide all maternity staff with guidance on the indications for IOL, referral pathways and IOL processes.
- to prevent inappropriate IOL.

Section 4 – indications

There are risks associated with any obstetric intervention. These must be balanced against both the benefits of intervention and the woman/pregnant person's wishes. The list below is neither absolute nor exhaustive. Women/pregnant person-centred discretion should be applied in each case with reference to the woman/pregnant person's individual circumstances and risk factors. Women/pregnant people being induced at <T+10 must have their case discussed with a senior obstetrician (associate specialist/consultant) and the decision documented on BadgerNet. The decision to intervene must be clear and clinically justified. This must include a plan for frequency of fetal monitoring. It is mandatory to obtain written consent when organising IOL. This is to be done by both midwives and doctors – see the specific IOL consent form.

<u>Post-dates induction of labour (PDIOL)</u>

- Women should be offered information about risks associated with pregnancies lasting longer than 42 weeks and their options should they choose to prolong their pregnancy.
- 70% of women will labour spontaneously between 41-42 weeks.
- The aim of delivery before T+14 is to avoid late stillbirth (SB). This occurs in 2-3/1000 pregnancies at 42 weeks.
- SB incidence:

1:2635 at 37 weeks	1:945 at 41 weeks
1:2284 at 38 weeks	1:525 at 42 weeks
1:1874 at 39 weeks	1:297 at 43 weeks
1:1368 at 40 weeks	

- IOL between T+10 and T+14 reduces perinatal mortality without increasing the caesarean birth rate.
    - For those with uncomplicated pregnancies:
        - Please see section 6 for full information about organising IOL.

- Ensure accurate pregnancy dating (patient should have had scan in early pregnancy to accurately determine gestational age and give EDD (estimated due date)).
- There is no indication for routine tests of fetal wellbeing (scan or cardiotocography (CTG)) before T+14.
- Arrange routine community midwife (CMW) review in the local antenatal clinic (ANC) at approximately 41 weeks of gestation.
- Perform vaginal examination, document Bishop score under vaginal examination tab in BadgerNet and perform cervical sweep.
- Offer the woman/pregnant person IOL at T+10.
- Contact maternity clerkess to make booking. Give EDD, Bishop score and BMI.
- If there is no space for IOL at T+10, book procedure for next available date. If this is > T+14, discuss with senior obstetrician.
- Routine PDIOL should be organised at the local antenatal clinic. Do not send to daycare to organise IOL.

- For those declining routine PDIOL:
  - Refer to the named consultant clinic for review .
  - Explain risks of a prolonged pregnancy >T+14. Ensure the woman/pregnant person understands such risks and document the following:
    - Increased perinatal morbidity and mortality.
    - Neonatal convulsions.
    - Meconium aspiration.
    - 5 minute Apgar score of <4.
    - Macrosomia including risks of operative vaginal delivery, caesarean birth and shoulder dystocia (SD).
  - Arrange the following ≥ T+14:
    - CTG twice-weekly in daycare.
    - Weekly scan for liquor volume (LV) and umbilical artery dopplers.
  - Delivery is indicated if there are any abnormalities detected in the umbilical artery dopplers or LV (DVP < 2cm).

- For those with uncertain EDD:
  - The above pattern of increased fetal surveillance is indicated for late bookers (over 24 weeks of gestation) with an uncertain EDD.
  - After appropriate post-dates CTG and scan, the woman/pregnant person should be reviewed in her consultant-led ANC whereby an individualised decision regarding IOL should be made.

- For those wishing vaginal birth after caesarean (VBAC):
  - IOL is not recommended < T+10 (unless other risk factors).
  - Arrange a face-to-face review at consultant clinic from 41 weeks of gestation for a VE and membrane sweep. Document the Bishop score under the 'vaginal examination' tab in BadgerNet.
  - Contact maternity clerkess, stating the patient's previous obstetric history, Bishop score and BMI.

- The use of vaginal prostaglandins is contraindicated. A Cook's balloon can instead be offered if the patient is keen for VBAC. However, in some circumstances a post-dates elective Caesarean birth may be preferable eg. high head/ unfavourable cervix and /or if the woman/pregnant person has not laboured before. This is a consultant decision.

Other reasons

Age > 40 years old		40 weeks of gestation
APH		See specific considerations section below
ART eg. IVF/ICSI		40 weeks
Diabetes	Type 1 and type 2 diabetes	Timing of delivery to be determined by Medical Obstetric clinic team
	Gestational Diabetics	Timing of delivery to be determined by Medical Obstetric/local Cons ANC
FGR		Refer to SGA guideline
GBS		Refer to GBS guidance
IUD	Previous	d/w consultant
	Current	d/w consultant See separate guideline
Hypertension		May be considered prior to Term
Macrosomia	≥ 97th centile	39 weeks
Multiple pregnancy	DCDA twins	37-38w
	MCDA twins	36-37w
	Higher order pregnancies	d/w twins consultant
Intrahepatic Cholestasis of Pregnancy (ICP)	Mild – Peak bile acids 19-39 µmol/L	40 weeks
	Moderate – Peak bile acids 40-99 µmol/L	38-39 weeks
	Severe – Peak bile acids >100 µmol/L	35 -36 weeks
PAPP-A	< 0.4 MoM Consistent growth	T+10 (if GAP is normal)
Post-dates		T+10
PET		d/w consultant
PPROM	≥ 34w	37 weeks
	< 34w	Individualised care plan
RFM (see below)	Abnormal USS/CTG	Consider need for immediate delivery – d/w consultant
	>40w Normal USS/CTG Additional risk factors	Offer IOL within 48h

	>40w Normal USS/CTG No risk factors	Increased fetal surveillance d/w consultant
	Recurrent RFM	See separate RFM guideline
SB	Previous	d/w consultant
	Current	d/w consultant see separate guideline
SPD		> 40 weeks when favourable
Term PROM	≥ 37w	Offer expectant management for up to 24 hours or immediate IOL
Thrombophilia		d/w MOT consultant consider from 38 weeks
VBAC		T+10

Specific considerations:

- Age ≥ 40:
  - Increased risk of stillbirth.
  - IOL should be considered at term.
- Hypertension:
  - Women/pregnant people with hypertension need not always be induced prior to term.
  - Any decision to induce should be a made by a senior obstetrician and should preferably involve the patient's geographical consultant. See NICE guideline.
- Reduced fetal movements (RFM):
  - There is no evidence to support IOL for RFM over fetal monitoring.
  - The decision for intervention needs to be individualised.
  - See separate guideline.
- Antepartum haemorrhage (APH):
  - Episodes of unexplained APH throughout pregnancy warrant serial ultrasound for fetal growth and wellbeing and offering IOL at 38 weeks of gestation.
  - A single, large APH warrants serial ultrasound for fetal growth and wellbeing and offering IOL at 38 weeks of gestation.
  - Multiple episodes of APH secondary to a known cervical cause (such as erosion or polyp) is neither a cause for serial ultrasound scans, nor IOL.
  - Suspected concealed abruption or marginal abruption requires discussion with a consultant obstetrician and may require either serial ultrasound scans or delivery depending on gestation and on the individual clinical circumstances.
  - APH secondary to a low-lying placenta, placenta praevia or placenta accreta spectrum should be managed on an individual basis – see separate guideline.
  - This section does not cover all scenarios so care should be at the discretion of the patient's geographical consultant and therefore must be decided upon on an individual basis.

Contraindications to IOL

- Absolute
  - Fetal compromise.
  - Malpresentation (unless breech and woman/pregnant person fully counselled of risks and on-call team agree). This would be exceptional.
  - Woman/pregnant person declines IOL.
- Relative
  - Previous uterine surgery.
  - Grand multiparity (para 6+).
  - High presenting part (this is a consultant decision if controlled ARM thought likely) and is a contraindication to mechanical IOL.

Not considered for routine IOL

- Asthma, controlled.
- Epilepsy, controlled.
- Inflammatory bowel disease (IBD), controlled.
- Maternal request.
- Mature placenta (with normal scan otherwise).
- Polyhydramnios.
- SPD with unfavourable cervix.
- Thyroid disease, controlled.

Section 5 – cervical sweeps

- Sweeps involve digital separation of the membranes from the lower uterine segment during pelvic examination with a dilated cervix.
- All women being offered IOL should be offered a sweep prior to admission.
- The aim is to cause onset of spontaneous labour prior to any intervention.
- Sweeps significantly reduce the need for IOL and improve the Bishop score.
- Sweeps increase local endogenous production of prostaglandins.
- Sweeps at the time of admission for IOL:
    - increase the SVD rate.
    - reduce induction-to-delivery intervals.
    - reduce oxytocin use.
    - improve women's satisfaction with the IOL process.

- Risks:
    - maternal discomfort.
    - vaginal bleeding.
    - prolonged latent phase.
    - PROM.

- Contraindications:
    - Placenta praevia, vasa praevia, placenta accrete spectrum.
    - Malpresentation.
    - High head.
    - Lack of consent.
    - 2 or more caesarean births (unless woman/pregnant person has been specifically counselled about this and still opts for VBAC).
    - There are insufficient data on the risks of sweeps in women/pregnant people known to be colonised with GBS the decision whether or not to undertake one should be based on individual clinical judgement.

- Performing a sweep:
    - Auscultate the fetal heart.
    - Insert finger as high as possible through the internal cervical os.
    - Perform circular motion rotation of the finger, once clockwise and once anticlockwise.
    - If the internal os is closed, the cervical canal should be swept. Perform and document BS in *vaginal examination tab* in BadgerNet.
    - Auscultate the fetal heart post-procedure.

Section 6 – organising IOL

Choice of IOL method (ALWAYS check for contraindications before booking)

- Low-risk outpatient IOL – Cook's balloon.
- High-risk inpatient IOL – Cook's balloon or vaginal prostaglandins.

Booking process

- Give leaflets regarding IOL and cervical sweeps and signpost to patient information videos.
- Perform a vaginal examination, formulate a Bishop score and document cervical favourability in BadgerNet under vaginal examination tab.
- Give cervical sweep.
- Inform women that IOL is potentially a 2-step process as described on the IOL consent form.
- Review timing and indication for IOL if Bishop score is less than 7.
- If unfavourable, discuss surveillance/repeat VE/timing of IOL with consultant.
- Explore woman/pregnant person's opinions on which type of IOL is correct for her.
- Complete consent form for IOL. This should be completed by the health care professional booking IOL (midwife or doctor).
- If no contraindications, offer outpatient IOL with Cook's balloon as 1st line.
- If the woman/pregnant person declines mechanical IOL, inform clerkess when booking that she is for an inpatient induction with prostaglandins; on admission ask doctor to prescribe appropriate vaginal prostaglandins.

Section 7 - outpatient IOL (Cook's balloon)

General principles

- NICE recommends the use of a double balloon catheter as a safe mechanical method of IOL noting no concerns about hyperstimulation or increasing caesarean birth rates.
- NHS Lanarkshire therefore recommends its use as first line in suitable patients.
- If the woman/pregnant person consents to its use, contact ward clerkess to book appointment.
- Women/pregnant people should be allocated a 90 minute appointment time at an allocated time in a single room in ward 23. The procedure may be complete within an hour.
- A staff midwife should be specifically allocated to perform procedure.
- All staff members providing this service should have available a senior mentor until their competency is at an adequate level.
- If the woman/pregnant person requests to remain as an inpatient, this should be accommodated using the Cook's balloon. Vaginal prostaglandins can be offered as an alternative.

Equipment required

- 20ml luer-lock syringe
- 2 x 100ml bags of normal saline
- Cook's cervical ripening balloon
- Vaginal examination pack
- Sterile glovesSterile cleaning solution
- Cusco speculum
- Lubricant

Prior to procedure

- Ensure correct patient lidentification.
- Ensure woman/pregnant person meets criteria for outpatient IOL.
- Verify reason for IOL and, if for anything other than routine PDIOL, ensure woman/pregnant person has had medical review and decision to induce is clearly documented on BadgerNet.
- Ensure the woman/pregnant person understands procedure, its aims, and has signed consent form.
- Give full explanation of procedure.
- Ensure adequate privacy and dignity.
- Perform CTG for 30 minutes and proceed only if reassuring.
- Place the woman/pregnant person in a semi-recumbent position with hands underneath buttocks.

Balloon insertion

- Locate cervix (digitally or with speculum).

- Advance the catheter through the cervix until both balloons have entered the cervical canal and passed the internal os. When the first balloon (uterine) is through the internal os, remove the stylet.
- Remove speculum (if used).
- Inflate the uterine balloon with 40ml of saline through the red Check-Flo valve (marked 'U') using the syringe.
- Pull balloon back until the uterine balloon abuts the internal os. The (deflated) vaginal balloon should now be visible/palpable in the upper portion of the vagina.
- Inflate the vaginal balloon with 20ml of saline through the green Check-Flo valve (marked 'V'), maintaining tension on the catheter.
- Once the balloons are correctly situated, add saline in 20ml increments up to a maximum of 80ml in each balloon.
- Auscultate the fetal heart.
- There is no need for post-procedure CTG unless there are additional risk factors, if the woman/pregnant person begins to contract or if there are any other problems encountered like SRM, APH, RFM or constant severe abdominopelvic pain. If this occurs, remove the Cook's balloon and discuss with medical staff.
- Allow the woman/pregnant person to rest for half an hour.
- Observe for bleeding, SRM, fetal movements and discomfort.
- Ensure the patient voids urine prior to discharge.
- Ensure woman/pregnant person has links to a written leaflet.
- Inform the woman/pregnant person of what to expect, what is not considered normal and ensure they have the relevant contact numbers in case of emergencies.
- If the woman/pregnant person remains well, they may go home.
- Document procedure on BadgerNet.

Balloon removal

- Deflate both balloons with luer-lock syringe.
- Slowly remove device from cervix.
- Perform VE to assess the BS.
- Encourage woman/pregnant person to adopt upright procedure.
- Auscultate fetal heart.
- The balloon can be removed from up to 24 hours post-insertion. It should not remain in for greater than 24 hours.
- Give appointment up to 24 hours after balloon insertion for balloon removal.
- Following removal the woman/pregnant person should mobilise within the unit.
- Wait at least 1 hour before performing ARM. There is no maximum time limit. Explain that ARM may be delayed due to clinical activity.
- Commence oxytocin immediately in primigravid patients and after 1-2 hours in parous women, unless the woman/pregnant peson declines or wishes to wait for a defined period of time.
- Document on BadgerNet.
- Inform women/pregnant people that the IOL procedure may be halted if the cervix remains unfavourable for amniotomy or if there is a heavy workload. This needs to be discussed with the woman/pregnant person, the reasoning should be explained and this should be discussed with a senior obstetrician.

Risks

- Discomfort
    - Evidence supports Cook's balloon insertion being well-tolerated.
    - Most women report little discomfort during and after the procedure.
    - Halt the procedure if the woman/pregnant person is in too much pain.
    - Analgesia can be considered after discussion with medical staff.
    - Abnormal vaginal bleeding.
    - Halt the procedure, deflate and remove the balloon.
    - Inform medical staff.
    - Follow guidelines for APH.
- Vasovagal response
    - Pallor, sweating, bradycardia, loss of consciousness.
    - Usually associated with traction of the device against the cervix.
    - If this happens, remove some fluid from both balloons.
- Fetal bradycardia or woman/pregnant person gives other cause for concern:
    - Halt procedure and remove the device if inserted.
    - Left lateral tilt.
    - Perform ABCDE.
    - Inform medical staff.
    - Monitor woman/pregnant person's vital signs.
- Infection:
    - Insufficient data to support a link between insertion of the Cook's balloon and maternal infection.
    - Inform woman/pregnant person of signs or infection and advise to call triage if there are any concerns.
- RFM:
    - Inform the woman/pregnant person to come in immediately.
    - Perform CTG.
    - If any CTG concerns, immediately remove balloon.
    - Contact medical staff if any CTG concerns.

<u>Specific considerations</u>

- VBAC – see section on PDIOL and section 12
- Note VBAC's can have a Cooks balloon as step one for an outpatient IOL.

<u>Contraindications</u>

- High head
- Malpresentation
- Fetal distress

<u>Subsequent events</u>

- Balloon falls out – if no other concerns, inform the woman/pregnant person to call and attend the unit for ARM within 2 hours if possible. In practice this may not be achievable in busy spells.
- SRM
    - Assess over phone.
    - If the balloon is still in-situ and there are no other concerns, the woman/pregnant person may stay at home and keep original appointment for assessment/confirmation of SRM.

- If the balloon has fallen out, inform the woman/pregnant person to attend the unit for further assessment and confirmation of SRM.
- If contractions start:
  - Assess over the phone.
  - If contractions are mild or irregular and there are no other concerns, follow guidance for management of the latent phase of labour.
  - Reassure the woman/pregnant person and reiterate that she can call back at any time for advice.
  - If the woman/pregnant person is thought to be in active labour, ask her to come in for assessment. If the balloon is in-situ, remove and proceed with IOL process.
- If unable to ARM after balloon is removed:
  - Inform senior medical staff.
  - Offer the woman/pregnant person other IOL options.
  - Usually this will involve use of vaginal prostaglandins.

<u>Competency of staff performing procedure</u>

- Before being allowed to perform the procedure, midwives must be supervised by a doctor or midwife who is competent at balloon insertion.
- The decision to practice independently without supervision can be made between the midwife and their facilitator.

Section 8 – inpatient IOL

General principles

- Inpatient IOL may be preferred by some patients over outpatient IOL. For inpatient IOL, either the Cook's balloon or vaginal prostaglandins can be offered.
- NICE recommends that IOL with vaginal prostaglandins is second line to mechanical methods.
- The vaginal prostaglandins currently in use in NHS Lanarkshire are prostin E2 (dinoprostone) vaginal tablets.
- NHS Lanarkshire no longer routinely uses propess pessaries (dinoprostone) or prostin gels.
- Women must remain as inpatients for the duration of the IOL process if vaginal prostaglandins are used.
- Advise women that IOL with vaginal prostaglandins is a 2-step process and that the findings/indications may have changed by the time she is admitted.
- As for all types of IOL, a Bishop score must have been calculated and recorded on BadgerNet under vaginal examination tab, and the reason for IOL must also be clearly available/documented.
- Aseptic technique for VE's and insertion of vaginal prostaglandins is not required.
- Hibitane should not be used.
- Administration intervals should be a minimum of 6 hours (see appendix 1).
- The maximum dose of prostin tablets for primigravid and parous women is 9mg in 3 divided doses (1 x 3mg tablet) 6 hours apart (see appendix 2). This is outside the BNF and manufacturer's recommendations which state a maximum of 2 doses. However, it is commonplace to use 3 doses if required, as seen in several trials and other trusts.
- Women should remain semi-recumbent on the CTG for at least 30 mins after receiving a dose of vaginal prostaglandin.
- Senior obstetric staff should be informed about parous women requiring ≥ 3 doses of prostin. The registrar (or consultant) should be given the option of performing the 3rd VE and administration of 3rd prostin though this can be delegated to midwifery staff if medical staff consent.

Fetal monitoring

- CTG should be normal for a minimum of 30 minutes prior to insertion of vaginal prostaglandins.
- If there are any CTG concerns, medical review should be sought immediately and vaginal prostaglandins withheld.
- Following insertion, the CTG must be continued for a minimum of 30 minutes. If normal, it can be discontinued.
- The fetal heart and maternal observations should be taken and recorded every 6 hours after insertion.
- At any point during the IOL process, perform CTG if the woman/pregnant person complains of RFM, abnormal vaginal bleeding, SRM, constant severe abdominopelvic

pain or if the woman/pregnant person goes into labour (cervix displaying progressive effacement and ≥ 3cm dilatation).

Specific considerations

- Oligohydramnios/FGR:
  - These women/pregnant people are at high-risk of fetal compromise.
  - Consideration should be given to early amniotomy.
  - NHSL recommends continuous electronic fetal monitoring (CEFM) from the onset of established uterine activity.
- High head:
  - This is not an indication for cervical priming.
  - All cases should be discussed with senior obstetric staff.
  - These cases are at high risk of failed induction/cord prolapse with injudicious use of amniotomy and consideration should be given to delay of the IOL process if appropriate. This decision should be taken by the relevant senior obstetrician.
- Hyperstimulation:
  - There is a small risk of uterine tachysystole with vaginal prostaglandins (risk of fetal heart rate abnormalities with true uterine hyperstimulation is 1-5%).
  - If this occurs with any evidence of fetal compromise, immediate administration of subcutaneous terbutaline 250 micrograms as a one-off should be given (NICE CG229, 2022) .
  - Urgent obstetric review should be requested.
  - CEFM is recommended until hyperstimulation has resolved or a decision for delivery has been made.
  - If there is no evidence of CTG abnormality but the woman/pregnant person has evidence of tachysystole, terbutaline is not indicated but the women should be offered analgesia, further prostaglandins withheld and medical review requested.
  - Repeat doses should be withheld only if regular painful uterine activity is present requiring analgesia or with CTG abnormalities.
  - If amniotomy is not possible, a repeat VE and re-calculation of the Bishop score should be performed and if the cervix remains unfavourable, prostin should be given if applicable.

Contraindications

- Previous caesarean birth.
- Other major uterine surgery.
- Malpresentation including cord presentation.
- Suspected or evidence of fetal distress.
- Placenta praevia/vasa praevia/unexplained vaginal bleeding.
- Lack of consent.
- Allergy/anaphylaxis.
- Multiparity:

- Para 4/5 – relative contraindication - these women should be examined by a senior obstetrician to determine whether amniotomy is possible (even if BS <7).
- Para ≥ 6 – absolute contraindication.

- Past history or existing pelvic inflammatory disease (PID) unless adequate prior treatment.
- Active cardiac, pulmonary, renal or hepatic disease.

Cautions with vaginal prostaglandins

- Discuss with senior obstetrician the use of vaginal prostaglandins in any of the following:
  - Asthma.
  - Glaucoma/raised intra-ocular pressure.
  - Compromised renal/hepatic/pulmonary/cardiac function.
  - Uterine hypertony.

Risks/side-effects of prostin

- Nausea – common.
- Vomiting – common.
- Diarrhoea – common.
- Vaginal warmth/discomfort/irritation – common.
- Venous thromboembolism – rare.
- Hypertension – rare.
- Bronchospasm – rare.
- Amniotic fluid embolism (AFE) – very rare.
- Hypersensitivity/anaphylaxis – very rare.
- Uterine rupture – very rare.
- Disseminated intravascular coagulopathy – very rare.
- Cardiac arrest – very rare.
- In labour:
  - Uterine tachysystole.
  - Abruption.
  - Rapid cervical dilatation.
- For the neonate:
  - Fetal bradycardia/fetal distress.
  - Low Apgar score.
  - Stillbirth.
  - Neonatal death (NND).

If unable to ARM after full complement of vaginal prostaglandins:

- Inform senior medical staff.
- Review the need for IOL.
- Offer the woman/pregnant person other options:
  - Rest for 24 hours then repeat VE +/- ARM.
  - Rest for 24 hours and commence second cycle of vaginal prostaglandins.
  - Inpatient Cook's balloon.

- Caesarean section (very likely to incur further delays depending on fetal monitoring, staffing, labour ward workload, time of day).

Section 9 – Artificial rupture of the membranes (ARM)/ amniotomy

- Amniotomy and oxytocin infusion should not be used as the primary IOL method if the BS is <7 except in specific circumstances such as grand multiparity or at the discretion of a senior obstetrician.
- Criteria:
    - Cervical dilatation > 2cm.
    - Cervical effacement.
    - Engagement of the fetal head.
- Procedure:
    - Auscultate the FH.
    - Perform ARM with amnihook.
    - Note colour and amount of liquor.
    - Encourage woman/pregnant person to mobilise if FH normal.
    - If primigravida and CTG normal, commence oxytocin immediately.
    - If parous, explore with woman/pregnant person and senior obstetric staff the possibility of allowing time for labour to establish. It is reasonable to commence an oxytocin infusion 2 hours later if there is inadequate uterine activity.
    - Perform serial VE's every 4h until full dilatation starting from the onset of regular activity with 3-4 contractions in 10 minutes.
    - If the spontaneous contractions post-amniotomy diminish, consider commencing an oxytocin infusion.
    - CEFM is recommended from the time of commencement of an oxytocin infusion.

Section 10 – oxytocin use

Please see separate guideline regarding use of oxytocin: https://www.rightdecisions.scot.nhs.uk/media/kfelgrez/oxytocin-use-in-labour.pdf

General principles

- CEFM is recommended in all cases whereby patients are being induced/augmented with an intravenous oxytocin infusion.
- Oxytocin infusion must not commence within 6 hours of the patient being administered vaginal prostin.
- Consider commencing an oxytocin infusion in primigravida in whom uterine activity is inadequate during active labour or in whom uterine activity becomes diminished.
- Discuss with senior medical staff before commencing an oxytocin infusion for augmentation of a parous woman/pregnant person in spontaneous labour – in this case medical staff should personally perform a VE, rule out a malpresentation and decide whether or not to commence an oxytocin infusion.
- If there are persistent concerns about the normality of a CTG of a woman/pregnant person on an oxytocin infusion, escalate concerns to a senior midwifery colleague who can decide if medical review is warranted.
- Avoid routine reducing or stopping oxytocin in such cases prior to medical review unless the CTG is pathological/bradycardic.Be particularly cautious with oxytocin use in the following and seek advice of a senior obstetrician before commencing an infusion:
    - VBAC/uterine scars/previous uterine surgery.
    - Prolonged oxytocin use in those with severe hypertensive disorders of pregnancy.
    - Prolonged oxytocin use in oxytocin-resistant uterine inertia, severe PET or severe cardiovascular comorbidities.

Non-routine use of oxytocin in induction of labour

The use of intravenous oxytocin infusion for induction or augmentation of the following groups MUST always be discussed with and agreed by the consultant obstetrician:

- VBAC – see below.
- Previous uterine surgery (eg. myomectomy).
- Suspicious or abnormal CTG.
- Malpresentation.
- Multiple pregnancy.
- Grand multiparity.
- Severe pre-eclampsia.

Specific considerations

- Term PROM
    - IOL should performed within 24 hours of the time the membranes ruptured. Women/pregnant people wishing to wait longer than this for the onset of spontaneous labour should be offered an appointment with a consultant obstetrician to discuss their wishes and to come up with a detailed plan for additional fetal/maternal monitoring.
    - Women/pregnant people with meconium-stained liquor and/or GBS should be recommended to undergo IOL immediately.
    - It is important, however, to inform the patient with an unfavourable cervix and SRM that there is evidence that an oxytocin infusion is less effective than vaginal prostaglandins in achieving a vaginal delivery within 24 hours.
    - Perform a full set of maternal observations and if the temperature is ≥ 37.5°C or there are other signs of infection/sepsis, commence the 'Sepsis 6' bundle and CTG monitoring.
- Para 4+ with term PROM
    - Even if the cervix is unfavourable, commence oxytocin as opposed to giving vaginal prostaglandins given the risk of uterine hyperstimulation.

Section 11– VBAC

General principles

- The incidence of women/pregnant people presenting for antenatal and intrapartum care with a history of previous caesarean birth is increasing.
- All women/pregnant people with previous caesarean birth aiming for VBAC should be counselled appropriately. This involves review by a senior obstetrician in the antenatal clinic where the risks of VBAC should be fully discussed. These should be clearly documented on BadgerNet.
- If the woman/pregnant person wishes a more detailed discussion about mode of delivery options, she can be referred to her consultant antenatal clinic.
- IOL for patients with a previous Caesarean birth should not be considered routine.
- Women /pregnant peopleopting for VBAC after appropriate counselling should be offered an outpatient Cook's balloon induction at T+10 if they have not gone into labour prior to that date.
- If they decline IOL but wish a VBAC, caesarean birth should be offered electively at T+10.
- If they decline caesarean birth at T+10, they should be offered fetal monitoring as described above in the 'Post-dates induction of labour' section.
- Consultant approval for induction with one previous CB is mandatory; vaginal examination and calculation of Bishop score requires to be carried out by medical staff.
- If requested, consideration should be given to a woman/pregnant person aiming for VBAC with ≥ 2 sections but these women/pregnant people should be reviewed by their own consultant at least once antenatally.
- NHSL does not recommend VBAC in those with ≥ 3 previous CB's and therefore would also not recommend IOL.

Cervical priming

- First-line management is the use of a Cook's balloon as an outpatient unless there is another reason to remain an inpatient.
- The use of vaginal prostaglandins is contraindicated due to an increased risk of uterine rupture.
- Women/pregnant people should be clearly informed that the use of a Cook's balloon or elective caesarean birth is safer than the use of vaginal prostaglandins.
- It is, however, important to point out that the use of Cook's balloon for IOL in those aiming for VBAC is unlicensed but commonly performed.

Risks of VBAC

All women/pregnant people considering VBAC should be informed of the following risks:

- Uterine rupture:
    - 5-6:1000 for spontaneous labour.
    - 2.9/1000 in women/pregnant people being primed with a Foley's catheter.
    - 10.2/1000 for induced labour.

- 8.7/1000 for augmented labour with oxytocin.
- 24/1000 in women/pregnant people being primed with vaginal prostaglandins.

- Uterine dehiscence:
  - 3.3/1000 for induced labour.
  - 2.6/1000 for augmented labour.
  - 1.9/1000 for spontaneous labour.
- Antenatal stillbirth:
  - 1:10,000 in women/pregnant people having repeat caesarean birth.
  - 10:10,000 in women/pregnant people having VBAC.
- Perinatal mortality:
  - 2.4/1000 for VBAC.
  - 0.9/1000 for elective repeat caesarean birth (comparable to primigravid women/pregnant people).
- Perinatal death from uterine rupture
  - 0.45-1.1/1000.
  - This represents a 2-3/10,000 additional risk when compared with elective CB.
  - Maternal death from uterine rupture: <1:100,000.
  - Hypoxic ischaemic encephalopathy (HIE): 8/10,000.
  - Neonatal respiratory problems:
    - VBAC 2-3%.
    - Elective CB 3-4%.
- Blood transfusion – 1% higher risk with VBAC compared with elective CB.
- Endometritis – 1% higher risk with VBAC compared with elective CB.
- Anaesthetic risk – very low irrespective of mode of delivery.
- Elective CB can increase the risk of serious complications in future pregnancies such as stillbirth and major haemorrhage secondary to invasive placentae.

<u>Contraindications to VBAC</u>

- Previous uterine rupture.
- High vertical classical caesarean birth.
- ≥ 3 previous CB's.
- No access to details of previous uterine surgery – this is a relative contraindication where the lead consultant can decide.

<u>Use of oxytocin in VBACs</u>

- Women/pregnant people should be informed of:
  - the two to three-fold increased risk of uterine rupture and
  - the 1.5-fold increased risk of caesarean birth in induced/augmented labours compared with spontaneous labour
  - the increased risk of uterine rupture with use of vaginal prostaglandins.
- There should be serial cervical assessments, preferably by the same person, for both augmented and non-augmented labours to ensure adequate cervical progress.
- A consultant obstetrician should make the following decisions in formulating a plan for intrapartum care of someone aiming for VBAC:
  - Decision to induce.

- Method of induction.
- Decision to augment with oxytocin.
- Time intervals for serial vaginal examination.
- Selected parameters of progress that would necessitate discontinuing VBAC attempts.

- If oxytocin is required, a 'half-dose' should be used.
- Dilute 5 international units of oxytocin (5ml) in 500ml normal saline and escalate as per the following table:

Infusion rate (ml/hr)	Time after starting (min)	Oxytocin dose at current rate (milliunits/min)
10	0	1.6
20	30	3.6
40	60	6.7
60	90	10
80	120	13.3
99	150	16.5

- The above regime should be prescribed.
- A VE should be performed by the designated midwife 4 hours after commencing an oxytocin infusion.
- If there has been no evidence of progressive cervical dilatation, further management should be discussed with the consultant.
- If there has been some change but not sufficient enough to conform adequate progress, further management should be discussed with the consultant.
- If progress is being made, the above regime should be continued and titrated against uterine activity.

Use of oxytocin in women/pregnant people with previous section in spontaneous labour

- This is a consultant decision and each case should be tailored to the individual patient/situation.

Appendix 1

The following table illustrates how to formulate a Bishop score:

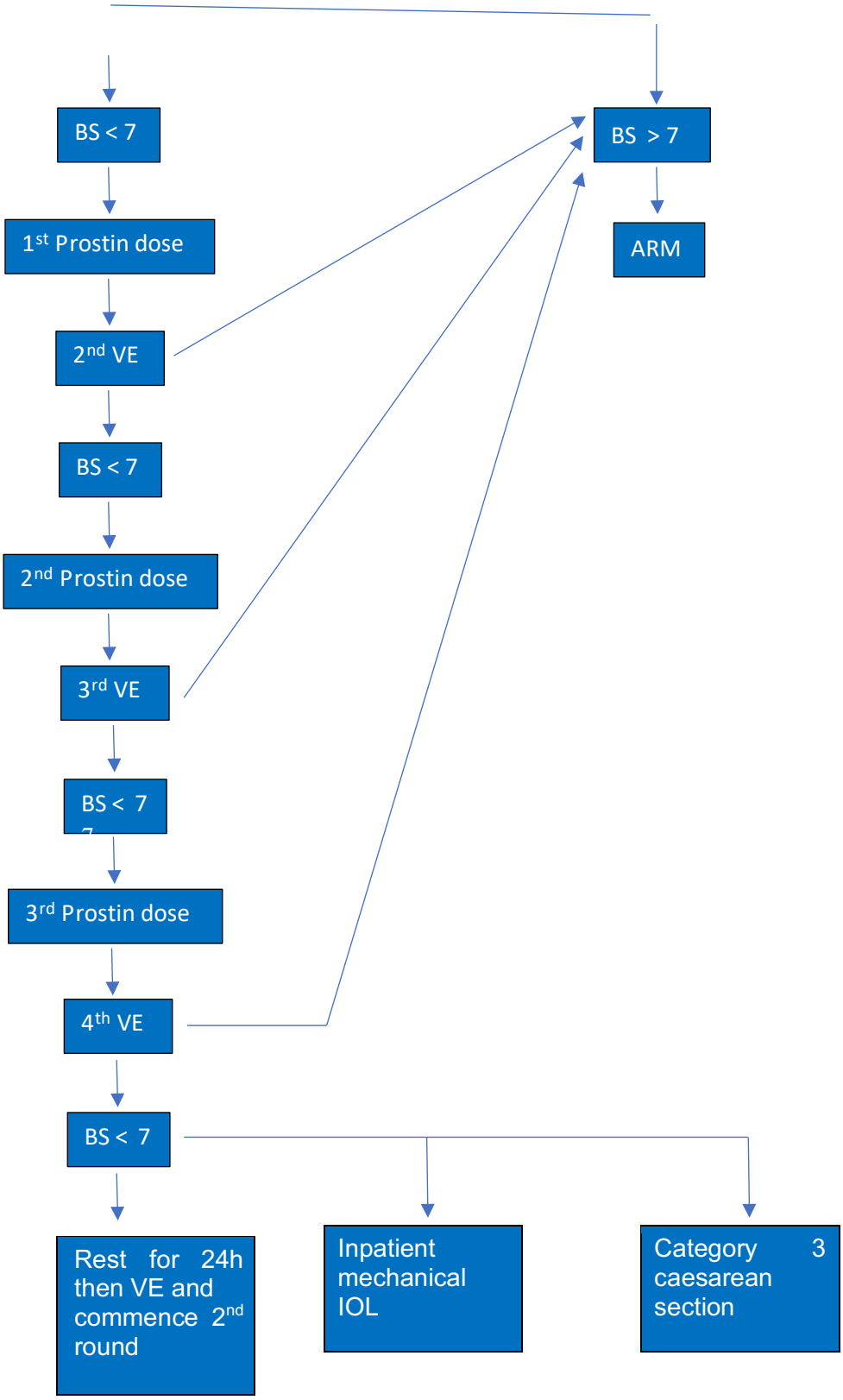
	0	1	2	3
Dilatation of internal os (cm)	<1	1-2	2-4	>4
Length of cervix (cm)	>4	2-4	1-2	<1
Cervical consistency	Firm	Average	Soft	
Cervical position	Posterior	Mid/anterior		
Station of head	-3	-2	-1	Spines/below spines

If the BS is ≥ 7, then the cervix is favourable for amniotomy.

If the BS is < 7, the cervix is unfavourable.

Appendix 2

Flowchart for use of vaginal prostaglandins for induction of labour.



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Appendix 3

Doses of vaginal prostaglandins organised by type of prostaglandin and parity.

	Primigravida	Parous women/pregnant people
	Tablet	**Tablet**
1st dose	3mg	3mg
2nd dose	3mg	3mg
3rd dose	3mg	3mg

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