Intelligent Intermittent Auscultation in Labour UHL Obstetric Guideline

University Hospitals of Leicester NHS Trust

Trust ref: C22/2021

Contents

1. Introduction and Who Guideline applies to 1
   What's new? 1
   Related documents: 1
   IIA pathway 2
2. Guideline Standards and Procedures 3
   Key points 3
Initial Assessment 3
Latent labour 4
First Stage of Labour 5
Second stage of labour 5
Gradually Evolving Hypoxia 6
Conversion Criteria for changing from IIA to CEFM 6
Risk Management 7
3. Education and Training 8
4. Monitoring Compliance 8
5. Supporting References 8
Key Words 8
   DEVELOPMENT AND APPROVAL RECORD FOR THIS DOCUMENT 9
   Appendix 1 – Cares Peer Review 10
   Appendix 2 – Intrapartum risk assessment 11

1. Introduction and Who Guideline applies to

Continuous Electronic Fetal Monitoring (CEFM) in low risk women is associated with an increased level of intervention without any improvement in outcome. Women who are healthy and have had an uncomplicated pregnancy should be offered and recommended Intelligent Intermittent Auscultation (IIA) to monitor fetal well-being. This should be performed using a Doppler ultrasound or pinard stethoscope (NICE 2017).

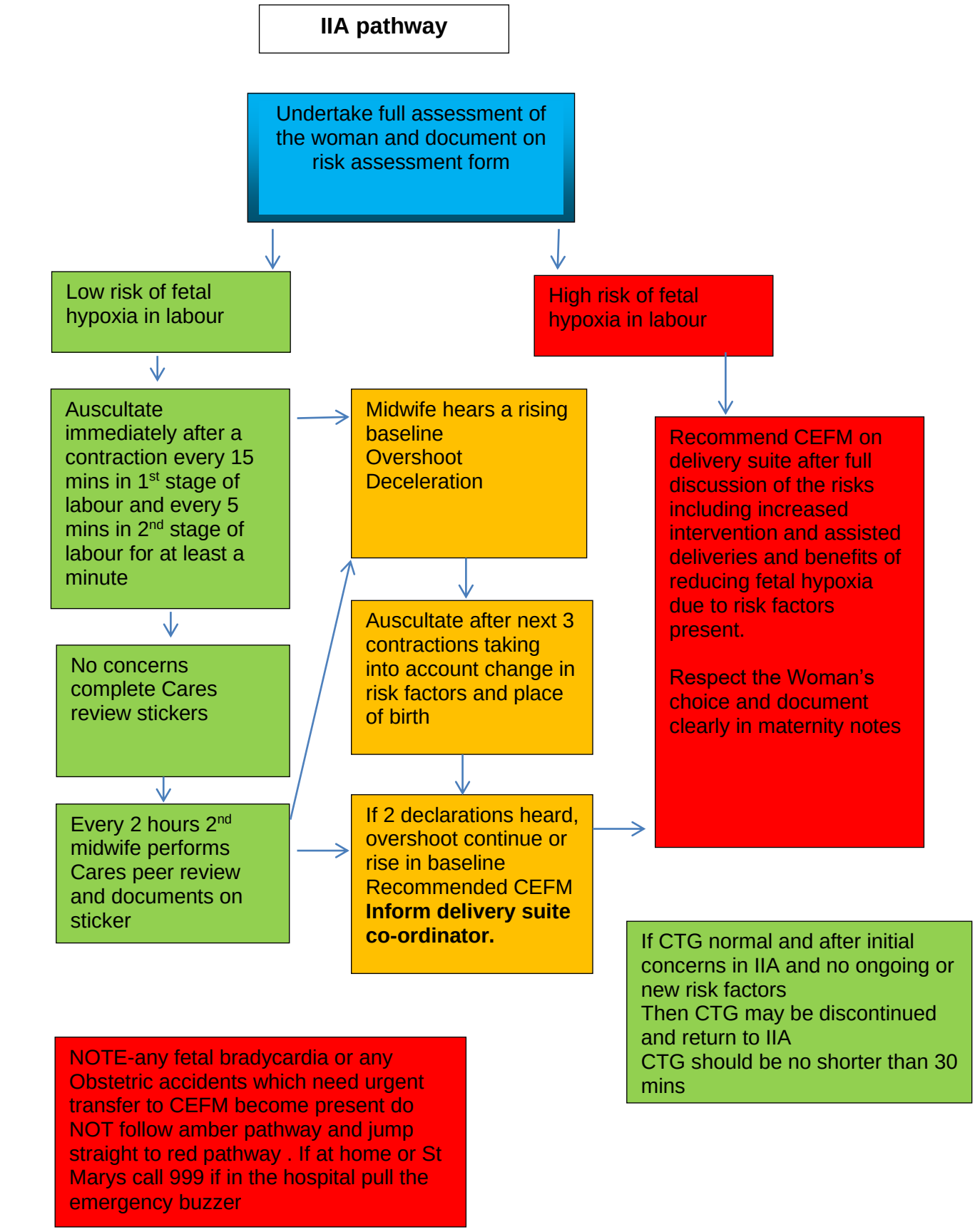
This guideline applies to all healthcare professionals providing care for pregnant women in labour.

What's new?

- Added IIA pathway flowchart, identifying care pathway, actions and escalation criteria
- Removed reference to the use of DR C BRAVADO when using IIA
- New CARES review sticker
- All babies born with meconium in the liquor should have paired cord gases at delivery (would not be expected/feasible in a home birth setting or at SMBC)

Related documents:

- Fetal Monitoring in Labour UHL Obstetric Guideline
- Reduced Fetal Movements UHL Obstetric Guideline
- Intrapartum Care UHL Obstetric Guideline



S Blackwell 2021 (adapted from Angela Willis Great Western Hospitals Trust)

2. Guideline Standards and Procedures

Vigilance is needed in interpreting the findings to ensure signs of hypoxia or other indicators requiring investigation are not overlooked. This practice has been termed 'intelligent auscultation' to highlight the extension beyond listening for the presence of the fetal heart, but requires an understanding of fetal physiology as well as the intrapartum hypoxic process and how this may influence the features of the fetal heart rate (FHR) (Chandaraharan, 2017)

A woman must be fully informed of the risks and benefits of IIA and CEFM. If during labour, she chooses not to be monitored by the recommended method, a full discussion of the potential impact on her and the fetus should be documented and the labour ward coordinator and senior obstetrician should be informed. This discussion must be clearly documented in the woman's records.

This Trust adopts a physiological holistic approach to intermittent auscultation, termed intelligent intermittent auscultation (IIA) (Chandraharan, et al., 2018; NHS Health Education England, 2020b).

Key points

- Auscultate the fetal heart (FH), ideally initially with a Pinard stethoscope
- On first auscultation listen for at least one full minute in between contractions when the baby is at rest to establish a baseline fetal heart rate
- If in early labour, auscultate during fetal movements or following stimulation of the baby.
- Latent phase of labour should be individualised for each woman.
- An hourly assessment should be carried out.
- 2 Hourly CARES Peer review should be undertaken (in community when 2nd midwife arrives and then 2 hourly)
- Complete a CARES Peer review every 30 mins in second stage
- Assess for gradually evolving hypoxia

Initial Assessment

- Discussion with mother regarding fetal movement pattern over the 24 hours prior to regular contractions.

- Discussion regarding any PV loss or liquor

- Abdominal palpation to identify any concerns regarding lie, presentation, descent, growth, uterine activity and resting tone.

- Auscultate the fetal heart (FH), ideally initially with a Pinard stethoscope on the mother's abdomen in line with the fetal scapula as it allows the clinician to establish the real sounds of the FH (Munro and Jokinen 2012). Following this, a handheld Doppler can be used as although a CTG transducer utilises the same technology as a handheld Doppler, it has a wider beam and therefore increased risk of auscultating maternal vessels. CTG transducers are not licenced for use in IIA.

- On first auscultation listen for at least one full minute after contractions when the baby is at rest to establish a baseline fetal heart rate. Consider if baseline is appropriate for gestation, identify if the FH appears regular and if there are any decelerations.

- If in early labour, auscultate during fetal movements or following abdominal palpation stimulation of the baby. An acceleration should be noted, and the presence of chronic hypoxia can be excluded. This is more difficult to demonstrate later in labour.

- The uterus should be palpated to identify the end of a contraction and the FH auscultated immediately after the contraction for at least 1 minute. Count the FH as an average over at least 60 seconds and record as a single number in beats per minute. If using a Doppler do not rely on the range shown on the screen, as there have been instances where the machine has miscalculated the FH rate (NICE 2017)

- To ensure an accurate baseline rate is obtained and recorded, accelerations should not be included in the fetal heart rate count, but their presence should be documented. Take note of whether the rate is steady or increasing. If increasing, consider if this could be a recovering deceleration.

- The maternal pulse should be palpated simultaneously while auscultating FH to differentiate between the two, as it is possible to inadvertently pick up maternal heart rate from surrounding vessels. This should be done on the initiation of each auscultation and throughout if a FH abnormality is detected

- An observed rise in baseline rate, slow recovering decelerations or persistent accelerations (overshoot) after contractions should be confirmed by listening throughout the next 3 contractions to clarify the suspected pattern. Confirmation of an abnormality warrants a move to Continuous Electronic Fetal Monitoring (CEFM) and transfer to obstetric-led care.

- An inter-contraction interval of 90 seconds should be observed and awareness of the increased risk of hyperstimulation in prostaglandin induced labours considered.

- If CEFM is commenced due to potential concerns with the intermittent auscultation, e.g. possible decelerations but the CEFM is normal after 30 minutes, it can be discontinued and IIA resumed. If concerns reoccur at any point in labour, CEFM should then be continued until delivery.

Latent labour

Care planning and monitoring of the fetal heart in the latent phase∞ of labour should be individualised for each woman. If a woman was previously identified to be in latent phase but her labour appears to be establishing fetal monitoring and care in labour should be commenced as per first stage guidelines. It is important to remain alert to possible transitions between different phases of labour and adjust frequency of monitoring accordingly.

∞ Latent labour is defined as a period of time, not necessarily continuous, when there are painful contractions and there is some cervical change, including cervical effacement and dilatation up to 4 cm. [1] NICE 2021

First Stage of Labour

When labour is confirmed a partogram must be started. This will act as a visual prompt to identify any changes from the norm. Blood pressure, temperature and urine output should also be documented 4 hourly on the partogram. Maternal pulse should be recorded hourly in the first stage of labour.

- Auscultation should occur immediately after a contraction for at least 1 minute every 15 minutes. Any delay may mean that the window of opportunity to hear deceleration may be missed, therefore failing to identify the first evidence of hypoxia (Chandaraharan 2017). This is also relevant to the second stage of labour.
- Document the baseline FHR on the partogram.
- Maternal pulse should be documented every hour as a single number in the first stage of labour and every 15 minutes in the second stage of labour in order to differentiate between the maternal pulse and the fetal heart rate.
- An hourly assessment should be carried out and documented in the maternal notes. None of the literature suggests that an assessment of variability can be determined by IIA. Record any accelerations/decelerations heard in the maternal records.
- Use the following CARES review sticker (if stickers are not available scribe the information in the notes) to document auscultation findings;

CARES review	Date	TIME	
Performed by:		Signature	
2nd Midwife - Name		Signature	(every 2 hours)
Baseline FH :		**stable?** yes/no	**Maternal Pulse**:
Concerns identified:	YES (use CARES tool to plan below)		NO
IIA still appropriate : yes/no			

- 2 Hourly CARES Peer review should be undertaken as recommended in Saving Babies Lives Care Bundle version 2 (2019). Appendix 2 In the community setting this would be on arrival of the second midwife and then every 2 hours
- The clinical situation and risk status are continuously evolving during labour and midwives must be alert to such change (SBLCBv2 2019). The Intrapartum risk assessment should be completed 2 hourly and plan adjusted accordingly.

Second stage of labour

It is important to correctly identify the 2nd stage of labour to ensure fetal wellbeing is properly monitored and any FHR abnormality is quickly identified so that appropriate action can be taken. In cases where 2nd stage has not been confirmed with a VE if the midwife suspect's transition from the 1st to the 2nd stage of labour FHR must now be auscultated every 5 minutes.

- Perform intermittent auscultation of the fetal heart rate immediately after palpation of a uterine contraction for at least 1 minute. If uterine contractions are more than 5 minutes apart, the fetal heart rate should be auscultated at least every 5 minutes.

- Palpate and record the maternal pulse every 15 minutes to differentiate between the two heart beats.
- In the event of a FHR anomaly or suspected fetal bradycardia, again palpate the maternal pulse to differentiate between the two heart rates.
- Document both the maternal pulse and the baseline FHR as a singular number rather than a range and plot on the partogram.
- Complete a CARES Peer review every 30 mins in second stage – if unable to be performed, the reason must be documented in the maternal notes.

Gradually Evolving Hypoxia

FHR baseline lowers with gestational age as the autonomic nervous system matures, look back at previous FHR recordings for what is normal for each individual baby. A fetus exposed to Gradually Evolving Hypoxia will release stress hormones (catecholamines) this is reflected in a gradual rise in the FHR baseline. It is vital that this is recognised as this is an attempt by the fetus to compensate therefore action must be taken as follows to improve the uterine environment. The continuing catecholamine surge is energy intensive and if not identified and action taken Gradually Evolving Hypoxia develops into Acute Hypoxia.

If a rising FHR baseline and/or a deceleration is heard action must be taken as follows:

- Auscultate FHR more frequently, for example **immediately** after the next three consecutive contractions
- Review the whole clinical situation including maternal position, hydration, observations and strength, length and frequency of contractions.
- Once action has been taken for correctable causes if a rising FHR baseline or decelerations are confirmed, further actions should include:

    - Summon help
    - Advise CEFM explaining to the woman and her birth companion(s) why it is recommended (NICE 2019)
    - Escalate to the Labour Ward coordinator and, if appropriate, the Obstetrician using the SBAR format.
    - Transfer the woman to obstetric-led care.

Conversion Criteria for changing from IIA to CEFM

During the course of pregnancy or labour the clinical circumstances may change, increasing risk to mother and/or fetus. In this situation, the mother should be informed of the rationale for changing the method of auscultation and should also be clearly documented in the notes.

If CEFM has been commenced due to concerns arising during IIA but the CTG is normal after a minimum of 30 minutes it is deemed suitable to return to IIA. If concerns arise again, CEFM would be recommended until delivery.

If conversion to CEFM is advised but declined, the risks of not continuously monitoring should be explained, and the midwife in charge and obstetric team informed. All discussions must be clearly documented in the notes and made with the woman and her birth partner.

Reasons for changing to CEFM from IIA	
MATERNAL	FETAL
*Pulse over 120 beats/minute on 2 occasions 30 minutes apart	2 x decelerations in FHR heard on intermittent auscultation after 2 successive contractions
*Systolic blood pressure ≥ 160 mmHg or a single reading of diastolic blood pressure ≥ 110 mmHg	FHR below 110 or above 160 beats/minute, or if it is perceived as inappropriate for gestational age
*Systolic blood pressure of 140 to 159 mmHg or diastolic blood pressure 90 to 109 mmHg on 2 consecutive readings taken 30 minutes apart	Evidence of a rising Baseline on the partogram
Maternal pyrexia (>37.8 for 2 hours or 37.5 or more on 2 consecutive occasions 1 hour apart)	Meconium
Any vaginal blood loss other than a show	
Persistent pain in between contractions	
Tachysystole	
Confirmed delay in first or second stage of labour	

*measured between contractions

If CEFM was commenced for suspected FHR abnormality and after 30 minutes the CTG is classified as normal and there are **no other** risk factors, following a 'Fresh eyes' review CEFM can be discontinued and IIA resumed if the woman is in agreement. If there are any additional risk factors the woman must be reviewed by an Obstetrician. This review and subsequent plan must be documented in the woman's Intrapartum records by the person carrying it out (Obstetrician). If the woman wishes to continue with CEFM ensure she has been given the information to make an informed decision and respect her choice.

Efforts should be made to minimise the impact of CEFM on the normal physiology of the mother's labour with regards to mobility, which should be supported with the use of telemetry where possible, the application of FSE or the encouragement to remain mobile within the constraints of the monitor.

Risk Management

Paired cord bloods (from umbilical artery and vein) should be collected and analysed from any baby born with:

- Apgar Score 3 or less at one minute or
- 6 or less at five minutes, and results recorded in maternal records.
- Vaginal breech birth
- Complications in birth e.g. shoulder dystocia
- Instrumental delivery
- All babies born with meconium present in the liquor should have paired cord gases at delivery.

Midwives and obstetricians should complete a Datix in relation to the following incidents:

- Apgar Score of 6 or less at 5 minutes
- Unexpected admission to NNU
- Arterial cord pH <7.05
- Stillbirth

N.B Paired cord bloods would not be expected/feasible in a home birth setting or at SMBC.

PLACENTAS SHOULD BE SENT TO HISTOLOGY FOR ANY UNEXPECTED ADMISSION TO NNU

3. Education and Training

To support the effective use of this guideline, all midwives will receive annual training in Intelligent intermittent auscultation, and forms part of the Directorate's mandatory (maternity specific) fetal monitoring training programme.

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Mandatory training for IIA compliance	Audit	Education Team	Yearly	Head of midwifery and women's board
CARES peer review	Audit	Fetal monitoring midwife	Quarterly	Head of Midwifery and women's board

5. Supporting References

1. National Institute for Health and Clinical Excellence (2017) Intrapartum care: Care of healthy women and their babies during childbirth. London: NICE
2. National Institute for Health and Clinical Excellence (2019) Fetal Monitoring During Labour http://pathways.nice.org.uk/pathways/intrapartum-care
3. Saving Babies Lives Care Bundle version 3 (2023) NHS England
4. Chandraharan, E (2017) Handbook of CTG Interpretation From Patterns to Physiology, Ch 8, pp 55-58
5. East Midlands Clinical Network (2019) Fetal Physiology in relation to Electronic Fetal Monitoring Handbook.

Key Words

Fetal monitoring, intermittent auscultation, CARES, low risk pregnancy

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

DEVELOPMENT AND APPROVAL RECORD FOR THIS DOCUMENT		
Author / Lead Officer:	Sarah Blackwell, Chandrima Roy, Karen Moores	**Job Title:** Fetal Monitoring Guideline and Obstetrician

REVIEW RECORD			
Date	**Issue Number**	**Reviewed By**	**Description Of Changes (If Any)**
02/07/2021	V1.1	S Blackwell	Statements amended: Perform intermittent auscultation of the fetal heart rate immediately after palpation of a uterine contraction for at least 1 minute. If uterine contractions are more than 5 minutes apart, the fetal heart rate should be auscultated at least every 5 minutes. Paired cord bloods would not be expected/feasible in a home birth setting or at SMBC.
04/10/2021	V2	S Blackwell	Added IIA pathway flowchart, identifying care pathway, actions and escalation criteria Removed reference to the use of DR C BRAVADO when using IIA New CARES review sticker
06/10/2021	V2.1	S Blackwell	Typing error amended page 4, Initial assessment, now reads - Count the FH as an average over at least 60 seconds and record as a single number in beats per minute.
29/04/2022	V2.2	L Taylor	Amended actions to be taken when meconium present in line with current related guidance. Removed reference to those with thick or significant meconium to ALL babies born with meconium in the liquor should have paired cord gases.
20/09/2022	V2.3	L Taylor	HIE assessment updated in line with current guidance regarding BMI & DVP risks
May- July 2023 November 2023	V3	S Blackwell F Hills	Reduced fetal movements and maternal pyrexia guidance updated. Updated intrapartum fetal monitoring risk assessment in line with national recommendations – Removed growth of <20g per day after 32 weeks New definition of recurrent reduced fetal movements Added birthing person concern

Appendix 1 – Cares Peer Review

IIA forms part of a complex assessment of fetal wellbeing. The inability to maintain situational awareness and an objective overview of a changing situation leads to failures in recognising evolving problems or the transition from normal to abnormal (MBRRACE-UK, 2017).

The CARES peer Review, is a holistic discussion between the midwife caring for the birthing woman and another midwife or doctor, which includes evaluation of the IIA, review of pre-existing and evolving risk factors and labour progress.

Midwives may choose to discuss the CARE peer reviews with colleagues outside of the birthing room to minimise disruption to the birthing environment.

Where risk factors are identified, escalation to the Labour Ward coordinator and obstetric team should occur and CEFM be commenced on Labour Ward if indicated.

Consideration should be given to provide less experienced midwives with support from a more senior colleague for CARES peer Review.

The CARES peer review should be completed at least 2 hourly and the sticker below fixed in the maternal hand held notes. Using CARES acronym if plan needs to be made

Appendix 2 – Intrapartum risk assessment

Addressograph

INTRAPARTUM RISK ASSESSMENT

PRE-EXISTING RISK FACTORS

- ☐ Previous LSCS
- ☐ Previous Stillbirth
- ☐ Medical disease (e.g. Diabetes, hypertension, see intrapartum care guideline)
- ☐ Maternal age >40
- ☐ BMI >40
- ☐ Multiple Pregnancy
- ☐ Fetal anomaly
- ☐ IVF / ICSI – individualised plan
- ☐ Unbooked people or minimal antenatal care in any country

ANTENATAL SCORE ☐

ADMISSION IN LABOUR OR FOR IOL

- ☐ USS: Growth <10th centile
- ☐ GROW pathway and last scan >4 weeks ago
- ☐ Reduced fetal movements in the 24 hours prior to the onset of regular contractions
- ☐ Recurrent episodes of reduced fetal movements (more than 1 episode in a 21 day period prior to labour)
- ☐ PET or Hypertension requiring medication
- ☐ IOL/Augmentation
- ☐ DVP ≥ 12cm
- ☐ Long Latent phase – 3 admissions in early labour
- ☐ Gestation: <37 weeks or >42weeks
- ☐ ≥24hr ruptured membranes pre-labour

ADMISSION SCORE ☐

Method of Fetal Monitoring (a score ≥ 1 please OFFER continuous monitoring and ensure you provide information leaflet if available)

CTG ☐ IIA ☐

DEVELOPING RISK FACTORS – review hourly in labour with fresh eyes/CARES peer review

DATE / TIME:							
2+ Proteinuria or more							
Raised BP (>140/90 between contractions)							
APH							
Meconium							
Hyperstimulation or tachysystole							
Raised Temp (x2 ≥37.5 for 1 hour or >38 for 30mins)							
Confirmed slow progress in 1st / 2nd stage of labour							
Oxytocin							
Epidural							
Maternal pulse >120bpm (x2 30mins apart)							
Other*							
TOTAL SCORE:							
Is the birthing person concerned?							
Sign / Print							

If a pregnant person has a score ≥ 1 please OFFER continuous monitoring and ensure that you have consent.*This is not an exhaustive list. Please seek advice from midwifery co-ordinator or obstetrician. **For 3rd stage risk assessment please refer to the current PPH risk assessment documentation.**

Title: Intelligent Intermittent Auscultation in Labour UHL Obstetric Guideline V: 3
Trust Ref No: C22/2021 Approved by: UHL Women's Quality & Safety Board: September 2023
Next Review: September 2026
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