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TRUST CLINICAL GUIDELINE

Intrapartum Fetal Heart Monitoring

Overview

This guideline covers methods for monitoring the wellbeing of the baby during labour. It includes risk assessment to determine the appropriate level of fetal monitoring, using clinical assessment in addition to fetal monitoring, and interpreting and acting on monitoring findings.

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Author/further information	Fetal Monitoring Midwives
Guideline version	v1.0
Related policies	None
Related protocols/procedures	**SRH&WH:** **PRH&RSCH:** **UHSx:** Antenatal Fetal Monitoring, Care in labour, Fetal Blood Sampling SOP
Standards	NICE NG229 Fetal monitoring in labour (2022)
Superseded documents	**SRH&WH:** CG1116 Fetal heart monitoring (inc FBS) **PRH&RSCH:** MP037 Fetal heart monitoring, MP038 Fetal blood sampling
Review due	October 2028
Date uploaded	27/10/2025

Approval		
JOGG	Date approved	15/10/2025

Women & Children's Clinical Effectiveness Meeting	Date approved	16/10/2025
Medicines Governance Committee	Date approved	20/10/2025
Consultation		
W&C Pharmacist	Date	19/09/2025
Ratification		
Clinical Document Approval Group	Date approved	22/10/2025

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Intrapartum Fetal Monitoring Guideline

1.0 Introduction

Fetal monitoring is used to monitor the heart rate of the fetus and is used as part of the assessment of the wellbeing of that baby. There are various ways that this can be undertaken, and midwifery and obstetric staff should be familiar with the different techniques.

2.0 Scope

This guideline applies to the following:

- Midwives
- Obstetricians

3.0 Responsibilities

Midwives & 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.

4.0 Abbreviations used within this guideline

bpm Beats per minute	**CEFM** Continuous electronic fetal monitoring
CTG Continuous cardiotocograph	**FBS** Fetal blood sampling
FSE Fetal scalp electrode	**HIV** Human immunodeficiency virus
IA Intermittent auscultation	**IIA** Intelligent intermittent auscultation

5.0 Information and supported decision-making

Fetal monitoring options should be discussed with women and birthing people as part of their antenatal care (NICE, 2022). The decision-making tool BRAINS can be used to assist these discussions (see Care in labour guideline). If women and birthing people are considering

choosing a fetal monitoring option outside of guidance, referral to Consultant Midwives should be offered.

Women and birthing people's decisions about fetal monitoring during labour should be supported. Include birthing companion(s) in these discussions if appropriate, and if that is what the woman or birthing person wants (NICE, 2022).

Throughout labour, women and birthing people should be provided with information on the fetal monitoring method being advised and the reasons for this advice. Keep women and birthing people, and their birthing companion(s) informed about what is happening if additional advice or review is being sought by the care team, for example from a senior midwife or obstetrician (NICE, 2022).

5.1 Discussions when offering fetal monitoring

Explain to women and birthing people that if there are no identified risk factors for fetal compromise:

- There is a risk of increased interventions with continuous cardiotocography (CTG) monitoring compared with intermittent auscultation (IA), which may outweigh the benefits and
- Advice given by their midwife or obstetrician on the method of fetal heart rate monitoring will take into account the whole clinical picture (NICE, 2022).

If there are risk factors, discuss with the woman or birthing person and their birth companion(s) the reasons for offering continuous CTG monitoring, and explain that:

- A combination of antenatal risk factors, intrapartum risk factors and continuous CTG monitoring are used to evaluate the baby's condition in labour.
- Continuous CTG monitoring is used to monitor the baby's heart rate and the labour contractions.
- It may restrict her mobility and the option to labour in water. Telemetry (if available) may reduce restriction of movement (see section 6.2.2).
- A normal CTG trace indicates that the baby is coping well with labour.
- Changes to the baby's heart rate pattern during labour are common and do not necessarily cause concern, however they may represent developing fetal compromise so maintaining continuous CTG monitoring is advised if these occur.
- If the CTG trace changes or is not normal there will be less certainty about the condition of the baby and so maintaining continuous CTG monitoring is advised, in conjunction with a full assessment including checks for developing intrapartum risk factors such as the presence of meconium, sepsis and slow progress in labour.
- Advice about their care during labour and birth will be based on an assessment of several factors, including their preferences, their condition and the condition of their baby, as well as the findings from the CTG (NICE, 2022).

6.0 Methods for fetal monitoring

Fetal heart rate monitoring in labour can be performed by intermittent auscultation or continuous electronic monitoring.

Fetal heart rate monitoring is a tool to provide guidance on fetal condition, and not a standalone diagnostic tool and the findings from monitoring need to be looked at together with the developing clinical picture for both woman/birthing person and baby. There are two methods: intermittent auscultation and continuous electric fetal monitoring (NICE, 2022).

6.1 Intermittent auscultation

Intermittent auscultation is conducted using a pinard stethoscope or handheld doppler ultrasound (e.g. Sonicaid). Normal fetal heart rate is between 110 and 160 bpm.

This can be via either traditional intermittent auscultation (IA), listening and counting for a full minute, or using intelligent intermittent auscultation (IIA), auscultating in 15 second intervals to identify the baseline rate. See appendix 2 for explanation on IIA.

Midwives should use the method of auscultation that they are trained and most comfortable using, and ensure it is clear in their documentation which method they have used.

6.1.1 Indications for intermittent auscultation

Offer women and birthing people with a low risk of complications fetal heart rate monitoring with intermittent auscultation when in established labour (NICE, 2022).

6.1.2 Intermittent auscultation in the first stage of labour

- Carry out intermittent auscultation immediately after a palpated contraction for at least 1 minute, repeated at least once every 15 minutes, and record the fetal heart rate as a single rate in the labour record alongside what equipment was used.
- Record accelerations and decelerations, if heard.
- Palpate and record the maternal pulse hourly, or more often if there are any concerns, to ensure differentiation between the maternal or birthing person and fetal heartbeats.
- If no fetal heartbeat is detected, offer urgent real-time ultrasound assessment to check fetal viability (NICE, 2022).

6.1.3 Intermittent auscultation in the second stage of labour

Once the woman or birthing person has signs of, or is in confirmed second stage of labour (passive or active):

- Perform intermittent auscultation immediately after a palpated contraction for at least 1 minute, repeated at least once every 5 minutes and record the fetal heart rate as a single rate.

- Palpate the woman or birthing person's pulse simultaneously to differentiate between the maternal and fetal heart rates (NICE, 2022). Record maternal and birthing people's pulse every hour.

If outward signs indicate that a woman or birthing person appears to have progressed to the second stage of labour, second stage care should be commenced.

If after 1 hour there are no further signs of progress, then a vaginal examination should be offered. If this examination finds that the woman or birthing person is not in the second stage, the midwife should revert to first stage labour care.

6.2 Continuous electronic fetal monitoring (CEFM)

At UHSussex, CEFM is carried out using by CTG in labour. This records both fetal heart rate using a CTG transducer and uterine activity using a tocodynamometer. A fetal scalp electrode can also be used to monitor the fetal heart rate.

When interpreting how the baby is coping with labour, CTG changes should be reviewed alongside maternal or birthing person, fetal and labour factors, not in isolation. Encourage and help women and birthing people to be as mobile as possible, to find positions that are comfortable for them, and to change position as often as they wish (NICE, 2022).Midwives should endeavour to reduce any restriction of movement as much as possible while using CTG monitoring.

6.2.1 Indications for CTG monitoring

Continuous CTG monitoring should be offered to women and birthing people who have any of the antenatal or developing intrapartum risk factors in table 1 and table 2. Consider a lower threshold for escalation when there are any antenatal or intrapartum risk factors that could lead to fetal compromise (NICE, 2022).

Antenatal Risk Factors	
Maternal	**Fetal**
Previous caesarean birth or other full thickness uterine scar	Non-cephalic presentation (including breech, transverse, oblique and cord), including while a decision is made about mode of birth
Any hypertensive disorder needing medication	Fetal growth restriction (estimated fetal weight below 3rd centile)
Prolonged ruptured membranes (rupture of membranes more than 24 hours **before** the onset of established labour, NICE 2023)	Small for gestational age (estimated fetal weight below 10th centile) with other high-risk features such as abnormal doppler scan results, reduced liquor volume or reduced growth velocity

Any vaginal blood loss other than a show	Advanced gestational age (more than 42+0 weeks at the onset of established labour)
Suspected chorioamnionitis or maternal sepsis	Anhydramnios or moderate/severe polyhydramnios (deepest pool >12 cm) on ultrasound (Karkhanis & Patni, 2014)
Pre-existing diabetes (type 1 or type 2) and gestational diabetes requiring medication.	Reduced fetal movements in the 24 hours before the onset of regular contractions
	Multiple pregnancy

Table 1: Antenatal Risk Factors *(NICE, 2022)*

Developing risk factors
• Contractions that last longer than 2 minutes, or 5 or more contractions in 10 minutes • Maternal pyrexia (a temperature of 38°C or above on a single reading or 37.5°C or above on 2 consecutive occasions 1 hour apart). • Suspected or confirmed chorioamnionitis or sepsis • Pain reported by the woman that appears, based on her description or her previous experience, to differ from the pain normally associated with contractions • Fresh vaginal bleeding that develops in labour • Blood-stained liquor not associated with vaginal examination, that is likely to be uterine in origin (and may indicate suspected antepartum haemorrhage) • Maternal pulse over 120 beats a minute on 2 occasions 30 minutes apart • Severe hypertension (a single reading of either systolic blood pressure of 160 mmHg or more or diastolic blood pressure of 110 mmHg or more, measured between contractions) • Hypertension (either systolic blood pressure of 140 mmHg or more or diastolic blood pressure of 90 mmHg or more on 2 consecutive readings taken 30 minutes apart, measured between contractions) • A reading of 2+ of protein on urinalysis and a single reading of either raised systolic blood pressure (140 mmHg or more) or raised diastolic blood pressure (90 mmHg or more) • Confirmed delay in the first or second stage of labour • Insertion of regional analgesia (for example, an epidural). Perform continuous cardiotocography for at least 30 minutes during establishment of regional analgesia and after administration of each further bolus of 10 ml or more • Use of oxytocin • The presence meconium (see section 6.2.1.1 below)
Be aware that intrapartum risk factors may increase the risk of fetal compromise, and that intrapartum risk factors that develop as labour progresses are particularly concerning.

Table 2: Developing risk factors *(NICE, 2022)*

This list is not exhaustive. Consider continuous CTG monitoring if, based on clinical assessment and multidisciplinary review, there are concerns about other factors not listed above that may lead to fetal compromise (NICE, 2022).

If, after a full discussion of the benefits and risks, a woman or birthing person declines continuous CTG, respect the woman's decision and document discussion.

6.2.1.1 Presence of meconium

When assessing risk at any time during labour, be aware that the presence of meconium:

- Can indicate possible fetal compromise, and
- May lead to complications, such as meconium aspiration syndrome (NICE, 2022).

Consider the character of the meconium as part of the overall clinical assessment, in conjunction with other antenatal or intrapartum risk factors, and discuss the option of CTG monitoring with the woman or birthing person. Recognise that the type of monitoring method used is the woman or birthing person's choice and support their decision (NICE, 2022).

Be aware that meconium is more common post-term but should still trigger a full risk assessment and discussion with the woman or birthing person about the option of CTG monitoring (NICE, 2022).

6.2.1.2 Preterm labour

Decisions around fetal monitoring should be made in conjunction with women and birthing people, and the multi-disciplinary (MDT) team which should include Neonatal staff. Involve a senior obstetrician (ST3 and above or equivalent) in discussions about whether and how to monitor the fetal heart rate for women who are between 23+0 and 25+6 weeks pregnant (NICE, 2015).

Discuss with women in suspected, diagnosed or established preterm labour (and their family members or carers, as appropriate):

- The purpose of fetal monitoring and what it involves.
- The clinical decisions it informs at different gestational ages.
- If appropriate, the option not to monitor the fetal heart rate (for example, at the threshold of viability) (NICE, 2015).

Explain the different fetal monitoring options to the woman or birthing person (and her family members or carers, as appropriate), being aware that:

- There is limited evidence about the usefulness of specific features to suggest hypoxia or acidosis in preterm babies
- The available evidence is broadly consistent with that for babies born at term
- A normal cardiotocography trace is reassuring and indicates that the baby is coping well with labour, but an abnormal trace does not necessarily indicate that fetal hypoxia or acidosis is present (NICE, 2015).

Explain that there is an absence of evidence that using cardiotocography improves the outcomes of preterm labour for the parent or the baby compared with intermittent auscultation. Include family members or carers in the discussion, as appropriate (NICE, 2015).

In established preterm labour with no other risk factors, offer a choice of fetal heart rate monitoring using either:

- Cardiotocography using external ultrasound or
- Intermittent auscultation (NICE, 2015)

6.2.2 Telemetry

Ensure wireless transducers are kept charged and maintained so that they are ready to use (NICE, 2022).

Switch from wireless to wired transducers as soon as possible if there is signal loss which is not resolved by reducing the distance between the base unit and the woman, in order to confirm whether or not there is a clinical problem (NICE, 2022).

6.2.3 Fetal scalp electrodes (FSE)

An FSE can be used to provide continuous CTG monitoring when a satisfactory trace cannot be obtained using an external abdominal transducer. Risks and benefits should be explained to women and birthing people when offering or recommending an FSE.

On removing an FSE either during labour or after birth, ensure that it is carefully disposed of in the appropriate sharps bin.

Contra-indications for the use of a Fetal Scalp Electrode:

- Maternal or birthing person infection (i.e. HIV, hepatitis viruses, herpes simplex virus).
- Placenta praevia is present or suspected.
- When woman or birthing person is a confirmed carrier of haemophilia and fetus is affected, or status is unknown.
- Mal-presentation (i.e. face, breech, shoulder, or any other presentation) or when it is not possible to identify fetal presenting part (NHS Wales, 2023).

Do not use a FSE if the woman or birthing person is less than 34+0 weeks pregnant unless all of the following apply:

- It is not possible to monitor the fetal heart rate using either external CTG or intermittent auscultation.
- It has been discussed with a senior obstetrician.
- The benefits are likely to outweigh the potential risks.
- The alternatives (immediate birth, intermittent ultrasound and no monitoring) have been discussed with the woman or birthing person and are unacceptable to her (NHS Wales, 2023).

6.2.4 General principles

Review the previous fetal heart rate monitoring results, including any previous CTG traces, as part of the hourly risk assessment and in conjunction with other antenatal or intrapartum risk factors (see section 6.2.1) and determine if there are any changes in baseline fetal heart rate, variability or decelerations (NICE, 2022).

- Differentiate between the maternal or birthing person and fetal heartbeats hourly, or more often if there are any concerns in the first stage of labour. Record fetal heart rate on the labour record every hour (see Care in labour guideline).
- In the second stage, ensure the fetal heart rate is differentiated from the maternal or birthing person heart rate at least once every 5 minutes. Record the maternal or birthing person pulse every hour (see Care in labour guideline). It is particularly important to confirm the fetal heart rate in the second stage of labour, when it is easier to mistakenly auscultate maternal or birthing person rather than fetal heart rate. Consider monitoring the baby with a fetal scalp electrode if there is concern about confusing the heart rates, but if this cannot be achieved expedite birth.
- If there are changes in the fetal heart rate pattern over time which indicate a change in the baby's condition, review antenatal or intrapartum risk factors for hypoxia.
- If there is a stable baseline fetal heart rate between 110 and 160 beats a minute and normal variability, continue usual care as the risk of fetal acidosis is low (NICE, 2022).

Ensure that the CTG trace is of high quality and, if not, take action to improve the trace (for example, by repositioning the tocodynamometer, the transducer or by using a fetal scalp electrode) (NICE, 2022). See appendix 3:

Appendix 3: Troubleshooting poor CTG quality.

Escalate to the obstetric team when the quality of CTG monitoring does not enable a systematic assessment (therefore fetal wellbeing cannot be assured) and other options, including fetal scalp electrode have been explored.

When reviewing CTG traces:

- Evaluate changes on traces over time to ascertain changes in the baby's condition.
- Document any changes in the CTG trace from the previous review.
- Review the changes alongside any existing and new intrapartum risk factors.
- Think about the possible reasons for any changes and take these and the whole clinical picture into account when planning ongoing care (NICE, 2022).

6.2.5 Features and categorisation of Intrapartum CTGs

The 4 features of the CTG trace (contractions, baseline fetal heart rate, variability, decelerations) should be categorised as white, amber or red (indicating increasing levels of concern) and used alongside consideration of the presence of accelerations to classify the overall CTG trace (NICE, 2022).

Feature	White	Amber	Red
Contractions	Fewer than 5 contractions in 10 minutes.	• 5 or more contractions in 10 minutes. • Hypertonus (contractions lasting 2 minutes or longer).	
Baseline fetal heart rate	Stable baseline of 110 to 160 beats a minute.	• Increase in baseline fetal heart rate of 20 beats a minute or more from the start of labour or since the last review an hour ago. • 100 to 109 beats a minute*. • Unable to determine baseline.	• Below 100 beats a minute. • Above 160 beats a minute. • Increase in baseline fetal heart rate of 20 beats a minute or more from the start of labour or since the last review an hour ago in the **active second stage of labour.**
Variability	5 to 25 beats a minute.	• Fewer than 5 beats a minute for between 30 and 50 minutes. • More than 25 beats a minute for up to 10 minutes.	• Fewer than 5 beats a minute for more than 50 minutes. • More than 25 beats a minute for more than 10 minutes. • Sinusoidal.
Decelerations	No decelerations.	• Repetitive variable decelerations with any	• Repetitive variable decelerations with any

	Early decelerations. Variable decelerations that are not evolving to have concerning characteristics*.	concerning characteristics* for less than 30 minutes. • (Non-repetitive) variable decelerations with any concerning characteristics* for more than 30 minutes, or • Repetitive late decelerations for less than 30 minutes.	concerning characteristics* for more than 30 minutes. • Repetitive late decelerations for more than 30 minutes. • Acute bradycardia, or a single prolonged deceleration lasting 3 minutes or more.
Accelerations	• The presence of fetal heart rate accelerations, even with reduced variability, is generally a sign that the baby is healthy. • The absence of accelerations on an otherwise normal CTG trace does not indicate fetal acidosis.		
*Concerning characteristics of decelerations: • Lasting more than 60 seconds. • Reduced variability within the deceleration. • Failure or slow return to baseline fetal heart rate. • Loss of previously present shouldering.			

Table 3: Features and categorisation of Intrapartum CTG (NICE, 2022)

CTG categorisation should form part of the ongoing review of women and birthing people during labour (see section 7.2 and section 7.3).

Take into account any change in the categorisation of the CTG alongside other antenatal and intrapartum risk factors for hypoxia (NICE, 2022). CTGs should be classified as follows:

Normal	Suspicious	Pathological
No amber or red features. All 4 features are white.	Any 1 feature is amber.	Any 1 feature is red. 2 or more features are amber.

Table 4: Overall Categorisation of Intrapartum CTGs (NICE, 2022)

6.2.6 Special considerations in the second stage of labour

Take into account that interpretation of CTG traces in the second stage of labour is more challenging than in the first stage of labour and onset of hypoxia is both more common and more rapid in the active second stage of labour. Have a lower threshold for seeking a second opinion or assistance (NICE, 2022).

In the second stage of labour:

- If fetal heart rate accelerations are recorded, be aware that these are most likely to be maternal or birthing person pulse.
- If fetal heart rate decelerations are recorded, look for other signs of hypoxia (for example, a rise in the baseline fetal heart rate or a reduction in variability) (NICE, 2022).

6.2.7 TREND analysis function

Sonicaid TREND measures fetal heart rate parameters at regular intervals, and describes the trace in a way that is quantitative and not qualitative. Trend is not intended as a replacement for skilled visual interpretation of the trace, but it can help long-term changes in the fetal heart rate pattern to be assessed (Huntleigh, 2023).

The use of TREND is not mandated, but clinicians may choose to use it to support CTG categorisation. Trend does not replace the requirement for hourly holistic reviews and peer reviews.

Note: Trend is **only** valid during the first stage of labour

For more information see appendix 5.

7.0 Assessment in labour

Fetal heart rate monitoring is a tool to provide guidance on fetal condition, and not a standalone diagnostic tool, therefore the findings from monitoring need to be looked at together with the developing clinical picture for both woman and baby (NICE, 2022).

Ensure one-to-one support is maintained by having a midwife remain with the woman or birthing person throughout labour. If the midwife needs to leave the room or there needs to be a change in staff, ensure the woman or birthing person knows this is happening (NICE, 2022). If 1:1 care cannot be facilitated this should be escalated as per Maternity Escalation Policy.

7.1 Initial assessment

When conducting an in-person initial assessment of women and birthing people in suspected labour, a full review should be conducted (see Care in labour guideline). This should include a review of antenatal and intrapartum risk factors for fetal compromise to determine whether intermittent auscultation or cardiotocography (CTG) should be offered as the initial method of fetal heart rate monitoring (see section 6.1.1 and section 6.2.1) (NICE, 2022). Once established labour has been confirmed, a formal intrapartum risk assessment must be documented on Badgernet (see appendix 7).

Confirm with the woman which method of fetal monitoring has already been advised as part of their personalised care plan (NICE, 2022).

Explain to the woman that risk assessment is a continual process, and the advised method of fetal heart rate monitoring may change throughout the course of labour (NICE, 2022).

7.2 Holistic review

Holistic review forms part of routine care provided by midwives during labour. Holistic risk assessments should be performed hourly during labour by the midwife leading care, regardless of birth environment and risk status of the individual throughout labour (NHS England, 2025), or more frequently if there are concerns.

Holistic reviews should consider at each assessment:

- Maternal or birthing person and fetal antenatal risk factors.
- New or developing intrapartum risk factors.
- Review of partogram (including maternal or birthing person observations) and progress in labour including characteristics of contractions (frequency, strength and duration).
- Fetal heart rate monitoring, including changes to the fetal heart rate pattern (this includes full categorisation of the CTG trace if on continuous monitoring) (NICE, 2022).

The following factors may also be considered:

- Analgesia/coping strategies
- Bladder care
- Hydration and nutrition
- Liquor concerns
- Fluid balance (this should be reviewed 4 hourly for women and birthing people receiving midwifery-led care and every hour for women and birthing people under obstetric-led care. See Hyponatraemia in labour guideline.)
- Any concerns that the woman or birthing person and their birth partners may have (NHS England, 2025).

Discuss with the woman or birthing person any changes identified since the last review, and the implications of these changes. Include birthing companion(s) in these discussions if appropriate and if that is what the woman or birthing person wants. Recommendations about care in labour should be based on her preferences (NICE, 2022). If any new or developing intrapartum risk factors emerge, the Intrapartum Risk Assessment should be repeated.

See appendix 8 for how to document these reviews on BadgerNet Maternity.

7.3 Peer review or “Fresh Eyes”

Peer review, or “Fresh Eyes”, of the holistic review are designed to reduce the risk of misinterpretation of clinical situations including fetal heart monitoring which stem from factors such as fatigue, familiarity or lack of knowledge.

Peer reviews should:

- Be an in-person review of the holistic assessment (NICE, 2022).

- Involve a discussion between the midwife caring for the woman or birthing person and another midwife or doctor, as well as the woman or birthing person (NHS England, 2025).
- Be conducted within the birthing room.

This should be undertaken:

- At least 4 hourly when IA is utilised (NICE, 2022).
- At least hourly in the first stage of labour when CTG monitoring is used (NICE, 2022).
- Every 30 minutes in the second stage of labour when CTG monitoring is used.

At a homebirth, if there is only one midwife in attendance, the peer review or fresh eyes should be conducted via telephone with the labour ward coordinator.

See appendix 8 for how to document these reviews on BadgerNet Maternity.

8.0 Making care decisions based on the fetal heart monitoring

8.1 Concerns during intermittent auscultation

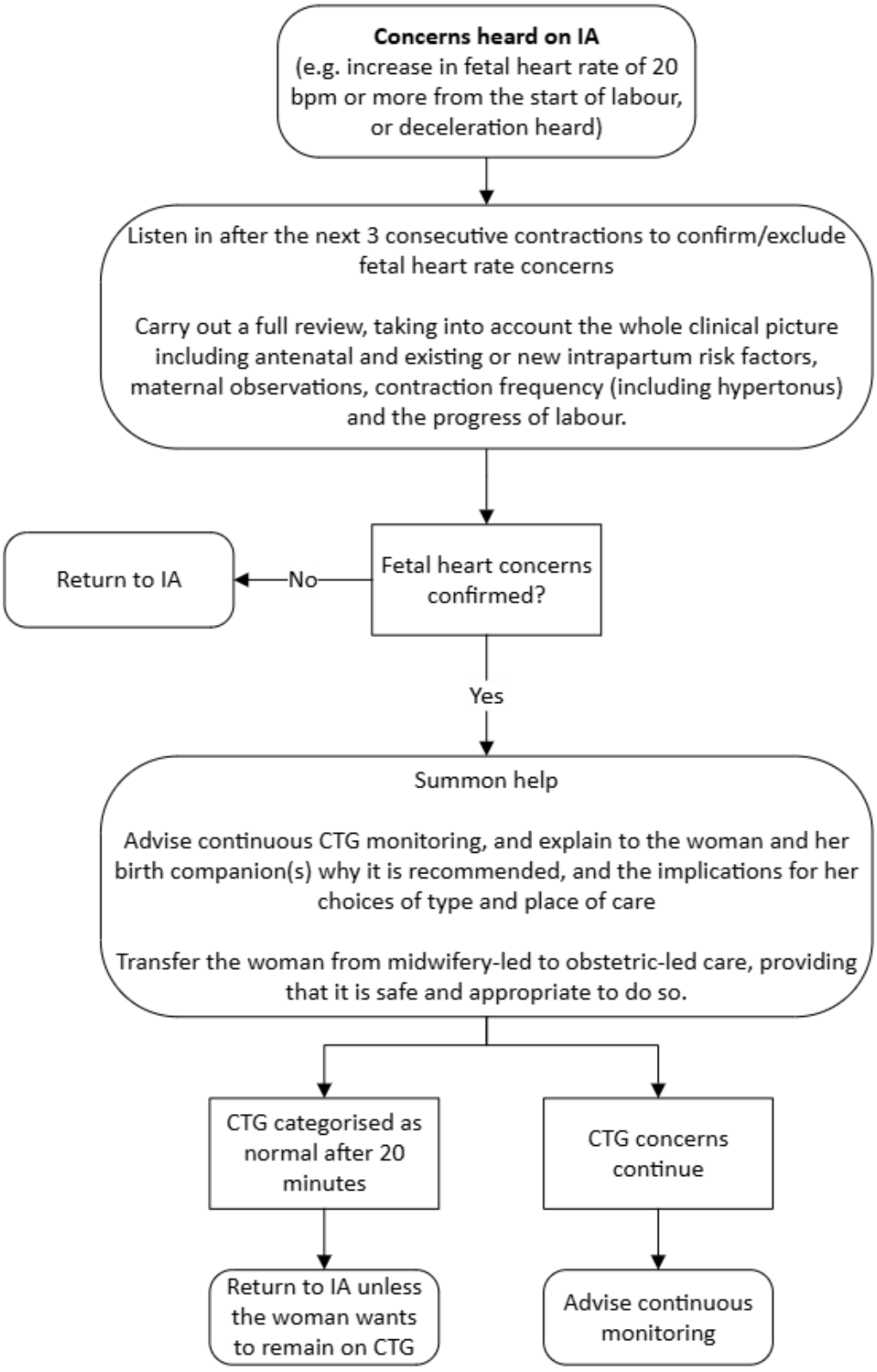

Figure 1: Flowchart for management of concerns during intermittent auscultation (NICE, 2022)

8.2 Actions following CTG categorisation

Assess fetal wellbeing every hour, taking into account antenatal and intrapartum risk factors, in conjunction with interpretation of the CTG trace (NICE, 2022).

Take the whole clinical picture into account when making decisions on how to manage the labour, including maternal observations, contraction frequency and labour progress (NICE, 2022).

Discuss with the woman or birthing person and their birth companion(s) what is happening, taking into account her individual circumstances and preferences, and support her decisions (NICE, 2022).

Classification	Plan
Normal	• Continue CTG (unless it was started because of concerns arising from intermittent auscultation and there are no ongoing antenatal or intrapartum risk factors) and usual care. • Continue to perform a holistic review and Peer review at least hourly and document the findings.
Suspicious and no other concerning risk factors	• Perform a full risk assessment, including a full set of maternal observations, taking into account the whole clinical picture, and document the findings. • Note that if accelerations are present then fetal acidosis is unlikely. If the CTG trace was previously normal, consider possible underlying reasons for the change. • Undertake conservative measures as indicated (see the section on underlying causes and conservative measures).
Suspicious and additional intrapartum risk factors such as slow progress, sepsis or meconium	• Perform a full risk assessment, including a full set of maternal observations, taking into account the whole clinical picture, and document the findings. • Consider possible underlying causes, and undertake conservative measures as indicated (see section 8.2.2). • Obtain an urgent review by an obstetrician or a senior midwife. • Consider fetal scalp stimulation (see the section on fetal scalp stimulation) or expediting birth.
Pathological	• Obtain an urgent review by an obstetrician and a senior midwife. • Exclude acute events (for example, cord prolapse, suspected placental abruption or suspected uterine rupture) that need immediate intervention. • Perform a full risk assessment, including a full set of maternal observations, taking into account the whole clinical picture, and document the findings. • Consider possible underlying causes and undertake conservative measures as indicated (see section 8.2.2).

Pathological after implementing conservative measures	• Obtain a further urgent review by an obstetrician and a senior midwife. • Evaluate the whole clinical picture and consider expediting birth • if there are evolving intrapartum risk factors for fetal compromise, have a very low threshold for expediting birth.
Acute bradycardia, or a single prolonged deceleration for 3 minutes or more	• Urgently seek obstetric review. • If there has been an acute event (for example, cord prolapse, suspected placental abruption or suspected uterine rupture), expedite the birth. • Consider possible underlying causes and undertake conservative measures as indicated (see section 8.2.2). • Make preparations for an urgent birth, including a request for paediatric or neonatal support. • Expedite the birth if the acute bradycardia persists for 9 minutes, or less if there are significant antenatal or intrapartum risk factors for fetal compromise. • If the fetal heart rate recovers at any time up to 9 minutes, reassess any decision to expedite the birth, but take into account other antenatal and intrapartum risk factors and discuss this with the woman or birthing person.

Table 5: Recommended actions following CTG categorisation (NICE, 2022)

If a decision is made to expedite birth, ensure the time at which urgent review was sought, and the time the decision was made, are documented (NICE, 2022).

8.2.1 Specific CTG concerns

If there are any concerns with the CTG:

- Perform full risk assessment
- Explain to the woman or birthing person what is happening (NICE, 2022).

Concern	Action
5 or more contractions per 10 minutes	• Take action to reduce contraction frequency as described in the section on underlying causes and conservative measures. • Ensure that they have adequate pain relief.
Rise in baseline heart rate of less than 20 beats per minute	• Consider if there is a developing infection or hypoxia.
Baseline fetal heart rate between 100 and 109 beats a minute	• Although this is an amber feature, continue usual care if baseline has been stable throughout labour and there is normal variability and no variable or late decelerations.

Concerns differentiating between the maternal heart rate and the fetal heart rate	Discuss with the woman or birthing person the methods available to differentiate and support her decision on which method to use. Options include: • Fetal heart rate auscultation with a Pinard stethoscope. • Bedside ultrasound scanning. • Continuous maternal heart rate monitoring (using a pulse oximeter or the facility on the CTG equipment). • Fetal heart rate detection using a fetal scalp electrode which is attached to the baby's head (but be aware this may detect maternal or birthing person heart rate if there is no fetal heartbeat, so should always be used in conjunction with maternal or birthing person heart rate monitoring). • Simultaneous palpation of the woman or birthing person's pulse while listening to the fetal heart rate. • If concerns remain, or if a fetal heart cannot be heard, obtain an urgent review by an obstetrician or senior midwife.
Isolated reduction in variability to fewer than 5 beats per minute for more than 30 minutes when combined with antenatal or intrapartum risk factors **OR** **Reduction in variability to fewer than 5 beats per minute combined with other CTG changes, particularly a rise in the baseline fetal heart rate**	• Obtain an **urgent** review by an obstetrician or senior midwife and consider expediting birth. • If there is an absence of variability, carry out a review of the whole clinical picture with a low threshold for expedited birth, as this is a very concerning feature.
Recurrent decelerations for more than 30 minutes and any other CTG changes	• Start conservative measures. • Obtain an **urgent** obstetric review. Take into account antenatal and intrapartum risk factors, such as suspected sepsis, the presence of meconium, slow progress of labour or the use of oxytocin, to determine whether there is a need for expedited birth. • Take into account that the longer and later the individual decelerations, the higher the risk of fetal compromise (particularly if the decelerations are accompanied by a rise in the baseline, a tachycardia or reduced or increased variability).
Variable decelerations with no concerning characteristics and no other	• Be aware that these are very common, can be a normal feature in an otherwise uncomplicated labour and birth, and are usually a result of cord compression.

CTG changes, including no rise in the baseline fetal heart rate	• Support the woman or birthing person to change position or mobilise.

Table 6: Suggested actions following specific CTG concerns or features (NICE, 2022)

If CTG concerns arise in the **active second stage** of labour:

- Obtain an obstetric review.
- Consider discouraging pushing and stopping any oxytocin infusion to allow the baby to recover, unless birth is imminent.
- Agree and document a clear plan with time limits for the next review (NICE, 2022).

8.2.2 Underlying causes and conservative measures

If there are any concerns about the baby's wellbeing, be aware of the possible underlying causes and start 1 or more of the following conservative measures based on an assessment of the most likely cause(s) (NICE, 2022).

Underlying cause	Conservative measures to correct
Maternal or birthing person position (as this can affect uterine blood flow and cord compression)	Encourage the woman or birthing person to mobilise, or adopt an alternative position, and to avoid being supine.
Hypotension	If the woman or birthing person is hypotensive secondary to an epidural top-up, start intravenous fluids, move her to a left lateral position and call an anaesthetist to review. Do not offer intravenous fluids to treat fetal heart rate abnormalities unless the woman or birthing person is hypotensive or has signs of sepsis.
Excessive contraction frequency	Reduce contraction frequency by reducing or stopping oxytocin if it is being used. Offer a tocolytic drug (subcutaneous terbutaline 250 micrograms).

Table 7: Underlying causes and management (NICE, 2022)

Do not offer maternal facial oxygen therapy as part of conservative measures because it may harm the baby. However, it can be used if it is given for maternal or birthing person issues such as hypoxia, or as part of preoxygenation before a potential anaesthetic (NICE, 2022).

8.2.3 Fetal scalp stimulation

If the CTG trace is suspicious with antenatal or intrapartum risk factors for fetal compromise, then consider digital fetal scalp stimulation. If this leads to an acceleration in fetal heart rate and a sustained improvement in the CTG trace, continue to monitor the fetal heart rate and clinical picture (NICE, 2022).

Be aware that the absence of an acceleration in response to fetal scalp stimulation is a worrying sign that fetal compromise may be present, and that expedited birth may be necessary (NICE, 2022).

8.3 Managing differences of opinion

If there are any differences of opinion when concerns are raised, a senior opinion should be called to provide another opinion and a fresh perspective. Please see Conflict of clinical opinion guideline.

One tool that may be used is “Teach or Treat” (see appendix 9). Teach or treat is an escalation tool developed by the RCOG with the RCM and Every Baby Counts (RCOG, 2022).

8.4 Fetal blood sampling

Due to a lack of robust evidence, NICE do not make any recommendation regarding the use of fetal blood sampling in labour (NICE, 2022).

UHSx does not recommend fetal blood sampling, unless in exceptional circumstances, which should be clearly documented. If a FBS is carried out this must be discussed and agreed with the Consultant on-call. Resident doctors in obstetrics are currently not being trained in fetal blood sampling, so the consultant may need to take the sample themselves. Refer to Fetal Blood Sampling (FBS) SOP.

8.5 Paired cord blood samples

Paired cord blood samples should be taken in all cases where there has been concern about the baby either in labour or immediately following the birth:

- All emergency caesarean births.
- Instrumental births (where there has been suspected fetal compromise).
- If the baby is born in poor condition (the Apgar score at 1 minute is 5 or less).
- Premature births
- Following FBS
- Vaginal breech birth
- Complications e.g. shoulder dystocia

Paired cord blood samples should also be considered if there have been significant CTG concerns during labour, for example if a tocolytic was required during labour. See appendix 10.

9.0 Monitoring

Issue being monitored	**Monitoring method**	**Responsibility**	**Frequency**	**Reviewed by and actions arising followed up by**
SBL Element 4 and incident reviews	Audit	Fetal Wellbeing Midwives	Quarterly	SBL quarterly reports and assurance meetings

Appendix 1: Setting up a CTG

1. If provided, ensure the Ethernet cable is inserted into the moxibox assigned to the room/bed/assessment space.

2. Turn on the machine.

3. Ensure the date and time are correct on the machine, and adequate paper is available. If using the printer, it must be set to run at 1cm per minute.

4. Input patient name, hospital number (or NHS number) and gestational age. Use the scan EDD. DO NOT use LMP.

5. Manually palpate the maternal radial pulse to differentiate between fetal heart and maternal heart rates and document on trace. If differentiating is difficult, ensure maternal pulse is recording on the trace by applying the pulse oximeter probe.

6. Perform a full abdominal palpation and auscultate FHR by sonicaid or pinard before commencing the CTG to confirm fetal heart rate sounds.

7. Position the toco and ultrasound transducers. Dawes Redman Criteria cannot be met with >10% loss of contact – therefore reposition transducers if contact is poor.

8. Press the ‘print’ icon to commence the trace for a paper copy.

9. Ensure the correct patient details and gestation are input to the corresponding room/bed/assessment space on SonicCentrale.

Appendix 2: Intelligent Intermittent Auscultation

The aim of IIA is to identify the baseline rate and the presence of accelerations or decelerations. These are features of gradually evolving hypoxia, the most common form of hypoxia during labour. There is an emphasis on identifying the baseline heart rate. Please see the training package on e-lfh for how to undertake IIA:

https://www.e-lfh.org.uk/programmes/intelligent-intermittent-auscultation-in-labour/

Appendix 3: Troubleshooting poor CTG quality

Possible cause	Actions required
Poor contact from abdominal transducer	• Perform an abdominal palpation and listen to FH with a Pinard stethoscope or handheld Doppler and re-position transducer. • Consider requesting a bedside USS to aid re-positioning the transducer. • If there is no improvement offer fetal scalp electrode (FSE), explaining the importance of a quality trace for correct classification. • Ensure differentiating maternal or birthing person and fetal heart rate by using maternal pulse oximeter if available or palpating maternal pulse.
FSE not working or detached	• Listen with transducer, check position of FSE. • Consider changing FSE lead or machine. • Ensure the correct consumables are being used for this function.
Loss of contact using telemetry	• Check that both transducers are fully charged. • Ensure antenna on CTG is in line of sight with the pregnant woman or birthing person. • If in the pool, move the machine closer to the pool for better signal. • Revert to wired CTG if LOC continues.

Appendix 4: Definitions, features and categorising of CTGs

The 4 features of the CTG trace (contractions, baseline fetal heart rate, variability, decelerations) should be categorised as white, amber or red (indicating increasing levels of concern) and used alongside consideration of the presence of accelerations to classify the overall CTG trace (NICE, 2022).

Baseline

Determine baseline fetal heart rate by looking at the mean fetal heart rate, excluding accelerations and decelerations, over a period of 10 minutes when the fetal heart rate is stable.

Lower baseline fetal heart rates are expected with post-term pregnancies, with higher baseline rates in preterm pregnancies.

Variability

Determine variability by looking at the minor oscillations in the fetal heart rate, which usually occur at 3 to 5 cycles a minute. Measure it by estimating the difference in beats per minute between the highest heart rate and the lowest heart rate in a 1-minute segment of the trace between contractions, excluding decelerations and accelerations.

Take the following into account when assessing fetal heart rate variability:

- Variability will usually be between 5 and 25 beats a minute.
- Intermittent periods of reduced variability are normal, especially during periods of quiescence ('sleep').
- Certain medicines, such as opioids, may lead to a reduction in variability, but all other intrapartum risk factors should be carefully reviewed as a potential cause (for example, look for other features on the CTG such as a rise in the baseline fetal heart suggestive of another reason such as sepsis).
- Increased variability refers to oscillations around the baseline fetal heart rate of more than 25 beats a minute, and shorter episodes lasting a few minutes may represent worsening fetal condition.

Decelerations

Define decelerations as transient episodes when the fetal heart rate slows to below the baseline level by more than 15 beats a minute, with each episode lasting 15 seconds or more. An exception to this is that in a trace with reduced variability, decelerations may be 'shallow'. [2022]

When assessing the significance of decelerations in fetal heart rate, consider:

- Their timing (early, variable or late) in relation to the peaks and duration of the contractions.
- The duration of the individual decelerations.
- Whether or not the fetal heart rate returns to the baseline heart rate.

- How long they have been present for.
- Whether they occur with over 50% of contractions (defined as repetitive).
- The presence or absence of shouldering.
- The variability within the deceleration.

Describe decelerations as 'early', 'variable' or 'late'.

Take the following into account when categorising early decelerations:

- They are uncommon, benign and usually associated with head compression.
- They are not accompanied by any other CTG changes, such as reduced variability or a rise in the baseline fetal heart rate.

Appendix 5: TREND analysis function

Sonicaid Trend is a software option available with all Team3 series monitors.

For information on how to use and access: https://www.huntleigh-diagnostics.com/wp-content/uploads/2024/09/777919EN-2_TEAM_3_Fetal_Monitor_IFU-42131f94-1.pdf

Appendix 6: FSEs - Information and how to apply

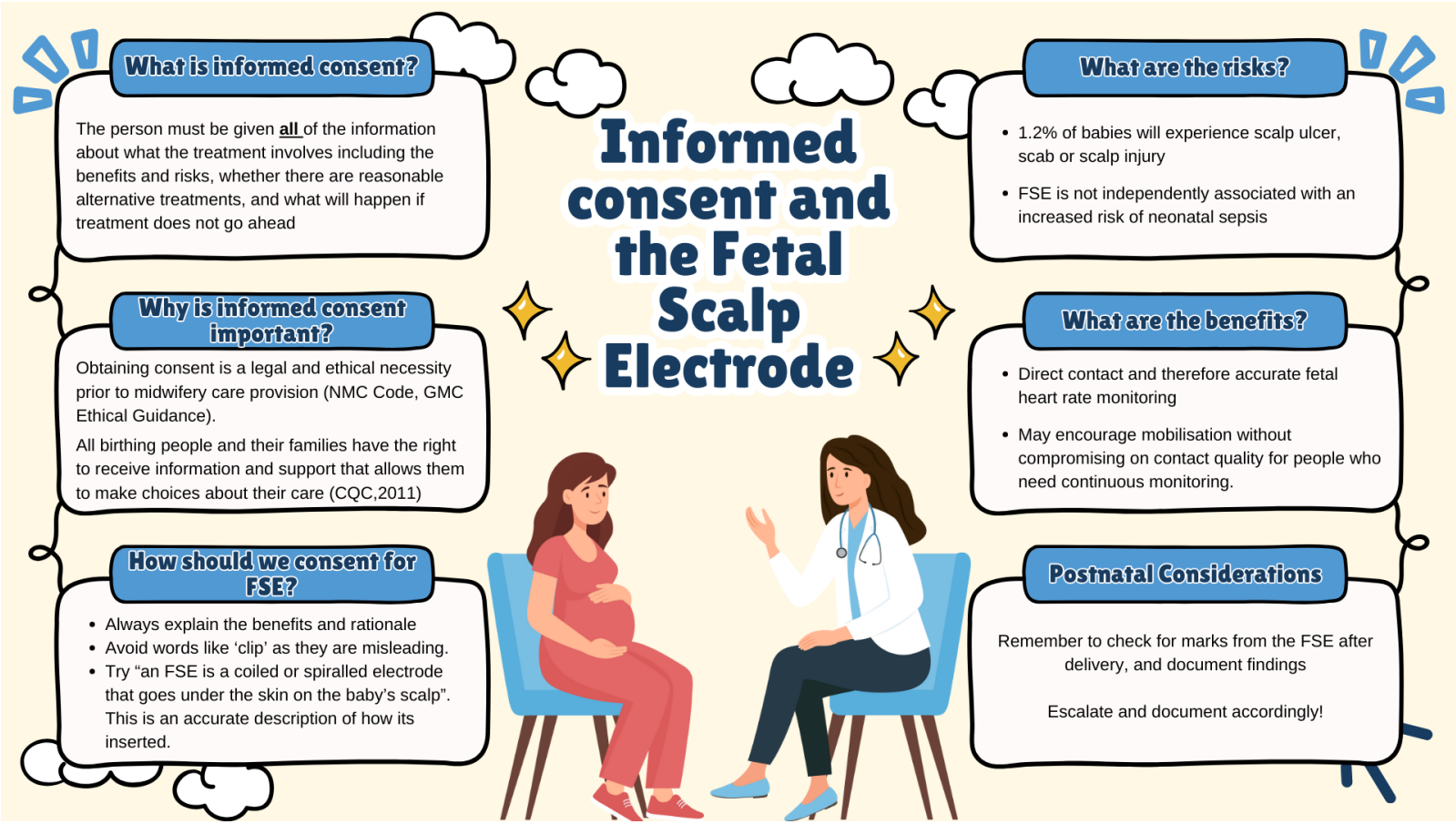

Figure 2: Informed consent and the fetal scalp electrode. Inspired by infographic accessed via NHS Futures Fetal Wellbeing Network.

There are currently two types of FSE in circulation, detailed instructions on how to apply, use and remove are given in the below instructional videos.

[Rocket Medical Clinical Videos - Rocket Medical Copeland(R) Fetal Scalp Electrode on Vimeo (vimeopro.com)]

[Goldtrace « Neoventa Medical]

Appendix 7: Intrapartum Risk Assessment

Intrapartum Risk assessment should be documented in the Risk Assessment form on Badgernet (Figure 3).

- Prepopulated risks should be reviewed.
- Any risk factors that are no longer applicable should be removed.
- Any new risk factors should be entered.
- If there are no risk factors within a category “None” should be selected. This demonstrates all risk categories have been reviewed.
- Risk must be categorised (high or normal low) to confirm the overall risk in labour. This will also help inform fetal monitoring recommendations.
- Within the “Labour Assessment form”, ensure the Risk Level For Monitoring is completed (Figure 4).

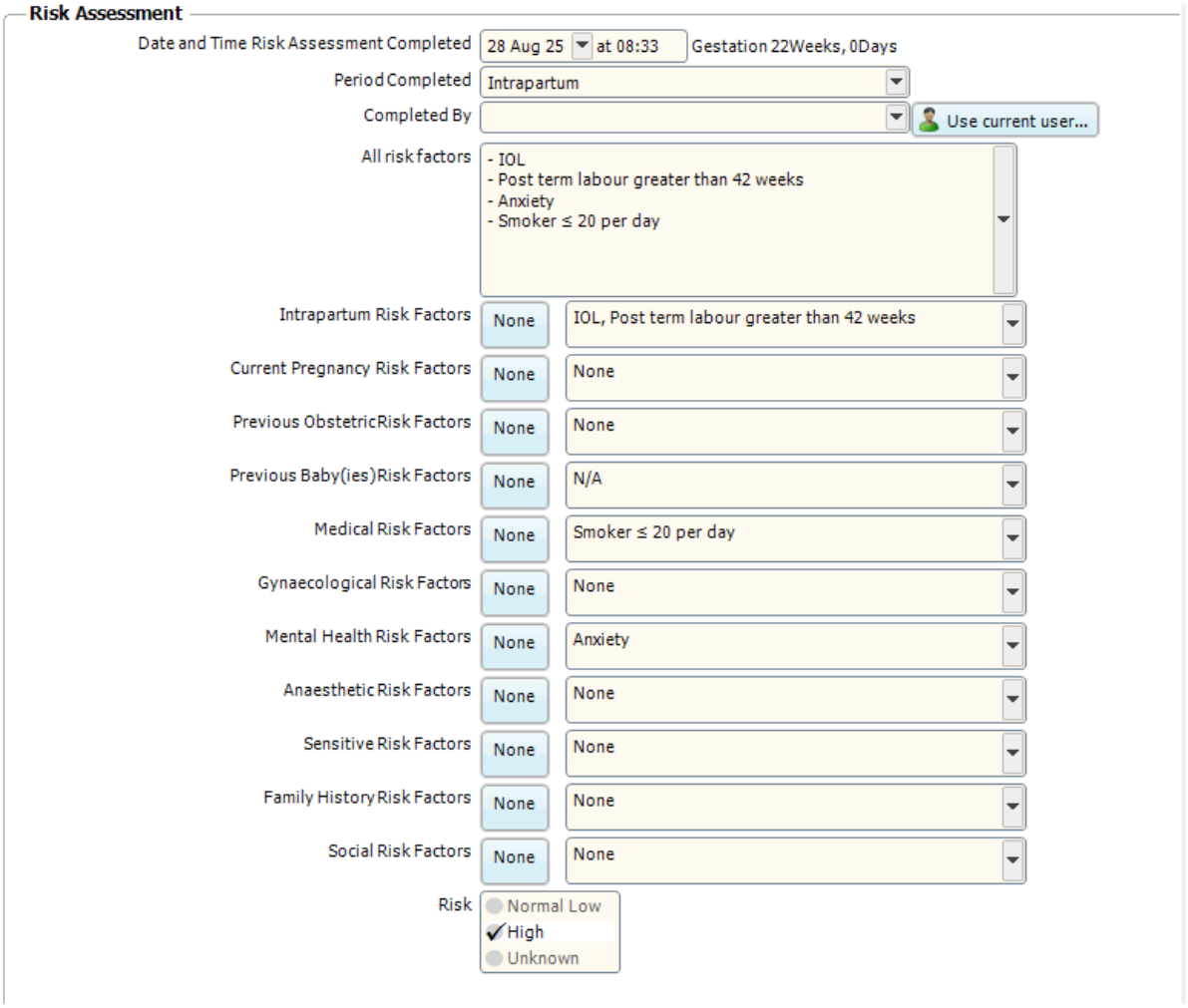

Figure 3: Example of completed Intrapartum Risk Assessment on Badgernet

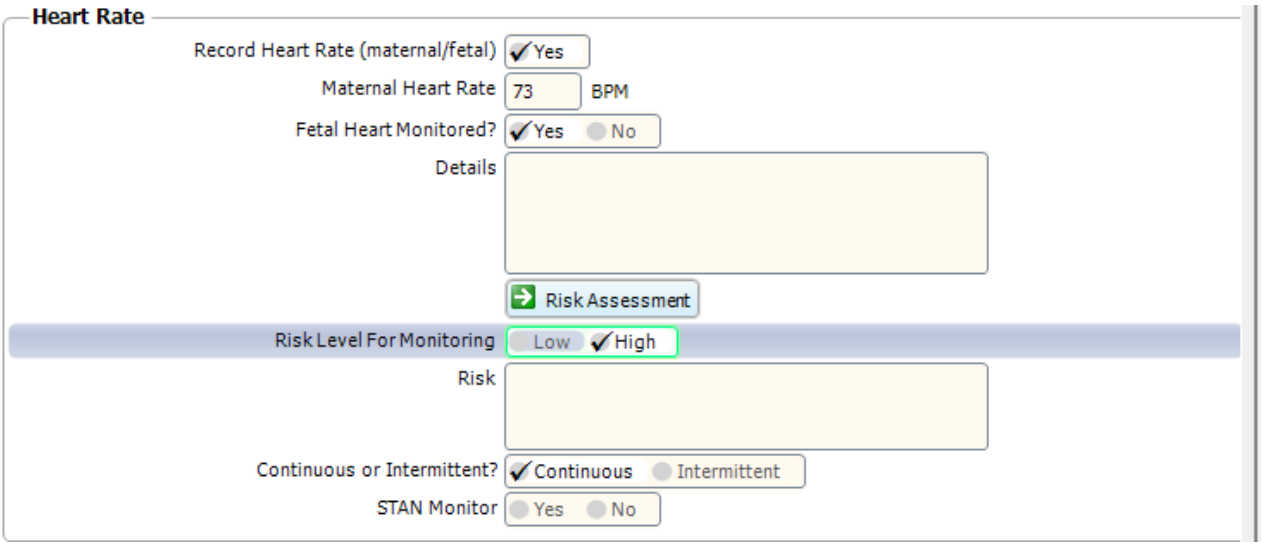

Figure 4: Screenshot of Risk Level for Monitoring question within Labour Assessment

Appendix 8: Documenting Holistic and Peer "Fresh Eyes" reviews

IA

Hourly holistic reviews, encompassing all the elements as outlined in 7.2, should be documented within the additional notes section of "Labour Assessment" form on Badgernet (Figure 5).

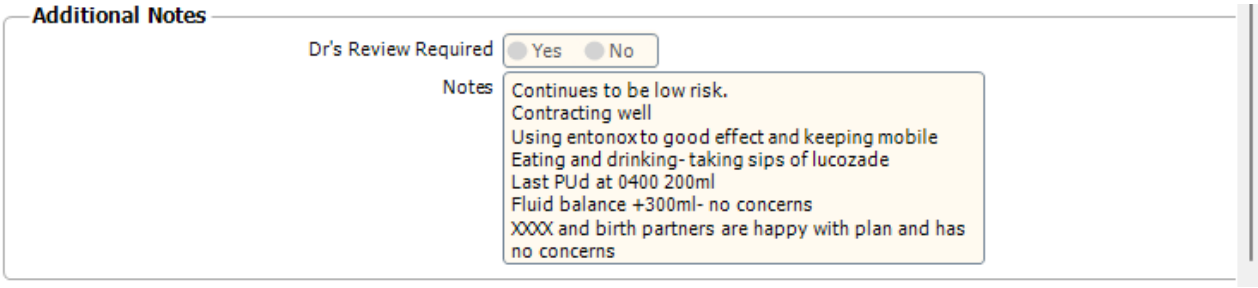

Figure 5: Screenshot of Additional Notes section of "Labour Assessment" form on Badgernet

Peer review or fresh eyes should be documented as an Intermittent peer review within the "Labour Assessment" form (Figure 6). The discussion between the midwife leading care and another midwife should be documented within this comments box, and the second clinician should authorise this.

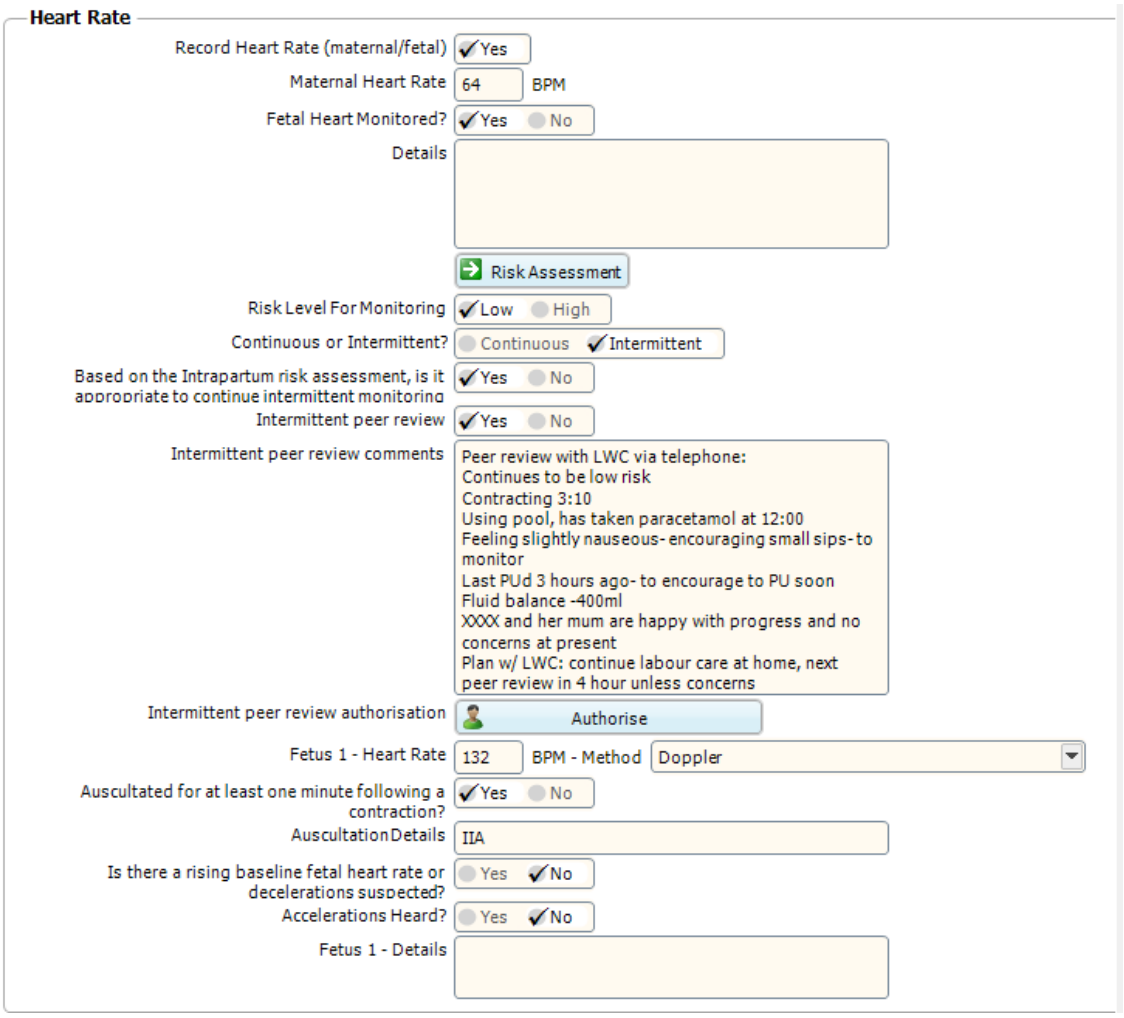

Figure 6: Screenshot of Badgernet Intermittent peer review

CTG

- Holistic reviews and peer reviews should be documented in the "CTG review" form, and Peer CTG Review should be selected (Figure 7).
- CTG features should be assessed using the drop-down boxes for each fetus, and the CTG categorised.
- Additional detail of the holistic review should be written within the additional notes box.
- Peer reviews by the obstetric team during ward rounds should be documented within "Intrapartum Obstetric Review" forms.

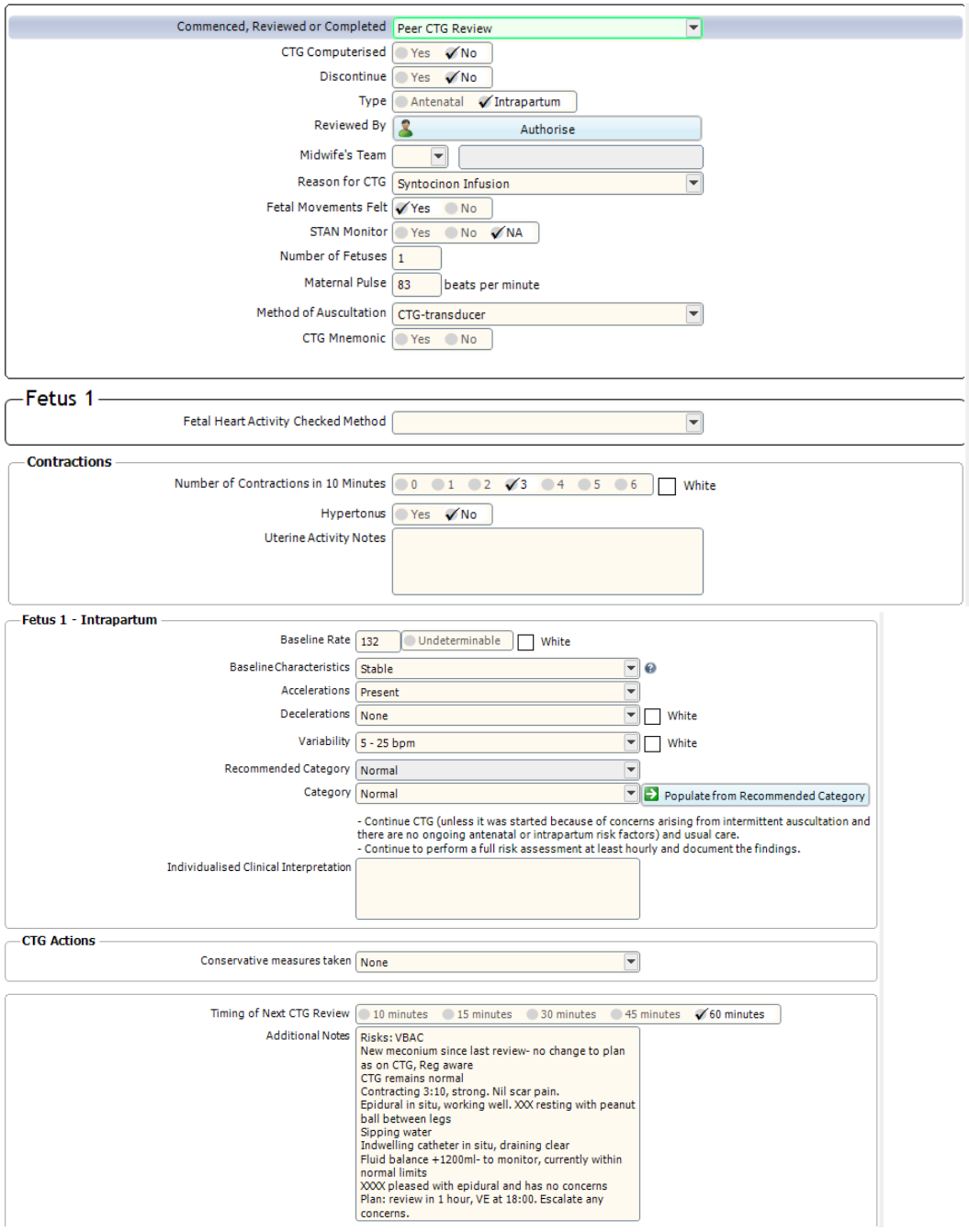

Figure 7: Screenshot of Peer CTG Review form on Badgernet

Appendix 9: Teach or Treat

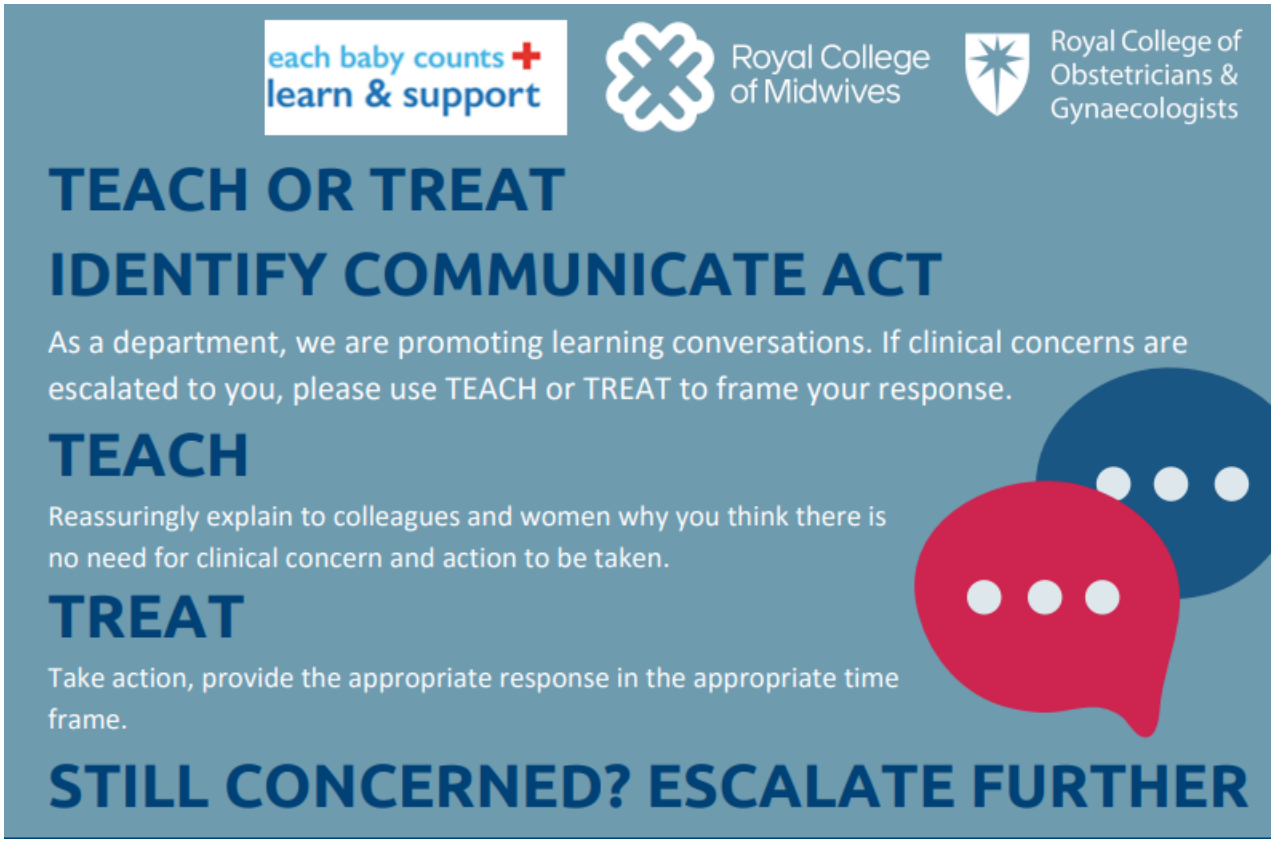

Figure 8: Teach or treat tool (RCOG, 2022)

The person being escalated to "teaches" the other member of staff and the woman or birthing person about their interpretation of current fetal wellbeing. This has 2 benefits:

- If they have missed crucial information or made an incorrect assessment, it provides an additional opportunity to have a more thorough comprehension of the clinical scenario.
- If their holistic assessment has taken everything into account and there is good evidence of fetal wellbeing, it provides a learning opportunity for the other, potentially more junior member of staff, as well as empowering the woman about her care.

Appendix 10: Procedure for taking cord blood

- Procedure should be explained to the parents and consent obtained.
- The need to take paired cord blood samples should not prevent optimal cord management.
- Following birth and before placental separation, a segment of cord of at least 6 inches, where possible, should be isolated between 2 sets of clamps. The segment of cord is then excised for immediate sampling, placed in a receiver and given to a midwife/support worker trained in cord sampling and analysis.
- Using universal precautions, the cord should be wiped clean of blood and amniotic fluid with a dry swab. Using 2 heparinised syringes with 21-gauge needles, blood is withdrawn first from the umbilical artery and then from the vein. (The distended vein stabilises the artery and makes access easier). The needle should be inserted almost parallel to the vessels. As an aid to sample identification, a larger quantity of blood should be taken from the vein.
- Any air bubbles should be expelled from the syringes and both samples analysed (artery first)
- Input woman or birthing person's details and input the sample details into gas analyser
- In relation to cord blood results, clinically well babies require a paediatric opinion when the pH is less than 7 or base excess -16 or lower.

Guideline Version Control Log

Version	Date	Author	Comment
1.0	September 2025	Fetal Wellbeing Midwives	New Trust wide guideline replacing: • CG1116 Fetal heart monitoring (inc FBS) (SRH&WH) • MP037 Fetal heart monitoring, MP038 Fetal blood sampling (PRH&RSCH)

Due Regard Assessment Tool

To be completed and attached to any guideline when submitted to the appropriate committee for consideration and approval.

		Yes/No	Comments
1.	**Does the document/guidance affect one group less or more favourably than another on the basis of:**		
	Age	*No*	
	· Disability	*No*	
	· Gender (Sex)	*No*	
	· Gender Identity	*No*	
	· Marriage and civil partnership	*No*	
	· Pregnancy and maternity	*No*	
	· Race (ethnicity, nationality, colour)	*No*	
	· Religion or Belief	*No*	
	· Sexual orientation, including lesbian, gay and bisexual people	*No*	
2.	**Is there any evidence that some groups are affected differently and what is/are the evidence source(s)?**	*No*	
3.	**If you have identified potential discrimination, are there any exceptions valid, legal and/or justifiable?**	*NA*	
4.	**Is the impact of the document likely to be negative?**	*No*	
5.	**If so, can the impact be avoided?**	*NA*	
6.	**What alternative is there to achieving the intent of the document without the impact?**	*NA*	
7.	**Can we reduce the impact by taking different action and, if not, what, if any, are the reasons why the guideline should continue in its current form?**	*NA*	
8.	**Has the document been assessed to ensure service users, staff and other stakeholders are treated in line with Human Rights FREDA principles (fairness, respect, equality, dignity and autonomy)?**	*Yes*	

If you have identified a potential discriminatory impact of this guideline, please refer it to [Insert Name], together with any suggestions as to the action required to avoid/reduce this impact. For advice in respect of answering the above questions, please contact uhsussex.equality@nhs.net 01273 664685).

Dissemination, Implementation and Access Plan

To be completed and attached to any guideline when submitted to Corporate Governance for consideration and TMB approval.

	Dissemination Plan	**Comments**
1.	Identify:	
	Which members of staff or staff groups will be affected by this guideline?	Midwives and obstetricians
	How will you confirm that they have received the guideline and understood its implications?	Dissemination through the usual communication channels and highlighted at Safety Huddles.
	How have you linked the dissemination of the guideline with induction training, continuous professional development, and clinical supervision as appropriate?	All new members of staff are shown where to access Clinical documents that are relevant to their area of practice.
2.	How and where will staff access the document (at operational level)?	Accessed by staff via Sharepoint.

		Yes/No	**Comments**
3.	Have you made any plans to remove old versions of the guideline or related documents from circulation?	Yes	Previous versions will be archived as part of the uploading onto sharepoint process.
4.	Have you ensured staff are aware the document is logged on the organisation's register?	Yes	Dissemination plan includes notifying staff via email, departmental noticeboards, and safety huddles.

Additional guidance and information

Huntleigh. (2023). *Team 3 Fetal Monitor: Instructions for use*. https://www.huntleigh-diagnostics.com/wp-content/uploads/2024/09/777919EN-2_TEAM_3_Fetal_Monitor_IFU-42131f94-1.pdf

Karkhanis, P., & Patni, S. (2014). Polyhydramnios in singleton pregnancies: perinatal outcomes and management. *The Obstetrician & Gynaecologist*, *16*(3), 207–213. https://doi.org/10.1111/tog.12113

NHS England. (2025). *Saving babies' lives: version 3*. https://www.england.nhs.uk/long-read/saving-babies-lives-version-3-2/

NHS Wales. (2023). *Fetal Monitoring Guideline*. https://wisdom.nhs.wales/health-board-guidelines/cwm-taf-maternity-file/fetal-monitoring-guideline/

NICE. (2022). *NG229 Fetal monitoring in labour*. www.nice.org.uk/guidance/ng229

RCOG. (2022). *Escalation Toolkit: Teach or Treat*. https://www.rcog.org.uk/about-us/quality-improvement-clinical-audit-and-research-projects/each-baby-counts-learn-support/escalation-toolkit/teach-or-treat/