University Hospitals of Derby and Burton NHS Foundation Trust

Fetal Monitoring in Labour
Full Clinical Guideline
Interim guideline prior to Badgernet launch

Reference no.: UHDB/IP/04:24/F2

Contents

1. Introduction

Fetal heart rate monitoring is the process of checking the condition of baby in pregnancy, during labour and delivery by monitoring its heart rate. It can be done by auscultation, periodically listening in, or by continuous monitoring and the appropriate recommended option is essential and should be based on the level of risk of fetal compromise.

2. Purpose and Outcomes

To improve the standard of fetal monitoring, especially intrapartum, through providing Midwives and Obstetricians useful protocols and clear criteria for identifying the fetus at risk of acidosis. This guidance should serve as practical assistance for the MDT in identifying the fetus at risk of hypoxia and provide guidance on management and appropriate responses to the normal, suspicious and pathological fetal heart beat traces – to reduce perinatal mortality and morbidity.

3. Abbreviations

AN	-	Antenatal
BPM	-	Beats per minute
CS	-	Caesarean Section
CTG	-	Cardiotocograph
EFM	-	Electronic Fetal Monitoring
FBS	-	Fetal Blood Sample
FHR	-	Fetal Heart Rate
FSE	-	Fetal Scalp Electrode
FSS	-	Fetal Scalp Stimulation
IA	-	Intermittent Auscultation
IP	-	Intrapartum
IUGR	-	Intra Uterine Growth Restriction
PET	-	Pre Eclampsia
ROM	-	Rupture of membranes
SFGA	-	Small for Gestational Age
SFH	-	Symphysis Fundal Height
SLE	-	Systemic Lupus Erythematosus
SVD	-	Spontaneous Vaginal Delivery

4. Fetal Monitoring in Labour

- On admission in labour a full risk assessment and review of antenatal history is required as well as a full set of observations and abdominal palpation. Close attention to history of fetal movements and listening to any concerns the woman may have is essential.

- Recommend fetal monitoring by intermittent auscultation in the absence of risk factors for fetal compromise. Explain to women that if there are no identified risk factors for fetal compromise, there is a risk of increased interventions with continuous CTG monitoring compared with intermittent auscultation, which may outweigh the benefits and advice she is given by her midwife or obstetrician on the method of fetal heart rate monitoring will consider the whole clinical picture.

- Recommend continuous fetal monitoring by CTG in the presence of risk factors for fetal compromise as per Appendix A. Ensure one-to-one support is maintained by having a midwife remain with the woman throughout labour.

Fetal Monitoring & informed choice

Discuss with the woman and her 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
- 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 her care during labour and birth will be based on an assessment of several factors, including her preferences, her condition and the condition of her baby, as well as the findings from the CTG.

- Ensure wireless transducers are kept charged and maintained so that they are ready to use. Switch from wireless to wired transducers as soon as possible if there is signal loss.

4.1 Intermittent Auscultation in Labour

Basic standards for auscultation:

- Auscultation by pinard or doppler (Sonicaid, except initial auscultation)
- Count the fetal heart rate and document as a single number.
- If using a Doppler do not rely on the range shown on the screen
- Auscultation needs to be for a minimum of 1 minute.
- Palpate maternal pulse on the initiation of each auscultation to differentiate.
- Palpate maternal pulse throughout auscultation if a fetal heart rate abnormality is suspected.
- 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.

In case of suspected rise in baseline fetal heart rate, slow recovery or persistent accelerations (overshoot) after contractions, actions to clarify the suspected pattern should include:

- Auscultation throughout the next three contractions
- carry out a full review, considering the whole clinical picture including antenatal and existing or new intrapartum risk factors, maternal observations, contraction frequency (including hypertonus) and the progress of labour.

If additional reassurance is required, further actions should include:

- Inform the coordinator.
- Advise continuous monitoring and explain to the woman and her birth partner why this is needed (For both IA & CEFM)
- Transfer the woman to the consultant lead delivery suite (if not already there) if considered safe and appropriate.
- If CTG is abnormal, SBAR handover to obstetrician.
- If CTG is normal, care may be converted back to original plan of care if no other concerns arise.

On initial assessment, assess and confirm suitability for intermittent auscultation:

- Auscultate between contractions to begin to establish a baseline fetal heart rate.
- Document acceleration from assumed baseline if heard.

During first stage of labour:

- Auscultate at least every 15 minutes, immediately following a contraction.
- Record accelerations and decelerations if heard.

During second stage of labour (including passive):

- Auscultate immediately following each contraction, minimum every 5 minutes.
- Record accelerations and decelerations if heard.
- Document all factors to be considered such as any activity at the time, progression of labour and return of the heart rate to the assumed baseline.

4.2 Continuous Electronic Fetal Monitoring

If CTG monitoring has been started because of concerns arising from intermittent auscultation and the trace is normal after a minimum of 20 minutes, return to intermittent auscultation unless the woman asks to stay on continuous monitoring. If not reassured within 50 minutes seek obstetric review.

Basic documentation standards for EFM:

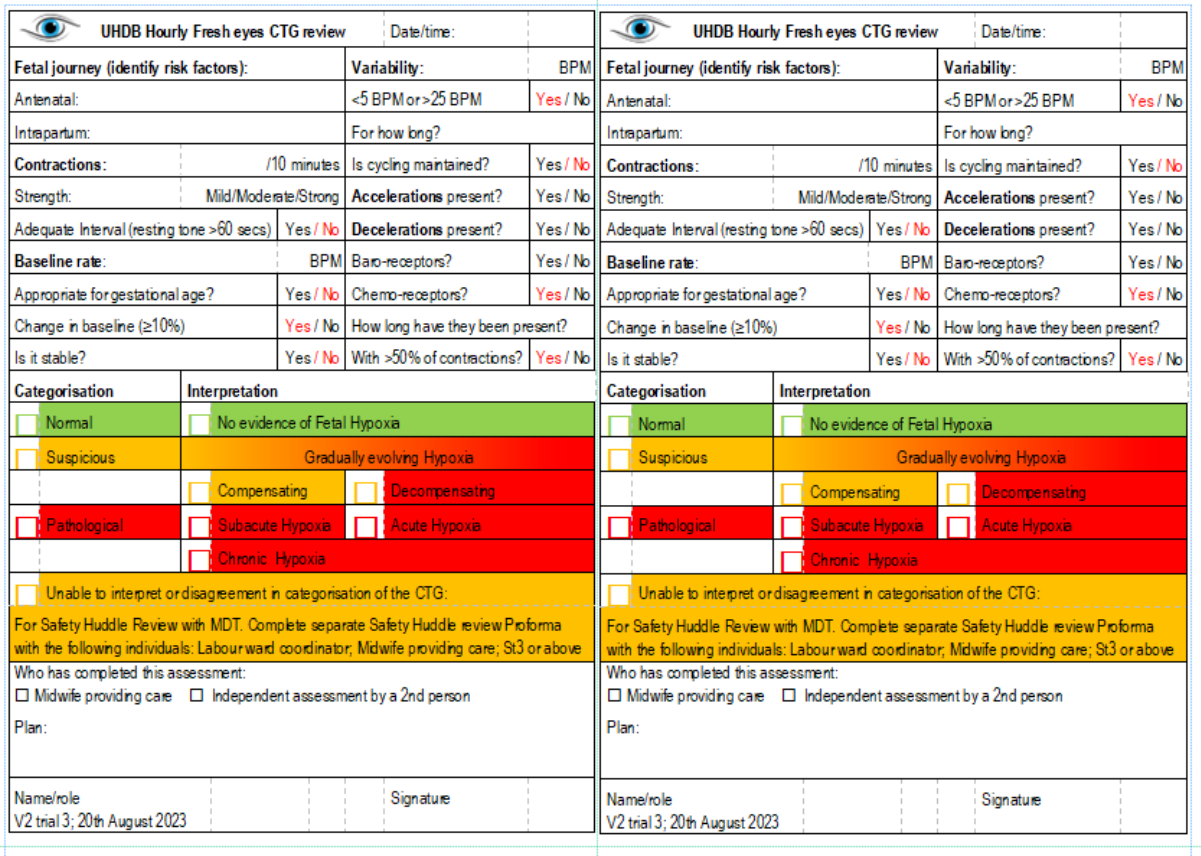
- Record the woman's details (name, hospital number, maternal pulse with date and time taken) on the central monitoring systems.
- Check time and date of the monitor compared to hospital clocks.
- Check paper trace speed is at 1cm/min
- Record and sign all significant events or changes on the paper trace.
- At the completion of the recording the following needs to be recorded:
  - Date and time CTG stopped.
  - Date and time of birth if applicable.
  - Mode of delivery if applicable

4.2.1 Review of Continuous Fetal Monitoring in Labour

Review CTG trace as a minimum as following:

- Half hourly review documented on the Partogram by the midwife delivering one to one care for this woman.
- 2 identical fresheye's review stickers must be completed independently hourly:
  - 1 by the midwife caring for the woman.
  - 1 by an independent midwife or doctor who is not caring for the women.
- If there is an uninterpretable CTG or a variance in categorisation of the CTG then a safety huddle must be completed immediately.
- Discuss the results of each hourly assessment with the woman and base recommendations about care in labour on her preferences.
- CTGs should be reviewed in the room taking account of full clinical picture, and not from the central monitoring station.

4.3 Interpretation and Management of Suspected Fetal Hypoxia / Acidosis – Fresh eyes review



UHDB Hourly Fresh eyes CTG review		Date/time:	
Fetal journey (identify risk factors):		**Variability:**	BPM
Antenatal:		<5 BPM or >25 BPM	Yes / No
Intrapartum:		For how long?	
Contractions:	/10 minutes	Is cycling maintained?	Yes / No
Strength:	Mild/Moderate/Strong	**Accelerations** present?	Yes / No
Adequate Interval (resting tone >60 secs)	Yes / No	**Decelerations** present?	Yes / No
Baseline rate:	BPM	Baro-receptors?	Yes / No
Appropriate for gestational age?	Yes / No	Chemo-receptors?	Yes / No
Change in baseline (≥10%)	Yes / No	How long have they been present?	
Is it stable?	Yes / No	With >50% of contractions?	Yes / No

Categorisation	Interpretation	
☐ Normal	No evidence of Fetal Hypoxia	
☐ Suspicious	Gradually evolving Hypoxia	
	☐ Compensating	☐ Decompensating
☐ Pathological	☐ Subacute Hypoxia	☐ Acute Hypoxia
	☐ Chronic Hypoxia	
☐ Unable to interpret or disagreement in categorisation of the CTG:		

For Safety Huddle Review with MDT. Complete separate Safety Huddle review Proforma with the following individuals: Labour ward coordinator; Midwife providing care; St3 or above

Who has completed this assessment:
☐ Midwife providing care ☐ Independent assessment by a 2nd person

Plan:

Name/role Signature

V2 trial 3; 20th August 2023

UHDB Hourly Fresh eyes CTG review		Date/time:	
Fetal journey (identify risk factors):		**Variability:**	BPM
Antenatal:		<5 BPM or >25 BPM	Yes / No
Intrapartum:		For how long?	
Contractions:	/10 minutes	Is cycling maintained?	Yes / No
Strength:	Mild/Moderate/Strong	**Accelerations** present?	Yes / No
Adequate Interval (resting tone >60 secs)	Yes / No	**Decelerations** present?	Yes / No
Baseline rate:	BPM	Baro-receptors?	Yes / No
Appropriate for gestational age?	Yes / No	Chemo-receptors?	Yes / No
Change in baseline (≥10%)	Yes / No	How long have they been present?	
Is it stable?	Yes / No	With >50% of contractions?	Yes / No

Categorisation	Interpretation	
☐ Normal	No evidence of Fetal Hypoxia	
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☐ Pathological	☐ Subacute Hypoxia	☐ Acute Hypoxia
	☐ Chronic Hypoxia	
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V2 trial 3; 20th August 2023

Hypoxia	Features	Management
No hypoxia	✔ Baseline appropriate for gest age ✔ Normal variability and cycling ✔ No repetitive decelerations	⇒ Consider the need to continue CTG monitoring ⇒ Continue with regular review and fresh eye as per guideline
Chronic hypoxia	⇒ Higher baseline then expected for gestational age ⇒ Reduced variability and/or absence of cycling ⇒ Absence of accelerations ⇒ Shallow decelerations	⇒ Avoid further stress ⇒ Expedite delivery if delivery is not imminent
Gradually evolving hypoxia	**Compensated** ⇒ Baseline clearly identifiable but rising (with normal variability) ⇒ Preceded by decelerations and loss of accelerations	⇒ Likely to respond to conservative measures ⇒ Regular review to assess for signs of further hypoxic change and to review effect of conservative measures ⇒ Consider other causes such as reduced placental function/reserve and act accordingly
	Decompensated	⇒ Urgent intervention required to reverse the hypoxic

	• Reduced or increased variability • Unstable/progressive decline in the baseline (step ladder pattern to death)	insult. (e.g. remove propess, stop i.v. syntocinon, consider tocolysis) ⇒ Delivery should be expedited if no signs of improvement are seen
Subacute hypoxia	⇒ More time spent during decelerations than at the baseline ⇒ May be associated with a salutatory pattern	**First stage**
		⇒ Remove propess/stop syntocinon infusion i/a ⇒ If no improvement, consider urgent tocolysis ⇒ If still no evidence of improvement within 10-15 minutes, review situation and expedite delivery
		Second stage
		⇒ Stop maternal active pushing until improvement noted ⇒ If no improvement noted, consider tocolysis if delivery is not imminent or expedite delivery by operative (vaginal) delivery
Acute Hypoxia	Prolonged deceleration	**Preceded by reduced variability and lack of cycling or reduced variability within the first 3 minutes**
		Immediate delivery by the safest and quickest route
		Preceded by normal variability and cycling and normal variability during the first 3 minutes of the deceleration
		⇒ Consider sinister causes: uterine scar dehiscence, abruption, cord prolapse, vasa praevia ⇒ Treat reversible causes (e.g. hyperstimulation, maternal hypotension, supine hypotension, epidural top-up) ⇒ Expect recovery by 6 minutes, if no recovery, plan mode of delivery. Follow 3-6-9-12 plan
Unable to ascertain fetal wellbeing		⇒ Escalate to senior team ⇒ Consider FSE to improve signal quality

* See Appendix D for tips when experiencing problems with the Recording of the Fetal Heart Rate

Do not offer maternal facial oxygen therapy as part of conservative measures because it may harm the baby. Do not offer amnioinfusion for intrauterine fetal resuscitation.

CTG Categorisation and Management:

	NORMAL	SUSPICIOUS	PATHOLOGICAL
Baseline	110-160 BPM	Lacking at least one characteristic of normality, but with **no** pathological features	<100BPM, >160 bpm
Variability	5-25 BPM		• Reduced variability <5BPM * • Increased variability >30 minutes or linked with recurrent decelerations • Sinusoidal pattern
Decelerations	No repetitive decelerations (associated with >50% of contractions)		• Repetitive late decelerations during >30 minutes or 20 minutes if reduced variability • One prolonged deceleration >5minutes (see appendix C)
Interpretation	Fetus with no hypoxia/acidosis	Fetus with low probability of having hypoxia/acidosis	Fetus with a high probability of having hypoxia/acidosis
Management	No intervention necessary to improve fetal oxygenation state	• Action to correct reversible causes if identified. • Close monitoring or additional methods to evaluate fetal oxygenation	• obtain an urgent review by an obstetrician and a senior midwife. • Immediate action to correct reversible causes. • Additional methods to evaluate fetal oxygenation. • If not possible to expedite delivery

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. When deciding if there is any change in baseline fetal heart rate, compare it with earlier CTG traces or recordings of fetal heart rate.

Accelerations-The presence of accelerations denotes a fetus that does not have hypoxia/acidosis, but their absence during labour is of uncertain significance.

Define accelerations as transient increases in fetal heart rate of 15 beats a minute or more, lasting 15 seconds or more.

Take the following into account when assessing accelerations in fetal heart rate: 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.

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.

* Definition of reduced variability is <5 BPM for >50 minutes in baseline segments or for >3 minutes during decelerations. However, during deep sleep variability is usually in the lower range of normality but with the bandwidth seldom <5 BPM. 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.

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'.

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

Consider 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).

Escalation

Obtain an urgent review by a obstetrician or senior midwife and consider expediting birth if: there is an isolated reduction in variability to fewer than 5 beats per minute for more than 30 minutes when combined with antenatal or intrapartum risk factors, as this is associated with an increased risk of adverse neonatal outcomes, or there is a reduction in variability to fewer than 5 beats per minute combined with other CTG changes, particularly a rise in the baseline fetal heart rate, as this is a strong indicator for fetal compromise.

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.

In case of a pathological CTG, 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.

FSE

- If there are concerns about whether the maternal heart rate is being heard rather than the fetal heart rate, discuss with the woman 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 FSE which is attached to the baby's head (but be aware this may detect maternal heart rate if there is no fetal heartbeat, so should always be used in conjunction with maternal heart rate

monitoring), simultaneous palpation of the woman's pulse while listening to the fetal heart rate. If fetal heart rate accelerations are recorded, be aware these are most likely to be maternal pulse.

- Be aware that it is particularly important to confirm the fetal heart rate in the second stage of labour, when it is easier to mistakenly auscultate maternal rather than fetal heart rate. Have a lower threshold for seeking a second opinion or assistance.

- When considering an FSE to improve signal quality, take the following contraindications into consideration:
- Do not use if <34 weeks gestational age unless all the following apply:
    - It is not possible to monitor the fetal heart rate using either external CTG or IA
    - It has been discussed with a senior obstetrician.
    - The benefits are likely to outweigh the potential risks.
    - The alternatives (immediate birth, IA and no monitoring) have been discussed with the woman and are unacceptable to her.
- Maternal blood born disease.
- Maternal blood clotting risk factors
- Known neonatal clotting disorders.

Conservative Measures

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

- encourage the woman to mobilise or adopt an alternative position (and to avoid being supine)

- offer intravenous fluids if the woman is hypotensive

- reduce contraction frequency by:
    - reducing or stopping oxytocin if it is being used and/or
    - offering a tocolytic drug

Inform the co-ordinating midwife and/or senior obstetrician whenever conservative measures are implemented.

Do not use maternal facial oxygen therapy for intrauterine fetal resuscitation.

5. Fetal Scalp Stimulation (FSS) and Fetal Blood Sampling (FBS)

The main purpose of FSS is to distinguish between deep sleep and hypoxia/acidosis in cases of reduced variability. It can reduce the need for an FBS with up to 50%.If FSS 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. 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

- No FBS is needed if it leads to the appearance of an acceleration and subsequent normalisation of the fetal heart pattern.

- FBS should be considered if it does not elicit the appearance of accelerations or when accelerations occur but continued reduced variability ensues.

There is uncertainty on whether the use of FBS as an adjunct to CTG improves neonatal outcome and reduces intervention rates.

- In cases with bradycardia, FBS has no place
- If fetal heart rate recovers, observation for at least 20 minutes is recommended as transient acidaemia is likely shortly after a bradycardic event.

5.1 Practical Aspects of FBS

- Verbal informed consent needs to be obtained from the mother and documented prior to commencing the procedure
- Document the results of the FBS in the labour record, together with the requirement and planned timing of repeated FBS. The result slip should be secured by staples in the appropriate place in the labour notes.
- If after two FBS samples the birth is not imminent, the management plan should be reviewed again with a senior/consultant obstetrician.
- For indications/ contraindications and risk see Appendix D

Remember a CTG may deteriorate further following FBS which may alter the management plan.

5.2 Interpretation of FBS Results

Use either Ph or Lactate when interpreting fetal blood sample results using the following:

pH:

FBS result (pH)	***Lactate result***	***Interpretation***
≥*7.25*	≤ 4.1mmol/l	Normal FBS result. Repeat after 1 hour if CTG remains the same
7.21-7.24	4.2-4.8mmol/l	Borderline FBS result. Repeat after 30 minutes
≤ 7.20	≥4.9 mmol/l	Abnormal FBS result. Consider delivery

Interpret fetal blood sample results taking into account:

- Any previous pH or lactate measurement AND
- The clinical features of the woman and baby, such as the rate of progress in labour

If the fetal blood sample result is abnormal:

- Inform a senior obstetrician, the co-ordinating midwife and the neonatal team
- Explain the findings to the woman and birth partner including care plan advised. Talk to them about what is happening and take her preferences into account
- Expedite birth

If the fetal blood sample result is borderline and there are no accelerations in response to fetal scalp stimulation, consider taking a second sample no more than 30 minutes later if this is still indicated by the CTG trace

If the blood sample result is normal and there are no accelerations in response to fetal scalp stimulation, consider taking a second sample no more than 1 hour later if this is still indicated by the CTG trace.

If a third sample is thought to be needed, an obstetric consultant needs to be advised prior to the procedure.

If the CTG trace remains unchanged and the FBS results is stable (that is unchanged) after a second test, further samples may be deferred unless additional non-reassuring or abnormal features are seen.

If FBS is attempted and a sample cannot be obtained, but the associated fetal scalp stimulation results in a fetal heart rate acceleration, decide whether to continue labour or expedite the birth in light of the clinical circumstances and in discussion with the woman and a senior obstetrician.

6. Cord Sampling

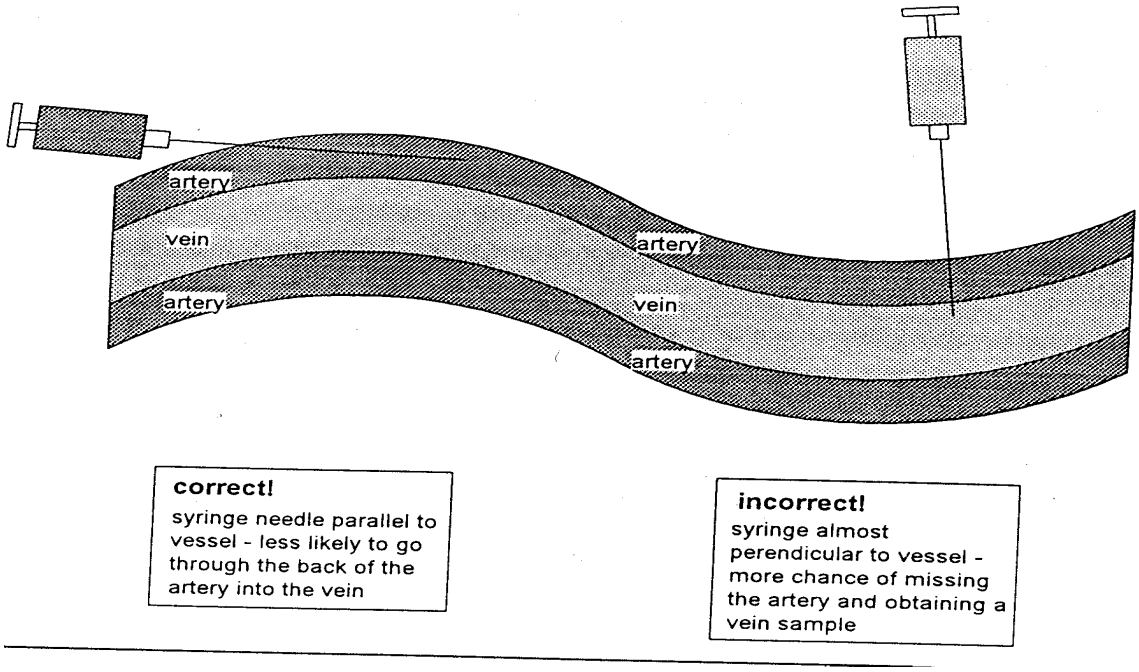
Cord samples to be collected at birth following:

- Apgar score ≤7 at 5 minutes
- IPPV >1 minute
- Antenatal suspicion of: placental insufficiency; EFW <3rd centile, IUGR
- IUGR appearance of baby at birth
- Oligohydramnios
- Operative/instrumental delivery or episiotomy performed for fetal compromise
- Pathological CTG trace
- FBS during labour
- Complications during labour such as shoulder dystocia or vaginal breech
- Intrapartum maternal fever >38°C
- Multiple pregnancy
- Thick meconium or thin meconium needing resuscitation
- Emergency caesarean section grade 1 or 2

It is vital that cord samples are collected properly or any subsequent analysis of results may be incorrect.

Blood must be taken from BOTH an artery and a vein (paired cord samples) and the results checked to ensure separate vessels have been sampled.

- Take blood from an artery first using a pre-heparinised syringe by inserting the needle at an oblique angle (as shown below).
- Repeat procedure to take blood from the vein
- A minimum of 0.5mls of blood is required from each vessel.



Storage & Governance

- Keep cardiotocograph traces for 25 years and, if possible, store them electronically.
- In cases where there is concern that the baby may have sustained a possible brain injury, photocopy cardiotocograph traces (if they are not available electronically) and store them indefinitely in case of possible adverse outcomes.
- Ensure that tracer systems are available for all cardiotocograph traces if stored separately from the woman's records.
- Develop tracer systems to ensure that cardiotocograph traces removed for any purpose (such as risk management or for teaching purposes) can always be located.

7. Monitoring Compliance and Effectiveness

As per the Business Unit audit forward programme

8. References

FIGO consensus guidelines on intrapartum fetal monitoring: Cardiotocography, 2015a

FIGO consensus guidelines on intrapartum fetal monitoring: Physiology of fetal oxygenation and the main goals of intrapartum fetal monitoring, 2015b

FIGO consensus guidelines on intrapartum fetal monitoring: Adjunctive technologies, 2015c

FIGO consensus guidelines on intrapartum fetal monitoring: Intermittent auscultation, 2015d

National Institute for Clinical Excellence (NICE) Clinical guideline CG55. Intrapartum care: management and delivery of care to women in labour. 2017

NICE Fetal monitoring during labour. February 2017

Plymouth Perinatal Research Group (1994-2000) Umbilical Cord Blood Sampling

K2 Medical Systems: Plymouth

Royal College of Obstetricians and Gynaecologists. Scientific Impact Paper No.47 January 2015; is it time for the UK obstetricians to accept fetal scalp lactate as an alternative to scalp Ph?

Risk Factors / Indications for CTG Monitoring during Labour

Maternal indications:

Antepartum haemorrhage
Severe hypertension: systolic **≥**160 or diastolic **≥**110
Hypertension: systolic **≥**140 or diastolic **≥**90 on 2 consecutive occasion/30minutes apart
PET
Diabetes
Previous caesarean
Obesity
Prolonged ruptured membranes (>24 hours at term)
Post term pregnancy ≥42
Other maternal medical condition as per advice consultant
Maternal request
Sepsis

Fetal indications:

Suspected growth restriction
Oligohydramnios/Polyhydramnios
Prematurity <37 weeks
Abnormal dopplers
Reduced fetal movements in 24 hours prior to admission.
Abnormalities heard on IA
Breech
Multiple pregnancy

Intra partum indications:

Labour as a result of Induction of labour (with the exception of ARM only)
Maternal tachycardia >120BPM on 2 occasions 30 minutes apart
Maternal pyrexia (≥38°C on one occasion or ≥37.5 on two with 1 hour apart)
Liquor: offensive, significant meconium, non-significant meconium in the presence of other risk factors, meconium after previous clear liquor, blood stained.
Meconium- 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. Be aware that meconium is more common post-term but should still trigger a full risk assessment and discussion with the woman about the option of CTG monitoring.
Oxytocin augmentation
Fresh vaginal bleeding
Epidural
Hypertonus (contractions lasting >2minutes)
Tachysystole (>5 contractions in 10 minutes)
Pain that differs from the pain normally associated with contractions.
Prolonged 1st & 2nd stage.

Consider continuous CTG monitoring if, based on clinical assessment and multidisciplinary review, there are concerns about other antenatal factors not listed above that may lead to fetal compromise.

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.

CTG Safety Huddle Review Tool

(complete with Labour Ward Coordinator, midwife providing care and ST3 or above)

Name: Hospital no: DOB:

Date and time: Safety Huddle no.:

Reason for Safety Huddle:

Clinical Picture (e.g. meconium, bleeding, infection, NEW risk factors)

Central Organ Oxygenation

Brain:
Variability less than 5 bpm? YES **NO**
Variability greater than 25bpm? YES **NO**
Is there evidence of cycling? YES **NO**
Are there accelerations? YES **NO**

Heart:
Is the baseline appropriate for gestation? YES **NO**

Can you define the baseline? YES **NO**

Is the baseline stable? YES **NO**

Chemoreceptor

Are the decelerations:
Baro-receptor YES **NO**
(Head or cord compression)
Chemo-receptor YES **NO**
(Insufficient utero placental)

How long have the decelerations been present for?

Cumulative Uterine Activity	Catecholamine Release?	Compensating?	
Is there resting tone ≥90 sec?	Is there a rising baseline?	Compensating	
YES NO	YES NO	Decompensating	

Management Plan:

Time of next review:
Escalation to Consultant required? YES **NO**
Safety huddle attended by:

Interpretation of Hypoxic State

Gradually Evolving Hypoxia

Sub Acute

Chronic

No Hypoxia

Person completing safety Huddle:

Signature:

Trial version October 2022

Acute Bradycardia or Single Prolonged Deceleration

If there is an acute bradycardia, or a single prolonged deceleration for 3 minutes or more initiate bradycardia management (if FHR ≥: 15 BPM below baseline for > 3 minutes)

CALL FOR HELP- *senior clinical midwife / obstetric SpR / anaesthetic SpR / paediatrician*

3 minutes:

Consider sinister causes:-

- uterine scar dehiscence
- abruption
- cord prolapse
- vasa praevia

→ **If present or suspected for IMMEDIATE delivery.**

Remember: bradycardias/prolonged decelerations due to non sinister causes would be expected to last 3-6 minutes only. After recovery consider FBS if CTG does not return to normal after 15 minutes.

Consider rapid progress to full dilatation

Treat reversible causes e.g. hyperstimulation, maternal hypotension, supine hypotension, VE, epidural top-up/bolus.

↓

6 minutes

You should expect recovery towards baseline by **6 minutes**

If no recovery → ***Registrar should be planning mode of delivery***

9 minutes

Persistent Bradycardia - fetal acidosis is increased whatever the cause. The lower the heart rate the more rapidly it develops and already compromised fetuses are at greatest risk.

→ ***A decision to deliver urgently should be made by registrar or Consultant***

↓

12 minutes

Aim for delivery plan to be underway

Problems with Recording the Fetal Heart Rate

Problem	Recommended action
No fetal heart rate before the CTG is commenced	• Inform senior doctor and coordinator immediately • Palpate maternal pulse • Doctor to use portable USS at the bedside to visualise fetal heart beat and confirm fetal life • Reposition US transducer on CTG or consider FSE
Erratic recording, loss of contact with external transducer	• Abdominal palpation to local fetal back • Repositioning of US transducer • Readjust belt and ensure there is enough gel present • If recording is still suboptimal, consider locating the FHR with portable USS machine to optimise transducer position • If problem still exists, the membranes are ruptured and there are no contra-indications consider to apply FSE
Erratic or no recording with FSE	• Confirm presence of FHR with auscultation or portable USS • Check that FSE connection is attached to leg plate • Check FSE connection to fetus and replace if it is detached • Check external monitoring is discontinued • Consider exchanging equipment if suspected faulty • If unable to adequately record FH consult senior doctor
Artefacts with FSE	• Confirm presence of FHR with auscultation or portable USS • Reposition FSE and ensure it is not attached over membranes or close to cervix or vaginal walls
Document any difficulties recording the FHR and any actions taken to rectify this, including others present in the room to assist with this.	

FBS – Contra-indications - Risks

Considerations:

- During or immediately after fetal bradycardia. If the bradycardia resolves and a FBS is deemed necessary, a period of 20 minutes should elapse to enable the fetus to clear the resultant oxygen debt.
- When the clinical picture demands early delivery
- When delivery is indicated for other reasons
- Where NVD or easy instrumental vaginal delivery is possible
- Where CTG abnormalities may be due to external factors such as uterine hyperstimulation, supine position, maternal hypotension/dehydration, maternal pain or anxiety. These factors should first be corrected
- Prior to established labour with cervical dilation ≤ 3cm
- Maternal BBV
- Fetal bleeding disorders
- Prematurity < 34 weeks

Complications

Less than 1% incidence and include:

- Significant laceration
- Serious fetal haemorrhage due to poor technique or unrecognised fetal bleeding disorder
- Infection of the scalp wound
- Abcess formation

Documentation Control

Reference Number: UHDB/IP/04:24/F2	**Version: UHDB v2**	**Status: Final**	

	Last version Royal Derby prior to merged document		
7.1	March 2021	Cindy Meijer – Risk Support Midwife	AN information removed as now in separate guideline
	Last version Burton Trust prior to merged document:		
13	Oct 2020	Miss Thangavelu – O&G Consultant Risk Team	Amendments to assure full NICE compliance Amendments reflecting HSIB report
2 (FBS guidance)	Dec 2015	Mrs I Anwar **Consultant Obstetrician**	Amendment to flow chart and section 3, bullet point 3 – Repeat FBS if CTG improves but remains suspicious
Version control for UHDB merged document:			
version	date	author	Reason/ overview of changes
UHDB1	April 2021	Miss S Rajendran - Consultant Obstetrician S Smith – Professional Development Midwife	Burton to adopt Derby guideline with Implementation of FIGO at the Burton Site with Introduction of new stickers. Fresh eye review and escalation reviewed and amended
1.1	August 2023	Joanna Harrison-Engwell	Amend to state CTG review by midwife and independent fresh eyes to be completed hourly.
1.2	Sept 2023	Hannah Armstrong - Professional Development Advisor & FM Lead Midwife	New Safety Huddle Tool
2	March 2024	Miss A Joshi - Consultant Obstetrician Miss N Chikhes - O&G Consultant Jane Harrington - Lead Midwife Fetal Monitoring	Review. To be brought in line with national guidance.

Intended Recipients: All staff caring for women in labour	
Training and Dissemination: Cascaded electronically through lead midwives/doctors; Published on Intranet; Mandatory training day, Extended support from externally trained staff	
EIRA stage 1 completed/stage 2 completed: n/a	
To be read in conjunction with: Clinical Risk Assessment in Labour **(A5);** Care of women in Labour **(L2)**	
Consultation with:	Practice development senior midwives
Business Unit sign off::	09/04/2024: Maternity Guidelines Group: Exceptional Ratification Miss J Rowley, J. Harrison-Engwell 11/04/2024: Maternity Governance Group/CD- Mr R Deveraj
Notification Overview sent to TIER 3 Divisional Quality Governance Operations & Performance: 16/04/2024	
Implementation date:	19/ 04 /2024
Review Date:	April 2027
Key Contact:	Joanna Harrison-Engwell