

INTRAPARTUM FETAL SURVEILLANCE

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Key Amendments

Date	Amendments	Approved by
21 st August 2020	Amended in accordance with recommendations SBL V2. An implementation of Hourly Fresh eyes (instead of previous 2 hours) during Intrapartum care will ensure our maternity services are compliant with this national document.	Maternity Governance Meeting

INTRODUCTION

This Trust has adopted the NICE guidance on Intrapartum Care, which includes fetal surveillance and Electronic fetal monitoring (EFM). NICE clinical guideline 55 National Institute for Health and Clinical Excellence (2007) www.nice.org.uk and NICE guideline 190 (2014)

This guideline should be used along with the guideline Fetal Blood Gas Sampling.

NB: Electronic Fetal Monitoring (EFM) should be offered after 28/40 between 26–28 weeks only after careful counselling of patient by consultant obstetrician and consultant paediatrician

THIS GUIDELINE IS FOR USE BY THE FOLLOWING STAFF GROUPS :

All professionals (medical and midwifery) who must have evidence of bi-annual completion of K2 fetal monitoring training.

GUIDELINE

For a woman who is healthy and has had an otherwise uncomplicated pregnancy, **intermittent auscultation** is recommended in labour to monitor fetal wellbeing, and should be offered and performed using Pinards or handheld Doppler. In the active stages of labour, intermittent auscultation should occur after a contraction, for a minimum of one minute and recorded in the relevant records, at least:

- Every 15 minutes in the first stage
- Every 5 minutes in the second stage
- Record accelerations and decelerations if heard

The uterine contractions should be palpated and the frequency and duration of contractions noted. Presence of fetal movements is a very reassuring and simple sign of fetal wellbeing in labour. When fetal movements are noted, where possible, this should be recorded in the labour case notes and on the cardiotocograph (CTG) if performed.

It is **important to monitor maternal pulse in labour** as a normal pulse rate and rhythm is a sign of maternal wellbeing. Maternal pulse should be taken hourly and recorded either on the partogram, in the labour notes or on the CTG if in progress. If a fetal heart rate abnormality is suspected palpate maternal pulse to differentiate between the two heart rates. **NB:** The maternal heart rate shows changes in response to events in labour e.g. pain, contractions, dehydration etc and the increase in maternal pulse may falsely be interpreted as fetal heart rate accelerations / variability.

If in doubt always auscultate FH using pinard or hand held Doppler.

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Continuous Electronic Fetal Monitoring (EFM)

The fetal heart must be confirmed by auscultation with a PINARD or hand held Doppler before commencing a CTG, the transducer should never be used to determine fetal heart. The fetal heart rate should be recorded on K2

Prior to commencing a CTG the following should be discussed with the woman;

- any concerns that the woman has about continuous CTG
- Explain that continuous CTG is used to monitor the baby's heart rate and uterine contractions.
- Explain mobility might be affected and offer telemetry if appropriate
- Details of different types of findings that may occur
- Normal CTG is reassuring and indicates baby is coping well with labour
- If not normal there is less certainty about the condition of the baby and further continuous monitoring will be advised
- Decisions about whether to take further action will be assessed on several factors including the findings from CTG

EFM is recommended and should be offered in high risk pregnancies in labour. Do not perform a CTG on low risk women in established labour.

In pregnancies previously monitored with intermittent auscultation, continuous CTG monitoring should be performed if:

- 1) there is evidence of auscultation of a baseline less than 110 or greater than 160 bpm
- 2) there is evidence of auscultation of any decelerations
- 3) any intrapartum risk factors develop:
 - Oxytocin augmentation
 - Vaginal bleeding in labour
 - Maternal pyrexia of 38 or suspected chorioamnionitis
 - Significant meconium stained liquor
 - Severe hypertension (160/110mmHg)
- 4) If a woman requires epidural analgesia and has no other factors perform CEFM for at least 30 mins during establishment of regional analgesia and if the woman requires a top-up or bolus dose
- 5) If two or more of the following risk factors are present;

Maternal pulse over 120bpm on two occasions 30 minutes apart.

Either a diastolic of 90mmHg or more or systolic of 140mmHg or more on two occasions 30 mins apart

A reading of 2+ of protein on urinalysis and BP single reading of either diastolic of 90mmHg or systolic of 140mmHg

Maternal temperature of 37.5 on two occasions one hour apart.

Pain reported by the woman that differs from the pain associated with contractions

Confirmed delay in first or second stage of labour

Use of regional analgesia

Prolonged period since ruptured membranes (24 hours or more)

Non-significant meconium

The reason for changing to continuous monitoring should be documented in the relevant maternal record.

Current evidence does not support the use of admission CTG in low-risk pregnancy and it is therefore not recommended.

Do not regard amniotomy alone for suspected delay in the established first stage of labour as indication to commence a CTG

If continuous CTG has been commenced due to concerns arising from intermittent auscultation but there are no non-reassuring or abnormal features after 20 mins return to intermittent auscultation.

In high-risk women, where continuous EFM is recommended in labour, if the CTG is normal, monitoring may be interrupted for short periods of up to 15 minutes to allow personal care (shower, toilet). These interruptions should not occur immediately after any intervention that might be expected to alter FHR (e.g. amniotomy, epidural insertion or top up, or whilst on oxytocin infusion)

When performing a CTG:

- The date and time clocks on the EFM machine should be correctly set. This is automatic on the K2 portal.
- An information sticker should be attached to each CTG, with the woman's name, registration number, date and time of the CTG, gestation, specific reason for the CTG (fetal wellbeing is not sufficient), maternal pulse, fetal heart rate (as auscultated with Pinard or handheld Doppler) and the name of midwife commencing CTG. This is done via the CTG Commencement wizard on K2.
- Any intrapartum events that may affect the FHR should be recorded contemporaneously on the EFM trace with time noted, and signed (e.g. vaginal examination, fetal blood sample, siting of an epidural, syntocinon started or increased). This occurs automatically on K2 Guardian.
- For women having continuous EFM, there must be an hourly review of fetal wellbeing. Use of a buddy system to provide 'Fresh Eyes' reviews. This adheres to the recommends from Saving Babies Lives. This hourly action is prompted automatically by the K2 wizard.
- Following birth, the care-giver should note time and mode of delivery on the CTG trace and sign it.
- In K2 guardian the CTG is stored electronically and the date and time of delivery is recorded on electronic patient record.
- The EFM trace should be stored securely in a named brown envelope and secured in the maternal notes at the end of the monitoring process.

Interpretation of FHR traces/cardiocographs (CTG)

The recommended definitions and classifications of the FHR trace/CTG produced during EFM are shown in tables below.

Interpreting a CTG

- When interpreting a CTG do not make any decision based on the CTG alone, but take into account any antenatal or intrapartum risk factors including progress in labour.
- Ensure that the focus of care remains on the woman rather than the CTG trace.
- Take into account factors such as fetal movements and general maternal wellbeing. as reported by her, and observations
- Document an hourly systematic review via the K2 CTG Review Wizard, or more frequently if there are concerns.
- Any member of staff who is asked to provide a fresh eyes opinion on a trace should complete a systematic assessment of the trace via the K2 CTG wizard. This should include baseline rate, variability, accelerations and decelerations. An overall classification of the CTG and documentation of a plan of care should be recorded on K2 guardian.

- When undertaking a ward round, all medical staff are required to complete the K2 CTG review wizard alongside the Ward Round wizard.
- Provide 1-1 care

It is not possible to categorise or interpret every CTG. Senior obstetric input is important in these cases

Additional Information

Baseline fetal heart rate (see tables)

- Baseline FHR will usually be between 110-160bpm
- A baseline FHR between 100-109bpm bpm (having confirmed that this is not maternal heart rate) with normal baseline variability and no variable or late decelerations is normal.
- A stable baseline FHR between 90-99 bpm (having confirmed that this is not maternal heart rate) with normal baseline variability may be a normal variation, obtain a senior obstetric opinion if uncertain
- A baseline FHR of 161-180bpm with no other non reassuring or abnormal features on the CTG and the woman's temperature and pulse are normal, continue CTG and normal care since the risk of fetal acidosis is low.
- If the baseline FHR is between 100-109bpm or above 160bpm and there is one other non reassuring feature start conservative measures to improve fetal well being.
- If baseline FHR is above 180bpm with no other non reassuring or abnormal features
 - Consider possible underlying causes eg infection and investigate
 - Check temperature and pulse; if either are raised offer fluids and paracetamol
 - Commence conservative measures. (See later in guideline).
- In the presence of bradycardia, expedite birth if lasts more than 9 minutes. Reassess, any decision to expedite birth if FHR improves

Baseline variability

- Baseline variability will usually be 5bpm or more
- intermittent periods of reduced variability are normal
- mild or minor pseudo-sinusoidal patterns are of no significance
- in the presence of reduced baseline variability of less than 5bpm with a normal baseline FHR and no late or variable decelerations;
 - start conservative measures if this persists over 30 minutes
 - offer fetal blood sample (FBS) if this persists after 90 minutes
- If there is reduced baseline variability for over 30 minutes together with one or more of tachycardia (>160bpm), FHR < 100bpm or variable or late decelerations;
 - Start conservative measures AND
 - Offer FBS

(Sinusoidal pattern

Pathological sinusoidal fetal heart rate pattern is very rare but catastrophic if missed.

Typical Features:

- True sinusoidal fetal heart rate pattern is continuous at least 10 mins if it recovers it is not a true pathological sinusoidal trace.
- There is reduced baseline variability (No areas of normal variability)
- No accelerations
- Sinusoidal waveform (degree of oscillations above and below the baseline is typically equal but may vary in atypical sinusoidal trace)

It is a preterminal trace and warrants prompt intervention i.e. either FBS or delivery. It may be further complicated by decelerations.

It is commonly seen in severe fetal anaemia & hypoxia.)

Accelerations

- The presence of FHR accelerations is usually a sign that the baby is healthy
- The absence of accelerations in an otherwise normal CTG does not indicate acidosis

Decelerations

- Description of decelerations should specify;
 - The depth and duration
 - Timing in relation to contractions
 - whether the FHR returns to baseline
 - how long the decelerations have been present for
 - whether they occur with over 50% of contractions
- Describe decelerations as “early”, “variable” or “late”. Do not use the terms “typical” or “atypical”.
- Early decelerations:
 - Are uncommon, benign and usually associated with head compression.
 - In association with no non-reassuring or abnormal features on the CTG should not prompt further action.
- If variable decelerations are observed that begin with the onset of a contraction:
 - Be aware that these are very common, can be a normal feature in an otherwise uncomplicated labour and birth, and are usually the result of cord compression.
 - Consider change of position.
- Start conservative measures if variable decelerations are observed with a normal baseline FHR and normal baseline variability that are:
 - Dropping from baseline by 60bpm or **less** AND taking 60 seconds or **less** to recover.
 - Present for over 90 minutes.
 - Occurring with over 50% of contractions
- Start conservative measures if variable decelerations are observed with a normal baseline FHR and normal baseline variability that are:
 - Dropping from baseline by **more** than 60bpm OR taking **more** than 60 seconds to recover.
 - Present for over 30 minutes.
 - Occurring with over 50% of contractions
- Offer FBS if non-reassuring variable decelerations are:
 - Still observed 30 minutes after starting conservative measure.
 - Accompanied by baseline FHR >160bpm and /or reduced baseline variability.
- If late decelerations (decelerations that start after a contraction and often have a slow return to baseline) are observed:
 - Start conservative measures if late decelerations occur with over 50% of contractions.
 - Offer FBS and/or expedite birth if persist for over 30 minutes and occur with over 50% of contractions.
 - Act sooner if late decelerations are accompanied by an abnormal baseline FHR and /or reduced baseline variability.
- The longer, the later and the deeper the decelerations, the more likely the presence of fetal acidosis, (especially if accompanied by fetal tachycardia and / or reduced baseline variability) and take action sooner than 30 minutes.

Conservative Measures

If there are any concerns about the fetal wellbeing, consider underlying causes and commence one or more of the following conservative measures based on an assessment of the most likely cause(s):

- Mobilisation or left lateral, avoid being supine.
- Offer oral or IV fluids.
- Offer paracetamol in the presence of a temperature.
- Reduce contraction frequency by:
 - Stopping oxytocin AND/OR

- Offering a tocolytic drug (subcutaneous Terbutaline 0.25mg)
- Inform coordinating midwife and an obstetrician.
- Do not use maternal facial oxygen for intrauterine resuscitation as it may be harmful to the baby. It can be used where it is administered for maternal indications such as hypoxia or as part of preoxygenation prior to anaesthesia.

Overall care

- Make a documented systematic assessment of the condition of the woman and unborn baby (including cardiotocography [CTG] findings) every hour, or more frequently if there are concerns.
- Do not make any decision about a woman's care in labour on the basis of CTG findings alone.
- Take into account the woman's preferences, any antenatal and intrapartum risk factors, the current wellbeing of the woman and unborn baby and the progress of labour.
- Ensure that the focus of care remains on the woman rather than the CTG trace.
- Remain with the woman in order to continue providing one-to-one support.
- Talk to the woman and her birth companion(s) about what is happening and take her preferences into account.

Principles for intrapartum CTG trace interpretation

- When reviewing the CTG trace, assess and document contractions and all 4 features of fetal heart rate: baseline rate; baseline variability; presence or absence of decelerations (and concerning characteristics of variable decelerations* if present); presence of accelerations.
- If there is a stable baseline fetal heart rate between 110 and 160 beats/minute and normal variability, continue usual care as the risk of fetal acidosis is low.
- If it is difficult to categorise or interpret a CTG trace, obtain a review by a senior midwife or a senior obstetrician.

Accelerations

- The presence of fetal heart rate accelerations, even with reduced baseline variability, is generally a sign that the baby is healthy.

Description	Feature		
	Baseline (beats/minute)	Baseline variability (beats/minute)	Decelerations
Reassuring	110 to 160	5 to 25	None or early Variable decelerations with no concerning characteristics* for less than 90 minutes
Non-reassuring	100 to 109† OR 161 to 180	Less than 5 for 30 to 50 minutes OR More than 25 for 15 to 25 minutes	Variable decelerations with no concerning characteristics* for 90 minutes or more OR Variable decelerations with any concerning characteristics* in up to 50% of contractions for 30 minutes or more OR Variable decelerations with any concerning

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			<p>characteristics* in over 50% of contractions for less than 30 minutes</p> <p>OR</p> <p>Late decelerations in over 50% of contractions for less than 30 minutes, with no maternal or fetal clinical risk factors such as vaginal bleeding or significant meconium</p>
Abnormal	<p>Below 100</p> <p>OR</p> <p>Above 180</p>	<p>Less than 5 for more than 50 minutes</p> <p>OR</p> <p>More than 25 for more than 25 minutes</p> <p>OR</p> <p>Sinusoidal</p>	<p>Variable decelerations with any concerning characteristics* in over 50% of contractions for 30 minutes (or less if any maternal or fetal clinical risk factors [see above])</p> <p>OR</p> <p>Late decelerations for 30 minutes (or less if any maternal or fetal clinical risk factors)</p> <p>OR</p> <p>Acute bradycardia, or a single prolonged deceleration lasting 3 minutes or more</p>

Table 11 Management based on interpretation of cardiotocograph traces

Category	Definition	Management
Normal	All features are reassuring	<ul style="list-style-type: none"> Continue CTG (unless it was started because of concerns arising from intermittent auscultation and there are no ongoing risk factors; see recommendation 1.10.8) and usual care Talk to the woman and her birth companion(s) about what is happening
Suspicious	<p>1 non-reassuring feature</p> <p>AND</p> <p>2 reassuring features</p>	<ul style="list-style-type: none"> Correct any underlying causes, such as hypotension or uterine hyperstimulation Perform a full set of maternal observations Start 1 or more conservative measures* Inform an obstetrician or a senior midwife Document a plan for reviewing the whole clinical picture and the CTG findings Talk to the woman and her birth companion(s) about what is happening and take her preferences into account
Pathological	<p>1 abnormal feature</p> <p>OR</p> <p>2 non-reassuring features</p>	<ul style="list-style-type: none"> Obtain a review by an obstetrician and a senior midwife Exclude acute events (for example, cord prolapse, suspected placental abruption or suspected uterine rupture) Correct any underlying causes, such as

		<p>hypotension or uterine hyperstimulation</p> <ul style="list-style-type: none"> • Start 1 or more conservative measures* • Talk to the woman and her birth companion(s) about what is happening and take her preferences into account • If the cardiotocograph trace is still pathological after implementing conservative measures: • obtain a further review by an obstetrician and a senior midwife • offer digital fetal scalp stimulation (see recommendation 1.10.38) and document the outcome • If the cardiotocograph trace is still pathological after fetal scalp stimulation: • consider fetal blood sampling • consider expediting the birth • take the woman's preferences into account
<p>Need for urgent intervention</p>	<p>Acute bradycardia, or a single prolonged deceleration for 3 minutes or more</p>	<ul style="list-style-type: none"> • Urgently seek obstetric help • If there has been an acute event (for example, cord prolapse, suspected placental abruption or suspected uterine rupture), expedite the birth • Correct any underlying causes, such as hypotension or uterine hyperstimulation • Start 1 or more conservative measures* • Make preparations for an urgent birth • Talk to the woman and her birth companion(s) about what is happening and take her preferences into account • Expedite the birth if the acute bradycardia persists for 9 minutes • If the fetal heart rate recovers at any time up to 9 minutes, reassess any decision to expedite the birth, in discussion with the woman