Fetal monitoring in labour: appendix 1

This guideline updates and replaces the section on monitoring in labour in the NICE guideline on intrapartum care for healthy women and babies (CG190; published in 2014 and updated in 2017).

We have reviewed the evidence on fetal blood sampling during labour. All other changes have been made as editorial edits to the recommendations previously contained in CG190. These recommendations have not had an evidence review.

Recommendations in the guideline are marked **[2022]** if the evidence has been reviewed, or they are new consensus recommendations based on the committee's knowledge or expertise.

Recommendations that have been deleted, or changed without an evidence review

We have deleted some recommendations from the section on monitoring in labour in the 2014 NICE guideline on intrapartum care for healthy women and babies. Table 1 sets out these recommendations and includes details of replacement recommendations. If there is no replacement recommendation, an explanation for the proposed deletion is given.

For recommendations ending **[2014, amended 2022]** or **[2017, amended 2022]** we have made changes without reviewing the evidence. Reasons for the changes are given in table 2.

For recommendations ending **[2014]** or **[2017]** we have not reviewed the evidence. In some cases minor changes have been made – for example, to update links, or bring the language and style up to date. These changes are listed in table 3.

See also the previous NICE guideline and supporting documents.

Table 1 Recommendations that have been deleted

Recommendation in 2014 guideline	Comment
1.10.5 Do not offer continuous cardiotocography to women who have	This recommendation has been deleted as more detailed recommendations on

non-significant meconium if there are no other risk factors.	the action required if meconium is detected have been added.
1.10.6 Do not regard amniotomy alone for suspected delay in the established first stage of labour as an indication to start continuous cardiotocography.	This recommendation has been deleted as amniotomy is a midwife-led intervention which does not require transfer or CTG. It is not necessary to list all midwife-led interventions which are low risk and do not require CTG, as the emphasis of the guideline has changed to assessing risk and deciding which women do require CTG.
1.10.9 Offer telemetry to any woman who needs continuous cardiotocography during labour.	Replaced with: 1.2.21 Ensure wireless transducers are kept charged and maintained so that they are ready to use. [2022] 1.2.22 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. [2022]
1.10.10 Use tables 10 and 11 to define and interpret cardiotocograph traces and to guide the management of labour for women who are having continuous cardiotocography. These tables include and summarise individual recommendations about fetal monitoring (1.10.11 to 1.10.35), fetal scalp stimulation (1.10.38 and 1.10.39), fetal blood sampling (1.10.40 to 1.10.55) and intrauterine resuscitation (1.10.36 and 1.10.37) in this guideline.	This recommendation has been deleted as the tables are no longer present, so it is not necessary to have a recommendation referring to them.
1.10.13 Do not make any decision about a woman's care in labour on the basis of cardiotocography findings alone, but also take into account: • her preferences • her report of how she is feeling • her report of the baby's movements • assessment of her wellbeing and behaviour • maternal observations, including temperature, blood pressure and pulse • whether there is meconium or blood in the amniotic fluid • any signs of vaginal bleeding • any medication she is taking • the frequency of contractions	Replaced by: 1.2.16 Use the advice in this guideline to interpret and categorise intrapartum CTG traces, but when interpreting how the baby is coping with labour take into account maternal, fetal and labour factors as well as CTG changes. [2022] 1.2.17 Consider a lower threshold for intervention when there are any antenatal or intrapartum risk factors that could lead to fetal compromise. [2022] The detail on risk factors is now contained in separate recommendations.

• the stage and progress of labour • her parity • the fetal response to digital scalp stimulation if performed (see recommendations 1.10.38 and 1.10.39) • the results of fetal blood sampling if undertaken (see recommendation 1.10.48). [2017]	
1.10.14 Supplement ongoing care with a documented systematic assessment of the condition of the woman and unborn baby (including any cardiotocography findings) every hour. If there are concerns about cardiotocography findings, undertake this assessment more frequently. [2017]	Replaced by: 1.4.1 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 the recommendations on indications for continuous cardiotocography monitoring in labour) and determine if there are any changes in baseline fetal heart rate, variability or decelerations. [2017, amended 2022] 1.4.2 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. [2022] (Existing recommendation 1.2.1 already advises the frequency of review should be increased if there are concerns so this has not been repeated).
1.10.35 Inform a senior midwife or an obstetrician whenever conservative measures are implemented. [2017]	This recommendation has been deleted as the committee agreed it was a local operational issue, and would depend on staff availability, and so did not need to be specified in a recommendation.
1.10.40 Do not carry out fetal blood sampling if: • there is an acute event (for example, cord prolapse, suspected placental abruption or suspected uterine rupture) or • the whole clinical picture indicates that the birth should be expedited or • contraindications are present, including risk of maternal-to-fetal transmission of infection or risk of fetal bleeding disorders. 1.10.41 Be aware that for women with sepsis or significant meconium (see recommendation 1.5.2), fetal blood sample results may be falsely reassuring,	Replaced by: 1.7.1 Be aware that the evidence to support fetal blood sampling is limited. [2022]

and always discuss with a consultant obstetrician: • whether fetal blood sampling is appropriate • any results from the procedure if carried out. 1.10.42 Before carrying out or repeating fetal blood sampling, start conservative measures and offer digital fetal scalp stimulation (see recommendations 1.10.34 and 1.10.38). Only continue with fetal blood sampling if the cardiotocograph trace remains pathological (see recommendation 1.10.27). 1.10.43 When considering fetal blood sampling, take into account the woman's preferences and the whole clinical picture. 1.10.44 When considering fetal blood sampling, explain the following to the woman and her birth companion(s): • Why the test is being considered and other options available, including the risks, benefits and limitations of each. • The blood sample will be used to measure the level of acid in the baby's blood, which may help to show how well the baby is coping with labour. • The procedure will require her to have a vaginal examination using a device similar to a speculum. • A sample of blood will be taken from the baby's head by making a small scratch on the baby's scalp. This will heal quickly after birth, but there is a small risk of infection. • What the different outcomes of the test may be (normal, borderline and abnormal) and the actions that will follow each result. • If a fetal blood sample cannot be obtained but there are fetal heart rate accelerations in response to the procedure, this is encouraging and in these circumstances expediting the birth may not be necessary. • If a fetal blood sample cannot be obtained and the cardiotocograph	

trace has not improved, expediting the birth will be advised.
• A caesarean section or instrumental birth (forceps or ventouse) may be advised, depending on the results of the procedure.
 	
1.10.45 Do not take a fetal blood sample during or immediately after a prolonged deceleration.
 	
1.10.46 Take fetal blood samples with the woman in the left lateral position.
 	
1.10.47 Use either pH or lactate when interpreting fetal blood sample results.
 	
1.10.48 Use the following classifications for fetal blood sample results:
• pH:
  ○ normal: 7.25 or above
  ○ borderline: 7.21 to 7.24
  ○ abnormal: 7.20 or below or
• lactate:
  ○ normal: 4.1 mmol/l or below
  ○ borderline: 4.2 to 4.8 mmol/l
  ○ abnormal: 4.9 mmol/l or above.
 	
1.10.49 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 rate of progress in labour.
 	
1.10.50 If the fetal blood sample result is abnormal:
• inform a senior obstetrician and the neonatal team and
• talk to the woman and her birth companion(s) about what is happening and take her preferences into account and
• expedite the birth (see recommendations 1.13.34 to 1.13.37).
 	
1.10.51 If the fetal blood sample result is borderline and there are no accelerations in response to fetal scalp stimulation, consider taking a second fetal blood sample no more than 30 minutes later if	

this is still indicated by the cardiotocograph trace. 1.10.52 If the fetal blood sample result is normal and there are no accelerations in response to fetal scalp stimulation, consider taking a second fetal blood sample no more than 1 hour later if this is still indicated by the cardiotocograph trace. 1.10.53 Discuss with a consultant obstetrician if a third fetal blood sample is thought to be needed. 1.10.54 If fetal blood sampling 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 the labour or expedite the birth in light of the clinical circumstances and in discussion with the woman and a senior obstetrician. 1.10.55 If fetal blood sampling is attempted but a sample cannot be obtained and there has been no improvement in the cardiotocograph trace, expedite the birth (see recommendations 1.13.34 to 1.13.37).	

Table 2 Amended recommendation wording without an evidence review

Recommendation in 2014 updated 2017 guideline (this table is ordered in the order of recommendations in this version of the guideline)	**Recommendation in current guideline**	**Reason for change**
1.4.3 Transfer the woman to obstetric-led care, following the general principles for transfer of care described in section 1.6, if any of the following are observed on initial assessment: • Observations of the woman:	1.3.2 Offer continuous CTG monitoring for women in labour who have any of the following antenatal maternal risk factors: • previous caesarean birth or other full thickness uterine scar • any hypertensive disorder requiring medication • prolonged ruptured membranes (but woman who are already in established labour at 24 hours	To make the risk assessment of women in labour easier to follow, these risk factors have been adapted to create a lists of maternal and then fetal antenatal risk factors that may determine that CTG is needed. The definitions of fetal growth restriction or

○ pulse over 120 beats/minute on 2 occasions 30 minutes apart ○ a single reading of either raised diastolic blood pressure of 110 mmHg or more or raised systolic blood pressure of 160 mmHg or more ○ either raised diastolic blood pressure of 90 mmHg or more or raised systolic blood pressure of 140 mmHg or more on 2 consecutive readings taken 30 minutes apart ○ a reading of 2+ of protein on urinalysis and a single reading of either raised diastolic blood pressure (90 mmHg or more) or raised systolic blood pressure (140 mmHg or more) ○ temperature of 38°C or above on a single reading, or 37.5°C or above on 2 consecutive readings 1 hour apart ○ any vaginal blood loss other than a show ○ rupture of membranes more than 24 hours before the onset of established labour (see	after their membranes ruptured do not need CTG unless there are other concerns) • any vaginal blood loss other than a show • suspected chorioamnionitis or maternal sepsis • pre-existing diabetes (type 1 or type 2) and gestational diabetes requiring medication [2014, amended 2022] 1.3.3 Offer continuous CTG monitoring for women in labour who have any of the following antenatal fetal risk factors: • non-cephalic presentation (including breech, transverse, oblique and cord), including while a decision is made about mode of birth • fetal growth restriction (estimated fetal weight below 3rd centile) • 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 • advanced gestational age (more than 42+0 weeks at the onset of established labour) • anhydramnios or polyhydramnios • reduced fetal movements in the last 24 hours. [2014, amended 2022]	small for gestational weight have been taken from Saving Babies Lives version 2 care bundle. Meconium has been removed as this is not an antenatal risk factor, it is an intrapartum risk factor.

recommendation 1.15.25) ○ the presence of significant meconium (see recommendation 1.5.2) ○ pain reported by the woman that differs from the pain normally associated with contractions ○ any risk factors recorded in the woman's notes that indicate the need for obstetric-led care. • Observations of the unborn baby: ○ any abnormal presentation, including cord presentation ○ transverse or oblique lie ○ high (4/5–5/5 palpable) or free-floating head in a nulliparous woman ○ suspected fetal growth restriction or macrosomia ○ suspected anhydramnios or polyhydramnios ○ fetal heart rate below 110 or above 160 beats/minute ○ a deceleration in fetal heart rate heard on intermittent auscultation ○ reduced fetal movements in the last 24 hours reported by the woman.		

1.4.7 Be aware that for women at low risk of complications there is insufficient evidence about whether cardiotocography as part of the initial assessment either improves outcomes or results in harm for women and their babies, compared with intermittent auscultation alone. [2017]	1.2.8 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 take into account the whole clinical picture. [2017, amended 2022]	This recommendation has been updated to clarify that the harm is related to increased interventions and to add that the whole clinical picture will therefore be taken into account when discussing and agreeing on the monitoring method to use, as this was not emphasised in the previous guideline.
1.10.1 Do not offer cardiotocography to women at low risk of complications in established labour.	1.2.8 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 take into account the whole clinical picture. [2017, amended 2022]	More detail has been added about the reasons for not using CTG in low-risk women, as well adding that it is the whole clinical picture that needs to be taken into account when deciding on the method of monitoring. The recommendation is no longer a 'do not' recommendation as the use of CTG (or not) even in low-risk women should be based on a discussion with the woman and consideration of her preferences,
1.10.2 Offer intermittent auscultation of the fetal heart rate to women at low risk of complications in established first stage of labour: • Use either a Pinard stethoscope or doppler ultrasound. • Carry out intermittent auscultation immediately after a contraction for at least 1 minute, at least every 15 minutes, and record it as a single rate.	1.2.9 Offer women with a low risk of complications fetal heart rate monitoring with intermittent auscultation when in established first stage of labour. Do this as follows: • use either a Pinard stethoscope or doppler ultrasound • carry out intermittent auscultation immediately after a contraction for at least 1 minute, repeated at least once every 15 minutes, and record it as a single rate on a partogram and in the woman's notes • record accelerations and decelerations if heard	The use of a partogram has been added to the recommendation to clarify where the heart rate should be recorded as this was not clear in the previous version of the guideline; an additional bullet has been added (based on recommendation 1.4.11 in CG190) about the action to be taken if no fetal heart is detected, as this was missing in the previous version of the guideline.

• Record accelerations and decelerations if heard. • Palpate the maternal pulse hourly, or more often if there are any concerns, to differentiate between the maternal and fetal heartbeats. [2017]	• palpate (and record on the partogram) the maternal pulse hourly, or more often if there are any concerns, to ensure differentiation between the maternal and fetal heartbeats • if no fetal heartbeat is detected offer urgent real-time ultrasound assessment to check fetal viability [2017, amended 2022]	
1.10.3 If there is a rising baseline fetal heart rate or decelerations are suspected on intermittent auscultation, actions should include: • carrying out intermittent auscultation more frequently, for example after 3 consecutive contractions initially • thinking about the whole clinical picture, including the woman's position and hydration, the strength and frequency of contractions and maternal observations. If a rising baseline or decelerations are confirmed, further actions should include: • summoning help • advising continuous cardiotocography, and explaining to the woman and her birth companion(s) why it is needed • transferring the woman to obstetric-led care, provided that it is safe and appropriate to do so (follow the general principles for transfer of care described in section 1.6). [2017]	1.2.11 If, on intermittent auscultation, there is a rise in baseline fetal heart rate of 20 beats a minute or more from the start of labour, or a deceleration is heard: • carry out intermittent auscultation more frequently (for example, after 3 consecutive contractions) • carry out a full review, taking into account the whole clinical picture including antenatal and existing or new intrapartum risk factors, maternal observations, contraction frequency (including hypertonus) and the progress of labour. [2017, amended 2022] 1.2.12 If fetal heart rate concerns are confirmed: • summon help • advise continuous CTG monitoring, and explain to the woman and her birth companion(s) why it is recommended, and the implications for her choices of types and place of care • transfer the woman from midwifery-led to obstetric-led care, providing that it is safe and appropriate to do so (follow the general principles for transfer of care in the NICE guideline on intrapartum care for healthy women and babies). [2017, amended 2022]	The recommendation has been split into 2 for improved readability. The increase in the fetal heart rate has been quantified as 20 beats per minute as this was not specified in the previous version of the guideline; the full clinical review has been expanded to include a wider range of factors to emphasise how important full clinical review is.
1.10.4 Advise continuous cardiotocography if any of the following risk factors are present at initial	1.2.14 Advise continuous CTG monitoring if:	The first bullet point in this revised recommendation was taken from

assessment (see section 1.4) or arise during labour: • maternal pulse over 120 beats/minute on 2 occasions 30 minutes apart • temperature of 38°C or above on a single reading, or 37.5°C or above on 2 consecutive occasions 1 hour apart • suspected chorioamnionitis or sepsis • pain reported by the woman that differs from the pain normally associated with contractions • the presence of significant meconium (as defined in recommendation 1.5.2) • fresh vaginal bleeding that develops in labour • 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	• fetal heart rate concerns arise with intermittent auscultation and are ongoing, or • intrapartum maternal or fetal risk factors develop (see the recommendations on indications for continuous cardiotocography monitoring in labour). [2017, amended 2022] 1.3.8 Offer continuous CTG monitoring for women who develop any of the following new intrapartum risk factors: • contractions that last longer than 2 minutes, or 5 or more contractions in 10 minutes • the presence of meconium (see the recommendations on the presence of meconium) • 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) (see the NICE guideline on Neonatal infection: antibiotics for prevention and treatment) • suspected chorioamnionitis or sepsis (see the NICE guideline on Neonatal infection: antibiotics for prevention and treatment) • 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 • 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	recommendation 1.10.3 above. The detail of the intrapartum risks (which may indicate a move to CTG monitoring is necessary) have been split out into separate recommendations and cross-linked to improve the clarity of the recommendations. The details of longer contractions and more frequent contractions have been amended to reflect the recommendations agreed for induction of labour guideline, and the occurrence of new meconium or blood-stained liquor have been added as additional risk factors as these were missing from the previous version of the guideline. The definition of meconium has been removed, as more detailed recommendations on the action to be taken if meconium is detected have been written and cross-referenced from her.

labour (see recommendations 1.12.14, 1.13.3 and 1.13.4) • contractions that last longer than 60 seconds (hypertonus), or more than 5 contractions in 10 minutes (tachysystole) • oxytocin use. [2017]	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 (see the NICE guideline on intrapartum care for healthy women and babies) • insertion of regional analgesia (for example, an epidural) • use of oxytocin. [2017, amended 2022]	
1.10.7 Address any concerns that the woman has about continuous cardiotocography, and give her and her birth companion(s) the following information: • Explain that continuous cardiotocography is used to monitor the baby's heartbeat and the labour contractions. • Explain that it may restrict her mobility. • Give details of the types of findings that may occur. Explain that a normal trace indicates that the baby is coping well with labour. • Explain that changes to the baby's heart rate pattern during labour are common and do not necessarily cause concern.	1.2.20 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	The stem of the recommendation has been amended to advise that a discussion is held to bring the guideline in line with current best practice around shared decision-making; the use of risk factors as well as CTG has been added to the recommendation as the emphasis of the guideline has shifted to encourage a more holistic assessment; more detail has been included on the implications of changes to the fetal heart rate as this was missing from the previous version.

• Explain that if the trace is not normal (see table 11), there will be less certainty about the condition of the baby and so continuous monitoring will be advised. • Explain that decisions about her care during labour and birth will be based on an assessment of several factors, including her preferences, her condition and that of her baby, as well as the findings from cardiotocography. [2017]	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. [2017, amended 2022]	
1.10.8 If continuous cardiotocography has been started because of concerns arising from intermittent auscultation, but the trace is normal (see table 11) after 20 minutes, return to intermittent auscultation unless the woman asks to stay on continuous cardiotocography (see recommendation 1.4.8). [2017]	1.2.13 Return to intermittent auscultation if continuous CTG monitoring has been started because of concerns arising from intermittent auscultation but the CTG trace is normal after 20 minutes, unless the woman decides to remain on continuous CTG monitoring. [2017]	The word ‘asks’ has been changed to ‘decides’ as the choice of method of fetal monitoring should be discussed with the woman. She should not need to pro-actively ask for CTG.
Table 10 Bullets. 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,	1.2.1 Perform and document a systematic assessment of the condition of the woman and unborn baby every hour, or more frequently if there are concerns. See the NICE guideline on intrapartum care for more information on the monitoring requirements for different stages of labour. [2017] 1.2.2 Discuss the results of each hourly assessment with the woman and base recommendations about care in labour on her preferences and:	To improve the clarity and readability of the guideline, these bullets have all been changed into individual recommendations or incorporated into different recommendations as shown. In some cases the wording has not changed but they are listed here for completeness. Some of these bullets were repeated in separate recommendations, but duplication has now

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	• her reports of the frequency, length and strength of her contractions • any antenatal and intrapartum risk factors for fetal compromise • the current wellbeing of the woman and unborn baby • how labour is progressing. Include birthing companion(s) in these discussions, if appropriate and that is what the woman wants. [2017,amended 2022] 1.2.4 Ensure one-to-one support is maintained by having a healthcare professional remain with the woman throughout labour. If the midwife needs to leave the room or there needs to be a change in staff , ensure the woman knows this is happening. [2017, amended 2022] 1.3.5 Carry out a full assessment of the woman and her baby every hour. At each assessment include: • maternal antenatal risk factors for fetal compromise • fetal antenatal risk factors for fetal compromise • new or developing intrapartum risk factors • progress in labour including characteristics of contractions (frequency, strength and duration) • fetal heart rate monitoring, including changes to the fetal heart rate pattern. Discuss with the woman any changes identified since the last review, and the implications of these changes. Include birthing companion(s) in these discussions, if appropriate and that is what the woman wants. [2017, amended 2022] 1.4.1 Review the previous fetal heart rate monitoring results, including any previous CTG traces, as part of the hourly risk assessment and in conjunction with	been removed or minimised. The additional advice has been added that the results of the ongoing assessment should be discussed with the woman and the need to ask her about her contractions.

reduced baseline variability, is generally a sign that the baby is healthy.	other antenatal or intrapartum risk factors (see the recommendations on indications for continuous cardiotocography monitoring in labour) and determine if there are any changes in baseline rate, variability or decelerations. [2017, updated 2022] 1.4.30 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. [2017] 1.5.1 Assess fetal wellbeing hourly by considering antenatal and intrapartum risk factors, in conjunction with interpretation of the CTG trace. [2017] 1.5.2 Take the whole clinical picture into account when making decisions on how to manage the labour, including maternal observations, contraction frequency and labour progress. [2017] 1.5.3 Discuss with the woman and her birth companion(s) what is happening, taking into account her individual circumstances and preferences, and support her decisions. [2017]	
1.10.11 When a woman is having continuous cardiotocography: • ensure that the focus of care remains on the woman rather than the cardiotocograph trace • remain with the woman in order to continue providing one-to-one support • encourage and help the woman to be as mobile as possible and to change position as often as she wishes	1.2.4 Ensure one-to-one support is maintained by having a midwife remain with the woman throughout labour. If the midwife needs to leave the room or there needs to be a change in staff, ensure the woman knows this is happening. [2017, amended 2022] 1.2.18 Encourage and help women to be as mobile as possible, to find positions that are comfortable for them, and to change position as often as they wishes. [2017] 1.4.5 Differentiate between the maternal and fetal heartbeats	To improve the clarity and readability of the guideline, this recommendation has been split into several recommendations. The clarification has been added that women should be informed if their one-to-one support changes andmore detail has been added about what do if the CTG trace is not of good quality, as these were missing from the

• monitor the condition of the woman and the baby, and take prompt action if required • differentiate between the maternal and fetal heartbeats hourly, or more often if there are any concerns • ensure that the cardiotocograph trace is of high quality, and think about other options if this is not the case • if it is difficult to categorise or interpret a cardiotocograph trace, obtain a review by a senior midwife or a senior obstetrician. [2017]	hourly, or more often if there are any concerns. [2017] 1.4.9 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). [2017, amended 2022]	previous version of the guideline
1.10.12 When reviewing the cardiotocograph 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 (see recommendation 1.10.22) • presence of accelerations. [2017]	1.4.3 When reviewing a CTG trace, assess and document: • contractions • baseline fetal heart rate • variability • presence or absence of decelerations (and characteristics of decelerations if present) • presence of accelerations. [2017, amended 2022]	Contractions have been added to the list if features to be assessed from the CTG trace as these were mentioned in the previous guideline but not included in the categorisation of the CTG trace, and so the importance of considering the contractions could be missed. Baseline variability has been amended to variability to avoid confusion with baseline heart rate.

1.10.15 Use the following categorisations for baseline fetal heart rate:
• reassuring:
  ○ 110 to 160 beats/minute
• non-reassuring:
  ○ 100 to 109 beats/minute (but see recommendation 1.10.16)
	1.4.15 Use the following to work out the categorisation for baseline fetal heart rate (see recommendation 1.4.31 to work out the overall categorisation for the CTG):
	• white
	  ○ stable baseline of 110 to 160 beats a minute
	• amber
	  ○ increase in baseline fetal heart rate of 20 beats a minute or more
		The categorisation of reassuring/non-reassuring/abnormal has been changed to white/amber/red to bring the guideline in line with other documentation used for monitoring [such as maternity early warning score (MEWS) charts]; amber features have been expanded to include an increase in

○ 161 to 180 beats/minute • abnormal: ○ below 100 beats/minute ○ above 180 beats/minute. [2017]	from the start of labour or since the last review an hour ago, or ○ 100 to 109 beats a minute (but see the recommendation1.4.16), or ○ unable to determine baseline • red ○ below 100 beats a minute, or ○ above 160 beats a minute. [2017, amended 2022]	baseline of 20 beats a minute or more as the committee agreed this was important to emphasise. A rise in baseline was in previous versions of the guideline, and the importance of a stable baseline was emphasised in 1.10.28, but actions for a rise had been removed. The upper limit has been reduced to 160 beats a minute and the inability to determine a baseline has been added as an amber feature, both based on stakeholder feedback.
1.10.16 Take the following into account when assessing baseline fetal heart rate: • differentiate between fetal and maternal heartbeats • baseline fetal heart rate will usually be between 110 and 160 beats/minute • although a baseline fetal heart rate between 100 and 109 beats/minute is a non-reassuring feature, continue usual care if there is normal baseline variability and no variable or late decelerations. [2017]	1.4.16 When assessing baseline fetal heart rate, differentiate between fetal and maternal heartbeats and take the following into account: • baseline fetal heart rate will usually be between 110 and 160 beats a minute • lower baseline fetal heart rates are expected with post-term pregnancies, with higher baseline rates in preterm pregnancies • a rise in baseline fetal heart rate may represent either developing infection or hypoxia (see the NICE guideline on Neonatal infection: antibiotics for prevention and treatment) • although a baseline fetal heart rate between 100 and 109 beats a minute is an amber feature, continue usual care if this has been stable throughout labour and there is normal variability and no variable or late decelerations. [2017, amended 2022]	Additional possible reasons for a rise in baseline heart rate have been added, as well as the impact of gestational age, as the committee agreed this detail may aid implementation of the guideline recommendations in clinical practice.
1.10.17 Use the following categorisations for fetal heart rate baseline variability:	1.4.18 Use the following to work out the categorisation for fetal heart rate variability (see recommendation 1.4.31 to work out	The categorisation of reassuring/non-reassuring/abnormal has been changed to

• reassuring:
  ○ 5 to 25 beats/minute
• non-reassuring:
  ○ less than 5 beats/minute for 30 to 50 minutes
  ○ more than 25 beats/minute for 15 to 25 minutes
• abnormal:
  ○ less than 5 beats/minute for more than 50 minutes
  ○ more than 25 beats/minute for more than 25 minutes
  ○ sinusoidal. [2017]
	the overall categorisation for the CTG):
	• white
	  ○ 5 to 25 beats a minute
	• amber
	  ○ fewer than 5 beats a minute for between 30 and 50 minutes, or
	  ○ more than 25 beats a minute for up to 10 minutes
	• red
	  ○ fewer than 5 beats a minute for more than 50 minutes, or
	  ○ more than 25 beats a minute for more than 10 minutes, or
	  ○ sinusoidal. [2017, amended 2022]
		white/amber/red to bring the guideline in line with other documentation used for monitoring (such as MEWS charts); amber features have changed to more than 25 beats/minute for up to 10 minutes instead of 15 to 25 minutes; and red to more than 25 beats a minute for more than 10 minutes instead of more than 25 minutes, as the committee agreed the longer periods in the previous guideline risked allowing the fetus to be at risk for too long before action was taken.
		Previous evidence reviews were consulted regarding increased variability, and the rationale relating to timings in the 2017 update related to committee consensus only. The current committee acknowledge that a true increase in variability for more than 25 minutes is rare, but the previous evidence review showed a significant increased likelihood of term neonatal respiratory morbidity in those born vaginally with much shorter periods of increased variability.

1.10.18 Take the following into account when assessing fetal heart rate baseline variability: • baseline variability will usually be between 5 and 25 beats/minute • intermittent periods of reduced baseline	1.4.19 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,	Other considerations regarding interpretation of variability have been added, including possible reasons and indicators of fetal compromise as the committee agreed this detail may aid implementation of the

variability are normal, especially during periods of quiescence ('sleep'). [2017]	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 a rise in the baseline fetal heart rate that would suggest 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. [2017, amended 2022]	guideline recommendations in clinical practice. The committee were aware of data showing that even short periods of variability may be associated with deterioration of fetal condition, but were unable to be specific about the degree of duration of such a change.
1.10.19 When describing decelerations in fetal heart rate, specify: • their timing in relation to the peaks of the contractions • the duration of the individual decelerations • whether or not the fetal heart rate returns to baseline • how long they have been present for • whether they occur with over 50% of contractions • the presence or absence of a biphasic (W) shape • the presence or absence of shouldering • the presence or absence of reduced variability within the deceleration. [2017]	1.4.21 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. [2017, amended 2022]	Definitions of early, variable and late, and repeated decelerations have been added to help users understand and implement this recommendation. The presence or absence of a biphasic (W) shape has been removed. This was because a true biphasic deceleration lasts more than 60 seconds and so the addition of this feature does not change the interpretation of the decelerations.
1.10.21 Use the following categorisations for decelerations in fetal heart rate: • reassuring:	1.4.24 Use the following to work out the categorisation for decelerations in fetal heart rate (see recommendation 1.4.31 to	The categorisation of reassuring/non-reassuring/abnormal has been changed to white/amber/red to bring

○ no decelerations ○ early decelerations ○ variable decelerations with no concerning characteristics (see recommendation 1.10.22) for less than 90 minutes • non-reassuring: ○ variable decelerations with no concerning characteristics for 90 minutes or more ○ variable decelerations with any concerning characteristics in up to 50% of contractions for 30 minutes or more ○ variable decelerations with any concerning characteristics in over 50% of contractions for less than 30 minutes ○ 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 • abnormal:	work out the overall categorisation for the CTG):: • white ○ no decelerations, or ○ early decelerations, or ○ variable decelerations that are not evolving to have concerning characteristics • amber ○ repetitive variable decelerations with any concerning characteristics for less than 30 minutes, or ○ variable declerations with any concerning characteristics for more than 30 minutes, or ○ repetitive late decelerations for less than 30 minutes • red ○ repetitive variable decelerations with any concerning characteristics for more than 30 minutes, or ○ repetitive late decelerations for more than 30 minutes ○ acute bradycardia, or a single prolonged deceleration lasting 3 minutes or more. [2017, amended 2022]	the guideline in line with other documentation used for monitoring (such as MEWS charts); the amber and red features have been split into those present with or without antenatal or developing intrapartum risk factors, to emphasise that CTG features should be considered with other risk factors. Variable decelerations without concerning characteristics are now a white feature regardless of the length of time present. This correlates with previous recommendation 1.10.28 that states to continue usual care if there is a stable baseline and normal variability.

○ variable decelerations with any concerning characteristics in over 50% of contractions for 30 minutes (or less if there are any maternal or fetal clinical risk factors) ○ late decelerations for 30 minutes (or less if there are any maternal or fetal clinical risk factors) ○ acute bradycardia, or a single prolonged deceleration lasting 3 minutes or more.		
1.10.22 Regard the following as concerning characteristics of variable decelerations: • lasting more than 60 seconds • reduced baseline variability within the deceleration • failure to return to baseline • biphasic (W) shape • no shouldering.	1.4.22 Regard the following as concerning characteristics of variable 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. [2017, amended 2022]	The characteristic of biphasic (W) shape has been removed, as a true biphasic deceleration lasts more than 60 seconds and so the addition of this feature does not change the interpretation of the decelerations. The absence of shouldering has been amended to 'loss of previously present shouldering', as shouldering is not always present in decelerations and this is not a concerning feature if there hasn't been a change
1.10.23 If variable decelerations with no concerning characteristics (see recommendation 1.10.22) are observed:	1.4.28 If variable decelerations with no concerning characteristics and no other CTG changes, including no rise in the baseline fetal heart rate, are observed:	The stem has been extended to clarify that variable decelerations are not concerning only if there are 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 • ask the woman to change position or mobilise. [2017]	• 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 • support the woman to change position or mobilise. [2017, amended 2022]	CTG changes or rise in baseline fetal heart rate.
1.10.24 Take the following into account when assessing decelerations in fetal heart rate: • early decelerations are uncommon, benign and usually associated with head compression • early decelerations with no non-reassuring or abnormal features on the cardiotocograph trace should not prompt further action. [2017]	1.4.29 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. [2017, amended 2022]	The wording has been amended to clarify that early decelerations are by definition not accompanied by other CTG changes such as reduced variability or a rise in baseline fetal heart rate.
1.10.25 Take into account that the longer and later the individual decelerations, the higher the risk of fetal acidosis (particularly if the decelerations are accompanied by tachycardia or reduced baseline variability). [2017]	1.4.25 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). [2017, amended 2022]	This recommendation has been amended as the change in variability can be reduced or increased.

1.10.27 Categorise cardiotocography traces as follows:
• normal: all features are reassuring (see table 10)
• suspicious: 1 non-reassuring feature and 2 reassuring features (but note that if accelerations are present, fetal acidosis is unlikely)
• pathological:
  ○ 1 abnormal feature or
	1.4.32 Categorise CTG traces as follows:
	• normal
	  ○ no amber or red features (all 4 features are white)
	• suspicious
	  ○ any 1 feature is amber
	• pathological
	  ○ any 1 feature is red, or
	  ○ 2 or more features are amber. [2017, amended 2022]
		Contractions have been added to the classification so 4 features are considered, not 3, as the committee agreed that contractions were important but by not being included in the CTG categorisation in the previous version of the guideline, they may not be adequately considered.

○ 2 non-reassuring features. [2017]		
1.10.29 If there is an acute bradycardia, or a single prolonged deceleration for 3 minutes or more: • 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 (see recommendations 1.13.34 to 1.13.37) • correct any underlying causes, such as hypotension or uterine hyperstimulation • start one or more conservative measures (see recommendation 1.10.34) • 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. [2017]	1.5.9 If there is an 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 the section on underlying causes and conservative measures) • 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. [2017, amended 2022]	The advice to expedite birth if bradycardia persists for 9 minutes or recovers in 9 minutes have been extended to state that this should take into account if there are other risk factors, as the committee agreed that the cumulative effect of additional risk factors with bradycardia should increase the urgency of the situation
1.10.30 If the cardiotocograph trace is categorised as pathological (see recommendation 1.10.27): • obtain a review by an obstetrician and a senior midwife	1.5.7 If the CTG trace is categorised as pathological: • obtain an urgent review by an obstetrician and a senior midwife • exclude acute events (for example, cord prolapse, suspected placental abruption	An additional bullet to state that a full risk assessment should be carried out has been added, as the emphasis of the guideline has been changed to encourage a more

• exclude acute events (for example, cord prolapse, suspected placental abruption or suspected uterine rupture) • correct any underlying causes, such as hypotension or uterine hyperstimulation • start one or more conservative measures (see recommendation 1.10.34) • talk to the woman and her birth companion(s) about what is happening and take her preferences into account. [2017]	or suspected uterine rupture) that need immediate intervention • perform and document 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 the section on underlying causes and conservative measures). [2017, amended 2022]	holistic approach to assessing risk.
1.10.31 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 (see recommendations 1.10.40 to 1.10.55) or • expediting the birth (see recommendations 1.13.34 to 1.13.37). Take the woman's preferences into account. [2017]	1.5.8 If the CTG trace is still 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 [2017, amended 2022]	An additional bullet to state that assessment of the full clinical picture should be carried out has been added as the emphasis of the guideline has been changed to encourage a more holistic approach to assessing risk. An addition has also been made to state that the presence of risk factors should lower the threshold for expediting birth, as the committee agreed that the cumulative effect of additional risk factors with a pathological CTG trace should increase the urgency of the situation. The reference to fetal blood sampling has been removed as this is no longer recommended.
1.10.32 If the cardiotocograph trace is categorised as suspicious (see recommendation 1.10.27):	1.5.5 If the CTG trace is categorised as suspicious and there are no other concerning risk factors:	Details have been added about the presence of accelerations as this was missing from the

• correct any underlying causes, such as hypotension or uterine hyperstimulation • perform a full set of maternal observations • start one or more conservative measures (see recommendation 1.10.34) • inform an obstetrician or a senior midwife • document a plan for reviewing the whole clinical picture and the cardiotocography findings • talk to the woman and her birth companion(s) about what is happening and take her preferences into account.	• 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) 1.5.6 If the CTG trace is categorised as suspicious and there are 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 the section on underlying causes and conservative measures) • obtain an urgent review by an obstetrician or senior midwife • consider: o fetal scalp stimulation (see the section on fetal scalp stimulation), or o expediting birth [2017, amended 2022]	previous version of the guideline. Documentation of the risk assessment, and consideration of additional risk factors which may lower the threshold for intervention, as the emphasis of the guideline has been changed to encourage a more holistic approach to assessing risk.
1.10.33 If the cardiotocograph trace is categorised as normal (see recommendation 1.10.27): • continue cardiotocography (unless it was started because of concerns arising from intermittent	1.5.4 If the CTG trace is categorised as 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	The need to continue with hourly risk assessment has been added, as the emphasis of the guideline has been changed to encourage a more holistic approach to assessing risk.

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. [2017]	• continue to perform and document a full risk assessment at least hourly and document the findings. [2017, amended 2022]	
1.10.34 If there are any concerns about the baby'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: o reducing or stopping oxytocin if it is being used and/or o offering a tocolytic drug (a suggested regimen is subcutaneous terbutaline 0.25 mg). [2017]	1.5.11 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): • maternal position (as this can affect uterine blood flow and cord compression) - encourage the woman to mobilise, or adopt an alternative position and to avoid being supine • hypotension: o do not offer intravenous fluids to treat fetal heart rate abnormalities unless the woman is hypotensive, or has signs of sepsis o if the woman is hypotensive secondary to an epidural top-up, start intravenous fluids, move her to a left lateral position and call the anaesthetist to review • excessive contraction frequency: o reduce contraction frequency by reducing or stopping oxytocin if it is being used o offering a tocolytic drug (a suggested regimen is subcutaneous terbutaline 0.25 mg). [2017, amended 2022]	The rationale for asking a woman to change position has been added to aid understanding and implementation of the guideline; additional information about hypotension in women with an epidural has been added, to bring these recommendations in line with the recommendations for regional analgesia in the NICE guideline on intrapartum care. A point has been added about not using intravenous fluids for fetal heart rate abnormalities unless the woman is hypotensive, or has signs of sepsis – this is because there have been multiple documented cases of women becoming hyponatraemic from excessive fluid administration.
1.10.36 Do not use maternal facial oxygen therapy for intrauterine fetal resuscitation, because it may harm the baby (but it can be used where it is administered for maternal	1.5.12 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 administered for maternal indications such as hypoxia or as part of	The caveat 'as part of conservative measures' has been added to clarify the situation when facial oxygen therapy should not be used.

indications such as hypoxia or as part of preoxygenation before a potential anaesthetic).	preoxygenation before a potential anaesthetic). [2017, amended 2022]	
1.10.38 If the cardiotocograph trace is pathological (see recommendation 1.10.27), offer digital fetal scalp stimulation. If this leads to an acceleration in fetal heart rate, only continue with fetal blood sampling if the cardiotocograph trace is still pathological.	1.6.1 If the CTG trace is suspicious with antenatal or intrapartum risk factors for fetal compromise, then offer 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. [2017, amended 2022]	This has been amended to clarify that fetal scalp stimulation should be offered if the CTG is suspicious with risk factors, as a pathological trace would require more urgent action. The reference to fetal blood sampling has been removed as this is no longer recommended.
1.10.39 If digital fetal scalp stimulation (during vaginal examination) leads to an acceleration in fetal heart rate, regard this as a sign that the baby is healthy. Take this into account when reviewing the whole clinical picture. [2017]	1.6.2 Be aware that an 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. [2017, amended 2022]	The wording has been revised to emphasise that a lack of response to scalp stimulation is a worrying sign. This is in response to considering the 2017 evidence review
1.10.56 To ensure accurate record keeping for cardiotocography: • make sure that date and time clocks on the cardiotocograph monitor are set correctly • label traces with the woman's name, date of birth and hospital number or NHS number, the date and the woman's pulse at the start of monitoring.	1.8.1 To ensure accurate record keeping for CTG: • make sure that date and time clocks on the cardiotocograph monitor are set correctly • ensure the recording or paper speed is set at 1 cm a minute and that adequate paper is available • label traces with the woman's name, date of birth, hospital number or NHS number and pulse at the start of monitoring, the date of the CTG. [2014, amended 2022]	The paper speed has been added as this was missing from the previous version of the guideline and is important that all centres use the same speed to ensure CTG recordings can be interpreted correctly.
1.10.57 Individual units should develop a system for recording relevant intrapartum events (for example, vaginal examination, fetal blood sampling and siting of an epidural) in standard notes and/or on the cardiotocograph trace. [2014]	1.8.2 Individual units should develop a system for recording relevant intrapartum events (for example, vaginal examination and siting of an epidural) in standard notes and/or on the cardiotocograph trace. [2014, amended 2022]	Fetal blood sampling has been removed from this recommendation as it is not currently advised.

1.10.59 In cases where there is concern that the baby may experience developmental delay, photocopy cardiotocograph traces and store them indefinitely in case of possible adverse outcomes. [2007, amended 2014]	1.8.4 In cases where there is concern that the baby may 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. [2007, amended 2022]	CTG traces in some units can now be recorded electronically and so can be stored this way, meaning that photocopying isn't necessary.
1.13.2 (part of) Perform intermittent auscultation of the fetal heart rate immediately after a contraction for at least 1 minute, at least every 5 minutes. Palpate the woman's pulse every 15 minutes to differentiate between the 2 heartbeats. [2007, amended 2014]	1.2.10 Once the woman has signs of, or is in confirmed second stage of labour: • perform intermittent auscultation immediately after a contraction for at least 1 minute, repeated at least once every 5 minutes and record it as a single rate on the partogram and in the woman's notes. • palpate the woman's pulse simultaneously to differentiate between the maternal and fetal heart rates • if there are concerns about differentiating between the 2 heart rates, then seek help and consider changing the method of fetal heart rate monitoring (see recommendation 1.4.6). [2007, amended 2022]	The need to palpate the woman's pulse simultaneously, and the action to be taken if the pulses cannot be differentiated have been added to the recommendation, as this information was missing from the previous guideline.

Table 3 Minor changes to recommendation wording

Recommendation numbers in current guideline	Comment
All recommendations except those labelled [2022]	Recommendations have been edited into the direct style (in line with current NICE style for recommendations in guidelines) where possible. Yellow highlighting has not been applied to these changes.

ISBN: 978-1-4731-4849-9