FETAL HEART TRACES FLOW CHART

Assess all 5 features

1. Baseline fetal heart rate
2. Baseline variability
3. Presence or absence of decelerations
4. Presence of accelerations
5. Uterine activity

Baseline fetal heart rate

1. Between 110 and 160bpm
2. 100 – 109bpm with no other abnormal features is normal but requires careful monitoring
3. 161 – 180bpm with no other non-reassuring or abnormal features = consider underlying conditions such as infection

Baseline variability

1. Normally 5 - 25/minute
2. Periods of reduced variability can be normal
3. Inform doctor if reduced variability for longer than 30min or increased for longer than 15min

Decelerations

1. Describe the deceleration
2. **Early deceleration** – mirror image of contractions (associated with head compression)
3. **Variable deceleration** – begins with contraction and can be normal. Usually result of cord compression
4. **Atypical variable deceleration** – features indicative of hypoxia with slow return of fetal heart to baseline and loss of variability during the deceleration.
5. **Late deceleration** – start after the peak of a contraction and often have a slow return to baseline
6. **Tachycardia with decelerations** considered to be fetal distress and requires immediate delivery
7. **Sinusoidal pattern** ominous and needs immediate action

Accelerations

Presence of accelerations is generally a sign that the foetus is well

CATEGORY	DEFINITION
Normal	A FHR trace in which all four features are classified as reassuring
Suspicious	A FHR trace with one feature classified as non-reassuring and the remaining features classified as reassuring.
Pathological	A FHR trace with two or more features classified as non-reassuring or one or more classified as abnormal

N.B. It is not always possible or easy to interpret or categorise every CTG tracing.

Table 1 Description of CTG trace features

Feature	Baseline Fetal Heart Rate	Baseline variability (beats/minute)	Decelerations	Accelerations
Reassuring	110 to 160	5 to 25	None or early Variable decelerations with no concerning characteristics* for less than 90 min	Present
Non-Reassuring	100 to 109† or 161 to 180	Less than 5 for 30 to 50 min or More than 25 for 15 to 25 min	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 characteristics* in over 50% of contractions for less than 30 minutes OR 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	The absence of accelerations with other normal parameters is of uncertain significance
Abnormal	Below 100 or Above 180	Less than 5 for more than 50 min or More than 25 for more than 25 min or Sinusoidal	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]) OR Late decelerations for 30 minutes (or less if any maternal or fetal clinical risk factors) OR Acute bradycardia, or a single prolonged deceleration lasting 3 minutes or more	

* 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.

† 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.

Table 2 Management based on interpretation of CTG traces

Category	Definition	Management
Normal	All features are reassuring	• Continue CTG (unless it was started because of concerns arising from intermittent auscultation and there are no ongoing risk factors) and usual care • Talk to the woman and her birth companion(s) about what is happening
Suspicious	1 non-reassuring feature AND 2 reassuring features	• 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	1 abnormal feature OR 2 non-reassuring features	• 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 hypotension or uterine hyperstimulation • 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: o obtain a further review by an obstetrician and a senior midwife • If the cardiotocograph trace is still pathological after fetal scalp stimulation: o consider expediting the birth o take the woman's preferences into account
Need for urgent intervention	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 • 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
* 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 reducing or stopping oxytocin if it is being used and/or offering a tocolytic drug		

Suspicious category need to be assessed in the context of the presence of the following conditions – if present consider immediate delivery

Ante Natal risk factors:

1. Twins etc.
2. Assisted reproduction (IVF, etc.)
3. Advanced maternal age >35yr
4. BMI > 30
5. Post dates
6. Other maternal or fetal conditions

Intrapartum risk factors:

1 Oxytocin
2 Meconium
3 Pyrexia > 37.5ºC (some cases as a result of epidural)

Situational awareness is crucial in the decision making related to the above mentioned category

References:

1. Adam, S. Soma-Pillay, P. Obstetric Essentials. 2018. 3rd Edition p45-47. University of Pretoria
2. NICE Guideline: Intrapartum care, Fetal monitoring during labour. March 2019

Authorship

These guidelines were drafted by a clinical team from Mediclinic and were reviewed by a panel of experts from SASOG and the BetterObs clinical team. All attempts were made to ensure that the guidance provided is clinically safe, locally relevant and in line with current global and South African best practise. Succinctness was considered more important than comprehensiveness.

All guidelines must be used in conjunction with clinical evaluation and judgement; care must be individualised when appropriate. The writing team, reviewers and SASOG do not accept accountability for any untoward clinical, financial or other outcome related to the use of these documents. Comments are welcome and will be used at the time of next review.

Released on date: 2019 12 01