Computerised CTG (cCTG)

Swansea Bay UHB

Document Author:	Dr Louise-Emma Shaw
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Computerised CTG (cCTG)

Computerised CTG is used for the monitoring of the fetal heart in the antenatal period, and in a systematic review showed a reduced perinatal mortality compared to non-computerised CTG. It uses the Dawes-Redman criteria (2002) to assess for normality. When criteria is met AND the cCTG visually looks normal then the chance of fetal hypoxia is low. However the algorithm does not assess for other causes of fetal compromise such as infection, and so it is important that the cCTG is always interpreted with consideration to the clinical picture for that woman and baby. Even if the criteria is met but the cCTG look pathological, then consideration should be given to the value of continuing the pregnancy. cCTG does not replace the responsibility of the midwife and obstetrician to interpret the CTG, but is an adjunct to support decision making.

When the criteria is not met then the management is less clear and it becomes more important to look at why the CTG did not meet the criteria, within the clinical picture for that woman and her baby. It becomes the responsibility of the senior obstetric team to decide on the significance of the cCTG and, in discussion with the woman, decide on a management plan. However a cCTG that does NOT meet the criteria should always been considered an abnormal CTG, and not be discontinued until a management plan has been agreed. The following is a suggestion for how to approach the management.

Indications
cCTG must not be used under 26/40, as the criteria has not been validated for these gestations. It should also not be used with uterine activity or following prostaglandin administration.

Criteria Met
cCTG analysis will give one of two outcomes – either criteria met, or criteria not met at 60 minutes. If the criteria is met and the cCTG visually looks normal then it can be discontinued. This can occur in as little as 10 minutes. If the criteria is met but the CTG does not look normal then it should be continued until obstetric review (ST3+ or equivalent grade)

Criteria NOT Met
The cCTG will run for 60 minutes before the criteria are not met. If the cCTG looks pathological then do not delay review and management to await the report, but escalate for urgent obstetric review.

After 60 minutes a report is generated. The CTG will continue but the computer analysis will stop. Within the report there will be a reason why the criteria has not been met. The following may be given as reasons:

- Baseline rate: The FIGO and NICE guidelines agree that a normal baseline fetal heart rate for a term fetus is 110 – 160 beats per minute. Baseline FH Rates must be assessed in consideration of expected baseline for a fetus of the gestation being monitored. The Dawes/ Redman analyses the intervals between beats and converts into a Basal Heart Rate. Basal rate is not the same as baseline rate and may deviate significantly from a visual assessment

of baseline rate. Reasons for a higher than expected basal rate include maternal conditions such as sepsis, dehydration, DKA. A lower than expected basal rate include opiate usage.

- Decelerations: These will be unprovoked decelerations. Immediate intervention if the trace is otherwise abnormal, or significant clinical concerns. Isolated decelerations may occur especially in very early gestations or oligohydramnios. Repetitive decelerations are more concerning.

- No episodes of high variation: Long Term Variation (LTV) is essentially equivalent to traditional baseline variability. Measured over 1-minute, the difference between the high and low FH values is analysed. Important evidence of normality is the episodic variation in the baseline heart rate. LTV is reported as “High” or “Low” episodes. In deep sleep the fetal heart rate is relatively constant with lower short-term variation but this should not normally exceed 50 minutes.

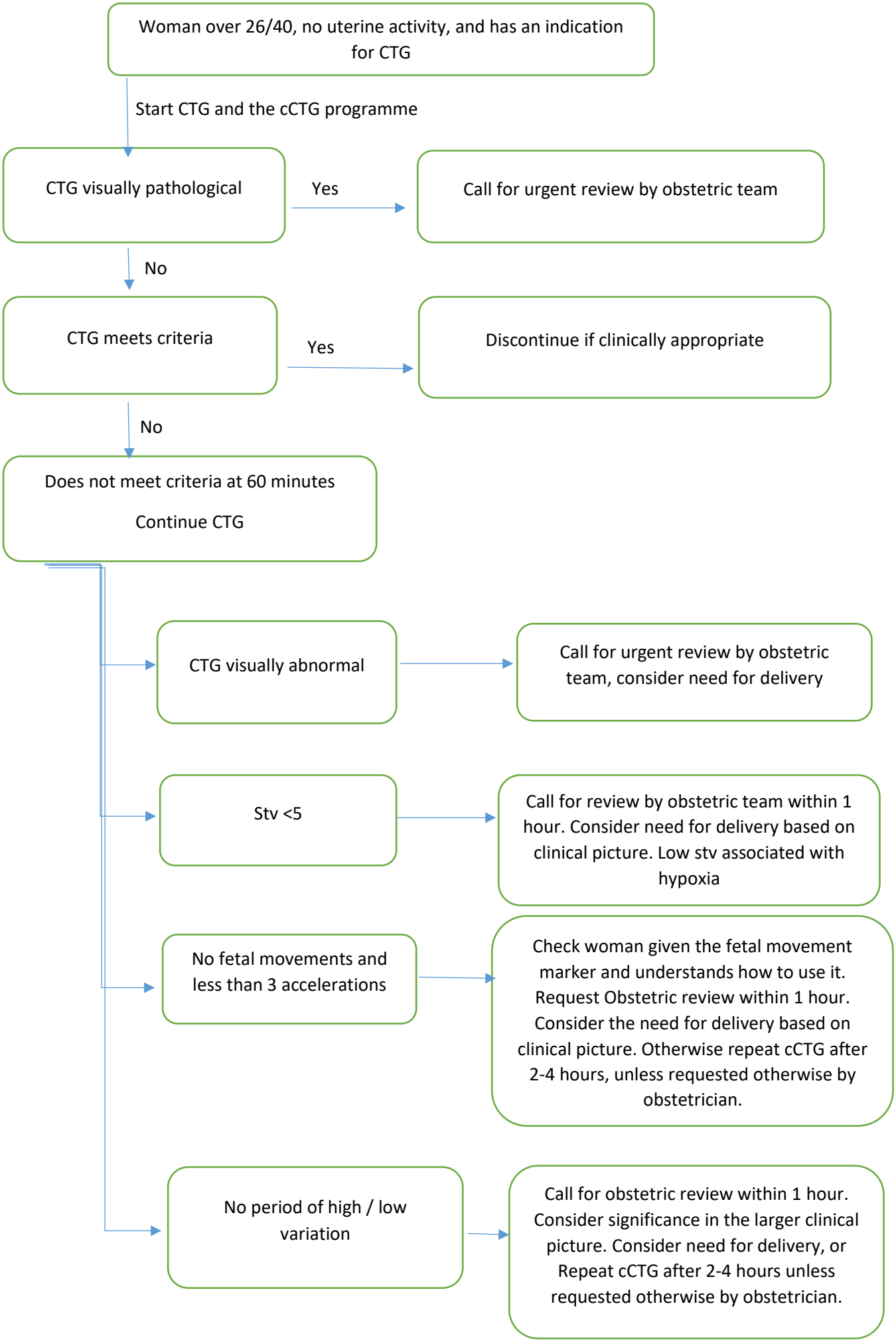
- No fetal movements / fewer than 3 accelerations: Ensure the woman understands to use the event marker with fetal movements, and that the event marker is plugged in. If the woman has not felt any fetal movements AND there are no accelerations then this is more concerning.

- Low stv: Short-term variation (stv) is a computerised measure of the micro fluctuations of the fetal heart. These are not visible to the human eye. A value of less than 3ms is strongly linked to the development of metabolic acidaemia and impending intrauterine death (risk 24%), especially if also with the absence of high variation. STV can only be analysed after a full 60 minutes. A stv between 3 and 5 is borderline with a risk of fetal academia of 2%.

- Suspected sinusoidal pattern: Sinusoidal FHR patterns are associated with either severe fetal anaemia or severe/prolonged fetal hypoxia with acidosis and are associated with poor fetal outcomes. The cCTG should be escalated for urgent obstetric review.

Decision for delivery

As with any CTG consideration should always be given to the whole clinical picture, and not acted upon in isolation. Even with a cCTG that does not meet criteria delivery may not be in the best interest of the woman and fetus, especially in premature gestations. The rationale for not delivering in the presence of a cCTG that does not meet criteria should be clearly documented in the maternal records and a plan for future monitoring made. Where the cCTG looks normal and there are no immediate concerns about fetal or maternal wellbeing then repeating the cCTG after 2-4 hours can be considered. Where cCTG’s repeatedly do not meet the criteria then a review should be undertaken by the obstetric consultant, to ensure senior level decision making regarding plan of care.


Woman over 26/40, no uterine activity, and has an indication for CTG
Start CTG and the cCTG programme
CTG visually pathological
Yes
Call for urgent review by obstetric team
No
CTG meets criteria
Yes
Discontinue if clinically appropriate
No
Does not meet criteria at 60 minutes
Continue CTG
CTG visually abnormal
Call for urgent review by obstetric team, consider need for delivery
Stv <5
Call for review by obstetric team within 1 hour. Consider need for delivery based on clinical picture. Low stv associated with hypoxia
No fetal movements and less than 3 accelerations
Check woman given the fetal movement marker and understands how to use it. Request Obstetric review within 1 hour. Consider the need for delivery based on clinical picture. Otherwise repeat cCTG after 2-4 hours, unless requested otherwise by obstetrician.
No period of high / low variation
Call for obstetric review within 1 hour. Consider significance in the larger clinical picture. Consider need for delivery, or Repeat cCTG after 2-4 hours unless requested otherwise by obstetrician.

Maternity Services

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Checklist for Clinical Guidelines being submitted for Approval