

Reference Number: UHBOBS205 Version Number: 2	Date of Next Review: 06/09/2026 Previous Trust/LHB Reference Number:
Dawes Redman Antenatal Computerised CTG Analysis	
Introduction and Aim To assist midwives and obstetricians in the interpretation of antenatal Cardiotocograph (CTG). This includes understanding the situations where computerised CTG (cCTG) is indicated and how to interpret the Dawes/Redman Criteria.	
Objectives The aim of antenatal fetal surveillance is to identify fetuses at risk of intrauterine hypoxia and acidaemia. Timely, appropriate intervention will avoid fetal neurological damage or death. <p style="text-align: center;">CTG is the most commonly adopted tool for antenatal fetal assessment. It should not be used in isolation.</p> <p style="text-align: center;">There is no clear evidence that antenatal CTG improves perinatal outcomes or caesarean section rates. However, a comparison of cCTG versus traditional CTG showed a significant reduction in perinatal mortality with cCTG. (Cochrane review, 2015)</p> <p style="text-align: center;">CTG interpretation must be used within the context of the clinical situation.</p>	
Scope This policy applies to all healthcare professionals in all locations including those with honorary contracts	
Equality Health Impact Assessment	<i>An Equality Health Impact Assessment (EHIA) has not been completed.</i>
Documents to read alongside this Procedure	<i>Fetal Surveillance Guideline</i>
Approved by	<i>Maternity Professional Forum and Obstetrics & Gynaecology Quality & Safety</i>

Document Title: <i>Dawes Redman cCTG</i>	2 of 11	Approval Date:
Reference Number: UHBOBS205		Next Review Date: 06/09/2026
Version Number: 2		Date of Publication:
Approved By: Maternity Professional Forum & O&G Quality & Safety		

Accountable Executive or Clinical Board Director	<i>Jason Roberts, Executive Nurse Director</i>
Author(s)	<i>Sarah Spencer, Senior Midwife Manager Sarah Davies, Fetal Surveillance Midwife</i>
<p style="text-align: center;">Disclaimer</p> <p style="text-align: center;">If the review date of this document has passed please ensure that the version you are using is the most up to date either by contacting the document author or the Governance Directorate.</p>	

Summary of reviews/amendments			
Version Number	Date of Review Approved	Date Published	Summary of Amendments
2			<i>Band 7 as well as senior obstetrician can sign off CTG when criteria not met. Dawes-Redman not to be used in the presence of uterine activity.</i>

Document Title: <i>Dawes Redman cCTG</i>	3 of 11	Approval Date:
Reference Number: UHBOBS205		Next Review Date: 06/09/2026
Version Number: 2		Date of Publication:
Approved By: Maternity Professional Forum & O&G Quality & Safety		

1 Table of Contents

Contents

1 Table of Contents	3
2 Aim/Purpose of this Guideline	5
3 Definition and Background	6
4 COMPUTERISED CTG (cCTG)	7
4.1 ELIGIBILITY FOR CTG	7
4.2 EQUIPMENT	7
4.3 SETTING UP THE MONITOR	8
4.4 DURATION OF MONITORING	8
4.5 DOCUMENTATION FOR cCTG	8
4.6 STORAGE OF CTG's	9
5 ABNORMAL CTG	10
6 RESULTS	11
6.1 Criteria met	11
6.2 Criteria NOT met	11
6.3 Reasons for not meeting the criteria (see appendix 1)	11
6.4 Summary of Actions Following cCTG	12
6.4.1 CRITERIA MET	12
6.4.2 CRITERIA NOT MET BEFORE 60 MINUTES	12
6.4.3 CRITERIA NOT MET AFTER 60 MINUTES OF ANALYSIS	13
7 Reasons for Not Meeting Dawes-Redman Criteria and Actions	14
7.1 Basal Heart Rate outside normal range	14
7.2 Large decelerations	14
7.3 No episodes of high variation	14
7.4 No movements and fewer than 3 accelerations	15
7.5 Baseline fitting is uncertain	15
7.6 Short-term variation (STV) is less than 3ms	15

Document Title: <i>Dawes Redman cCTG</i>	4 of 11	Approval Date:
Reference Number: UHBOBS205		Next Review Date: 06/09/2026
Version Number: 2		Date of Publication:
Approved By: Maternity Professional Forum & O&G Quality & Safety		

7.7 Possible error at end of the record	16
7.8 Deceleration at the end of the record	16
7.9 High frequency sinusoidal rhythm	16
7.10 Suspected sinusoidal rhythm	17
7.11 Long-term variation in high episodes below acceptable level	17
7.12 No accelerations	17
8 Reference	18

Document Title: <i>Dawes Redman cCTG</i>	5 of 11	Approval Date:
Reference Number: UHBOBS205		Next Review Date: 06/09/2026
Version Number: 2		Date of Publication:
Approved By: Maternity Professional Forum & O&G Quality & Safety		

2 Aim/Purpose of this Guideline

To assist midwives and obstetricians in the interpretation of antenatal Cardiotocograph (CTG). This includes understanding the situations where computerised CTG (cCTG) is indicated and how to interpret the Dawes/Redman Criteria.

[Back to Contents](#)

Document Title: <i>Dawes Redman cCTG</i>	6 of 11	Approval Date:
Reference Number: UHBOBS205		Next Review Date: 06/09/2026
Version Number: 2		Date of Publication:
Approved By: Maternity Professional Forum & O&G Quality & Safety		

3 Definition and Background

The aim of antenatal fetal surveillance is to identify fetuses at risk of intrauterine hypoxia and acidaemia. Timely, appropriate intervention will avoid fetal neurological damage or death.

CTG is the most commonly adopted tool for antenatal fetal assessment. It should not be used in isolation.

There is no clear evidence that antenatal CTG improves perinatal outcomes or caesarean section rates. However, a comparison of cCTG versus traditional CTG showed a significant reduction in perinatal mortality with cCTG. (Cochrane review, 2015).

CTG interpretation must be used within the context of the clinical situation.

[Back to Contents](#)

Document Title: <i>Dawes Redman cCTG</i>	7 of 11	Approval Date:
Reference Number: UHBOBS205		Next Review Date: 06/09/2026
Version Number: 2		Date of Publication:
Approved By: Maternity Professional Forum & O&G Quality & Safety		

4 COMPUTERISED CTG (cCTG)

cCTG provides objective CTG interpretation. It allows communication of robust, numeric facts instead of opinion.

The Dawes/Redman analysis has a database of 100,000 traces; by using this vast numeric data and relating it to outcomes, it acts as an expert assistant for CTG interpretation and accurate interpretation criteria.

The final clinical judgement should be based on the entire clinical assessment with cCTG forming part of this holistic approach to pregnancy management.

[Back to Contents](#)

4.1 ELIGIBILITY FOR CTG

Dawes/Redman Criteria is NOT appropriate for intrapartum fetal monitoring. It must be discontinued once the woman is in active labour.

cCTG should only be performed in the antenatal period for fetal surveillance as per clinical indications.

Dawes/Redman criteria should not be used during induction of labour in the presence of uterine activity.

Dawes/Redman criteria can be used for a fetal gestation of 26⁺⁰ onwards until the woman is in labour. Prior to that gestation, auscultation with a Pinard Stethoscope or Sonicaid is appropriate.

[Back to Contents](#)

4.2 EQUIPMENT

Only Huntleigh Sonicaid Team3 provide Dawes-Redman analysis.

[Back to Contents](#)

Document Title: <i>Dawes Redman cCTG</i>	8 of 11	Approval Date:
Reference Number: UHBOBS205		Next Review Date: 06/09/2026
Version Number: 2		Date of Publication:
Approved By: Maternity Professional Forum & O&G Quality & Safety		

4.3 SETTING UP THE MONITOR

The fetal heart must be auscultated with a Pinard Stethoscope or sonicaid before commencing the cCTG and documented.

Turn on the machine by touching the on/off switch for 3 seconds (front, upper right of machine)

Position the toco and ultrasound transducers.

Connect the fetal event marker and show the patient how to use it.

Input patient name, hospital number and EDD (from scan), gestational age. DO NOT use LMP. Analysis is now ready to start. Ensure maternal pulse is recorded. Ensure date and time is correct and sign cCTG.

NOTE the analysis will not start unless the gestation is entered.

[Back to Contents](#)

4.4 DURATION OF MONITORING

The maximum record length is 60 minutes for Dawes Redman analysis at this point criteria is either *Met* or *Not Met*. If the criteria is met the cCTG can be removed. If it is not met the trace must continue until you have sought Band 7 or ST6 and above review.

The computer analyses the CTG data and compares it with the Dawes/Redman criteria at 10 minutes and every 2 minutes thereafter.

The practitioner commencing the CTG MUST ensure the quality of the cCTG is adequate

[Back to Contents](#)

4.5 DOCUMENTATION FOR cCTG

Rationale for antenatal CTG should be documented in maternal notes.

Document Title: <i>Dawes Redman cCTG</i>	9 of 11	Approval Date:
Reference Number: UHBOBS205		Next Review Date: 06/09/2026
Version Number: 2		Date of Publication:
Approved By: Maternity Professional Forum & O&G Quality & Safety		

At the start of the CTG, enter the woman's name and hospital number (use patient identification sticker) and legible name, designation and signature of the midwife (use printed stamp for clarity)

Add the Maternal pulse at the start of the CTG.

Confirmation that the date and time on the CTG is correctly set and signed by the midwife.

Confirmation that the monitor is set to run at 1cm per minute.

Any event, review or action related to the CTG will be entered on the trace with a legible name, signature and designation.

At the end of the CTG, the above classification is documented with the date, time and legible staff name, signature and designation.

[Back to Contents](#)

4.6 STORAGE OF CTG's

Antenatal CTG paper print outs must be stored in the CTG envelope in the patient's record. The envelope must be identified with the patient's name, and hospital number; include the date and reason for CTG.

[Back to Contents](#)

Document Title: <i>Dawes Redman cCTG</i>	10 of 11	Approval Date: 06/09/2019
Reference Number: UHBOBS205		Next Review Date: 06/09/2022
Version Number: 1		Date of Publication: 06/09/2019
Approved By: Maternity Professional Forum & O&G Quality & Safety		

5 ABNORMAL CTG

If the CTG is suspected to be abnormal at any point, an immediate Band 7 or ST6 and above review **MUST** be sought using the appropriate SBAR escalation protocol.

Whenever the CTG is reviewed during the analysis, the practitioner must sign/annotate to evidence and document in the notes.

[Back to Contents](#)

Document Title: <i>Dawes Redman cCTG</i>	11 of 11	Approval Date: 06/09/2019
Reference Number: UHBOBS205		Next Review Date: 06/09/2022
Version Number: 1		Date of Publication: 06/09/2019
Approved By: Maternity Professional Forum & O&G Quality & Safety		

6 RESULTS

6.1 Criteria met

If the cCTG meets the Dawes/Redman criteria, this is a normal result.

Unless there are other clinical concerns, the analysis can be stopped and a report of the analysis is printed.

This criteria can be achieved as early as 10 minutes. The CTG does not need to be continued if there are no clinical concerns.

The practitioner who stops the CTG must sign the CTG at the end of the print out and include a visual assessment, to confirm that the CTG is normal. If at any point the practitioner disagrees with the outcome on the printout this must be escalated to a Band 7 or ST6 and above.

The cCTG must then be filed in the patients notes.

[Back to Contents](#)

6.2 Criteria NOT met

The CTG must continue for the FULL 60 minutes.

If it the criteria is still not met at 60 minutes, the computer will end the analysis but the trace will continue and print the results on the trace. The reasons why the criteria were not met are highlighted as coded numbers.

Continue the cCTG until the case is reviewed by a Band 7 or ST6 and above and action taken, based on the reasons for “Criteria not met”, visual trace review and a holistic assessment of the pregnancy.

[Back to Contents](#)

6.3 Reasons for not meeting the criteria (see [appendix 1](#))

Code

Document Title: <i>Dawes Redman cCTG</i>	12 of 11	Approval Date: 06/09/2019
Reference Number: UHBOBS205		Next Review Date: 06/09/2022
Version Number: 1		Date of Publication: 06/09/2019
Approved By: Maternity Professional Forum & O&G Quality & Safety		

- | | |
|----|---|
| 1 | Basal Heart Rate outside normal range |
| 2 | Large decelerations |
| 3 | No episodes of high variation |
| 4 | No movements and fewer than 3 accelerations |
| 5 | Baseline fitting is uncertain |
| 6 | Short-term variation (STV) is less than 3ms |
| 7 | Possible error at the end of the record |
| 8 | Deceleration at the end of the record |
| 9 | High frequency sinusoidal rhythm |
| 10 | Suspected sinusoidal rhythm |
| 11 | Long-term variation (LTV) in high episodes below acceptable level |
| 12 | No accelerations |

[Back to Contents](#)

6.4 Summary of Actions Following cCTG

6.4.1 CRITERIA MET

- Visually review and classify the cCTG. If this is normal and there are no ongoing clinical concerns the analysis can be **stopped**.
- This can be with as little as **10 minutes** recording time. □ The printer will produce a report of the analysis results
- **DO NOT** review the numeric data as the cCTG has been classified as normal and this data is therefore insignificant

6.4.2 CRITERIA NOT MET BEFORE 60 MINUTES

- Unless there are clear abnormal features or any cause for concern continue the recording until the criteria are met.
- Short term variation (STV) is uninterpretable prior to 60 minutes; **DO NOT** review the numeric data.
- **DO NOT** prematurely stop the recording. If the analysis has been stopped before criteria are met and before 60 minutes it is not valid.

Document Title: <i>Dawes Redman cCTG</i>	13 of 11	Approval Date: 06/09/2019
Reference Number: UHBOBS205		Next Review Date: 06/09/2022
Version Number: 1		Date of Publication: 06/09/2019
Approved By: Maternity Professional Forum & O&G Quality & Safety		

6.4.3 CRITERIA NOT MET AFTER 60 MINUTES OF ANALYSIS

- Indicates that normality has not been demonstrated
- In the context of an antenatal CTG classification this is an abnormal outcome
- The case must be reviewed by a Band 7 or ST6 and above and action taken based on the reasons for failure, visual trace review and a holistic assessment of the pregnancy
- STV cannot be assessed visually it can only be calculated following 60 minutes of analysis.
- The STV should be taken into account but **MUST NOT** be used in isolation as an indicator of fetal condition.
 - $\geq 4\text{ms}$ is normal
 - $< 4\text{ms}$ is low
 - $< 3\text{ms}$ is abnormal
 - $< 2\text{ms}$ is highly abnormal

[Back to Contents](#)

Document Title: <i>Dawes Redman cCTG</i>	14 of 11	Approval Date: 06/09/2019
Reference Number: UHBOBS205		Next Review Date: 06/09/2022
Version Number: 1		Date of Publication: 06/09/2019
Approved By: Maternity Professional Forum & O&G Quality & Safety		

7 Reasons for Not Meeting Dawes-Redman Criteria and Actions

7.1 Basal Heart Rate outside normal range

Baseline FH Rates must be assessed in consideration of expected baseline for a fetus of the gestation being monitored. Also consider the baseline in relation to the baseline on any previous CTG.

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 slightly from a visual assessment of baseline rate.

[Back to Contents](#)

7.2 Large decelerations

These will be unprovoked decelerations. Review by Band 7 or ST6 and above. Immediate intervention if the trace is otherwise abnormal, or significant clinical concerns.

If the trace is otherwise normal and there are no clinical concerns, the CTG should be should be repeated later, as per Band 7 or ST6 and above management plan.

[Back to Contents](#)

7.3 No episodes of high variation

Long Term Variation (LTV) is essentially equivalent to traditional baseline variability.

Measured over a 1 minute sample, 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.

Document Title: <i>Dawes Redman cCTG</i>	15 of 11	Approval Date: 06/09/2019
Reference Number: UHBOBS205		Next Review Date: 06/09/2022
Version Number: 1		Date of Publication: 06/09/2019
Approved By: Maternity Professional Forum & O&G Quality & Safety		

In deep sleep the fetal heart rate is relatively constant with lower short-term variation but this should not normally exceed 50 minutes.

[Back to Contents](#)

7.4 No movements and fewer than 3 accelerations

This is significant and requires review by the Band 7 or ST6 and above.

[Back to Contents](#)

7.5 Baseline fitting is uncertain

If all else is normal and the baseline falls within normal parameters then this can be ignored.

[Back to Contents](#)

7.6 Short-term variation (STV) is less than 3ms

DO NOT rely on STV values if cCTG has been on for less than 1 hour

Short-term variation 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 - Particularly with the absence of an episode of high variation. STV can only be analysed after a full 60 minutes.

Document Title: <i>Dawes Redman cCTG</i>	16 of 11	Approval Date: 06/09/2019
Reference Number: UHBOBS205		Next Review Date: 06/09/2022
Version Number: 1		Date of Publication: 06/09/2019
Approved By: Maternity Professional Forum & O&G Quality & Safety		

STV (ms)	<2.6	2.6-3.0	>3.0
Metabolic acidaemia	10.3%	4.0%	2.7%
IUD	24.1%	4.3%	0.0%

STV of less than 3ms is significant and should be discussed and reviewed by the Band 7 or ST6 and above.

Urgent review is required if the CTG visual assessment is also abnormal

[Back to Contents](#)

7.7 Possible error at end of the record

This occurs when the machine detects a possible abnormality at the end of the trace which would otherwise be passed as CRITERIA MET.

In this event the trace may be continued or, if the clinical evaluation is that it is significantly abnormal, for example prolonged deceleration, then action should be taken as appropriate. Review by Band 7 or ST6 and above.

[Back to Contents](#)

7.8 Deceleration at the end of the record

In this event the trace should be continued and action taken as appropriate. Review by Band 7 or ST6 and above.

[Back to Contents](#)

7.9 High frequency sinusoidal rhythm

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 analysis of the Dawes Redman system should be acted on immediately and discussed with the Band 7 or ST6 and above.

[Back to Contents](#)

Document Title: <i>Dawes Redman cCTG</i>	17 of 11	Approval Date: 06/09/2019
Reference Number: UHBOBS205		Next Review Date: 06/09/2022
Version Number: 1		Date of Publication: 06/09/2019
Approved By: Maternity Professional Forum & O&G Quality & Safety		

7.10 Suspected sinusoidal rhythm

Sinusoidal FHR needs to be distinguished from a pseudosinusoidal FHR which, while it closely resembles a sinusoidal pattern, is usually transient, resolves spontaneously and is associated with a good fetal outcome.

Where a diagnosis of Sinusoidal FHR pattern is made, immediate intervention is required with probable emergency delivery if intrauterine resuscitation is not appropriate.

The CTG should be continued.

Maternal blood should be taken for an urgent Kleihauer test to assess the degree of any fetomaternal haemorrhage.

The Band 7, Obstetric Registrar, Obstetric Consultant, Neonatologist and Haematologist, should be alerted.

[Back to Contents](#)

7.11 Long-term variation in high episodes below acceptable level

This should be acted upon in the same way as STV.

[Back to Contents](#)

7.12 No accelerations

In this event the CTG trace should be continued but should be reviewed by Band 7 or ST6 and above.

(Dawes Redman analyses acceleration using a slightly lower threshold (>10bpm) than FIGO and NICE definitions).

DO NOT RELY ON THE ANALYSIS IN ISOLATION

Document Title: <i>Dawes Redman cCTG</i>	18 of 11	Approval Date: 06/09/2019
Reference Number: UHBOBS205		Next Review Date: 06/09/2022
Version Number: 1		Date of Publication: 06/09/2019
Approved By: Maternity Professional Forum & O&G Quality & Safety		

It may not always identify abnormal patterns that may be more obvious from visual interpretation with a holistic expert assessment of the whole clinical scenario.

[Back to Contents](#)

8 Reference

Cochrane review, (2015) Antenatal cardiotocography for fetal assessment. Wiley Online.

[Back to Contents](#)