

Antenatal Fetal Monitoring (Computerised cardiocotocograph) - Full Clinical Guideline

Reference no.:UHDB/AN/F2.1

Contents

Section		Page
1	Introduction	1
2	Purpose and Outcomes	1
3	Key Responsibilities and Duties	1
4	Abbreviations	2
5	Main Guideline	2
5.1	Criteria	2
5.2	Eligibility for cCTG	2
5.3	Setting up cCtg analysis	3
5.4	During cCTG analysis	3
5.5	cCTG analysis	3
5.5.1	Criteria met	3
5.5.2.	Criteria not met	4
6	Monitoring and compliance effectiveness	5
7	References	5
Appendix 1	Criteria not met codes	6
Appendix 2	Antenatal cCTG label	8
	Document Control	9

1. Introduction

The Computerised CTG analysis utilised on the Huntleigh machines is the Dawes Redman algorithm. The Dawes Redman analysis is derived from the world's largest database (100,000 traces) and provides a precise and reproducible grading of the CTG, thus eliminating the problems associated with highly subjective visual interpretation. Dawes Redman analysis is **NOT** appropriate for intrapartum fetal monitoring.

2. Purpose and Outcomes

To improve the standard of antenatal fetal monitoring, this guidance will provide the midwives and obstetricians practical assistance in interpreting the Dawes Redman analysis. The analysis will then be used along with the entire clinical picture of the presenting patient to identify the fetus at risk of hypoxia and provide guidance on management and care plans when 'criteria met' and when 'criteria not met' both within 60 minutes and >60 minutes.

3. Key Responsibilities and Duties

To inform the patient of the necessity of the cCTG and gain consent, keeping the patient informed of the outcome and management plan. To accomplish a quality CTG trace and escalate concerns timely and in accordance with the guideline using the antenatal cCTG sticker (Appendix 2) to assist with categorisation, escalation and management plan in relation to the entire clinical picture. To also use the antenatal CTG sticker when Dawes Redman is not suitable (document on sticker if not used).

4. **Abbreviations**

CTG	Cardiotocograph
cCTG	Computerised Cardiotocograph
EDD	Estimated Delivery Date
FHR	Fetal Heart Rate
IUD	Interuterine Death
STV	Short Term Variation
LTV	Long Term Variation

5. **Main guideline**

5.1 Criteria:

Computerised CTG should be used for ANTENATAL patients only, it should not be used on patients who are in active labour or suspected of being in active labour.

Computerised CTG analysis provides a precise and reproducible grading of the CTG, what it **cannot do** is relate it to the clinical picture that the patient presents with or with previous CTG monitorings undertaken. As with all CTG analysis it provides one piece of information which should be used in conjunction with the whole clinical picture when making a plan of care.

5.2 Eligibility for cCTG and Dawes Redman analysis:

5.2.1 cCTG is **NOT** to be used for intrapartum analysis. It is not appropriate to use this analysis for those women experiencing uterine contractions including the latent phase of labour.

5.2.3 cCTG can be used from 26+0 weeks provided the patient is antenatal and not intrapartum or suspected of being intrapartum. However, this should be performed and interpreted with caution and the decision must be made on an individual care plan basis by a senior obstetrician. Difficulty in producing a good quality trace must be acknowledged due to the increased possibility of signal loss due to early gestation.

5.2.4 cCTG should be carried out for altered fetal movements from 26 weeks

5.2.5 cCTG should be carried out prior to the Induction of labour process unless not deemed appropriate due to uterine contractions. NOTE: cCTG is **not** to be used at any time after insertion of Propess regardless of uterine activity.

5.3 Setting up Dawes Redman cCTG analysis:

Select 'set up' from the main display and then select 'analysis on'

- It is important to enter the exact gestation according to the EDD.
NOTE the analysis will not start unless the gestation is entered.
- There is an option to enter patient name
- An 'A' will appear in the bottom right corner to show that the analysis is ON.

Ensure hospital number, name, date, time, maternal pulse, reason for ctg and practitioner signature are present on the printed CTG

5.4 During cCTG analysis:

5.4.1 The **maximum** time the computer will analyse for is **60 minutes**, at this point the trace will continue but no further analysis will be made. If further analysis is required you must restart the monitor and set up again.

5.4.2 The analysis is made at 10 minutes and then every 2 minutes thereafter up to 60 minutes.

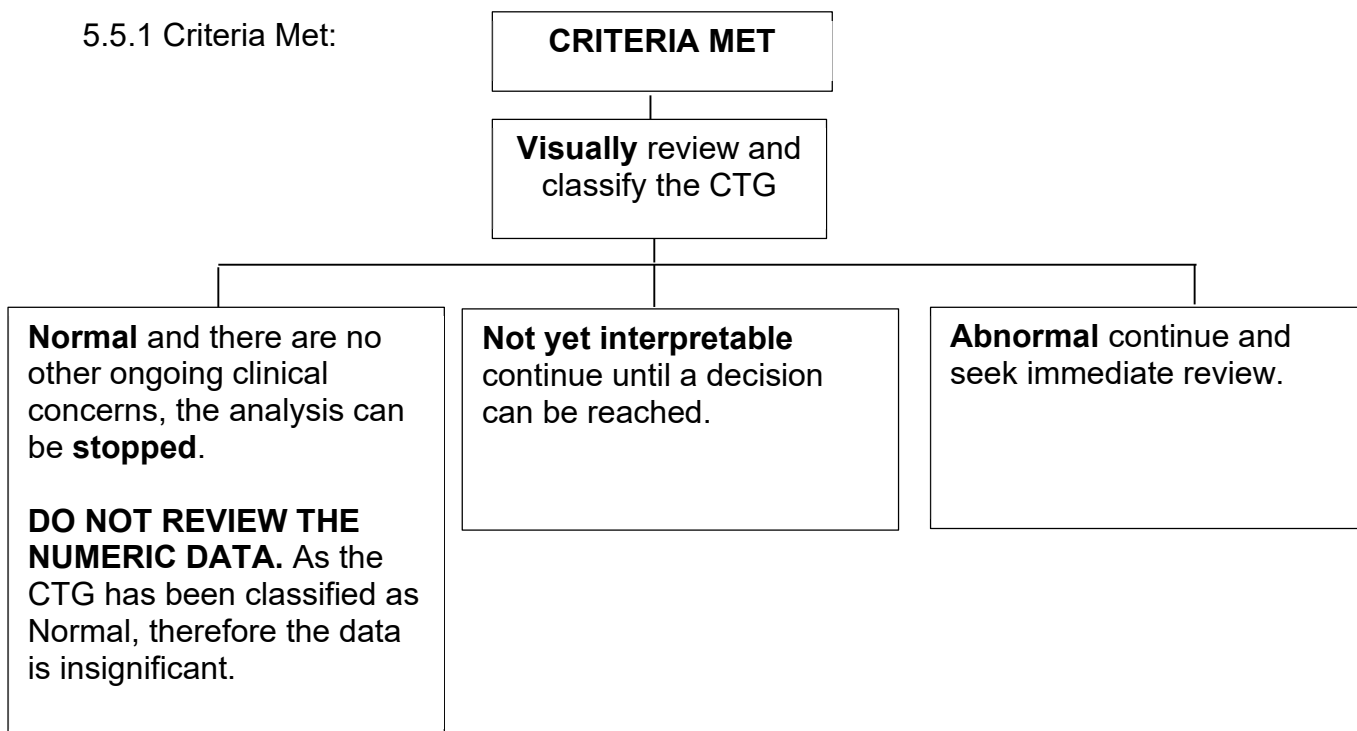
5.4.3 The status indicator will appear in the bottom right corner with the following indicators:

- ✓ Criteria met
- x Criteria not met
- N Not applicable (i.e. no results yet)

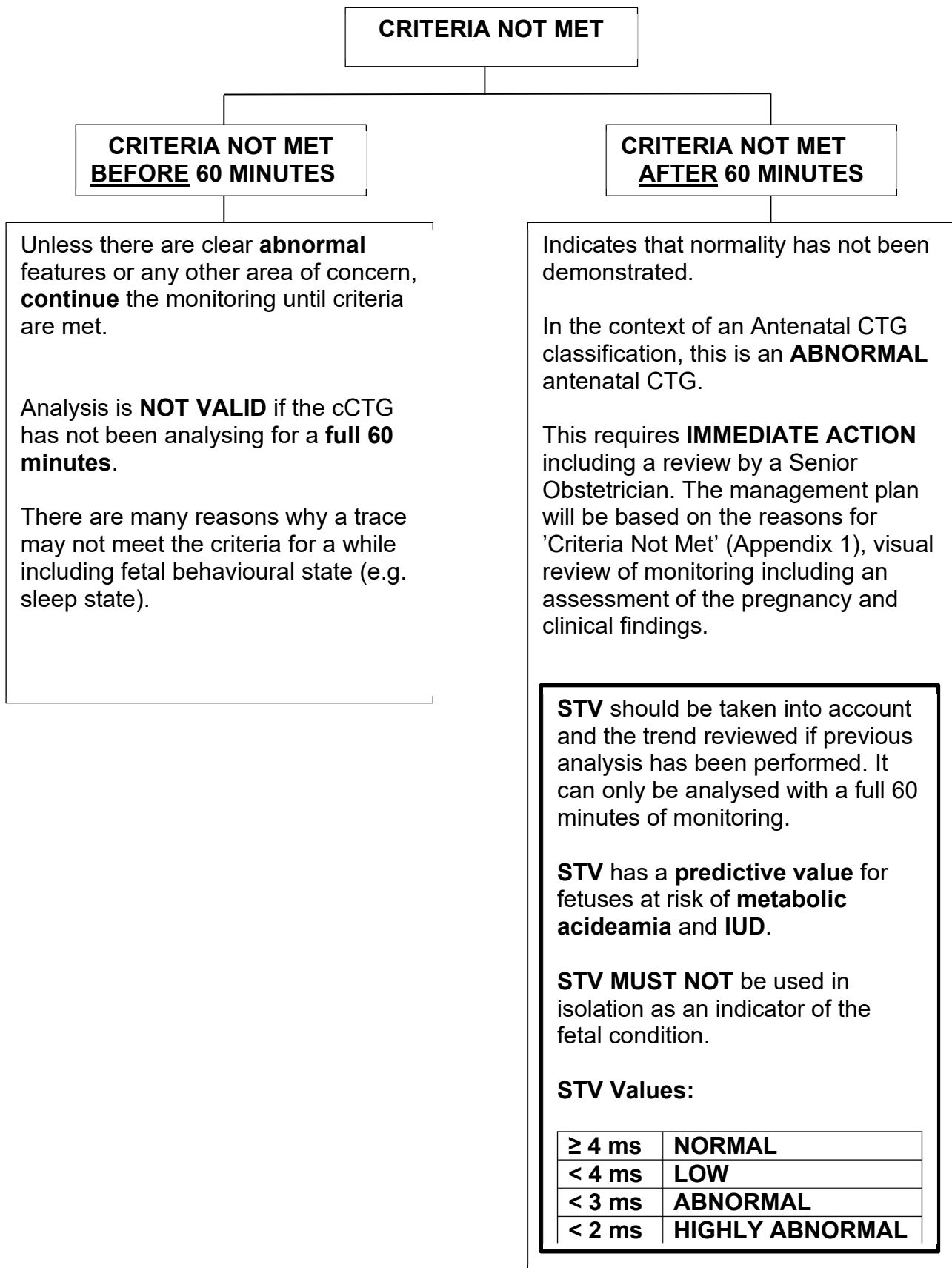
5.5 cCtg analysis:

DO NOT act on the basis of the cCTG alone, this is an AID to pregnancy management, NOT a diagnostic tool. It should Not replace clinical decision making.

5.5.1 Criteria Met:



5.5.2 Criteria Not Met (See Appendix 1):



5.5.3 On completion of monitoring fill out the cCTG label assessment (Appendix 2) and sign the trace.

6. **Monitoring Compliance and Effectiveness**

As per agreed business unit audit forward programme

7. **References**

Royal Cornwall Hospital (2019) **Antenatal Cardiotocography (CTG) and Dawes-Redman Analysis Clinical Guideline v2.1**

Dawes GS, Moulden M, Redman CW. **Improvements in computerised fetal heart rate patterns analysis antepartum.** *J Perinat Med*; 1996; 24:25-36.

B Albert. **A midwife's perspective on fetal monitoring and the value of Dawes-Redman CTG analysis.** *British Journal of Midwifery*

CWG Redman and M Moulden **Avoiding CTG misinterpretation: A review of the latest Dawes- Redman CTG analysis** *British Journal of Midwifery*


Royal College of Obstetricians and gynaecologists. **Green-top Guideline No. 31: The investigation and management of the small for gestational age fetus.** London: RCOG:2014.

Dawes Redman **Criteria Not Met** codes:

	Criteria not met code	Description	Suggested Management (Not to replace individual care planning)
1	Basal heart rate outside normal range	This is the average rate measured normally during periods of low variation. On very reactive traces it is assessed by a 'best fit' method. It is similar to visually assessed baseline rate but may differ with some trace patterns (eg. very reactive, large decelerations, etc.). Users should always visually assess baseline rate independently from the analysis.	Consider maternal observations, signs and symptoms of infection. Seek review from senior obstetrician taking entire clinical picture into consideration. Visual assessment of Baseline Rate should take into account gestational age and any previous CTG traces available.
2	Large decelerations	These will be unprovoked, in an otherwise normal CTG with good fetal movements and no clinical concerns it is unlikely to be a decompensating hypoxic fetus.	Review by senior obstetrician, if other CTG concerns and / or clinical concerns discussion for consideration of delivery. If otherwise normal CTG and no clinical concerns, CTG should be repeated no longer than after 4 to 6 hours as part of a management plan taking into account the clinical picture.
3	No episodes of high variation	Reported as High or Low episodes. In deep sleep the fetal heart is relatively constant with lower STV.	Review by senior obstetrician as this should not normally exceed 50 minutes, in this event provided the STV is normal the trace can be discontinued. An individual care plan needs to be made taking into account the fetal risks and clinical picture. If otherwise normal CTG and no clinical concerns, CTG should be repeated no longer than after 4 to 6 hours as part of a management plan taking into account the clinical picture.
4	No movements and fewer than 3 accelerations	The absence of accelerations in an antenatal CTG is abnormal .	Review by senior obstetrician.
5	Baseline fitting is uncertain		If this is the only reason why the criteria is not met and there are no additional fetal or clinical concerns the monitoring can be discontinued with an individualized care plan clearly documented. If otherwise normal CTG and no clinical concerns, CTG should be repeated no longer than after 4 to 6 hours as part of a management plan taking into account the clinical picture.
6	Short-term variation is less than 3ms	STV cannot be assessed visually, it is a computerized measure of the micro fluctuations of the fetal heart. It is not the same as beat to beat variability. It can only	A value of less than 3ms is strongly linked to metabolic acideamia and impeding intrauterine death. Particularly with absence of an episode

		be analysed after a full 60 minutes (and should be ignored before this).	<p>of high variation. Preparations for delivery should be made and the CTG continued with urgent review by the senior obstetric team.</p> <table border="1"> <tr> <td>STV (ms)</td> <td><2.6</td> <td>2.6-3.0</td> <td>>3.0</td> </tr> <tr> <td>Gestation (wks)</td> <td>25-38</td> <td>26-38</td> <td>27-37</td> </tr> <tr> <td>Metabolic Acideamia</td> <td>10.3%</td> <td>4.0%</td> <td>2.7%</td> </tr> <tr> <td>IUD</td> <td>24.1%</td> <td>4.3%</td> <td>0.0%</td> </tr> </table>	STV (ms)	<2.6	2.6-3.0	>3.0	Gestation (wks)	25-38	26-38	27-37	Metabolic Acideamia	10.3%	4.0%	2.7%	IUD	24.1%	4.3%	0.0%
STV (ms)	<2.6	2.6-3.0	>3.0																
Gestation (wks)	25-38	26-38	27-37																
Metabolic Acideamia	10.3%	4.0%	2.7%																
IUD	24.1%	4.3%	0.0%																
7	Possible error at the end of the record	This occurs when the analysis detects a possible abnormality at the end of the monitoring, which would otherwise be passed as 'criteria met'.	The monitoring should be continued. If it is significantly abnormal eg. prolonged bradycardia, urgent escalation and appropriate action.																
8	Deceleration at the end of the record		As above (Possible error at the end of the record).																
9	High frequency sinusoidal rhythm	Sinusoidal FHR patterns are associated with either severe fetal anaemia or severe / prolonged hypoxia with acidosis and are associated with poor fetal outcomes.	Urgent review by senior obstetrician with plans for delivery. Maternal blood should be taken for urgent Kleihauer test to assess the degree of feto-maternal haemorrhage, but this should not delay delivery.																
10	Suspected sinusoidal rhythm	Sinusoidal FHR needs to be distinguished from pseudo-sinusoidal FHR which, while closely resembles a sinusoidal pattern, is usually transient, resolves spontaneously and is associated with good fetal outcomes.	Where a diagnosis of sinusoidal FHR is made, management should proceed as above (9 High frequency sinusoidal rhythm).																
11	Long-term variation in high episodes below acceptable level		This should be acted upon the same as STV (6 Short-term variation is less than 3ms)																
12	No accelerations	The absence of accelerations in an antenatal CTG is Abnormal .	Review by senior obstetrician and continue monitoring.																

Antenatal cCTG label. (may also be used if not using Dawes Redman when not suitable, document as such on sticker)

Antenatal CTG assessment	G: P:	Gestational age:	Maternal pulse:		
Fetal movements:	Normal <input type="checkbox"/>	Reduced <input type="checkbox"/>	Changed <input type="checkbox"/>	Absent <input type="checkbox"/>	Signed off date/time:
	NORMAL	ABNORMAL	Name:		
Baseline fetal heart rate:	110-160 BPM <input type="checkbox"/>	<110 BPM <input type="checkbox"/>	Designation:		
		>160 BPM <input type="checkbox"/>	Signature:		
		Sinusoidal trace <input type="checkbox"/>	Second signature (*only if no DR used)		
		Raised baseline <input type="checkbox"/>	Name:		
Variability	>5 BPM <input type="checkbox"/>	<5 BPM for >30 minutes <input type="checkbox"/>	Designation:		
	<25 BPM <input type="checkbox"/>	>25 BPM for >25 minutes <input type="checkbox"/>	Signature:		
Accelerations (>15 BPM above baseline for minimum of 15 seconds)	Present <input type="checkbox"/>	Absent (in 40 minute period) <input type="checkbox"/>	Escalation		
Decelerations (visual and/or audible)	None <input type="checkbox"/>	Any type of deceleration <input type="checkbox"/>	To registrar/consultant if Abnormal CTG and/or Dawes Redman criteria not met:		
CATEGORISATION	NORMAL CTG <input type="checkbox"/>	ABNORMAL CTG <input type="checkbox"/>			
	All four features normal	One or more features abnormal			
Dawes Redman used: Yes / No*	Criteria met <input type="checkbox"/>	Criteria not met <input type="checkbox"/>			

WPH2300/UHDBv2 lgd

Documentation Control

Reference Number:	Version: UHDB Version 1.1	Status: FINAL		
Royal Derby prior to merged document:				
Version / Amendment	Version	Date	Author	Reason
	7	April 2019	Miss Rajendran	Previous full guideline with AN and intrapartum combined
Burton Trust prior to merged document:				
WC/NP/106	2	25/04/2018	Dr W Oakley	Inclusion of CTG codes
Version control for UHDB merged document:				
UHDB/AN/F2.1	1	01/03/2021	Miss Rajendran Consultant Obstetrician	Merge and introduction Dawes Redman at RDH site
	1.1	Nov 2022	Miss Rajendran Consultant Obstetrician Cindy Meijer Lead midwife guidelines, audit and digital	Dawes Redman to be carried out prior to all IOL and for all RFM from 26 weeks
Intended Recipients:				
Training and Dissemination: Cascaded electronically through lead sisters/midwives/doctors via NHS.net, Published on Intranet, Article in Business unit newsletter;				
To be read in conjunction with: Reduced fetal movements, AN care, Intrapartum fetal monitoring				
Keywords:				
Consultation with:	Training and development team, senior midwives, PAU and MAU, Maternity Risk team			
Business Unit sign off:	11/2022 Maternity Guidelines Group: Miss S Rajendran – Chair 01/12/2022: Maternity Governance CD – Mrs K Dent			
Divisional sign off:	20/12/2022 Full BU meeting			
Implementation date:	21/12/2022			
Review Date:	21/12/2025			
Key Contact:	Cindy Meijer			