Worcestershire Acute Hospitals NHS Trust

Antenatal CTG and Management of Reduced Fetal Movements (RFM)

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Approved by:	Maternity Governance Meeting	
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Key Amendments

Date	Amendments	Approved by

Introduction

This guideline covers women who are not in labour and require:

1) Antenatal electronic fetal heart monitoring (EFM) for any maternal or fetal indication.
2) Management of reduced fetal movements.

Fetal activity in the form of fetal movements perceived by the mother is a reliable indicator of fetal health. Women should be encouraged to be aware of it prior to 24 weeks gestation and a leaflet about fetal movements should be offered to all women and recorded in the record.

Maternal perception of fetal movement is one of the first signs of fetal life and is regarded as a manifestation of fetal wellbeing. Movements are first perceived by the mother between 18 and 20 weeks of gestation and rapidly acquire a regular pattern. Fetal movements have been defined as any discrete kick, flutter, swish or roll. A significant reduction or sudden alteration in fetal movement is a potentially important clinical sign. It has been suggested that reduced or absent fetal movements may be a warning sign of impending fetal death. Studies of fetal physiology using ultrasound have demonstrated an association between RFM and poor perinatal outcome. The majority of women (55%) experiencing a stillbirth perceived a reduction in fetal movements prior to diagnosis.

In most cases of reduction in fetal movements the cardiotocograph (CTG) / fetal monitoring is normal and women are reassured and discharged. A reduction of fetal movements of concern to the mother, both in high risk and low risk women can be an indicator of a fetus at risk and is an indication for careful fetal assessment. In a local review of still births after 28 weeks, most cases had reduction in fetal movements the week prior the confirmation of intrauterine death. When a woman complains of excessive fetal movements a reversion to normal movements is reassuring, but if there is subsequent reduced or absent fetal movements she should attend urgently for review.

Antenatal Electronic Fetal Heart Monitoring (EFM)

- Take a history noting past medical and obstetric history and the progress of the current pregnancy. Review the risk assessment to identify any risk factors.
- Enquire about the usual fetal movement pattern and what change has occurred.
- Gain consent for, and perform an abdominal palpation.
- Measure the symphysio-fundal height and plot this on the customised growth chart if not done within the last 2 weeks or if appears to be clinically indicated i.e. looks small.
- Auscultate the fetal heart with Pinard/sonicaid. If the fetal heart is not heard, a scan must be performed to identify the fetal heart. Under no circumstances apply a CTG monitor unless the fetal heart beat is identified using a Pinard, sonicaid or scanner. Perform EFM monitoring by using either CTG monitor as per NICE guidelines or Oxford Monitor using Dawes Redman criteria for those women attending with reduced fetal movements.
- Ask the woman to record any fetal movements whilst on monitor.

A - Fetal heart tracing with CTG

Parameters for a reassuring CTG trace:

- Baseline between 110 –160 bpm
- Variability >5bpm
- No decelerations
- Accelerations present

All of the above should be commented on and documented in the notes.

If the CTG is reassuring and the fundal height measurement indicates normal growth using the customised growth chart and there are no associated complaints, the woman can be reassured and discharged home with advice to call should she have further concerns about fetal movements. If the CTG is not normal the Registrar or Consultant should be asked to review the patient urgently.

B - Fetal heart tracing using the Oxford monitor:

The Oxford monitor will report ‘Criteria Not Met’ when there is insufficient evidence of normality and the monitoring should be continued. If the criteria are not met at 60 minutes, the reasons will be listed numerically on the printout (Appendix 1). See appendix 2 for management algorithm.

- Short term variation (STV) is the best predictor of fetal well-being (Appendix 3). If the criteria are not met after 60 minutes, action depends on the STV, whether or not a sinusoidal rhythm is present and the presence of fetal movements.

- If STV is >5.0 the fetus is unlikely to be hypoxemic. Consider other clinical aspects of the case. It is more significant at term than in preterm fetuses, especially <32 weeks.

- If STV is between 4.0 and less than 5.0 at >37weeks repeat CTG later the same day. At <37 weeks repeat CTG the next day.

- If STV 3.0 - 3.99 repeat the CTG within 4 hours and notify medical staff (if at Kidderminster refer to Worcester).

- If STV <3.0 = pre-terminal trace. Notify medical staff immediately and prepare for delivery.

- If a sinusoidal rhythm is present, notify medical staff urgently.

- The CTG monitoring can be discontinued once the Dawes/Redman criteria are met if using the Oxford monitor, and/or when the trace is reassuring, using the NICE Guidelines**.**

- In a normal low risk pregnancy, midwives may make the decision to discharge women following a CTG if the trace is normal and the symphysio-fundal height measurement suggests normal growth using the customised growth chart.

- Women should be encouraged to report back if further episodes of reduced fetal movements are experienced.

- CTG/Oxford monitoring does not replace clinical judgement. If there are any other associated signs or symptoms, further maternal or fetal assessment may be required, despite a reassuring trace and DR criteria met. In such a case the on-call Registrar should be informed.

Management of Reduced Fetal Movements (RFM)

- When women contact the maternity unit with concerns regarding fetal movements, a thorough history must be obtained. Inquire about a change in the pattern of movements. Furthermore ask about diminished, absent or excessive fetal movements; such women need to be invited for further assessment in Triage. See appendix 4 checklist from Saving Babies' Lives Care Bundle vs. 2 - NHS England

- If a woman presents with RFM, complete BSOTs TAC for Reduced Fetal Movements: This will include take a history noting past medical and obstetric history and the progress of the current pregnancy. Review her antenatal notes and including the risk assessment to identify any risk factors.
- Check blood pressure and urine. Perform an abdominal palpation with consent.
- Measure the symphysio-fundal height and plot this on the customised growth chart if not done within the last 2 weeks or if clinically looks small.
- If a woman presents with RFM prior to 24^{+0} weeks of gestation, the presence of a fetal heartbeat should be confirmed by auscultation with a Doppler handheld device.
- If fetal movements have never been felt by 24 weeks of gestation, referral to a fetal medicine specialist should be considered. If a woman presents with RFM between 24^{+0} and 28^{+0} weeks of gestation, the presence of a fetal heartbeat should be confirmed by auscultation with a Doppler handheld device.
- Women should be advised to be aware of their baby's individual pattern of movements. If they are concerned about a reduction or cessation of fetal movements after 28^{+0} weeks of gestation, they should contact their maternity unit urgently.
- Women who are concerned about RFM should not wait until the next day for assessment of fetal wellbeing

- Following discussion and confirmation of the presence of the fetal heart, if it is clear that the woman does not have RFM and there are no other risk factors for stillbirth, she can be reassured and discharged. All women attending with reduced fetal movements should be offered a leaflet to take home which provides information about future care should reduced fetal movements be experienced. (Tommys Leaflet)

- These women presenting with a history of RFM must be assessed for risk factors for fetal growth restriction or stillbirth. They may present with multiple consultations for any of the following; reduced fetal movements, known growth restriction, maternal hypertension, diabetes, extremes of maternal age, primiparity, smoking, obesity, racial/ethnic factors, past obstetric history of growth restriction or stillbirth and issues with access to care. Women noticing a sudden change in fetal activity or in whom other risk factors for stillbirth are identified should report to their maternity unit for further investigation i.e. CTG and/or ultrasound scan.

- Clinical assessment of a woman with RFM should include assessment of fetal size with the aim of detecting SGA fetuses.

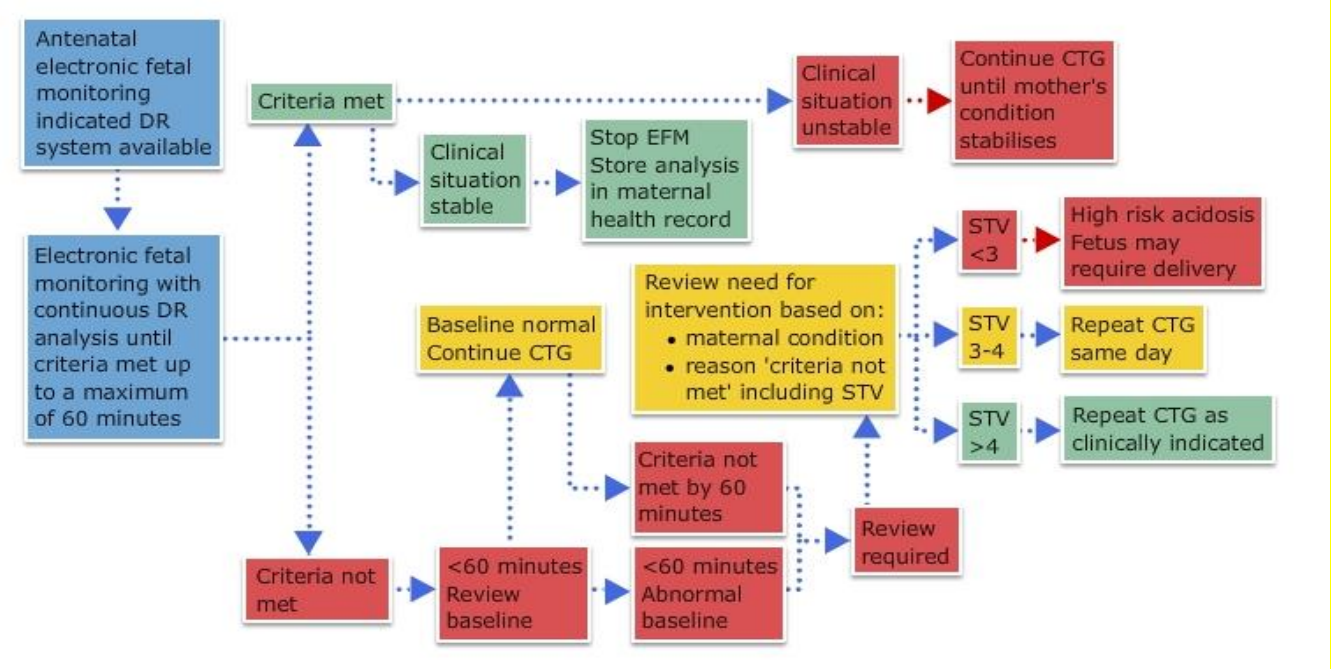
- After fetal viability has been confirmed and history confirms a decrease in fetal movements, arrangements should be made for the woman to have a CTG (as explained above) to exclude fetal compromise if $\geq 28^{+0}$ weeks of gestation.

- Ultrasound scan assessment should be undertaken as part of the preliminary investigations of a woman presenting with RFM after 28^{+0} weeks of gestation, if the perception of RFM persists despite a normal CTG or if there are any additional risk factors for fetal growth restriction (FGR) /stillbirth.
- If an ultrasound scan assessment is deemed necessary, it should be performed ASAP, ideally within 24 hours.
- All women with ongoing RFM should reviewed by the on call team to include assessment of the ultrasound scan.
- When a woman has two or more episodes of RFM an ultrasound scan assessment should be undertaken as part of the investigations.
- Ultrasound scan assessment should include the assessment of fetal abdominal circumference and/or estimated fetal weight to detect the SGA fetus, together with the assessment of amniotic fluid volume and dopplers.
- If a woman complains of recurrent reduced/no fetal movements (having had normal movements earlier in gestation) discuss with the on-call consultant regarding further management plan i.e fetal monitoring/IOL depending upon gestation, maternal and fetal indications.

APPENDIX 1

Code	Reason criteria not met
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 is less than 3 ms
7	Possible error at the end of the record
8	Decelerations at the end of the record
9	High-frequency sinusoidal rhythm
10	Suspected sinusoidal rhythm
11	Long-term variations in high episodes below acceptable level
12	No accelerations

APPENDIX 2 (Adopted from RCOG EFM learning package)



- It should be remembered that ultimately FHR analysis is diagnostic and not predictive
- If a trace is currently normal it provides no indication of how long this healthy state will persist. This depends on the underlying pathology in the pregnancy.
- The decision as to what to do next is a clinical one that takes into account the CTG evidence but depends more on other factors.

APPENDIX 3

Short-term variation: Interpretation of short-term variation (STV) is only valid with a full 60 minutes of data. Low STV is the best predictor of fetal acidaemia. It correlates with the development of metabolic acidaemia and intrauterine death as follows:

STV (msecs)	% likelihood of metabolic acidaemia or intrauterine death
>4	0
3.5-4.0	8
3.0-3.5	29
2.5-3.0	33
<2.5	72

APPENDIX 4

Checklist for Management of Reduced Fetal Movements ≥28/40

1. **Ask at each clinical encounter:**
   - Is there a maternal perception of reduced fetal movements? Yes/No
   - Advise women to be mindful of their usual pattern of fetal movements.

2. **Risk Assess:**
   - Are there risk factors for Fetal Growth Restriction or Stillbirth? Tick box

Multiple consultations for RFM	
Known pre-existing growth restriction	
Maternal Hypertension	
Diabetes	
Extremes of maternal age (≤17 yr. / ≥40 yr.)	
Nulliparity	
Smoking	
Obesity (BMI ≥35)	
Racial/ethnic factors	
Past obstetric history of FGR/Stillbirth	

3. **Act:**
   - Auscultate fetal heart with hand-held Doppler.
   - Perform CTG as per national guidelines and check BP and urine.
   - If risk factors as listed above, organise growth scan to include liquor volume and umbilical artery Dopplers within 24 hours.

4. **Advise:**
   - Inform mother of findings and encourage to re-attend if further concerns.

5. **Act:**
   - Act upon abnormal results promptly.
   - If history of recurrent reduced fetal movements i.e. >2 attendances, consider IOL from 37/40. Discuss with Registrar/Consultant on call.

Name……. Signature: ……

Role: …… Date: ……

APPENDIX 4 cont.

Checklist for Management of Reduced Fetal Movements <28/40

1. **Reduced fetal movements 24-27+6/40:**
   - These women should be offered Doppler assessment of the fetal heart to confirm fetal viability. Check BP and urine.

2. **No CTG:**
   - There is no evidence to recommend routine use of CTG.

3. **Risk assess:**
   - Be aware that placental insufficiency may present at this gestation. If there is clinical suspicion of growth restriction with identifiable risk factors, consider the need for ultrasound assessment. Tick box.

Multiple consultations for RFM	
Known pre-existing growth restriction	
Maternal Hypertension	
Diabetes	
Extremes of maternal age (≤17 yr. / ≥ 40 yr.)	
Nulliparity	
Smoking	
Obesity (BMI ≥35)	
Racial/ethnic factors	
Past obstetric history of FGR/Stillbirth	

Checklist for Management of Reduced Fetal Movements ≤24/40

1. Confirm fetal heart present.

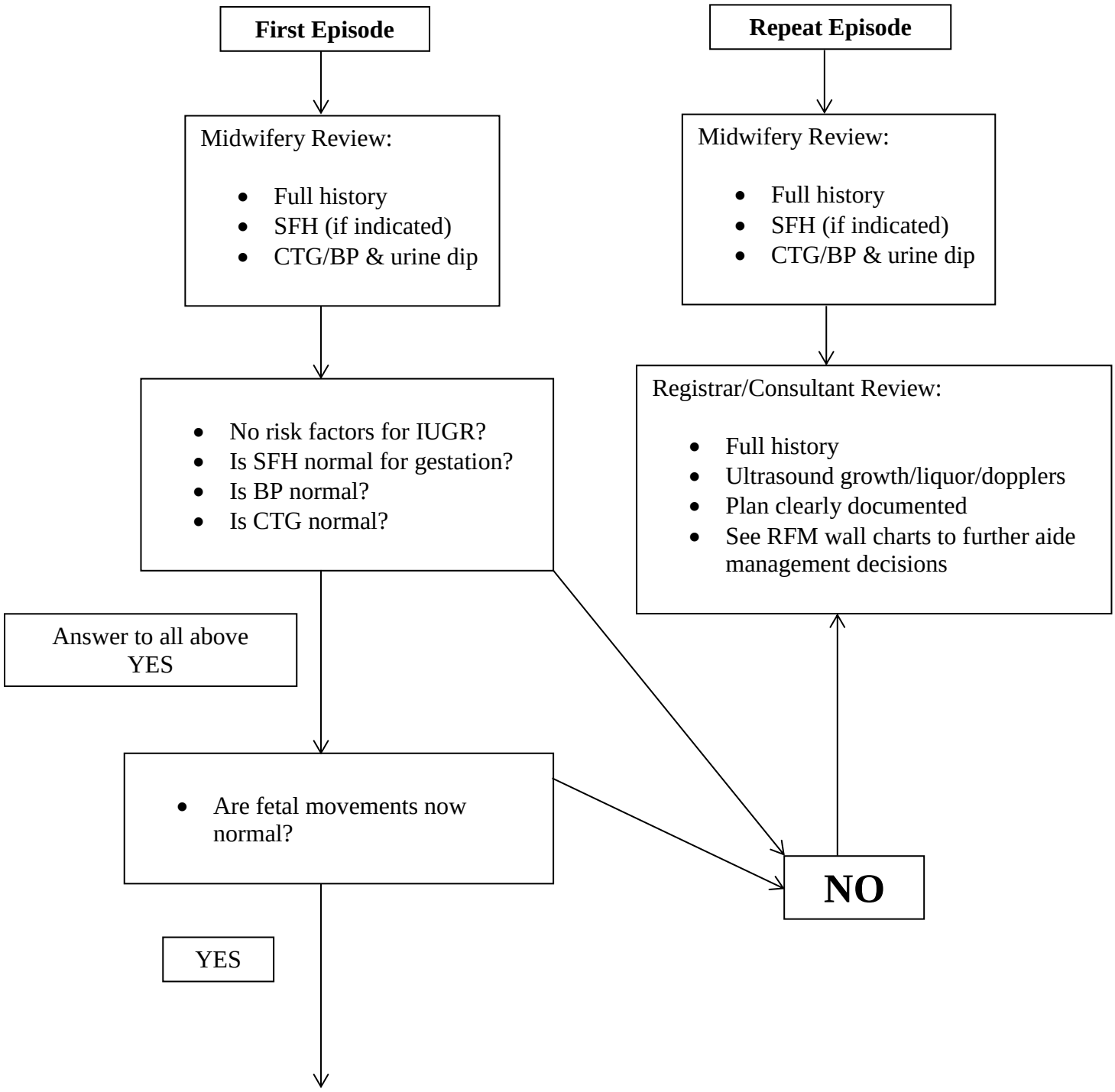
2. If no fetal movements have been felt by 24/40, refer to fetal medicine for assessment of possible neuromuscular conditions.

Name:…… Signature: ……

Role: …… Date: ……

APPENDIX 5

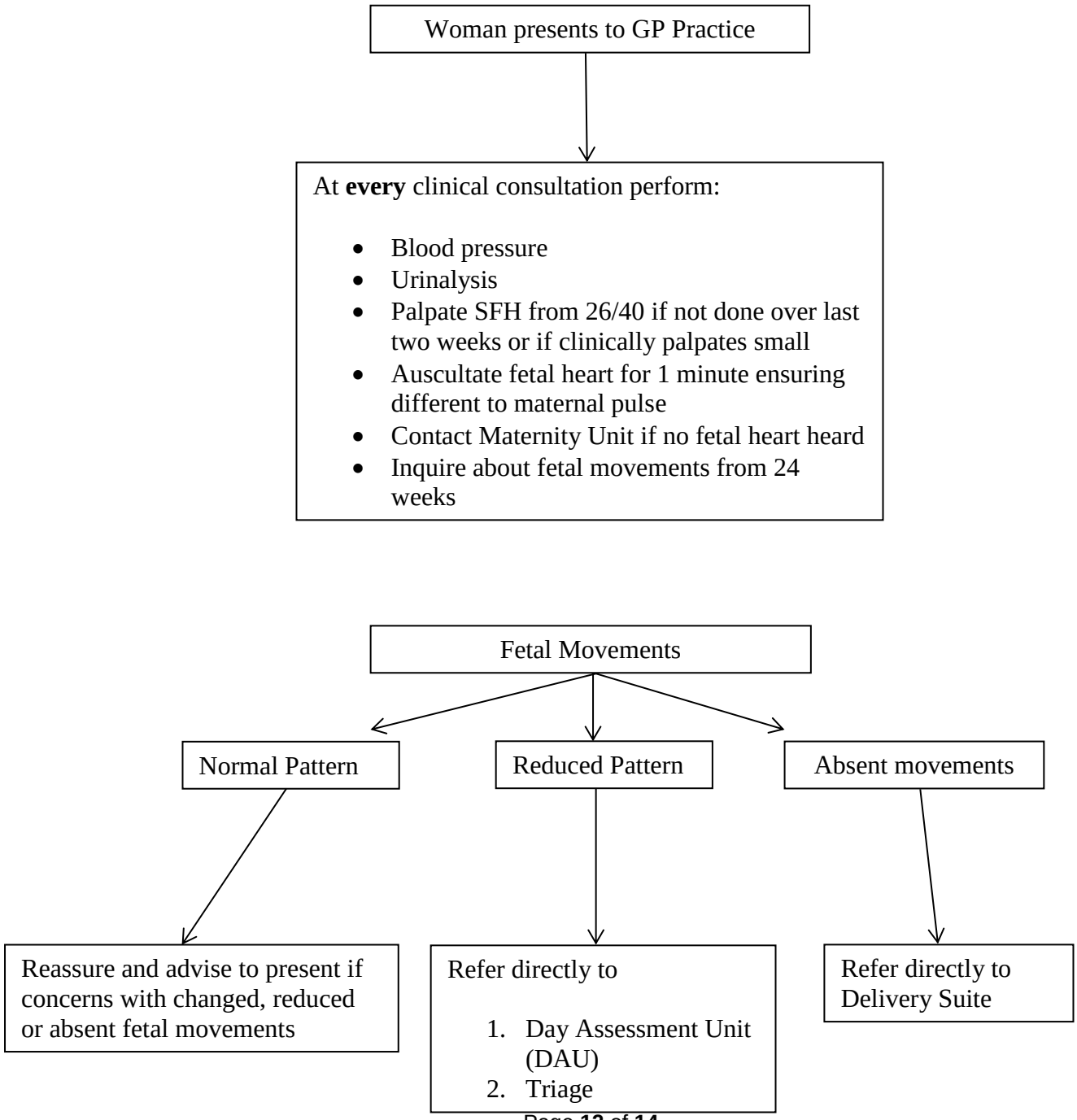
Flow Chart for management of reduced fetal movements ≥28/40



- Home
- Advise to return if further concerns with fetal movements

APPENDIX 6

Flow chart for management of reduced fetal movements in primary care



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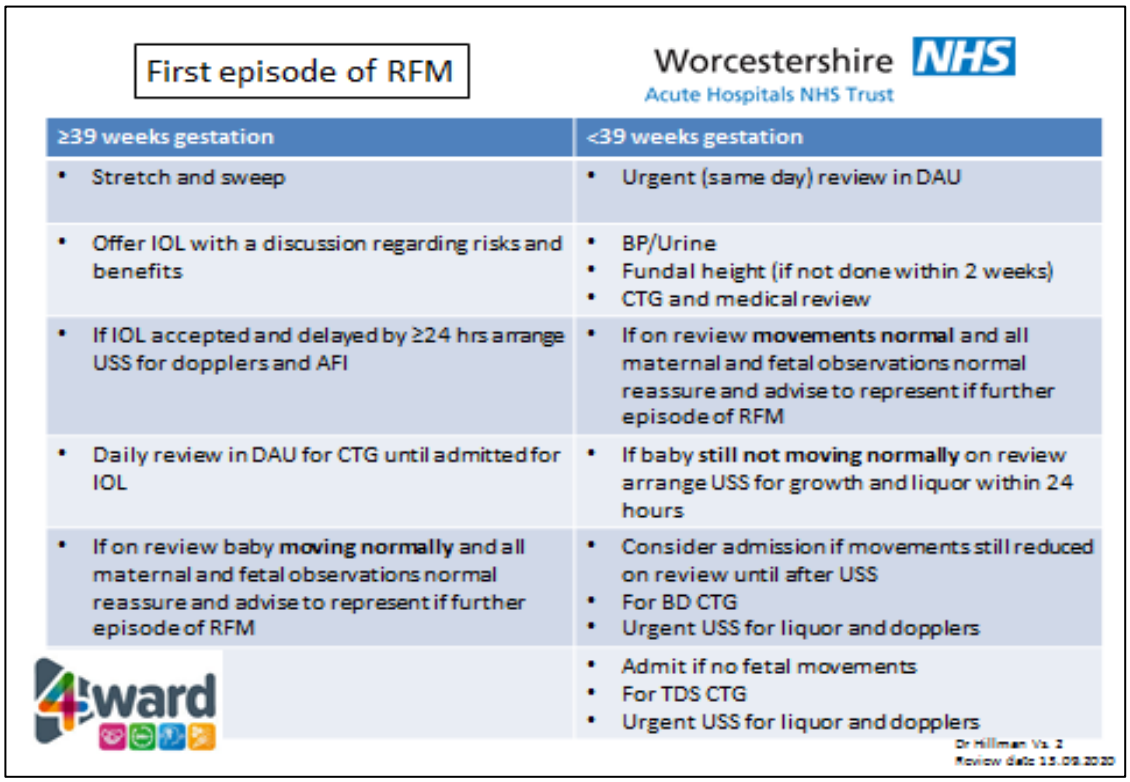
WRH DAU:	01905 760594 ext. 30124
WRH Triage:	01905 733196
WRH Delivery Suite:	01905 760571
Alexandra Hospital DAU:	01527 503030 ext. 44033
Kidderminster DAU:	01562 513220

APPENDIX 7

RFM wall charts – management aide memoires for use in triage/DAU



First episode of RFM

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≥39 weeks gestation	<39 weeks gestation
• Stretch and sweep	• Urgent (same day) review in DAU
• Offer IOL with a discussion regarding risks and benefits	• BP/Urine • Fundal height (if not done within 2 weeks) • CTG and medical review
• If IOL accepted and delayed by ≥24 hrs arrange USS for dopplers and AFI	• If on review **movements normal** and all maternal and fetal observations normal reassure and advise to represent if further episode of RFM
• Daily review in DAU for CTG until admitted for IOL	• If baby **still not moving normally** on review arrange USS for growth and liquor within 24 hours
• If on review baby **moving normally** and all maternal and fetal observations normal reassure and advise to represent if further episode of RFM	• Consider admission if movements still reduced on review until after USS • For BD CTG • Urgent USS for liquor and dopplers
4ward	• Admit if no fetal movements • For TDS CTG • Urgent USS for liquor and dopplers

Dr Hillman Va. 2
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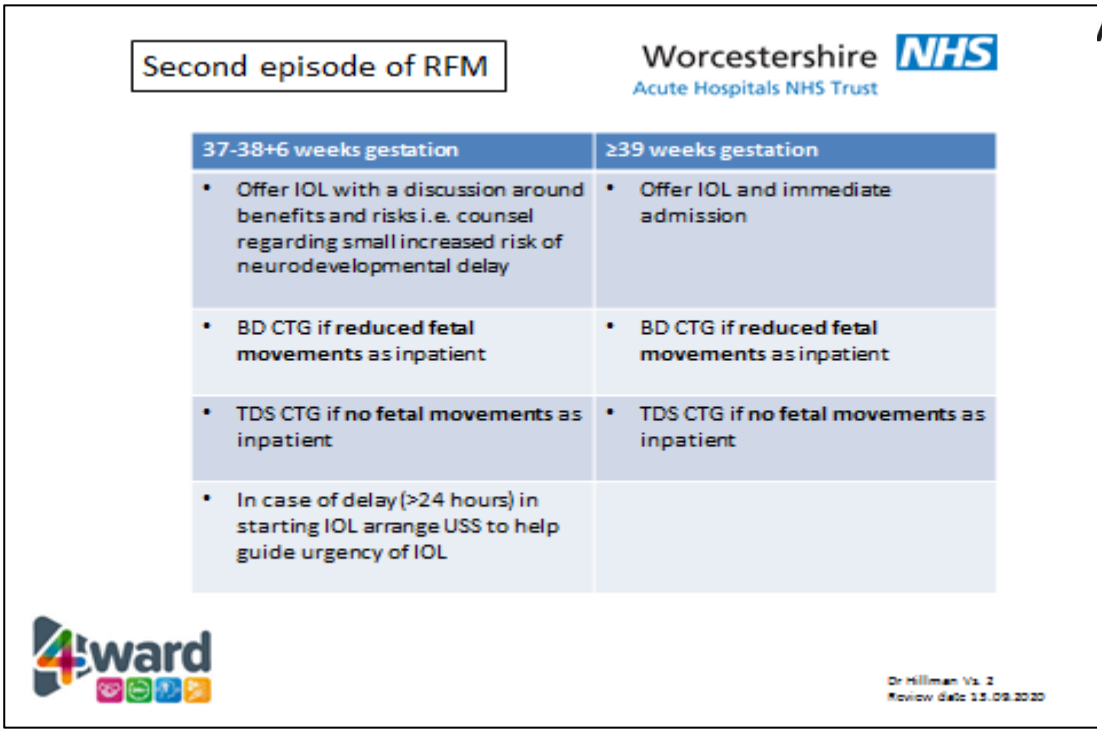

APPENDIX 7 cont.

RFM wall charts – management aide memoires for use in triage/DAU