

Ultrasound for Suspected SGA

Classification:	Guideline		
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Guideline to be followed by (target staff): Midwives and Obstetricians

To be read in conjunction with the following documents:
 Fetal Growth Assessment Guideline
 SOP – Fetal Growth Ultrasound
 BSOTS – Maternity triage
 SOP – Antenatal Day Assessment unit

Are there any eCARE implications? No

CQC Fundamental standards:
 Regulation 9 – person centred care
 Regulation 10 – dignity and respect
 Regulation 11 – Need for consent
 Regulation 12 – Safe care and treatment
 Regulation 13 – Safeguarding service users from abuse and improper treatment
 Regulation 14 – Meeting nutritional and hydration needs
 Regulation 15 – Premises and equipment
 Regulation 16 – Receiving and acting on complaints
 Regulation 17 – Good governance
 Regulation 18 – Staffing
 Regulation 19 – Fit and proper

Disclaimer

Since every patient's history is different, and even the most exhaustive sources of information cannot cover every possible eventuality, you should be aware that all information is provided in this document on the basis that the healthcare professionals responsible for patient care will retain full and sole responsibility for decisions relating to patient care; the document is intended to supplement, not substitute for, the expertise and judgment of physicians, pharmacists or other healthcare professionals and should not be taken as an indication of suitability of a particular treatment for a particular individual.

The ultimate responsibility for the use of the guideline, dosage of drugs and correct following of instructions as well as the interpretation of the published material **lies solely with you** as the medical practitioner.

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Guideline Statement

Prenatal ultrasound for fetal biometry and Doppler is the method of choice for the evaluation of the suspected small fetus. Small for gestational age (SGA) is defined as the fetus whose estimated fetal weight (EFW) on prenatal ultrasound is less than the 10th centile. At Milton Keynes University Hospital (MKUH), customised growth charts and centiles (GROW 2.0) are used, rather than population-based centiles.

A significant proportion of SGA babies are constitutionally small but healthy fetuses. Unnecessary medical intervention in those pregnancies will not improve perinatal outcome. Conversely, SGA babies who are growth restricted due to placental insufficiency carry an increased risk of stillbirth and these are most likely to benefit from early delivery. There is also a very small proportion of SGA fetuses which have an underlying chromosomal or genetic abnormality, but these babies are beyond the scope of this guideline

Executive Summary

The objective of this guideline is to define the follow up and management of ultrasound findings suggestive of SGA beyond 24+0 weeks gestation within MKUH. This guideline does not cover the management of babies with congenital or genetic abnormalities; or the management of large for gestational age fetus (LGA).

Treatment and care should consider service users' needs and preferences. Pregnant people should be offered evidence-based information and support to enable them to make informed decisions about their care and treatment.

1.0 Implementation and dissemination of document

This Guideline has followed the Guideline review process and is accessible via the Trust Intranet.

2.0 Definitions

Table 1. Definitions	
SGA	Small for gestational age: estimated fetal weight below the 10 th centile on customised growth chart
AC	Abdominal circumference
AC deceleration	Clinically significant alteration of the AC percentile position by more than 40 percentile points since the anomaly scan
c-EFW	Estimated fetal weight plotted on the patient's customised growth chart
Umb PI	Umbilical artery pulsatility index
MCA PI	Middle cerebral artery pulsatility index
CPR	Cerebroplacental ratio = MCA PI / Umb PI
Normal Umbilical Doppler	Umb PI < 95 th centile
Normal CPR	CPR > 1.1
Abnormal Umbilical Doppler	Umbilical PI > 95 th centile OR Absent EDF OR Reversed EDF
Abnormal CPR	CPR < 1.1
CTG	Cardiotocogram
c-CTG	Computerised CTG analysis using including short term variation (STV)
EDF	End diastolic flow
PAPP-A	Pregnancy associated plasma protein A

3.0 Roles and Responsibilities

3.1 Ultrasound Department;

The reporting sonographer is responsible for appropriate follow-up at the end of the ultrasound examination. The algorithms in 4.1 and 4.2 should be followed.

- Ultrasound scan reports for singleton pregnancies > 24+0 weeks gestation should include assessment of biparietal diameter (BPD); head circumference (HC); abdominal circumference (AC); femur length (FL); and estimated fetal weight (EFW).
The amniotic fluid should initially be assessed by maximum vertical pool depth (MVP).
The report should include fetal presentation, placental position and umbilical artery Doppler assessment by pulsatility index (PI) and resistance index (RI).
- The second page of the ultrasound report should include four (4) charts, displayed as two (2) charts per line: HC, AC, MVP and Umb PI.
- The EFW should be Plotted on customised growth chart within GROW 2.0
- Plan of care following scan is based on SOP – Fetal growth scan

3.2 Triage, ADAU, Antenatal Clinic and inpatient areas;

The obstetricians and midwives are responsible for arranging appropriate follow-up and management depending on findings from scan.

The algorithms in 4.1 and 4.2 should be followed.

3.2.1

- When FGR is suspected an assessment of fetal wellbeing should be made including a discussion regarding fetal movements.
- A maternal assessment should be performed at each contact; this should include blood pressure measurement using a digital monitor that has been validated for use in pregnancy and a urine dipstick assessment for proteinuria.
- In the presence of hypertension NICE guidance on the use of PIGF/sflt1 testing should be followed.
- If required; a computerised CTG (cCTG) should be undertaken See 4.1 & 4.2).

3.3 Fetal Medicine;

The obstetricians and midwives in Fetal Medicine are responsible for appropriate management and follow-up once the woman is referred to Fetal Medicine. The management of SGA should follow the principles outlined in 4.1 and 4.2

3.4 Criteria for referral to fetal medicine

- Any fetal biometry measurement <5th centile (at any gestation)
- Combined Uterine artery PI>2.5 AND AC/ EFW <5th centile at anomaly scan
- Combined uterine artery PI >=4

- EFW <3rd centile (at any gestation)
- EFW <10 centile at or ≥36 weeks gestation (**within 7 days**)
- AC drop of ≥40 points ≥36 weeks gestation
- Abnormal Umb PI >95th centile with/without Absent or reversed EDF (with additional same day review in ADAU/Triage) (**Refer within 4 days**)
- ≥36 weeks Red EFW plot appearing as slow/static growth on GROW 2.0
- For service users having scans ≥ 35 weeks gestation- If slow or static growth identified at additional scan performed (outside of SBL pathway)- Referral to Fetal Medicine

Please note; Referral to fetal medicine is via email or telephone for more urgent referrals;

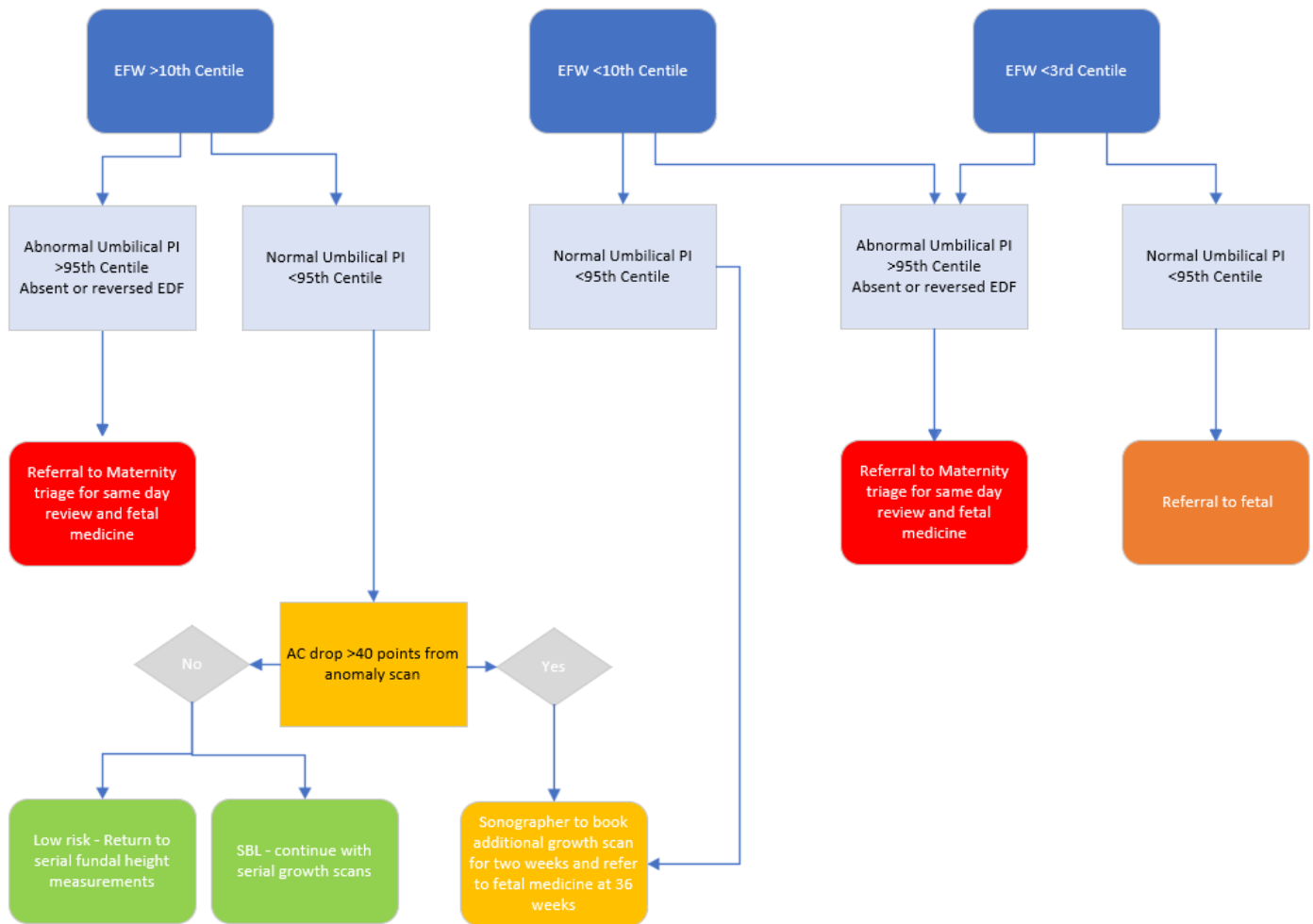
Email: fetalmedicine.preterm@mkuh.nhs.uk

Telephone: 85263

4.0 Processes and Procedures

4.1 SGA at 24+0 - 35+6 weeks

The follow up and management of preterm SGA should follow the principles outlined below



Absent or Reversed Umbilical EDF at any stage: admit, inform Consultant Obstetrician and Fetal Medicine. See paragraph 4.1 for subsequent management and AHSN guideline (Appendix 4).

- **Normal umbilical Doppler and normal movements:** the risk of stillbirth is very low and therefore c-CTG or admission are not required. Organise fortnightly scan in Ultrasound Department and refer to **ANC for an appointment within 2 weeks.** Refer to Fetal Medicine as per criteria in paragraph 3.4.
- **Umbilical PI > 95th centile:** offer maternal assessment and c-CTG in triage and arrange repeat doppler in Fetal Medicine within 4 days.
- **Absent or reversed EDF:** Organise urgent Obstetric review and c-CTG in triage. Offer admission for daily c-CTG and urgently discuss with Fetal Medicine. Subsequent management will depend on gestational age, fetal size, c-CTG and the presence of any maternal co-morbidity such as preeclampsia, diabetes etc.

Refer to **Appendix 4** for management in line with the AHSN guideline on severe preterm IUGR.

In particular:

- **EFW < 500g and/or < 26 weeks:** do not perform CTG, do not give steroids but discuss with Fetal Medicine.

- **EFW < 800g and/or < 28 weeks:** give steroids, do c-CTG and then organise transfer to tertiary neonatal care unit i.e. Oxford University Hospitals (OUH).
- **EFW > 800g and gestation <32 weeks:** give steroids, do c-CTG and consider the options of either local care in MKUH or transfer to OUH.
- **EFW > 800g and > 32 weeks:** give steroids, do c-CTG and deliver by caesarean section within 24-48 hours in MKUH.
- **If c-CTG is abnormal:** discuss with Consultant Obstetrician, Fetal Medicine and Neonatologist: urgent delivery may be required if the baby has viable weight.

4.2 SGA at 36+0 weeks

There is no conclusive evidence from randomised controlled trials to inform the decision or timing of delivery for near term SGA. According to the RCOG Guideline No 31, delivery may be offered at 37 weeks but additional Doppler investigations and senior clinician involvement should be used in order to determine the timing of delivery.

A significant proportion of SGA babies are constitutionally small but healthy fetuses. Unnecessary medical intervention in those pregnancies will not improve perinatal outcome. With appropriate ultrasound and Doppler surveillance, these fetuses can be monitored expectantly beyond 37+0 weeks.

Conversely, SGA babies who are growth restricted due to placental insufficiency carry an increased risk of perinatal death and these are most likely to benefit from early delivery at 37+0 or even earlier if required. Near term the umbilical artery Doppler is often normal, and it is not useful in isolation in order to distinguish between the small healthy fetus and the fetus at risk.

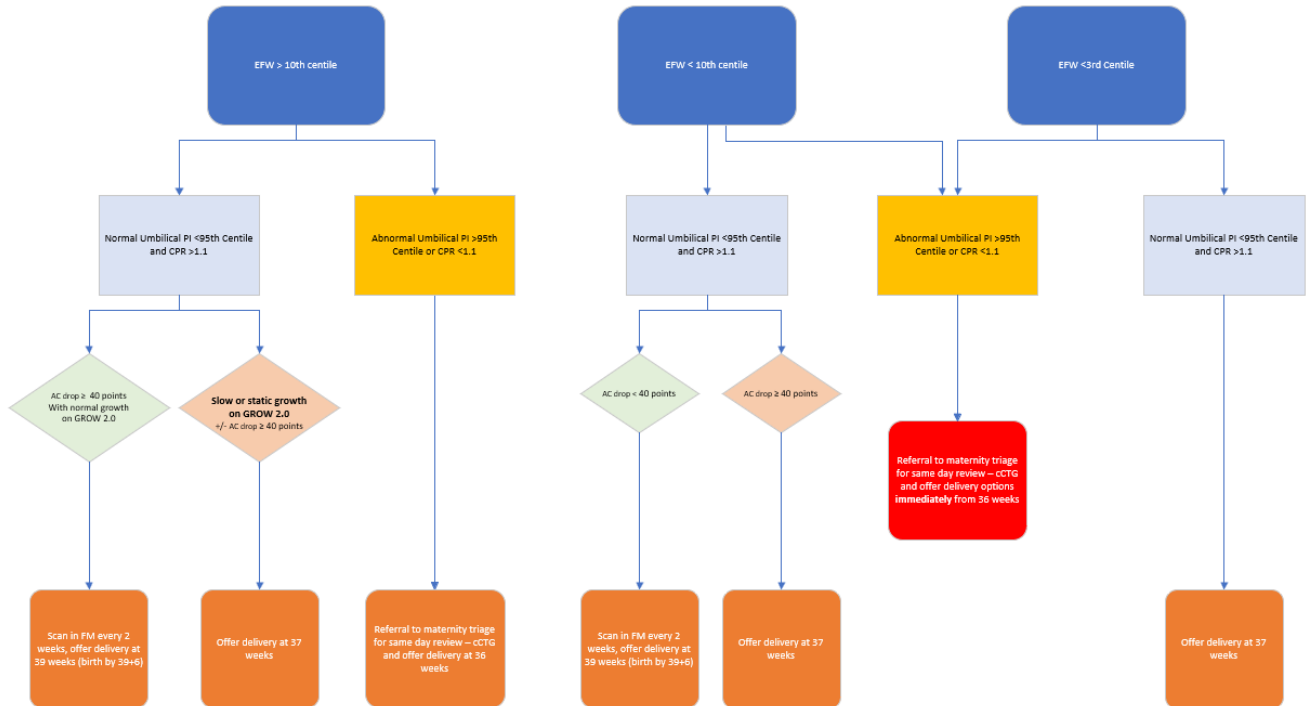
The management of SGA at ≥ 36 weeks should be based on the presence or absence of the complicating factors in the list below and, the **cerebroplacental ratio (CPR)** and **AC deceleration**, both of which are potent predictors of placental insufficiency and adverse perinatal outcome.

Table 1. SGA **plus** one of the following complicating factors (**offer delivery from 37 weeks**)

- AC deceleration > 40 points since the anomaly scan
- Abnormal CPR < 1.1
- Low PAPP-A < 0.41 MoM
- Abnormal uterine Doppler
- Umbilical Doppler PI > 95th centile
- Maternal age > 40
- Smoking > 10 cigarettes daily
- Hypertension or Diabetes

Management after 36+ weeks should be overseen by Fetal Medicine and should follow the principles outlined in the flow chart below;

Suspected SGA/IUGR ≥ 36 weeks gestation – Fetal medicine



- **Uncomplicated SGA** when the c-EFW is less than the 10th centile, with normal growth velocity and there are none of the above complicating factors: requires fortnightly assessment and delivery when CPR becomes < 1.1 or by **39+6 weeks**.
- **Complicated SGA** is when any of the above complicating factors are present: Delivery should be offered at **≥ 37+0**.
If SGA with umbilical PI > 95th centile or CPR < 1.1 deliver at **≥ 36+0 weeks**.
- **Induction of labour** can be offered if at the time of decision EFW > 1500g **and** gestation > 34 weeks **and** there are no obstetric contraindications. If the fetus is very small and near those thresholds, a vaginal assessment is useful to decide between induction of labour or caesarean section. Steroids are not required.
- **Caesarean section** should be offered if at the time of decision EFW < 1500g **or** gestation **or** absent / reversed umbilical EDF **or** other specific obstetric indication. Steroids are required if CS booked at less than **37+0 weeks** gestation.

4.3 Declining growth velocity >10th centile (suboptimal growth)

Declining growth velocity can occur in fetuses with an EFW >10th centile. Evidence to guide practise is limited and guidance (**SBLv3 2023, Appendix D**) is currently based on consensus opinion.

When assessing fetal growth, a pattern of slowing growth velocity (i.e., a downward trend in the percentile highlighted as slow or static growth on GROW 2.0/customised centile chart) indicates an increased risk of morbidity and stillbirth and should necessitate review.

This review should include assessment of all fetal biometry measurements since the anomaly scan to identify potentially erroneous single measurements and also the presence or absence of other risk factors for FGR.

Particular attention should be paid to a downward trend in abdominal circumference growth velocity.

FGR is rare >20th centile, so early delivery (<39+0 weeks) should only be considered following senior review, ideally by a dedicated fetal growth restriction assessment and monitoring service.

In fetuses with declining growth velocity and **EFW >10th** centile, the risk of stillbirth from late onset FGR should be balanced against the risk of late preterm delivery.

In infants where declining growth velocity is evident on GROW 2.0, delivery should be planned from 37+0 weeks unless other risk factors are present (see flow chart in section 4.2).

Risk factors that should trigger review of timing of birth are:

- Reduced fetal movements
- Any umbilical artery or middle cerebral artery Doppler abnormality
- cCTG that does not meet criteria
- Maternal hypertensive disease
- Abnormal sFlt1: PIGF ratio/free PIGF or reduced liquor volume

Opinion on timing of birth for these infants should be made in consultation with specialist obstetrician.

5.0 Statement of evidence/references

1. RCOG Green top Guideline No 31. The Investigation and Management of the Small-for-Gestational-Age Fetus. 2014
2. DeVore GR The importance of the cerebroplacental ratio in the evaluation of fetal well-being in SGA and AGA fetuses. *Am J Obstet Gynecol.* 2015 Jul;213(1):5-15. doi: 10.1016/j.ajog.2015.05.024.
3. Khalil A, Thilaganathan B. Role of uteroplacental and fetal Doppler in identifying fetal growth restriction at term. *Best Pract Res Clin Obstet Gynaecol.* 2017 Jan;38:38-47. doi: 10.1016/j.bpobgyn.2016.09.003. Epub 2016 Sep 23.
4. NHS England. Saving Babies' Lives Version Three: A care bundle for reducing perinatal mortality. June 2023

6.0 Governance

6.1 Record of changes to document

Version number	Review date	Reviewed by	Changes made
1	02/2018	Christos Ioannou	Complete review
2	04/2021	Christos Ioannou	Complete review
2.1	09/2023	Georgina Leroux/Faryal Nazami	
2.2	12.2023	Faryal Nizami	Updated formatting for clarity.

6.2 Consultation History

Stakeholders Name/Board	Area of Expertise	Date Sent	Date Received	Comments	Endorsed Yes/No
Imaging		30/04/21			
Womens digital group		30/04/21			
Women's Health CIG		02/06/21		Approved	
Faryal Nizami	Consultant Obstetrician	08/2023		Approved	Yes
Women's Health Guideline Review Group	Maternity	12/2023	-	Version 2.2 approved as chairman's action	Yes

6.3 Audit and monitoring

This Guideline outlines the process for document development will be monitored on an ongoing basis. The centralisation of the process for development of documents will enable the Trust to audit more effectively. The centralisation in recording documents onto a Quality Management database will ensure the process is robust.

Audit/Monitoring Criteria	Tool	Audit Lead	Frequency of Audit	Responsible Committee/Board
1. Sample of growth scan examinations 24-42 weeks: percentage of examinations which have a valid umbilical artery PI/RI recording	Viewpoint stats download	F Nizami	Annually	Women's Health CIG
2. Sample of growth scan examinations 24-36 weeks where the EFW is <10 th centile: percentage of examination episodes which have appropriate follow up booked in either US Department, Fetal Medicine or ADAU according to Appendix 1	Viewpoint stats download	F Nizami	Annually	Women's Health CIG
3. Audit compliance against Saving Babies Lives Version 3 (SBLv3), Element 2	Audit	Fetal surveillance leads	Set according to SBLv3, Element 2	Women's health audit group Women's health CSU

6.4 Equality Impact Assessment

This document has been assessed using the Trust's Equality Impact Assessment Screening Tool. No detailed action plan is required. Any ad-hoc incident which highlights a potential problem will be addressed by the monitoring committee.

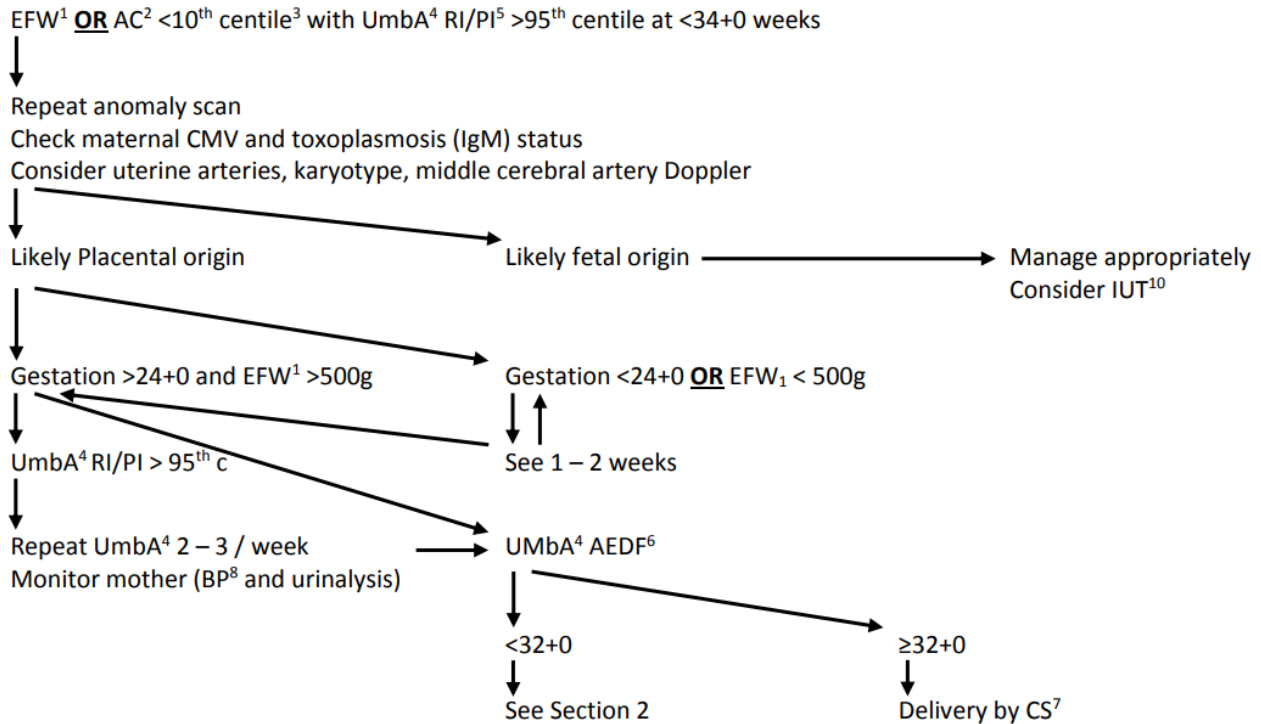
Equality Impact Assessment			
Division	Women and children	Department	Maternity
Person completing the EqIA		Contact No.	
Others involved:	No	Date of assessment:	30/04/21
Existing policy/service	Yes	New policy/service	No
Will patients, carers, the public or staff be affected by the policy/service?			
		Yes	
If staff, how many/which groups will be affected?		<i>For example: community midwives, phlebotomists, all staff</i>	
Protected characteristic	Any impact?	Comments	
Age	NO	Positive impact as the policy aims to recognise diversity, promote inclusion and fair treatment for patients and staff	
Disability	NO		
Gender reassignment	NO		
Marriage and civil partnership	NO		
Pregnancy and maternity	NO		
Race	NO		
Religion or belief	NO		
Sex	NO		
Sexual orientation	NO		
What consultation method(s) have you carried out?			
<i>Emails and meetings</i>			
How are the changes/amendments to the policies/services communicated?			
Meetings and emails			
What future actions need to be taken to overcome any barriers or discrimination?			
What?	Who will lead this?	Date of completion	Resources needed
Review date of EqIA			

Appendix 1: AHSN guideline for management of Preterm IUGR

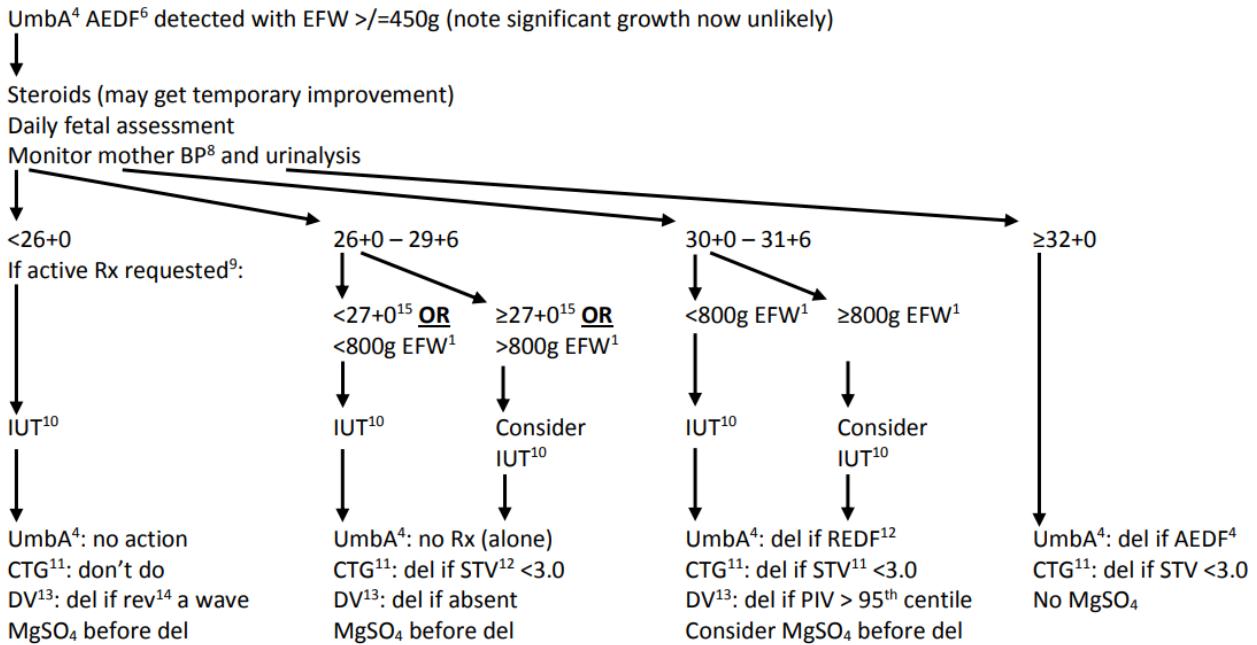
Oxford AHSN Regional Maternity Guideline

Algorithm for Management of Preterm Singleton / DC Twin Intrauterine Growth Restriction (IUGR)

Section 1: Management of Severe Preterm Singleton / DC Twin IUGR without Absent End-Diastolic Flow



Section 2: Management of Severe Preterm Single / DC Twin IUGR with Absent End-Diastolic Flow



NB: preeclampsia often increases rate of deterioration and may necessitate delivery.

Management of Preterm Singleton / DC Twin IUGR V2.0

Author: Mr Lawrence Impey, Oxford AHSN Maternity Clinical Lead

Footnotes:

1. 1: EFW: estimated fetal weight
2. AC: abdominal circumference
3. Centile. Use current Trust standard, accepting variation, ultimately aim to move to international chart. Avoid customised chart as ethnicity likely independent risk factor (see Intergrowth results)
4. UmbA: umbilical artery
5. RI/PI: resistance index/ pulsatility index. Follow current Trust practice as to which
6. AEDF: absent end-diastolic flow
7. CS: caesarean section
8. BP: blood pressure
9. If active treatment requested: Following paediatric consultation document any discussion regarding IUT with parents. Consider providing Thames Valley Neonatal Network patient information leaflets if available.
10. IUT: in utero transfer. Where neonatal guidelines require IUT this is designated 'IUT'. Where fetal medicine guidelines advise IUT this is designated 'consider IUT'. This is because it is recognised that within the Thames Valley area many units have fetal medicine expertise. However, IUT may be discussed with any pregnancies at any stage on this guideline according to individual units' or consultants' preference. Non urgent IUT to the OUH for IUGR is normally arranged by calling fetal medicine office (01865 221716) or the fetal medicine consultant (07810 376679)
11. CTG: computerised cardiotocograph. Evidence based tool in severe IUGR
12. STV: short term variability on computerised cardiotocograph
13. DV: ductus venosus
14. 14: Absent/ reversed a wave of ductus venosus. From 26+0w, computerised CTG as effective
15. 15: Note this threshold is <28+0 if DC twin pregnancy

This document takes account of national neonatal guidelines, national fetal medicine guidelines (RCOG Greentop and Specialised Commissioning CRG Service Specifications)