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Diagnosis and Management of Small for Gestational Age Fetus and Fetal Growth Restriction

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Summary

This guideline has been created to aid the risk assessment, diagnosis and management of pregnancies which may become/be affected by impaired fetal growth including the small for gestational age fetus and fetal growth restriction.

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DEFINITIONS

Small for gestational age (SGA): Estimated fetal weight/abdominal circumference less than 10th centile. A fetus is considered as SGA when its sizes falls below a predefined threshold for its gestational age on individualized growth assessment i.e. EFW below 10th centile on customised growth chart.

Reduced growth velocity: Increase in estimated fetal weight <280g over 14 days if more than 34 weeks gestation.

Fetal growth restriction (FGR): Estimated fetal weight/abdominal circumference less than 3rd Centile or estimated fetal weight/abdominal circumference less than 10th centile with evidence of placental dysfunction. (abnormal uterine artery dopplers/ abnormal umbilical artery dopplers)

Early Fetal growth restriction: Less than 32 weeks gestation (approximately 1/200 pregnancies). Should trigger referral to fetal medicine department.

Late Fetal growth restriction: More than 32 weeks gestation.

AC: Abdominal circumference
ANC: Antenatal clinic
AREDF: absent reversed end diastolic flow
BMI: Body Mass Index
CMW: Community Midwife
CTG: Cardiotocography
CPR: Cerebroplacental ratio
DV: Ductus venosus
EDF: End diastolic flow
EFW: Estimated Fetal Weight
FAC: Fetal assessment clinic
FL: Femur length
FM: Fetal movements
GAP: Growth assessment protocol
GROW: Gestation related optimal weight
HC: Head circumference
HTN: Hypertension
IOL: Induction of labour
IUD: Intra uterine death
LSCS: Lower segment caesarean section
LV: Liquor volume
MCA: Middle cerebral artery
MDT: Multi-disciplinary team
MW: Midwife
ON: Omni nocte (at night)
PAPP-A: Pregnancy Associated Plasma Protein-A
PET: Pre-eclampsia
PI: Pulsatile index
SFH: Symphysis Fundal Height
SLE: Systemic lupus erthyematosus
UAD: Umbilical artery doppler
USS: Ultrasound scan

PROCESS

The following risk assessment pathway has been adapted from Element 2 of the Saving Babies Lives Care Bundle. (see appendix B).

- If a woman has **no risk factors** she will be on the **GREEN pathway** and will not require serial growth scan assessment.

- If a woman has **a moderate risk factor or is not suitable for monitoring by symphysis fundal height measurement** e.g. BMI ≥35/ significant fibroids she will be on the **AMBER pathway** and will have serial growth scans from 32 weeks every 4 weeks until delivery.

  Moderate risk factors include: Previous SGA 3rd-10th centile
  Smoking
  Drug misuse
  Age ≥40 at delivery

- If a woman has **a high risk factor** she will be on the **RED pathway** and will need referral to specialist consultant obstetrician for a plan which may include uterine artery doppler assessment. Depending on this assessment serial growth scans will commence from either 28 or 32 weeks every 4 weeks until delivery.

  High risk factors include: Chronic kidney disease
  Essential hypertension
  SLE/Antiphospholipid syndrome
  Cyanotic Congenital Heart disease
  Previous baby <3rd Centile
  Previous PET (resulting in delivery <37/40)
  Previous IUD
  Low PAPP-A in current pregnancy
  Echogenic bowel in current pregnancy
  Significant bleeding in current pregnancy
  EFW <10th centile on 20/40 USS

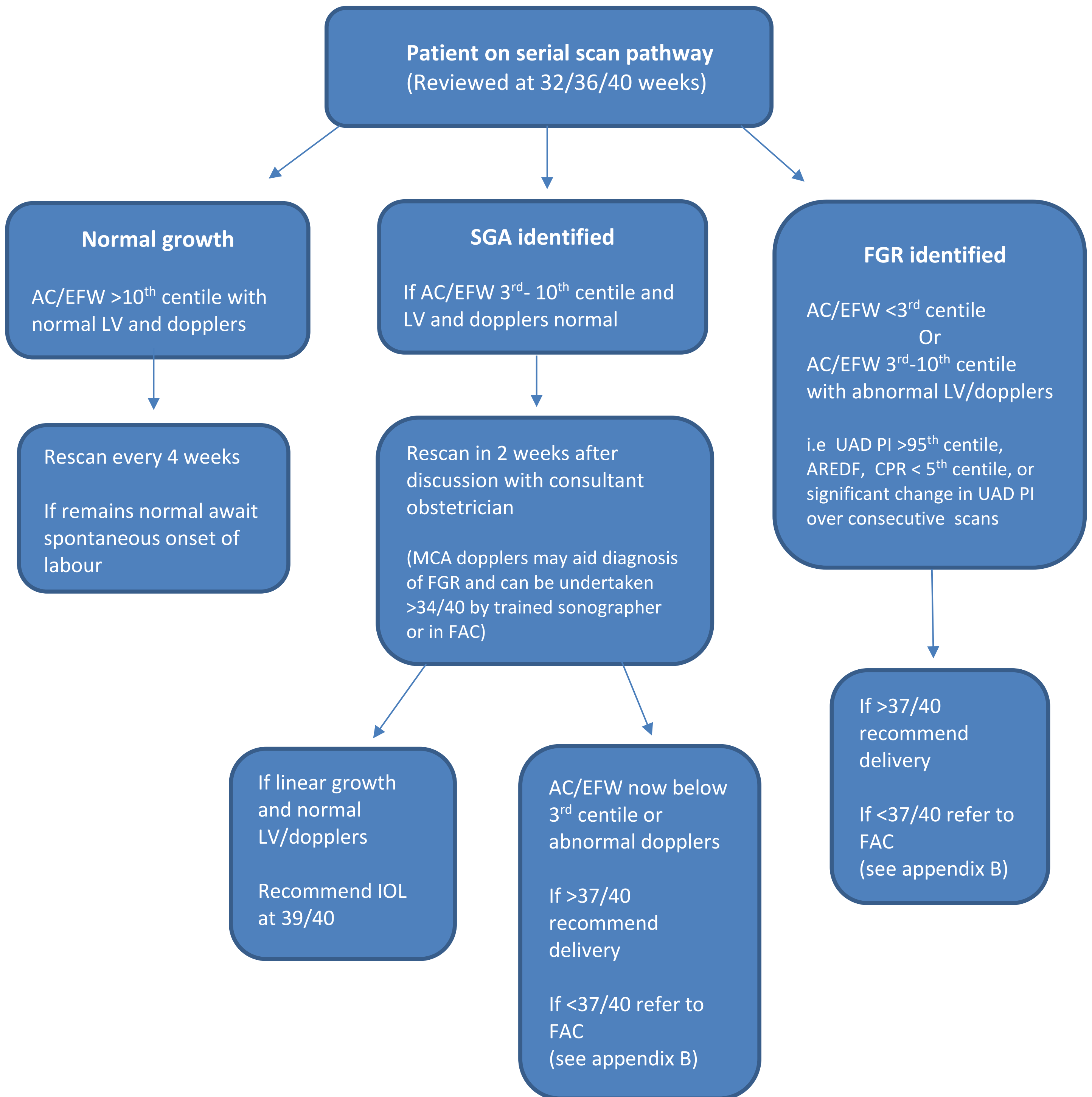
Women will enter the scan pathway as per the flow chart on page 4.

SGA/FGR Risk Assessment Pathway

NB All patients should be reassessed at 28 weeks/at any antenatal contact to assess need for transfer to consultant led care or serial scan pathway

i.e new onset hypertensive disease, SFH measurement outside of target on customised growth chart (should be serial scans to assess growth velocity), reduced FM, significant bleeding

ANC pathway



NB Isolated oligohydramnios in an otherwise normally grown fetus should trigger repeat scan in 2 weeks and would not be reason alone to recommend IOL

1. INTRODUCTION

Fetal growth restriction is associated with an increased risk of perinatal mortality and morbidity, and long term adverse infant outcome. Growth restricted babies have higher rates of hypertension, metabolic syndrome, insulin resistance, Type 2 diabetes, coronary heart disease and stroke in adulthood. Antenatal diagnosis of fetal growth restriction is a major factor in aiming prevention of stillbirth as up to 30% of late third trimester stillbirths are associated with fetal growth restriction or small for gestational age. However, not all babies who are small for gestational age will have fetal growth restriction.

This guideline has been created to aid the risk assessment, diagnosis and management of pregnancies which may become/be affected by impaired fetal growth including the small for gestational age fetus and fetal growth restriction. This guideline has been formulated to be used in conjunction with Saving Babies' Lives Care Bundle from NHS England and the ISUOG Practice guidelines for the diagnosis and management of small for gestational age fetus and fetal growth restriction.

2. SCOPE

All staff (permanent, locum, agency, bank and voluntary staff of the Trust, the Ministry of Defence Hospital Unit, Joint Hospitals Group South (Portsmouth) and Engie must follow the procedural documents agreed by the Trust. For staff other than those directly employed by the Trust the appropriate line management or chain of command will be taken into account. Breaches of adherence to Trust policy may have potential contractual consequences for the employee.

In the event of an infection outbreak, pandemic or major incident, the Trust recognises that it may not be possible to adhere to all aspects of this document. In such circumstances, staff should take advice from their manager and all possible action must be taken to maintain ongoing patient and staff safety.

3. PROCESS

Prevention

After the 12/40 scan every woman is reviewed by a specially trained GAP midwife:

- Aspirin 150mg ON is prescribed if no contra-indications if deemed to be at high/moderate risk of pre-eclampsia or SGA in accordance with NICE guidance. (Appendix C)
- Smoking cessation support is offered.

Risk assessment

This risk assessment is in line with Saving Babies Lives Care Bundle. (Appendix D) and should be performed by the community midwife at booking and/or the specially trained GAP midwife after the 12/40 scan.

Moderate risk factors

- All women with one or more moderate risk factor for fetal growth restriction should be referred for serial growth scans at 32/36/40 weeks with review in the consultant led antenatal clinic.
  - Previous SGA baby between 3rd and 10th centile on GROW
  - Current smoker

- Current drug misuse
- Maternal age at delivery >40 years
- Significant fibroids (multiple fibroids or single fibroid >5cm)
- BMI ≥35

Maternal risk factors

- All women with the following high risk medical comorbidities should be referred for early consultant led care:
  - Chronic kidney disease
  - Essential hypertension
  - Autoimmune disease including lupus/ antiphospholipid syndrome
  - Congenital cyanotic heart disease

A consultant obstetrician with expertise in maternal medicine will screen these referrals and offer early appointment after dating scan. If appropriate the woman will be referred to FMU for a uterine artery doppler study. Ultrasound scans for fetal growth surveillance will be arranged depending on the outcome.

Previous pregnancy risk factors

- All women with the following previous pregnancy risk factors should be referred for early consultant led care
  - Previous baby born below the 3rd Centile,
  - Previous pre-eclampsia resulting in preterm delivery (<37/40)
  - Previous IUD (these women will be offered an appointment in the Rainbow clinic at 16/40)

A consultant obstetrician with expertise in high risk pregnancies will screen these referrals and the woman will be booked for a uterine artery doppler study. Ultrasound scans for fetal growth surveillance will be arranged depending on the outcome.

Current pregnancy risk factors

- All women with a current pregnancy affected by the following should be referred to the fetal medicine team.
  - Low PAPP-A
  - Echogenic bowel
  - Significant bleeding
  - EFW <10th centile at the 20/40 USS

Surveillance of low risk women

If a woman is deemed low risk at booking SFH should be measured and plotted on a customised growth chart at every scheduled antenatal appointment from 26-28 weeks gestation.
If the SFH is plotted below the 10th centile or there is suspected slowing/static growth on customised chart then an urgent referral should be made for an ultrasound assessment of fetal growth. It should be noted that a single growth scan will not demonstrate normal growth velocity therefore it is recommended that 2 scans at least 3 weeks apart be used to assess growth velocity.
If <37/40 2 scans will be arranged 4 weeks apart and a consultant review will be arranged following the 2nd scan. A GAP midwife will review the initial scan and refer to consultant if any concerns at that time.

If normal growth velocity is demonstrated then the woman can be returned to community based care. Re-referral should be undertaken if there are growth concerns later in pregnancy.

Management of SGA/ FGR

If a small for gestational age fetus is identified (baby with AC/EFW between the 3rd-10th centile with normal LV and dopplers) then it is recommended a repeat ultrasound be performed with an interval of at least 2 weeks after discussion with a senior obstetrician.

- If evidence of linear growth and normal fetal movements then delivery would be recommended at 39/40 by induction of labour if suitable for a vaginal delivery. It is likely in this case the cause of SGA is constitutional rather than FGR.
- If there is evidence of reduced growth velocity or abnormal dopplers the baby is now diagnosed with fetal growth restriction and as such delivery would be recommended at 37/40. (If <37/40 at diagnosis of FGR then discussion with/ referral to FAC consultant is recommended)
- If EFW <3rd centile delivery is recommended at 37+0.

In fetal medicine delivery planning is based on clinical findings and clinician decision making with close liaison between the MDT including the neonatal team and Wessex Fetal Medicine Unit at Princess Anne Hospital. Fortnightly MDT meetings take place between fetal medicine and the neonatal team.

4. TRAINING REQUIREMENTS

Training will be included within the maternity trust update. This should include a robust training programme and competency assessment to screen for FGR e.g. measurement of fundal height, use and interpretation of customised growth charts, and referral process for ultrasound scanning for growth.
Online training can be accessed via the perinatal institute and competency assessments will be arranged locally.

5. REFERENCES AND ASSOCIATED DOCUMENTATION

- Saving Babies Lives- A care bundle for reducing stillbirth: NHS England, March 2019. https://www.england.nhs.uk/wp-content/uploads/2019/03/Saving-Babies-Lives-Care-Bundle-Version-Two-Updated-Final-Version.pdf
- ISUOG Practice Guidelines- Diagnosis and Management of Small-for-Gestational-Age Fetus and Fetal Growth Restriction: ISUOG August 2020. https://obgyn.onlinelibrary.wiley.com/doi/10.1002/uog.22134
- NICE Guideline- Hypertension in pregnancy: NICE June 2019. https://www.nice.org.uk/guidance/ng133/chapter/Recommendations#reducing-the-risk-of-hypertensive-disorders-in-pregnancy

6. EQUALITY IMPACT SCREENING

The Trust is committed to ensuring that, as far as is reasonably practicable, the way we provide services to the public and the way we treat our staff reflects their individual needs and does not discriminate against individuals or groups on any grounds.

This procedural document has been assessed accordingly. The assessment document is held centrally and is available by contacting the Governance Co-ordinator.

7. MONITORING COMPLIANCE

This procedural document will be monitored to ensure it is effective and to provide assurance of compliance.

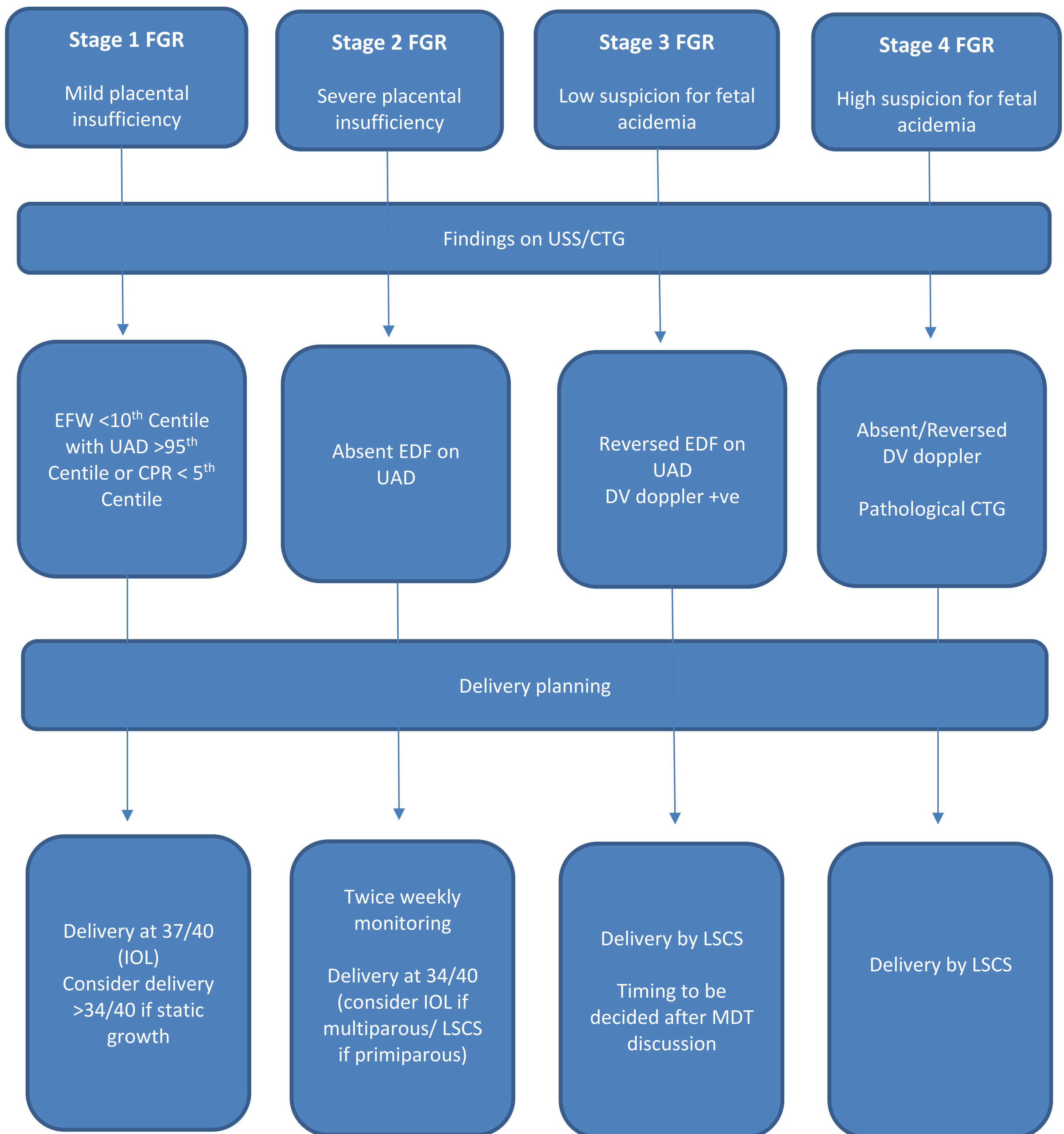
Element to be monitored	Lead	Tool	Frequency of Report	Reporting arrangements	Lead
Element 2 -Saving babies lives care bundle	Kirsty Lees	Ongoing audit of Small for Gestational Age (SGA) birth rates, with reporting of antenatal detection rate, false positive rate and false negative rate on local dashboard or similar).	Quarterly	Will be part of CNST requirement. SPA dedicated to audit and reporting of element 2 SBLCBv2 as agreed by Obstetric CD.	Kirsty Lees

Appendix A: Roles and Responsibilities

This should be the specific duties, accountabilities and responsibilities for key individuals in implementing the policy and should only be included if there are additional roles and responsibilities required, which do not fit within the quick reference guide.

Any further appendixes can be used to provide additional information required within the policy.

Appendix B : Example of Fetal Medicine pathway (thresholds for delivery)



Ductus Venosus doppler is generally for use <32/40
Middle Cerebral artery doppler is generally for use >34/40

Appendix C- Risk assessment for aspirin

Aspirin 150mg once at night should be commenced for women at risk of SGA/ Hypertensive disease in pregnancy in line with NICE guidelines and Saving Babies Lives Care Bundle.

One or more high risk factor:

- Hypertensive disease during a previous pregnancy
- Chronic kidney disease
- Auto-immune disease (e.g. SLE, antiphospholipid syndrome)
- Type 1 or 2 diabetes
- Chronic hypertension
- Previous SGA <5th centile

Two or more moderate risk factors:

- First pregnancy
- Age 40 years or older at delivery
- Pregnancy interval of 10 or more years
- BMI of 35 or greater
- Family history of pre-eclampsia
- Multiple pregnancy.

Appendix D: Saving Babies Lives Algorithm for using uterine artery dopplers as a screening tool