GAP Guidance: Assessment of Fetal Growth and Management of SGA Pregnancies

Introduction:

The definition small for gestational age (SGA) refers to an infant born with a birth weight less than the 10th centile. Fetal growth (FGR) refers to babies who do not reach their growth potential. Not all babies with that are born less that the 10th centile will have FGR, in fact 50–70% of SGA fetuses are constitutionally small. The more severe the SGA the more like the baby is to have FGR (ref RCOG).

FGR is associated with stillbirth, neonatal death and perinatal morbidity. Confidential Enquiries have demonstrated that most stillbirths due to fetal growth restriction (FGR) are associated with suboptimal care. It has been identified by the Perinatal Institute that 86% of stillbirth with FGR are potentially avoidable (ref PI and GAP).

Historically SGA birth has been defined using population centiles. But, the use of centiles customized for maternal characteristics (maternal height, weight, parity and ethnic group) as well as gestational age at delivery and infant sex, identifies small babies at higher risk of morbidity and mortality than those identified by population centiles (saving babies lives).

Pragmatically, to encompass the babies most as risk of FGR, all babies less than the 10th centile for EFW would be referred for enhanced monitoring.

Purpose of the Guideline:

The purpose of this guideline is support assessment of fetal growth in singleton pregnancies. This guideline also provides management pathways for babies diagnosed as SGA.

Scope of the guideline:

This guidance is not for use in multiple pregnancies or pregnancies with fetal abnormalities. This guidance should be used in conjunction with the Holistic Antenatal Pathway when risk assessing women for risk of FGR at each clinical encounter.

This guidance is relevant for:

- All pregnant women booked for antenatal care in NHS Lanarkshire (NHSL)
- University Hospital Maternity services and Daycare units across NHSL
- All midwifery and medical staff providing antenatal care in NHSL

- All ultrasonographers working within maternity services in NHSL

Definitions of terms:

- SGA: Small for gestational age refers to a fetus that has failed to achieve a specific biometric or estimated weight threshold by a specific gestational age
- AC: abdominal circumference measurement made at ultrasound scan
- EFW: estimated fetal weight, calculated using a mathematical formula including HC, AC and femur length
- FGR: fetal growth restriction describes a fetus that has failed to achieve its growth potential, predominantly because of suspected placenta insufficiency. Sometimes referred to as intrauterine growth restriction
- SFH: symphysis fundal height measured in centimeters
- HC: head circumference
- UAD: umbilical artery Doppler
- PI: pulsatile index
- EDF: end diastolic flow on assessment of UAD waveform
- MCA: middle cerebral artery
- DV: ductus venosus

Content:

Screening for SGA fetus:

Please refer to the Holistic Antenatal Care pathway for assessment of risk factors for FGR. This check list should be completed at booking and reviewed at 16 weeks. This should also include consideration for LDA (see guideline). See Appendix B for risk assessment. Smoking status should be reviewed at 16 weeks as well as CUBS. The presence of echogenic bowel should be reviewed after FAS

Generating a GROW chart:

At booking, a customized growth chart (GROW chart) should be generated within BadgerNet based on her EDD by dates. Following her booking US the chart will be updated with EDD based on scan by relevant sonographer. **The chart will show the 3rd, 10th, 50th, 90th and 97th centiles.**

In the top left hand corner a box displays her height, weight, ethnicity, parity and customized centiles of all previous children. The mother's name, reference number, and date of birth appears above the chart and the chart ID number appears in bold at the bottom of the chart.

When a SFH measurement is recorded it will be automatically plotted into the mother's GROW chart and annotated as an 'X'. When an EFW is recorded from an ultrasound scan it will be automatically plotted into the mother's GROW chart an annotated as a '●'.

However events during pregnancy can change the risk assessment. Please review the risk assessment of each women at all clinical encounters.

If the risk assessment indicates the pregnancy is at risk growth restriction then a request should be made to the ultrasound department for serial growth scans (see Appendix B).

If growth scans are recommended the SFH should not be performed as they are unhelpful not required.

Fetal growth assessment of low risk pregnancies:

Women who are recognised as low risk and suitable for midwifery led care should have serial fundal height measurements undertaken as a primary screening test for fetal wellbeing.

- SFH should be commenced from 26-28 weeks gestation and recorded every 2-3 weeks.
- Do not repeat a measurement less that 2 weeks apart.

- Women referred to Triage should not have SFH repeated is SFH has been recorded less that 2 weeks prior or if women are having serial growth scans for assessment of fetal growth.
- At each patient contact the woman should be assessed to ensure there has been no change in risk factors e.g. low PAPP-A identified from antenatal screening, development of pre-eclampsia or unexplained APH in the third trimester.

How to measure Symphyseal Fundal Height (See Appendix A)

When to refer for a growth scan:

Please refer to related guidance "When to refer for a Growth scan". In summary indications for a growth scan are:

- First FH measurement below 10th centile
- Static growth: no increase in measurements
- Slow growth: based on sequential measurements, if the growth is crossing the centile charts
- 2 FH measurements above 97th centile
- Accelerated growth: growth crossing centiles in an upward direction

Fetal Growth assessment for high risk pregnancies:

Women identified to be at high risk for FGR should be offered aspirin 150mgs to be taken at night from 12 to 36 weeks gestation. Lower dose 75mgs nocte may be considered in women with underlying renal impairment (only after specialist review). Smoking status should be reviewed at 16 weeks as well as CUBS. The presence of echogenic bowel should be reviewed after FAS

- Women with risk factors for SGA baby should have serial growth scans
- These will be commenced at 28 weeks
- These will be performed as least 4 weekly until delivery

Some women will be particularly high risk and should have an individualised care plan documented following review by their named Consultant.

See Appendix B for scanning pathways.

Diagnosis SGA and/or FGR pregnancies:

SGA babies:

- A baby would be considered SGA if the EFW is less than the 10th centile. This group if heterogeneous and will contain babies who are constitutionally small as well as those with FGR.
- In general these babies need growth scans every 2 weeks ensuring they follow this growth trajectory.
- Please see Appendix C for more details.
- **Providing there are no other obstetric/medical concerns from prior pregnancies or in index pregnancy, enhanced fetal monitoring with CTGs, LV and Doppler between scans is not required.**

Babies with suspected FGR:

- This can be considered early if less than 32 weeks or late-onset if greater than 32 weeks Early onset is much less common the definition includes:
- EFW ≤3rd centile or UA Doppler Absent/rev EDF
- EFW < 10th centile combined with Umbilical artery PI > 95th centile. Late onset much more common the definition includes:
- EFW≤ 3rd centile or UA Doppler Absent EDF
- Or at least 2 out of 3 of the following:
    - EFW < 10th centile
    - EFW crossing centiles >2 quartiles (eg 50% drop in centile)
    - Umbilical PI > 95th centile (**see separate note on isolated raised UA PI**)

Management of SGA and/or FGR pregnancies

Please refer to Appendix C for the management of SGA and/or FGR fetus

- On 1st diagnosis of SGA, the woman should attend for discussion on plan for follow up. This is most likely initially performed through maternity daycare or triage. Check maternal BP and urinalysis to exclude pre-eclampsia. The RCOG 'Having a small baby' leaflet should be issued.

- If no immediate indication for urgent action e.g. normal Dopplers, CTG, FMs, BP the woman should have a telephone consultation at her local Consultant antenatal clinic to discuss management plan (see Appendix C)
- The following visits may follow flow chart (Appendix C) without medical consultation at every visit if parameters normal.
- For medical review if any deviation from normal parameters as per Appendix C.
- For medical review as approaches gestation for consideration of delivery as per Appendix C.
- It is most likely patients with absent or reversed EDF will be having serial ultrasound performed by senior medical staff from fetal medicine team (as per Appendix C). If very preterm decision regarding delivery in non-acute situation should be made by this team in conjunction with neonatal unit.
- Consider steroids if likely will need preterm delivery, please refer to Antenatal Steroids guidance.
- Magnesium sulphate should be administered as per guidelines for prematurity, and may be considered beyond 30 weeks in very growth restricted foetuses.
- If end diastolic flow is absent or reversed: Deliver by caesarean section at appropriate gestation (see Appendix C)

Timing of delivery:

- **Please refer to Appendix C**
- A baby is considered SGA when they are following the centile curve between the 3rd and 10th centiles with normal liquor volume and normal umbilical artery Doppler PI. There is a small increased risk of perinatal mortality in babies <10th centile for EFW compared to babies over the 10th centile. Induction of labour should be offered at 39 weeks gestation.
- A baby has FGR based on the above definitions. There is a significant increased risk of perinatal mortality in this group and delivery should be offered at 37 weeks gestation or earlier if indicated.
- For babies at earlier gestation with significant growth concerns these pregnancies are likely to be referred to the Fetal Medicine Team for an individualised delivery plan.

Isolated raised UA PI

A single isolated measurement with increased umbilical artery PI where growth appears to be normal may reflect a spurious result due to fetal movement etc.
A single isolated finding of an increased umbilical artery PI in a fetus with apparent normal growth may not truly reflect an abnormal finding. In this instance, the umbilical artery Doppler should be repeated within the following 20-30 minutes and if still raised a repeat sonographer scan should be booked in 3-4 days. If the Doppler measurement remains abnormally raised at this point then a consultant scan should be organised in the following 3-4 days.

APPENDIX A: HOW TO MEASURE SFH

Fundal height measurements should be performed with the mother in a semi-recumbent position. Always use a paper measuring- tape. To reduce bias, the tape-measure should be used with the cm side hidden, and the measurement should be taken once only.

Bladder should be empty

Perform abdominal palpation and identify the highest point of the uterine

Starting at zero, the tape is placed on the uterine fundus at the highest point

The tape measure should then be drawn down to the top of the symphysis pubis and the number read in whole centimetres

Serial fundal height measurements should be carried out from 28 weeks gestation using the schedule of antenatal visits for primiparous and multiparous patients until delivery.

Fundal height measurements tutorial video can be found at the bottom of the maternity page on FirstPort.

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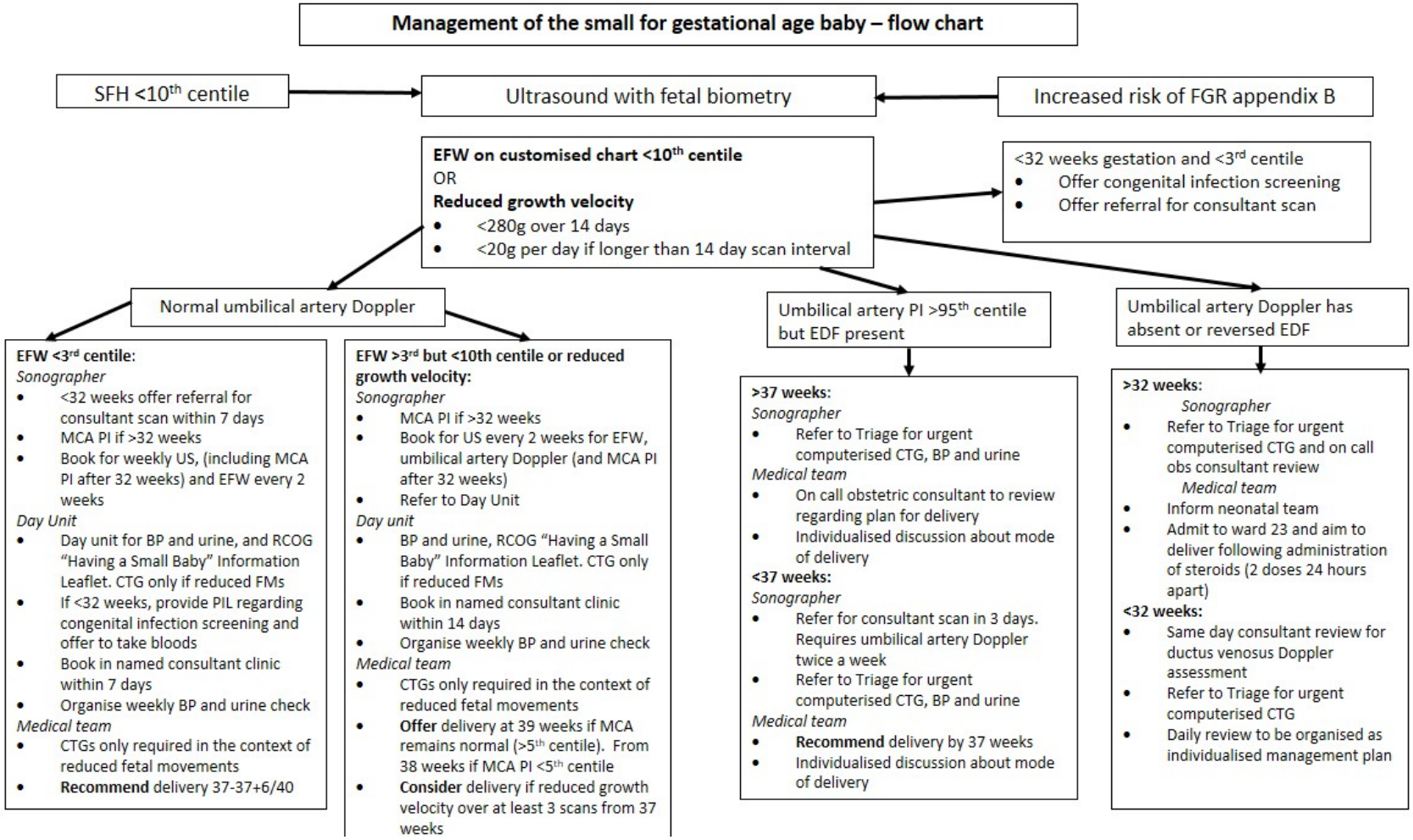
APPENDIX B: fetal growth assessment pathways (adapted from GAP and Saving Babies lives Bundle V2)

risk assessment at booking and 16 week appointment	prevention	risk assessment for early onset IUGR at FAS	Fetal growth surveillance pathway for SGA/FGR	Reassess at 28 weeks and after at all clinical assessments
Low risk	nil	FAS AC >10th centile	Serial SFH from 26-28 weeks every 2-3 weeks	Assess for complications developing in pregnancy, e.g. hypertension, APH
Moderate risk Obstetric history: Previous SGA Previous still birth AGA birthweight Current risk factors: Smoker >11/day Drug misuse Women ≥ 40 years of age at booking	Assess for history of placental dysfunction (check for placental histopathology) Consider asprirn 150mg OD to be taken at night 12-36 weeks Ideally commenced before 16 weeks	FAS AC >10th centile	Serial USS from 28 weeks every 4 weeks until delivery	
High risk Medical history: Maternal medical conditions (CKD, hypertension, autoimmune, connective tissue, heart disease, DM) Obstetric history: Previous FGR Hypertension in a previous pregnancy Previous SGA stillbirth Current pregnancy: Low PAPP-A Echogenic bowel Significant vaginal bleeding EFW <10th centile at FAS	Assess for history of placental dysfunction (check for placental histopathology) Consider asprirn 150mg OD to be taken at night 12-36 weeks Ideally commenced before 16 weeks	FAS AC >10th centile perform uterine artery dopplers (PI)	Serial USS from 28 weeks every 4 weeks until delivery	Serial growth scans from detection until delivery
		FAS AC <10th centile +/- raised Uterine artery dopplers	Serial USS from 24 weeks Individualised care plan	
Women unsuitable for growth assessment by SFH BMI >35kg/m^2, fibroids, multiple pregnancy	Evaluate as per risk assessment	FAS AC >10th centile	Serial USS from 28 weeks every 4 weeks until delivery	

Appendix C: Management of the SGA and/or FGR fetus (adapted from RCOG GTG 31 and Saving Babies Lives Bundle V2, ISUOG)



Related NHL Guidance:

GAP: When to refer for a growth scan GAP: TBA
Fetal Macrosomia: TBA

Steroids Antenatally to Reduce Fetal Morbidity

Reduced Fetal Movements

Holistic Antenatal Care pathway

References:

- GAP assessment tool. http://www.perinatal.org.uk/FetalGrowth/FAQ.aspx
- RCOG Green-top Guideline No. 31. The Investigation and Management of the Small–for–Gestational–Age Fetus, RCOG Press 2013 https://www.rcog.org.uk/en/guidelines-research-services/guidelines/gtg31/
- Saving Babies Lives care Bundle v2. NHS England https://www.england.nhs.uk/wp-content/uploads/2019/07/saving-babies-lives-care- bundle-version-two-v5.pdf
- GORDIJN et al, Consensus definition of fetal growth restriction: a Delphi Procedure. *Ultrasound Obstet Gynecol* 2016; 48: 333–339
- ISUOG Practice Guidelines: diagnosis and management of small-for-gestational-age fetus and fetal growth restriction. August 2020

Auditable Standards:

- Detection rate of FGR
- Undetected rates of FGR and themes
- GAP pathway and changes to scanning numbers

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