Clinical Guideline

SCREENING FOR FETAL GROWTH RESTRICTION AND SMALL FOR GESTATIONAL AGE AT PREGNANCY BOOKING

SETTING	UHBW and NBT, Women and Children's, Obstetrics
FOR STAFF	Information for Community Midwives, hospital midwives
PATIENTS	Pregnant patients

Background Information to this Guideline

- The UK stillbirth rates are among the highest of the world's high-income countries.
- In 2014 the Government announced a national drive called *The Saving Babies' Lives Care Bundle (SBLCB)*, to reduce stillbirth by 50% by 2030 from 4.7 per 1000 to 2.3 per 1000 births; saving over 1500 babies each year.
- The SBLCB has 5 key elements to reduce stillbirth:

  1. Reducing smoking in pregnancy
  2. Risk assessment and surveillance for fetal growth restriction (FGR)
  3. Raising awareness of reduced fetal movement
  4. Effective fetal monitoring during labour
  5. Reducing preterm birth

- Element 2; screening for FGR by identifying fetal growth failure and small for gestational age fetuses is the subject of this guideline and closely follows SBLCB version 2. It has been proven that instituting structured screening for FGR/SGA increases detection from 33% to 54%, and that following the 5 key elements can reduce stillbirth by 20% (SPIRE report).
- Small–for–gestational age (SGA) refers to a baby born with a birth weight less than the 10th centile.
- Fetal growth restriction (FGR) refers to a pathological restriction of genetic growth potential due to impaired placental function.
- In a cohort of SGA fetuses, some will be 'healthy small': with fetal growth appropriate for maternal size and ethnicity; but many will be 'starved small': with growth restriction. The FGR fetus is at risk of stillbirth, and poor long-term health outcomes, such as impaired neurological development and cardiovascular diseases in adulthood.
- The name of this guideline has been changed from 'SGA screening' to 'FGR screening' because it is critically important to identify the FGR fetus from a population of SGA fetuses.
- The key to reduce stillbirths is to identify maternal risk factors for developing FGR, and also to detect and thus refer earlier, those pregnancies which have developed growth restriction. Once identified, appropriate onward management can reduce the risk of serious sequelae such as stillbirth.
- Assessment of fetal growth is therefore a priority in antenatal care for all women, and community midwives are in a key position to identify risk factors for developing FGR from the woman's history at pregnancy booking.
- The community midwife (CMW) also has a critical role in:

  - Measuring and plotting SFH at every visit from 24 weeks (28 weeks in a multip);

- Educating the woman about the importance of reporting reduced fetal movements;
- Supporting smoking cessation during pregnancy;
- Recommending starting 150mg aspirin daily (in the evening) before 16 weeks (ideally 12 weeks) if she identifies a high risk woman (SBLCBv2):

Risk level	Risk Factor
HIGH – start aspirin if 1 risk factor	• Previous PET or PIH • Chronic kidney disease or previous AKI • Autoimmune disease e.g. SLE or antiphospholipid syndrome • Type 1 or type 2 diabetes • Chronic hypertension • Previous stillbirth over 20/40 • Previous fetal growth restriction • Previous abruption/histological evidence of placental dysfunction • Low PAPP-A <0.4MoM • Multiple pregnancy
MODERATE – start aspirin if 2 or more risk factors	• First pregnancy • Age ≥ 40 at booking • Pregnancy interval > 10 years • BMI >35kg/m2 at booking • Family history of PET in first degree relative

- In addition to SBLCBv2 recommendations, aspirin should be started for women with low PAPP-A identified at first trimester combined screening.
- Aspirin should be stopped at 36 weeks.

Best Practice Points

- At the pregnancy booking appointment the CMW requests the dating and 20 week anomaly scans electronically:

  - St Michael's and WGH: via ICE
  - Southmead: via Euroking/ **maternity.referrals@nbt.nhs.uk**

- At the booking or 12-week CMW appointment, all pregnant women have an assessment of FGR risk factors to decide whether the woman requires serial growth scans (see Risk Assessment Form, page 4). This form is filed in the "Antenatal Risk Assessment" section of the hand-held notes.
- At the 15-week CMW appointment: the presence of FGR **risk factors** prompts a referral for serial growth scans:

  - St Michael's: telephone the central clinic appointment line (0117 3426888) for any obstetric consultant's ANC at 28 weeks. Then request the 28-week growth scan

electronically, ensuring the ANC date/time is included on the request form (to ensure growth scan and ANC appointments occur on the same day).
  - Southmead: Send an email to **maternity.referrals@nbt.nhs.uk** requesting the 28-week ultrasound scan and ANC appointment which must occur on the same day.

- Measure **AND PLOT** symphysis fundal height (SFH) on the SFH chart on page 35 of the hand-held notes at every midwife visit from 24 weeks (28 weeks in a multip).
- Refer women for a growth ultrasound scan on the same day if:
  - There is a discrepancy **SFH of equal to or more than 3cm** between SFH and dates;
  - There is concern that growth is static or reduced compared to previous measurements.

- Refer women with unreliable SFH (BMI>35 or large fibroids) to the consultant led ANC.
- Low 'PAPP-A' (a molecule measured during the first trimester screening test for Down's syndrome) is a risk factor for FGR. The antenatal screening co-ordinator will refer pregnant woman with low PAPP-A for serial growth scans and send an information letter to the pregnant woman (see page 6). The CMW does not need to take any action other than ensure she is taking aspirin.
- FGR should be suspected if one of the following parameters is present:
- AC/EFW < 3rd centile – refer to FMU
- AC/EFW <10th centile **with** abnormal UAPI: >95th centile, AEDF or REDF – refer to FMU
- After 32 weeks: Tailing of AC or EFW growth trajectory graph: less than 280g EFW gain in the preceding 14 days (less than 20g per day increase in fetal weight)
- From 24 weeks: AC/EFW fall of >30% centiles on growth trajectory on serial scans
- If FGR is detected on growth scan, same day review by obstetric registrar or consultant (via FMU, ANC, or DAU on call registrar) must occur and BP, urinalysis must be checked.
- If FGR is detected with the co-existence of pre-eclampsia (proteinuria and BP >140/90 mmHg) then the woman must be admitted with senior obstetric review.
- Fetuses of EFW between 3rd-10th centile with **no** high risk features (e.g. normal Dopplers, no RFM, non-smokers) will often be constitutionally (healthy) small. They should receive serial growth scans (3-4 weekly). The care of such fetuses should be individualised and delivery should be offered at 39+0 weeks (SBLCBv2).
- Scan frequency should not be any more than every 14 days.

Symphysis Fundal Height Measurement

- Measure AND PLOT the SFH (primip from 24 weeks', multip from 28 weeks) at every antenatal appointment to assess fetal growth and to screen for FGR.
- Assessments of fetal growth rely on accurate assessment of gestational age, which is determined by the 12-week dating scan.
- Low sensitivity, high false positive rates and inter/intra- observer variation make this test unsuitable for diagnosis on its own. Thus, if FGR is suspected, same day referral for ultrasound assessment of fetal growth should occur.
- Refer women with a discrepancy SFH of equal to or more than 3cm between SFH and dates in weeks for a growth scan, or if there is concern that growth is static or reduced, compared to previous measurements.
- If a growth scan is not available within 5 days of referral, discuss case with the on call obstetric registrar and consider DAU referral if there are RFM or FGR risk factors.

Method

- Explain the procedure and gain verbal consent.
- Ask the mother to empty her bladder (a full bladder may increase SFH by up to 2cm).
- Position the woman flat, one pillow under her head, and arms by her sides, legs straight, ensure she is comfortable.
- Palpate the abdomen: define fundus and fetal size clinically.
- Define uppermost edge of symphysis pubis.
- Do not correct for dextro-rotation, even if the fetus is lying transversely (document lie in the notes).
- Measure SFH from the top of the fundus to the upper edge of the symphysis pubis following the longitudinal axis of the uterus.
- The tape measure should be non-elastic, marked in centimetres, with the cm scale facing down and hidden from the examiner, to reduce bias.
- Document the SFH carefully in cms on the antenatal assessment page AND PLOT on the symphysis fundal height chart.

Considerations

- Transverse lie: measure the longitudinal axis, document 'transverse lie' in the hand-held notes.
- Multiple pregnancy - SFH is unreliable (serial growth scans will be performed).
- BMI > 35 or large fibroids - SFH may be unreliable (but SFH should still be plotted to follow the increase in SFH for that particular woman). Serial growth scans will be performed.
- Measure AND PLOT (page 35) SFH at every antenatal appointment even if a woman is receiving serial growth scans.

Management of a Fetus Suspected to be Growth Restricted

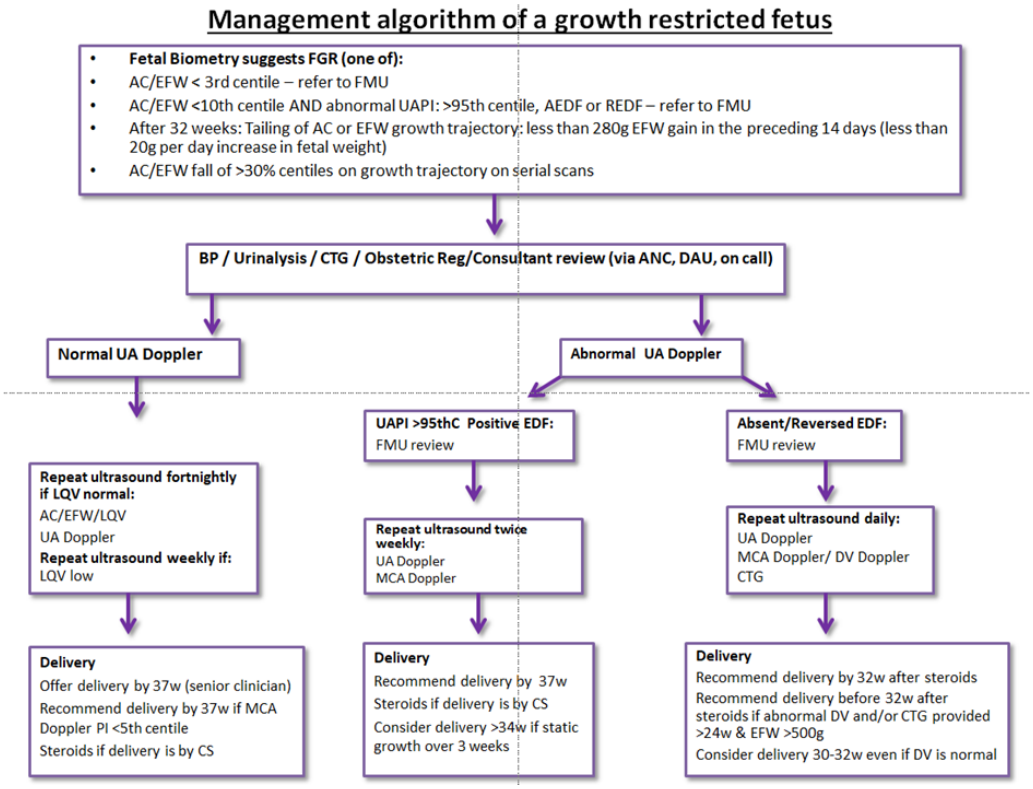

Table A

REFERENCES	• Evaluation of the implementation of the Saving Babies' Lives Care Bundle in early adopter NHS Trusts in England, SPIRE report, July 2018 • Gordijn SJ, Beune IM, Thilaganathan B, Papageorghiou A, Baschat AA, Baker PN, Silver RM, Wynia K, Ganzevoort W. Consensus definition of fetal growth restriction: a Delphi procedure. Ultrasound Obstet Gynecol. 2016 Sep; 48(3):333-9. • The Investigation and Management of the Small–for–Gestational–Age Fetus. February 2013 Green Top Guideline 31 • MacDonald TM, Hui L, Tong S, Robinson AJ, Dane KM, Middleton AL, Walker SP. Reduced growth velocity across the third trimester is associated with placental insufficiency in fetuses born at a normal birthweight: a prospective cohort study. BMC Med. 2017 Aug 31; 15(1):164. • Flenady V et al. Stillbirths: recall to action in high-income countries. Lancet 2016; 387: 691–702. • Care of Women with Obesity in Pregnancy (Green-top Guideline No. 72) RCOG November 2018. • Rolnik DL et al. Aspirin versus Placebo in Pregnancies at High Risk for Preterm Preeclampsia. NEJM. 2017 Aug 17; 377(7):613-622. • Roberge S et al. The role of aspirin dose on the prevention of preeclampsia and fetal growth restriction: systematic review and meta-analysis. Am J Obstet Gynecol. 2017 Feb; 216(2):110-120. • Saving Babies Lives Care Bundle Version 2 2019
RELATED DOCUMENTS AND PAGES	None
AUTHORISING BODY	Antenatal Working Party
SAFETY	None
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Version 3.2

- Amendment re Aspirin and multiple pregnancies and Low PAPP-A <0.4MoM
- Agreed by Antenatal Working Party

Appendix 1 – Risk Assessment Form of FGR Risk Factors at Pregnancy Booking

Name:	DOB:	Hospital Number:

If 1 or more FGR Risk Factor → refer to ANC for growth scans (28, 32 & 36/37 weeks):

- **Maternal age ≥ 40 years**
- **Current smoker**
- **Previous stillbirth**
- **Previous FGR (37-40w <2.5kg, 41w <2.6kg, 42w <2.8kg)**
- **Significant bleeding including in 1st trimester**
- **Cocaine use**
- **Maternal FGR (37-40w <2.5kg, 41w <2.6kg, 42w <2.8kg)**
- **Paternal FGR (if known)**
- **Current PET or severe PIH**
- **BMI>35 kg/m^2**
- **Chronic active medical conditions (renal impairment, diabetes, vascular disease, hypertension, active autoimmune disease e.g. APLS, SLE (seen in maternal medicine ANC)**
- **Low PAPP-A (antenatal screening co-ordinator actions this)**
- **Hypertensive disease in a previous pregnancy**
- **Echogenic bowel (ultrasound dept. & FMU will action this)**
- **Estimated fetal weight <10th centile (ultrasound dept. will action this)**
- **Big fibroids – SFH unreliable**

- At 28 weeks the ANC obstetrician assesses the future FGR risk, interprets the 28 week scan and decides on the ongoing scan frequency.
- At 36 weeks the ANC obstetrician makes an ongoing late pregnancy/delivery plan.
- The minimum surveillance is 3 scans (28 →32→36/37 weeks).
- The maximum surveillance is fortnightly (24, 28, 30, 32, 34, 36, 38 weeks): e.g. G2P1 previous HELLP with abruption and stillbirth at 30 weeks: these cases will often be managed in FMU.
- Women with chronic active medical conditions should be referred to maternal medicine ANC.

- Outcome (ring one): **LOW RISK** **SERIAL GROWTH SCANS & ANC**
- **Education about FM given?** **Yes** □ **No** □ **Declined** □
- **If smoker, smoker cassation given?** **Yes** □ **No** □ **Declined** □
- **Risk factors for commencing aspirin?** **Yes** □ **No** □ **Declined** □

Appendix 2 – Low PAPPA Patient Information Letter

Name:
Hospital Number:
Date of Birth:

Date: ……..

Dear ……,

Congratulations on your pregnancy!

We are writing to you to offer you extra growth scans around 28, 32 and 36 weeks to check that your baby is growing well.

You are being offered this because when you had your blood test at 12 weeks, one of the molecules called ‘PAPP-A’ that was measured was a little low.

We offer extra growth scans to all women with lower PAPP-A levels, because very occasionally lower PAPP-A can be associated with a lower baby birth weight.

Please don’t be concerned at this – most women with low PAPP-A still deliver big healthy babies, but the extra scans just allow us to keep a gentle check on baby!

Your 28 week growth scan has been arranged:

- Location:
- Date:
- Time:

Please bring this letter with you to the appointment.

Best wishes,

The Departments of Obstetrics/Ultrasound, [redacted] (St Michael’s Hospital), 03005550103 (Southmead Hospital), or [redacted] (Ashcombe Birth Centre).

Appendix 3 – Low PAPP-A in pregnancy - information for parents at the time of first trimester combined screening (FTCS)

- As part of your First Trimester Screening Test we look at PAPP-A (Pregnancy associated plasma protein-A) which is a hormone made by your placenta.
- Your PAPP-A result is low and therefore we recommend and would like to offer you extra scans.
- **What does it mean if I have low PAPP-A?**
- Medical evidence suggests that low PAPP-A levels are sometimes associated with smaller babies, earlier delivery and pre-eclampsia. However, many pregnancies where low PAPP-A is detected on first trimester screening continue normally.
- So that we can monitor your pregnancy more closely, additional appointments will be made for you to see a consultant obstetrician and to have a growth scan at 28 weeks and 36 weeks. This will be discussed at your 28 week appointment with the consultant. We will send an appointment letter out closer to the time.
- We also advise you to take aspirin throughout your pregnancy, as this helps your placenta to function better and reduces your chances of having a small baby, early delivery or developing pre-eclampsia. Please take 150mg Aspirin, once daily at night (or take two 75mg tablets at night). Aspirin 75mg can be purchased over the counter at supermarkets or a pharmacy. If you are allergic or asthmatic, please discuss with your Pharmacist before starting.
- If you have any concerns or questions, please call your community midwives or screening midwives.
- If you would like any further information on this, there will be a telephone number on the 28 week growth scan invitation letter.