PERINATAL SOCIETY of Australia & New Zealand PSANZ

Stillbirth CENTRE OF RESEARCH EXCELLENCE

POSITION STATEMENT

DETECTION AND MANAGEMENT OF WOMEN WITH FETAL GROWTH RESTRICTION IN SINGLETON PREGNANCIES

Fetal growth restriction (FGR) is associated with stillbirth, neonatal death and perinatal morbidity and an increased risk of adverse health outcomes into adulthood. Improving the detection and care of pregnancies with FGR is an important strategy to reduce adverse outcome and is relevant to all maternity care providers.

Contents

KEY MESSAGES

- Improving detection of FGR is an important strategy to reduce stillbirths
- Risk assessment for FGR should be undertaken in early pregnancy and at each antenatal visit (see algorithm).
- Where modifiable risk factors for FGR exist, provide advice and support to women (e.g. smoking cessation)[1].
- For low risk women, measure symphyseal fundal height (SFH) using a standardised technique. Plotting serial SFH measures on a growth chart may help to identify FGR.
- Where the SFH measures <10th centile or where static or slow growth is suspected, ultrasound assessment of fetal biometry should be considered[2].
- In women at increased risk for FGR and/or pre-eclampsia, consider commencing low dose aspirin (100-150mg nocte) prior to 16 weeks' gestation.
- Obstetric medical opinion should be sought for ongoing management when FGR is suspected[3,4].
- The following investigations are commonly used for the diagnosis and management of suspected FGR: ultrasound assessment of fetal biometry, amniotic fluid volume, umbilical artery Doppler and Cardiotocography and raising maternal awareness of reduced fetal movements.
- When planning the birth of a fetus with suspected FGR, care should be individualised taking into consideration the woman's preferences, health, gestational age, fetal condition, mode of birth, intrapartum monitoring and access to appropriate neonatal services
- The national FGR educational program for clinicians is recommended for all maternity services.
- Clinical audit and feedback are key drivers of practice change and should be undertaken to enhance best practice for FGR[5]

1 Purpose of the position statement

The purpose of this position statement is to improve perinatal outcomes through better antenatal detection and management of pregnancies with FGR. These recommendations have been derived from a literature review including multiple international SGA/FGR guidelines[5-10].

2 Definitions

FGR is best defined as a fetus that has not reached its growth potential. In practice, small for gestational age (SGA) is often used as a proxy for FGR (see Table 1). However, not all SGA fetuses are growth restricted, and some growth restricted fetuses are not SGA[11]. There are also differences between early and late FGR[12], which are detailed in Table 2.

Table 1: Definitions relating to FGR

Fetal Growth Restriction (FGR)	A fetus that has not reached its growth potential. (in practice, small for gestational age (SGA) is often used as a proxy for FGR)
Small for gestational age (SGA)	Estimated fetal weight/birthweight <10th centile
Severe FGR	SGA <3rd centile is often used as a proxy for severe FGR
Early FGR	FGR <32 weeks gestation
Late FGR	FGR >32 weeks gestation

Table 2: Early vs Late FGR, Adapted from Figueras et al[12].

	Early FGR	Late FGR
Gestation	<32 weeks	≥32 weeks
Prevalence[13]	0.5 – 1%	5 – 10%
Pre-eclampsia	Strong association	Weak association
Placental pathology	Strong association	Weak association
Relation to SGA	Often SGA <10th centile	Not always SGA
Umbilical artery Dopplers	Often Abnormal	Normal or abnormal
Detection[14]	Often ore readily detectable	Challenging to detect
Clinical consequences[14]	Risks of prematurity, high mortality and morbidity	Associated with increased mortality and morbidity

3 Risk factor assessment

Risk assessment for FGR can be undertaken pre-conceptionally, in early pregnancy, and at each antenatal visit [5,15] through inquiry about:

1. maternal characteristics and medical history
2. previous obstetric history
3. risk factors that may arise in pregnancy

It is good practice to inform women about FGR[1] at their booking visit. Where modifiable risk factors for FGR exist, provide advice and support to women (e.g. smoking and drug/alcohol cessation)[1].

Antenatal surveillance for FGR may be modified according to a woman's individual risk factors and this is detailed in the Risk Assessment Algorithm for FGR (Figure 1) at each antenatal visit.

Women can be stratified into three groups depending on their existing or newly arising risk factors for FGR. Consider low dose aspirin (100-150mg nocte) to commence prior to 16 weeks' gestation for women at increased risk of FGR. Frequency of ultrasound surveillance for suspected FGR should be based on FGR risk factors, prior history and the woman's preferences.

4 Symphyseal fundal height (SFH) measurement

Measurement of symphyseal fundal height (SFH) can be undertaken every 2-4 weeks starting from 24 weeks gestation[1,11]. In women with high BMI, or who have uterine fibroids that are unsuitable for SFH measurement, serial ultrasound can be considered for assessment of fetal growth[5].

The limitations of SFH measurement in the detection of FGR are well described[16]. A standardised approach to SFH measurement may reduce inter and intra-observer error[1,2]. One widely accepted approach to SFH measurement includes measuring from the fundus to the superior margin of the symphysis pubis, using a non-elastic tape measure with numbers facing downwards

Serially plotting SFH measurements on a growth chart may assist in the detection of FGR. Consider ultrasound assessment when a SFH measurement is <10th centile, or if there is clinical suspicion of static or slowing growth on serial SFH measurments[2].

5 Diagnosis and management of FGR

Accurate gestational age dating is important in the assessment of fetal size[17,18].

The following investigations are commonly used for the diagnosis and management of suspected FGR.

Table 3: Common investigations for diagnosis and management of suspected FGR

Investigation	Description	Suggestive of FGR
Fetal biometry by ultrasound	• Abdominal circumference (AC) • Head circumference (HC) • Biparietal diameter (BPD) • Femur length (FL) • Estimated fetal weight (EFW)	EFW or AC <10th centile and/or reduced growth velocity of EFW or AC
Amniotic fluid volume (AFV)	Measured by the single deepest vertical pocket (DVP) of amniotic fluid	DVP <2cm
Umbilical artery Doppler (UAD)	Measures resistance to blood flow in the umbilical artery and placenta	UAD Pulsatility or Resistance Index (PI or RI) >95th centile, absent or reverse end diastolic flow (AREDF)

Cardiotocography (CTG)	Continuous recording of fetal heart rate and uterine activity	Abnormal CTG trace
Enquiry about fetal movements	Ask each woman to identify her baby's normal pattern of movements[19].	Maternal concern about decreased fetal movements (strength and/or frequency).

Seek obstetric medical opinion for ongoing management when FGR is suspected[1].

6 Birth planning

When planning the birth of a baby with suspected SGA/FGR, the aim is to achieve the maximum maturity possible where it is safe to do so. Care should be individualised with consideration and discussion of the following points:

- Woman/family preferences
- Maternal condition
- Gestational age, EFW and fetal condition
- Mode of birth
- Intrapartum monitoring
- Access to appropriate neonatal services

7 Placenta

The major underlying cause of FGR is placental in origin[20]. Early onset FGR is often associated with maternal vascular malperfusion (MVM) of the placenta resulting in placental infarction or poor early placentation[20].

Rarer causes of placental pathology associated with FGR include: massive perivillous fibrin deposition (maternal floor infarction) and chronic intervillositis, both of which have high recurrence rates in subsequent pregnancies[20].

Compared to early onset FGR, the incidence of placental pathology in late onset FGR occurs less often[12].

It is recommended that the placentae of suspected SGA/FGR babies be sent for histopathology. The findings of which may support the clinical findings and influence subsequent pregnancy care[5].

8 Neonatal management

The clinical diagnosis of FGR in the neonate can be as challenging as it is antenatally. Care of the newborn with SGA/FGR should include monitoring and maintenance of oxygenation, temperature and blood glucose levels.

Paired cord blood gases can be undertaken to assess acid base status at birth.

In the care of the preterm growth restricted neonate, consider specific issues relating to prematurity such as lung disease, increased risk of infection, neurological complications and necrotising enterocolitis.

9 Subsequent pregnancy care

The birth of a baby with FGR is a major risk factor for FGR in a subsequent pregnancy[5]. Where possible, the underlying cause for FGR can be investigated to assess for recurrence risk. This includes review of placental histopathology and any investigations undertaken for FGR before and after birth[20].

Where SGA/FGR has been associated with stillbirth or severe long term adverse outcomes, consider additional parental psychosocial support in a subsequent pregnancy[21].

Prior to a subsequent pregnancy is an opportunity to address modifiable risk factors for FGR e.g. smoking cessation, optimising pre-existing medical conditions and weight reduction if obese[1].

Consider low dose aspirin (100-150mg nocte) in addition to serial ultrasound assessment in a subsequent pregnancy for women who have had previous FGR[5].

10 Education and clinical audit

Improving the detection and management of SGA/FGR is an opportunity to improve health outcomes[1,22].

Educational programs for maternity care providers have been shown to improve the detection of SGA/FGR and reduce stillbirth rates in the UK[2].

Clinical audit and feedback is a key driver of practice change[5]. Clinical case audit of best practice recommendations for SGA/FGR enables monitoring of practice change and evaluation of the impact on health outcomes including false positive and false negative findings[23].

Benchmarking practice across services identifies variation upon which to focus to improve outcomes. In Australia, the national core maternity indicator for SGA/FGR is the proportion of babies born at or after 40 weeks gestation who weighed less than 2750g at birth[24].

11 Evidence gaps

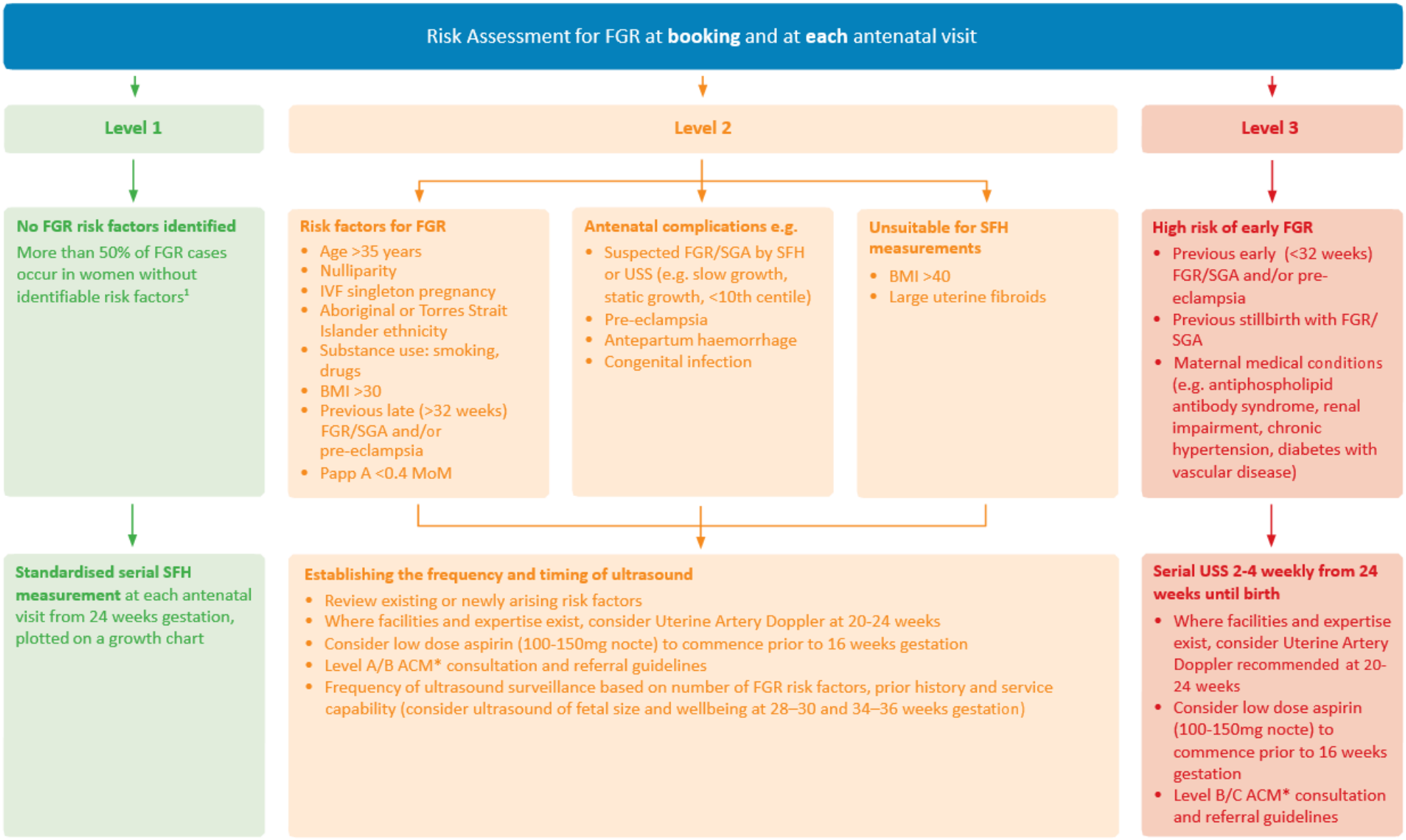
Further high-quality studies are required to improve practice and health outcomes.

Current evidence gaps in FGR research include:

- Placental biomarker and ultrasound screening for FGR
- Routine third trimester ultrasound to detect FGR
- Population vs customised growth charts in predicting FGR morbidity and mortality
- Interventions to reduce FGR
- Optimal frequency of fetal surveillance in suspected FGR
- Screening and management using a risk factor-based approach
- Systematic review of neonatal growth charts

12 Working group

Glenn Gardener, Megan Weller, Euan Wallace, Christine East, Jeremy Oats, David Ellwood, Alison Kent, Adrienne Gordon, Caroline Homer, Philippa Middleton, Sue McDonald, Farah Sethna, Lynn Sinclair, Claire Foord, Christine Andrews, Lisa Oro, Tracy Firth, Jonathan Morris, Vicki Flenady



Adapted from: Adapted by PSANZ/Stillbirth CRE 2018 from Royal College of Obstetricians and Gynaecologists. The Investigation and Management of the Small-for-Gestational-Age fetus, 2013. Maternal/paternal SGA, low fruit intake and excessive daily exercise are not readily ascertainable.

*Australian College of Midwives

[1]Isabelle M, Béatrice B, Anne E, Monique K, François G, Jennifer Z. Does the Presence of Risk Factors for Fetal Growth Restriction Increase the Probability of Antenatal Detection? A French National Study. Paediatric and Perinatal Epidemiology 2016; 30(1): 46-55.

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