

Risk assessment

Performed at booking and at regular intervals throughout pregnancy

Major risk factors for SGA and FGR

Maternal demographics

- Maternal age \geq 40 years (nulliparous)
- Continued smoking \geq 16 weeks' gestation (> 10 per day)
- Recreational drug use

Previous pregnancy history

- Previous FGR pregnancy*†
- Previous hypertensive disease of pregnancy*†
- Previous stillbirth†

Maternal medical history

- Chronic hypertension*†
- Diabetes with vascular disease*†
- Renal impairment*†
- Antiphospholipid syndrome*†

Current pregnancy risk

- Heavy bleeding < 20 weeks' gestation
- Pre-eclampsia or gestational hypertension
- Antepartum haemorrhage or placental abruption

Minor risk factors for SGA and FGR

Maternal demographics

- Nulliparity
- Maternal age \geq 40 years (multiparous)
- Smoking 1 to 10 cigarettes per day

Previous pregnancy history

- Short (< 6 months) or long (> 60 months) interpregnancy interval

Maternal medical history

- Conception via assisted reproductive technology
- BMI > 30 kg/m² or < 18.5 kg/m²

Current pregnancy risk

- Placenta praevia
- Low gestational weight gain

Antenatal screening

Starting from 20 to 24 weeks' gestation and performed until birth

Low risk: no major and < 3 minor risk factors

Serial fundal height assessment from 26 to 28 weeks' gestation until birth, plotted on customised antenatal growth chart

Suspected FGR

Slowing of customised fundal height > 30 centiles
or
Customised fundal height centile < 10

Increased risk

One or more major risk factors

- Start low-dose aspirin if indicated*
- Monthly serial ultrasound growth assessments starting from 28 to 30 weeks' gestation until birth

Risk factors for early-onset FGR†

- Monthly serial ultrasound growth assessments starting from 24 to 26 weeks' gestation until birth plus Uta Doppler at 20 to 24 weeks

Three or more minor risk factors

- Consider two ultrasound growth assessments in the third trimester: one at 30 to 32 weeks' gestation and one at 36 to 38 weeks' gestation

Unreliable fundal height measurement§

- Two ultrasound growth assessments in the third trimester: one at 30 to 32 weeks' gestation and one at 36 to 38 weeks' gestation

Ultrasound growth assessment

Customised antenatal growth chart ideally sent with referral or provided by pregnant woman/person

Normal fetal biometry

Customised EFW and AC \geq 10th centile, normal interval growth

Abnormal fetal biometry or growth

Customised EFW or AC centile < 10
or
Slowing of fetal growth (ie, decline in customised EFW or AC > 30 centiles from 28 weeks' gestation)

Perform Doppler assessment

UA Doppler
Abnormal if PI is > 95th centile

Uta Doppler
Abnormal if mean PI > 95th centile or bilateral notching
CPR (\geq 32⁺⁰ weeks)
Abnormal if < 5th centile

Normal UA Doppler

- Normal Uta Doppler
- Normal CPR (if \geq 32 weeks' gestation)
- EFW \geq 3rd centile

Specialist referral for review within 1 to 2 weeks‡

Normal UA Doppler

- Abnormal Uta and/or
- Abnormal CPR (if \geq 32 weeks' gestation) or
- EFW < 3rd centile

Specialist referral for review within 1 week‡

- If \geq 38+0 weeks, review within 48 hours for consideration of planned birth

Abnormal UA Doppler

Forward flow present

Same day referral for specialist review

Abnormal UA Doppler

AEDF or REDF

Urgent inpatient management

* Low dose aspirin is recommended, starting between 12+0 and 16+6 weeks' gestation, taken at night.

† Risk factors for early-onset FGR include previous FGR birth < 32 weeks' gestation, previous hypertensive disease with birth < 34 weeks' gestation, significant maternal medical disease and previous stillbirth (particularly early gestation or FGR).

‡ Clinical concern may override the recommended timeframes for specialist review (eg, oligohydramnios, significant slowing of growth or reduced fetal movements).

§ Unreliable fundal height measurements may be due to BMI > 35 kg/m² large or multiple fibroids or polyhydramnios.

Abbreviations: AC = abdominal circumference; AEDF = reversed end-diastolic flow; CPR = cerebroplacental ratio; EFW = estimated fetal weight; FGR = fetal growth restriction; PI = pulsatility index; REDF = reversed end-diastolic flow; SGA = small for gestational age; UA = umbilical artery; Uta = uterine artery.

Management of FGR < 32+0 weeks (early onset)

Review history

- Confirm gestational age
- Antenatal combined or maternal serum screening results
- Antenatal screening for aneuploidy and other conditions (such as MSS1, MSS2 and NIPT), if performed
- Medical, FGR risk factors
- Consider serology for congenital infection screen especially if < 28 weeks' gestation or severe FGR (EFW < 3rd centile)

Review fetal anatomy

- Consider referral for tertiary review including anatomical survey, especially if < 28 weeks' gestation or severe FGR

Isolated SGA

- EFW and/or AC 3rd to < 10th centile
- Normal UA and UtA Dopplers

Once ≥ 32+0 weeks' gestation, manage as per late-onset flowchart

Perform every two weeks

- Ultrasound for growth, UA Doppler, liquor
- Clinical review

If fetal growth normalises to > 10th centile with all normal Dopplers over ≥ 1 month, transfer to routine low-risk care

FGR

- EFW or AC < 3rd centile or
- EFW or AC < 10th centile plus
 - Abnormal UA (forward flow present) or
 - Abnormal UtA Doppler (performed once at diagnosis)

Once ≥ 32+0 weeks' gestation, manage as per late-onset flowchart

At least weekly

- Ultrasound for UA Doppler, liquor
- cCTG (or CTG)*
- Clinical review

- Consider antenatal steroids
- Increase surveillance and/or consider inpatient monitoring if there is oligohydramnios, static or very poor interval growth or suspected pre-eclampsia.

Every two weeks

- Ultrasound for growth

FGR at high risk of deterioration

- AEDF or REDF

Admit for birth planning

In-patient management

- Antenatal steroids < 35+0 weeks ± magnesium sulphate < 30+ 0 weeks
- Twice daily cCTG (or CTG)*
- At least daily maternal BP and pre-eclampsia assessment
- UA and DV Doppler, liquor performed two to three times per week

Birth

- AEDF birth by 32 to 34 weeks' gestation
- REDF birth by 30 to 32 weeks gestation
- If absent or reversed DV a-wave
- If reduced cCTG (or CTG) STV*
- By pre-labour caesarean

Absolute indications for birth

- Abnormal fetal heart rate (eg, repetitive unprovoked decelerations on cCTG or CTG)
- Maternal deterioration (eg, severe pre-eclampsia with uncontrolled hypertension/HELLP syndrome or other end-organ damage)

* cCTG is preferred in the assessment of early-onset FGR. If cCTG is not available, fetal wellbeing should be assessed using conventional CTG and fetal Doppler studies. STV criteria for birth are STV < 2.6 ms (26+0 to 28+6 weeks' gestation) and STV < 3.0 ms (29+0 to 31+6 weeks' gestation). **Abbreviations:** AC = abdominal circumference; AEDF = absent end-diastolic flow; BP = blood pressure; CPR = cerebroplacental ratio; cCTG = computerised cardiotocograph; CTG = cardiotocograph; DV = ductus venosus; EFW = estimated fetal weight; FGR = fetal growth restriction; HELLP = haemolysis, elevated liver enzymes and low platelets; IOL = induction of labour; REDF = reversed end-diastolic flow; UA = umbilical artery; UtA = uterine artery.



Management of FGR should be individualised.

Increased surveillance or expedited birth should occur if there are features of concern (eg, cessation of growth, oligohydramnios, repeated episodes of reduced movements)

Management of FGR $\geq 32+0$ weeks (late onset)

Review history

- Confirm gestational age
- Antenatal combined or maternal serum screening results
- Antenatal screening for aneuploidy and other conditions (such as MSS1, MSS2 and NIPT) if performed
- Medical, FGR risk factors
- Review fetal anatomy and placental location/morphology
- Consider serology for congenital infection screen, especially if severe FGR (EFW < 3 rd centile)

Isolated SGA

- EFW and/or AC 3rd to < 10 th centile
- Normal UA, CPR and UtA Dopplers

Perform every two weeks

- Ultrasound for growth, UA Doppler, CPR, liquor
- Clinical review

NOTE: If fetal growth normalises to ≥ 10 th centile with all normal Dopplers over ≥ 1 month, transfer to routine low-risk care

Birth

- At 40+0 weeks' gestation (and not earlier than 39+0 weeks' gestation), usually via IOL
- Continuous CTG in active labour*

FGR

- EFW or AC < 3 rd centile or
- Two of three:
 - EFW or AC < 10 th centile
 - Slowing of fetal growth
 - Abnormal UA (forward flow present), CPR or UtA Doppler (performed once, at diagnosis)

Twice per week

- Ultrasound for UA Doppler, CPR, liquor
- CTG
- Clinical review

Every two weeks

- Ultrasound for growth

Birth

- By 38+0 weeks' gestation, usually via IOL
- Continuous CTG in active labour*

Consider need for antenatal steroids $< 35+0$ weeks' gestation

Admit for birth planning

- Antenatal steroids $< 35+0$ weeks
 - Twice daily cCTG (or CTG)
 - At least daily maternal BP and pre-eclampsia assessment
 - Consider UA and DV Doppler, liquor performed two to three times per week if birth not imminent
- NOTE: Do not perform DV Doppler after 34+0 weeks' gestation as fetuses with AEDF or REDF in the UA have met the gestation criteria for birth.*

Birth

- Most births will be as soon as possible
- AEDF birth by 32 to 34 weeks' gestation
- REDF birth by 30 to 32 weeks' gestation
- By pre-labour caesarean

FGR at high risk of deterioration

- UA AEDF or REDF

Absolute indications for birth

- Abnormal fetal heart rate (eg, repetitive unprovoked decelerations on cCTG or CTG)
- Maternal deterioration (eg, severe pre-eclampsia with uncontrolled hypertension/HELLP syndrome or other end-organ damage)

* Offer continuous CTG after a full discussion of the benefits and risks. Respect woman/person's decision if they decline continuous CTG.

Abbreviations: AC = abdominal circumference; AEDF = absent end-diastolic flow; BP = blood pressure; CPR = cerebroplacental ratio; cCTG = computerised cardiotocograph; CTG = cardiotocograph; DV = ductus venosus; EFW = estimated fetal weight; FGR = fetal growth restriction; HELLP = haemolysis, elevated liver enzymes and low platelets; IOL = induction of labour; REDF = reversed end-diastolic flow; UA = umbilical artery; UtA = uterine artery.



Management of FGR should be individualised.

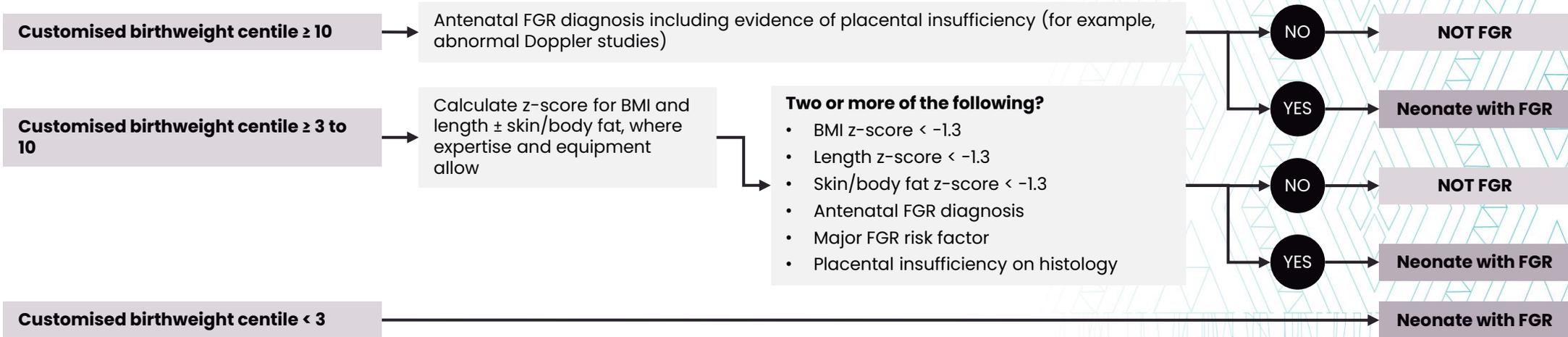
Increased surveillance or expedited birth should occur if there are features of concern (eg, cessation of growth, oligohydramnios, repeated episodes of reduced movements).

For All Babies

1) Review fetal growth monitoring

2) Review risk factors for FGR

3) Calculate customised birthweight centile using GROW



Management Of Neonates With FGR

Monitor with NOC/NEWS for ≥ 24 hours
 Screen for hypoglycaemia for 12 to 24 hours

Arrange paediatric/neonatal review for any of:

- Customised birthweight centile < 3
- Confirmed or suspected genetic abnormality
- Confirmed or suspected congenital infection
- Disproportionate microcephaly or macrocephaly
- Poor postnatal growth
- Neonatal diagnosis of FGR with no evidence of placental insufficiency (abnormal Doppler)

Paediatric/neonatal review

- Full examination
- Review maternal serology and Doppler studies
- Review newborn hearing screen

Evidence of placental insufficiency and no genetic or infection concerns

No further investigation needed

No clinical evidence of placental insufficiency (eg, normal Doppler studies): first-line investigation

- FBC
- Urine CMV PCR
- Consider placental histology
- Ensure newborn hearing screen is completed

Suspected congenital infection: maternal first-line investigations

- CMV serology (IgG and IgM)
- Syphilis serology (EIA screen initially) if not tested in third trimester
- Rubella serology (IgG and IgM) if not clearly immune
- Toxoplasmosis serology (IgG and IgM)

Suspected congenital infection: neonatal first-line investigations

- FBC, LFT, total and conjugated bilirubin
- Urine CMV PCR
- Ensure newborn hearing screen is completed

Suspected genetic disorder

- Molecular karyotype (EDTA) OR
- If aneuploidy is suspected, FISH and standard karyotype (heparin)
- Consider consultation with a clinical geneticist