

Term baby: small for gestational age (SGA)

Clinical Guideline Presentation



45 minutes

Towards CPD Hours

References:

The Queensland Clinical Guideline: *Term small for gestational age baby* is the primary reference for this package.

Recommended citation:

Queensland Clinical Guidelines. *Term small for gestational age baby*. Clinical guideline education presentation No. E16.16-1-V3-R21. Queensland Health. 2016.

Disclaimer:

This presentation is an implementation tool and should be used in conjunction with the published guideline. This information does not supersede or replace the guideline. Consult the guideline for further information and references.

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Learning objectives

At the end of this presentation, for the term small for gestational age baby, the participant will understand:

- Definitions associated with small for gestational age (SGA)
- Parental considerations and information
- Specific care required
- Prognosis and associated considerations
- Discharge planning considerations

Abbreviations

Abbreviations			
BoBs	Bacterial artificial chromosomes (BACs) on Beads	IV	Intravenous
BGL	Blood glucose level	LC	Lactation consultant
BW	Birth weight	NEC	Necrotising enterocolitis
CHD	Congenital heart disease	QCG	Queensland Clinical Guideline(s)
CMV	Cytomegalovirus	PPHN	Persistent pulmonary hypertension of the newborn
EBM	Expressed breast milk	SGA	Small for gestational age
FGR	Fetal growth restriction	SIDS	Sudden infant death syndrome
GP	General practitioner	SNP	Single nucleotide polymorphism
HC	Head circumference	WHO	World Health Organization
Hct	Haematocrit	>	Greater than
HIE	Hypoxic-ischaemic encephalopathy	<	Less than
HIV	Human Immunodeficiency virus	≥	Greater than or equal to

Definition

- SGA for each gestational age, is defined as birth weight:
 - Below the 10th percentile, or
- Severe SGA:
 - Birth weight below the 3rd percentile
 - At the greatest risk for morbidity and mortality

SGA

- Baby may be:
 - Constitutionally small and at no greater risk than appropriate weight for gestational age (AGA) babies, or
 - Small due to FGR
 - Also known as intrauterine growth restriction (IUGR)
 - A pathophysiological in-utero process
 - May not be detected before birth
 - More likely to have problems in the newborn period and require specialised care than SGA babies without FGR
 - Babies with abnormal Doppler studies are more likely to have complications

Associated risk factors: term baby

Maternal

- ≥ 35 years
- Obesity
- Underweight (≤ 55 kg)
- Weight gain < 6 kg
- Primiparity
- Short stature (≤ 157 cm)
- Previous SGA baby
- Multiple pregnancy
- Antenatal smoking
- Pre-eclampsia
- Chronic hypertension
- Anaemia
- Threatened preterm labour
- Pollutant exposures

Placental

- Low weight
- Insufficient perfusion
- Infarction
- Chronic villitis

Fetal

- Infection e.g. CMV
- Congenital anomaly

Conflicting/insufficient evidence

- Diabetes, gestational diabetes
- Gestational hypertension
- Illicit perinatal substance use, alcohol
- Maternal anxiety/depression
- Lack of social support
- High exercise
- Micronutrient deficiency
- Low dietary energy (calorie) intake

Parental considerations

- Involve parents in shared decision making
- Facilitate parent involvement
- Ensure parents understand the importance of maintaining temperature, feeding regularly, observing for jaundice
- Explain tests, procedures, comfort measures, equipment
- Refer to local support services
- Provide written parent information



Newborn assessment

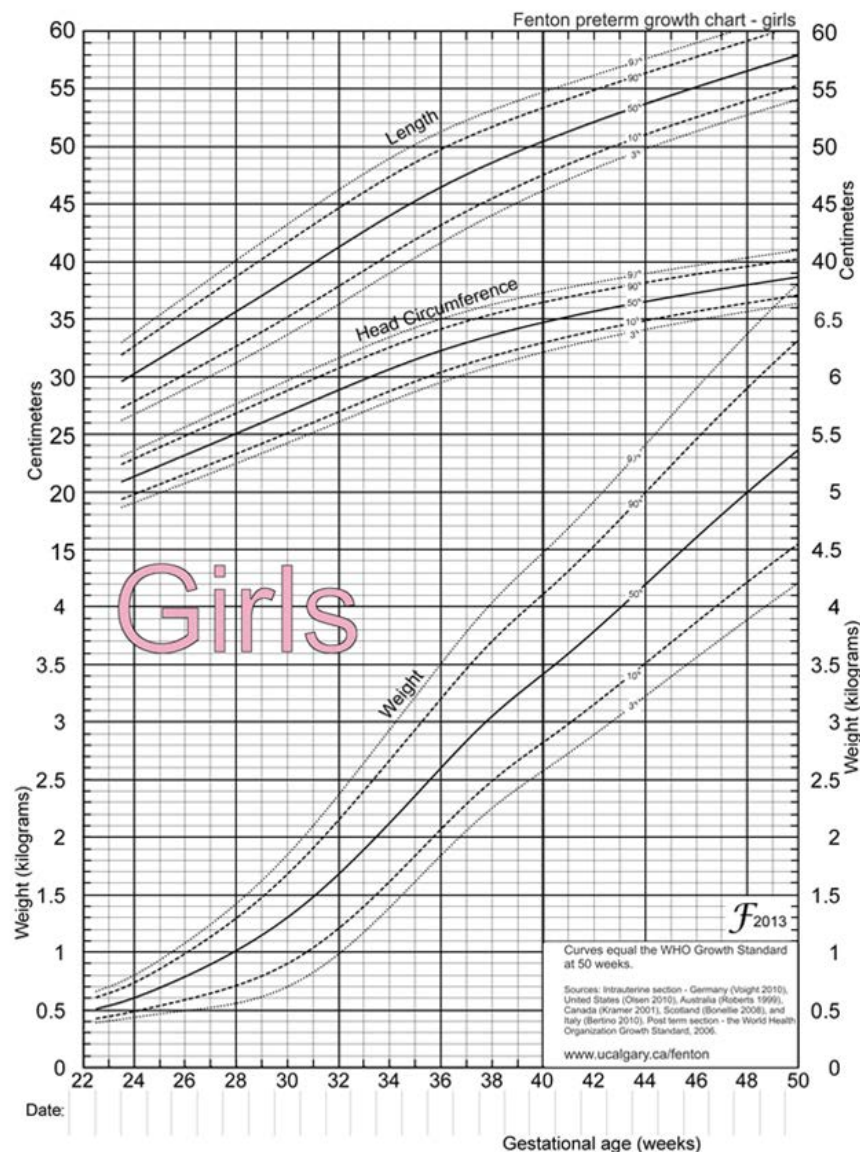
- The majority of term SGA babies are well and only require:
 - Routine care with an extra emphasis on being kept warm and fed; and the
 - Additional care of ensuring their blood sugars are within normal range

Newborn assessment

- Distinguish the healthy small baby from the FGR baby:
 - Obtain a detailed history
 - Perform a physical examination
 - Growth assessment: plot growth parameters on growth chart
 - Consider the need for investigations if FGR is suspected
 - Examine the placenta:
 - Investigations: considered at time of birth:
 - Histopathology
 - Cord blood: chromosomal analysis, gases as indicated

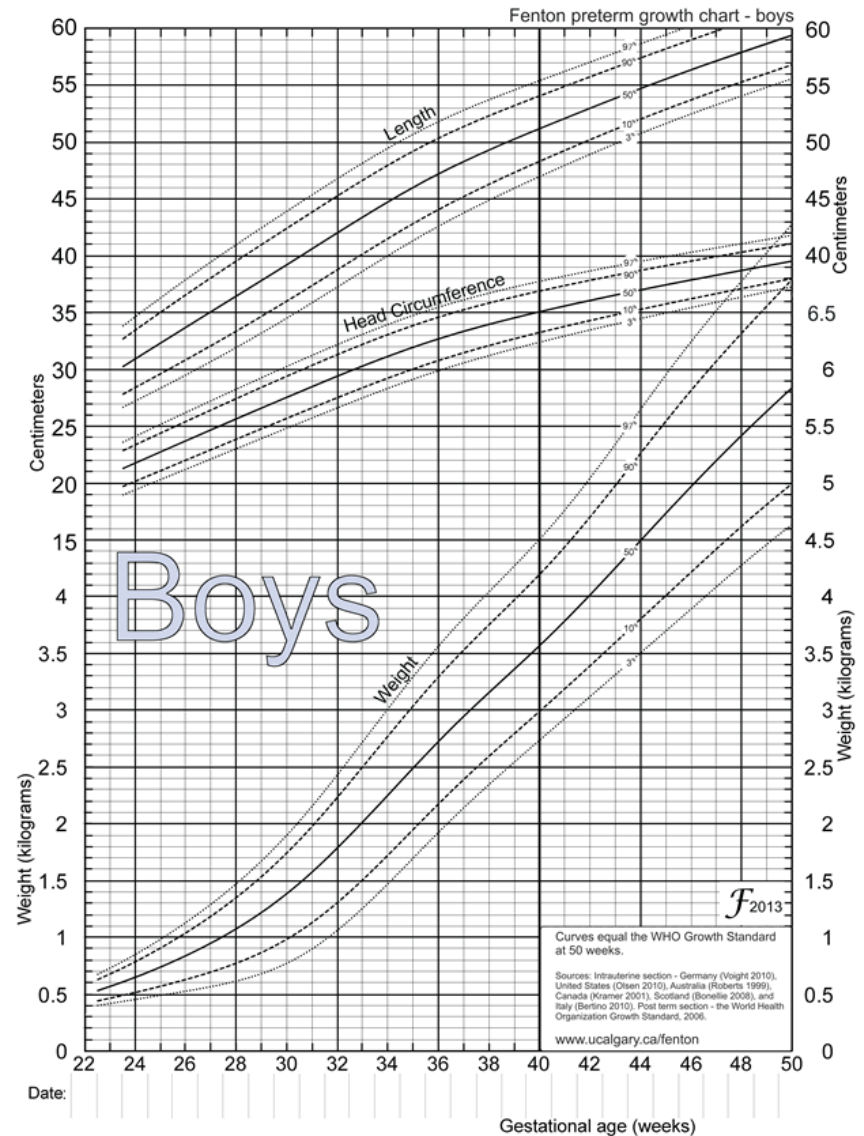
Growth charts

- Measure and plot BW, HC and length relative to gestational age
- Comparison of HC to BW and length may help to identify symmetrical or asymmetrical FGR



Fenton preterm growth charts

- Fenton growth charts for preterm infants:
 - Considered the gold standard for 22–50 weeks gestation
 - Blend into the WHO growth charts used in the Personal Health Record
- Inconsistent evidence about customised growth charts offering more accurate identification of SGA babies



Symmetrical FGR

- Proportionate decrease in length, weight and HC
- More severe form
- Associated with chromosomal abnormalities, congenital malformations, infection, fetal alcohol syndrome

Asymmetrical FGR

- Disproportionate decrease in length and weight compared to HC (head sparing)
- Associated with utero-placental insufficiency and extrinsic factors occurring late in pregnancy (e.g. maternal hypertensive conditions)
- Muscle mass may be decreased especially in the buttocks and thighs and facial appearance of an 'old man'
- Skin may be loose, thin, dry, flaky and with decreased subcutaneous fat
- Tone and alertness:
 - Mild to moderate FGR: hyperalert, jittery, hypertonic
 - Severe FGR: hypotonic

Investigations

- FBC including Hct and platelet count (to exclude polycythaemia and thrombocytopaenia respectively)
- Suspected congenital infection:
 - Refer to Australasian Society of Infectious Diseases guidelines *Management of perinatal infections* for investigations related to toxoplasmosis, rubella, CMV, HIV, varicella zoster, syphilis
- Dysmorphic features:
 - Dysmorphology assessment
 - Referral to a clinical geneticist
 - SNP array plus consider FISH if clinical suspicion of specific conditions (e.g. trisomy 21,13 or 18)

Rooming-in

- Rooming-in
 - Enhances breastfeeding
 - Promotes mother-baby attachment
 - Enables skin to skin contact
- Ensure mothers & babies are not separated unnecessarily
- Most babies > 2000 g can room-in if appropriate staffing, monitoring (e.g. temperature, BGL) and parental support is available



Neonatal unit admission

Morbidities associated with admission:

- Perinatal asphyxia
- Hypothermia
- Hypoglycaemia requiring intravenous (IV) therapy
- Hyperglycaemia
- Hypocalcaemia
- Polycythaemia/hyperviscosity
- Congenital anomalies
- Infection (TORCH and acquired)
- PPHN
- Meconium aspiration
- Pulmonary haemorrhage
- Thrombocytopenia, neutropenia, coagulopathy
- Lowered IgG levels
- NEC – increased risk with:
 - Absent or reversed umbilical artery end diastolic flow on antenatal Doppler studies
 - Sepsis
 - Congenital heart disease
 - HIE
 - Formula feeding



http://www.draeger.com/sites/en_aunz/Pages/Hospital/Neonatal-Care-Accessories.aspx

Thermoregulation

- Maintain normothermia (36.5–37.5°C):
 - Dress and cover baby appropriately for the environment
 - Skin to skin contact
- Apply SIDS guidelines (i.e. no hat) when baby is rooming-in
- Avoid hyperthermia by not over dressing the baby, monitoring equipment (e.g. incubator) and the baby's temperature
- Document baby and equipment temperature, as well as thermal care interventions required to maintain temperature



Temperature monitoring

- Monitor temperature at frequent intervals:
 - Within the first hour of birth
 - Every 3–4 hours at feed times for 24 hours
 - If less than 24 hours old
 - When transferred to the postnatal floor or rooming-in from the neonatal unit
 - Pre-interventions (e.g. physical examination)
 - 30–60 minutes after interventions (e.g. addition of warm wraps, commencement of overhead radiant warmer, change of incubator temperature)
 - Then hourly until stable



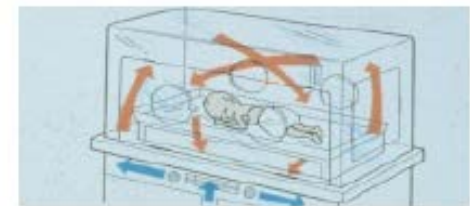
Hypothermia: interventions

- If hypothermia develops consider the use of:
 - Pre-warmed clothing
 - An incubator
 - Radiant warmer (unwrap blankets to enable radiant warmth to reach the baby), or a
 - Commercial heated water bed as required



Heated water-filled mattress

http://www.slideshare.net/varshatul/management-of-lbw-low-birthweight-babies?next_slideshow=1



Air-heated Incubator

Hypoglycaemia

- At increased risk due to:
 - Deficient alternative energy stores
 - Limited capacity for gluconeogenesis
 - Increased insulin sensitivity
 - Hyperinsulinaemia
 - Hypothermia
 - Polycythaemia
- For monitoring and management: refer to QCG: *Neonatal hypoglycaemia*



Feeding



- Term SGA (> 2000 g) are mature & from day 1 should tolerate feeding in response to cues
- Promote and support breastfeeding
- Refer to QCG: *Establishing breastfeeding*
- Feed within 30–60 minutes of birth
- Midwifery support and monitoring of feeding is vital (e.g. observe and encourage regular feeding)
- In response to cues
- Offer a feed if the baby has not fed for 3 hours
- Observe and document the baby's urinary output and bowel motions (frequency and type)

Feeding: further assistance

- Consult a LC or paediatric team as required (e.g. baby has not fed for 4 hours or more)
- Ineffective feeding:
 - Express after each feed
 - Supplementary feeds may be required (EBM preferred)
 - Skin to skin to promote breastfeeding behaviours
- If no evidence of milk transfer a feeding guide is 60 mL/kg/day on day 1 (daily increase of 30 mL/kg/day)
- Enteral tube for continued poor feeding
- IV 10% Glucose 60 mL/kg/day if:
 - Enteral feeding not possible
 - Difficulty maintaining normal BGL's with enteral feeds





Necrotising enterocolitis

- Is rare, but can be a life threatening complication
- Increased risk with:
 - Severe FGR
 - Absent/reversed umbilical artery end diastolic flow on Doppler studies
 - Sepsis, CHD, HIE, formula feeding
- Caution with babies < 2000 grams
- Monitor for feed intolerance (e.g. vomiting, increasing/large gastric aspirate if tube feeding)
- May require IV 10% Glucose to support more gradual increase in enteral volume intake

Prognosis

- Most term SGA babies are at low risk of serious long term outcomes
- Principally determined by:
 - Cause of aberrant growth
 - Timing, duration, severity & symmetry of growth restriction
 - Degree of perinatal asphyxia and its complications
 - Postnatal course
- An association with:
 - Adult obesity
 - End stage renal disease
- Weak but significant association with:
 - Childhood learning difficulties

Symmetrical FGR

- Remain smaller & relatively underweight throughout life and have a higher risk of adverse neurological outcome which can include:
 - Learning deficits
 - Behavioural problems



Asymmetrical FGR

- Usually have accelerated velocity of growth ('catch up growth') in first 6 months & normal development
- 'Catch up growth' refers to:
 - Accelerated linear growth after period of growth inhibition
 - Increase in linear growth & lean body mass preferred to
 - Increase in fat mass, central adiposity & insulin resistance



Discharge criteria

- ✓ Baby is healthy
- ✓ Physiologically stable
(e.g. temperature maintained
in open cot)
- ✓ Feeding well
- ✓ Parents able to sufficiently care for baby
- ✓ Steady weight gain (≥ 30 grams/day)
- ✓ Follow up plan in place



Discharge planning: parents

- ✓ Parents have been provided education & information regarding:
 - ✓ Nutritional/feeding requirements
 - ✓ Expected growth & development
- ✓ Consider/offer rooming-in as required
- ✓ Due to higher risk of readmission:
 - ✓ Discharge summary to GP/paediatrician/child health & copy to parents on discharge



Follow up recommendations

- Referral to:
 - GP
 - Child Health Services and/or Aboriginal & Torres Strait Islander Health Services
 - Specialised multidisciplinary clinic or paediatrician for:
 - Babies < 2000 grams
 - Co-existing medical conditions
 - Other relevant community support services