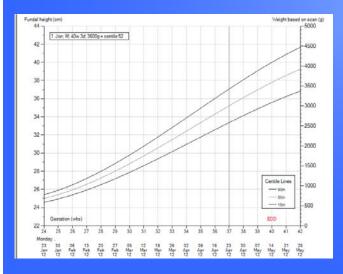
Customised Antenatal Growth Charts

Adapted with permission Perinatal Institute







for maternal and child health

Aims of Training

- Promote best practice
- Understand risk assessment at booking
- Increase knowledge of customised growth charts
- Standardise fundal height measurement
- Expand awareness of referral criteria



Parameters of normal growth

What is the average size baby at term?

What is the local definition of SGA?

What is the local definition of LGA?



Birth weight

2500g = SGA?

4500g = LGA?





Antenatal Detection

Using population standards to assess fetal growth in the 3rd trimester will miss most cases of SGA. Population standards group all women together and predict they will all have the same size baby at term.



Fetal growth restriction

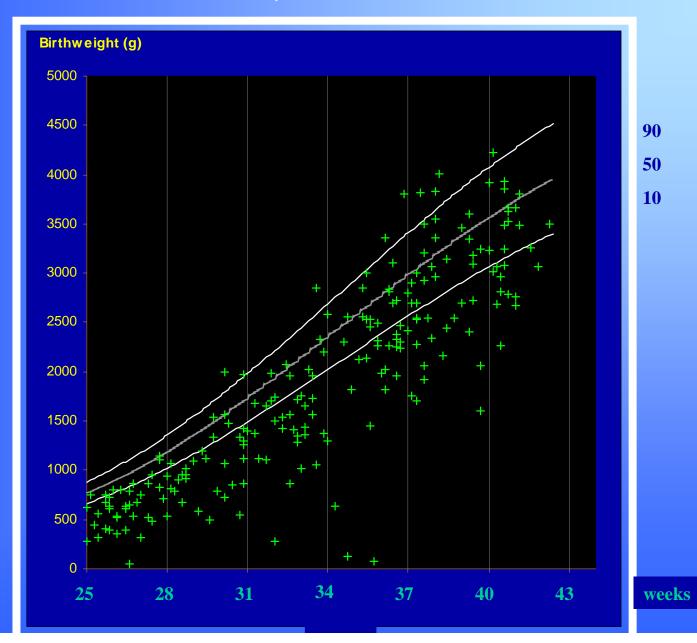
associations

Stillbirth
Neonatal deaths
SIDS

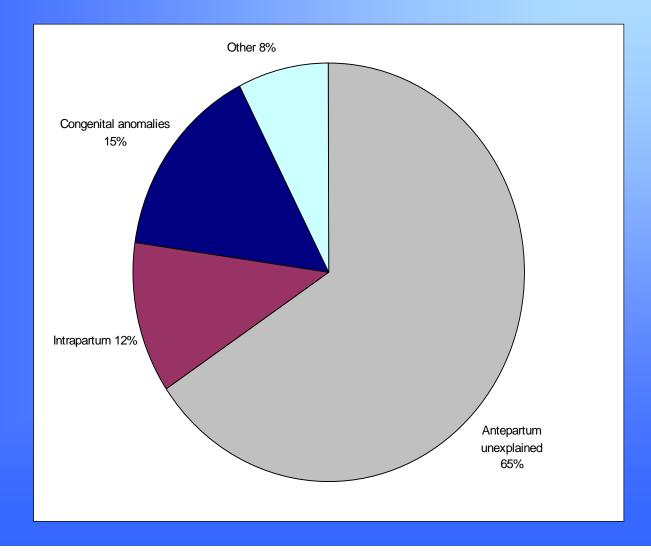
Perinatal morbidity
Cerebral palsy
Effects in later life



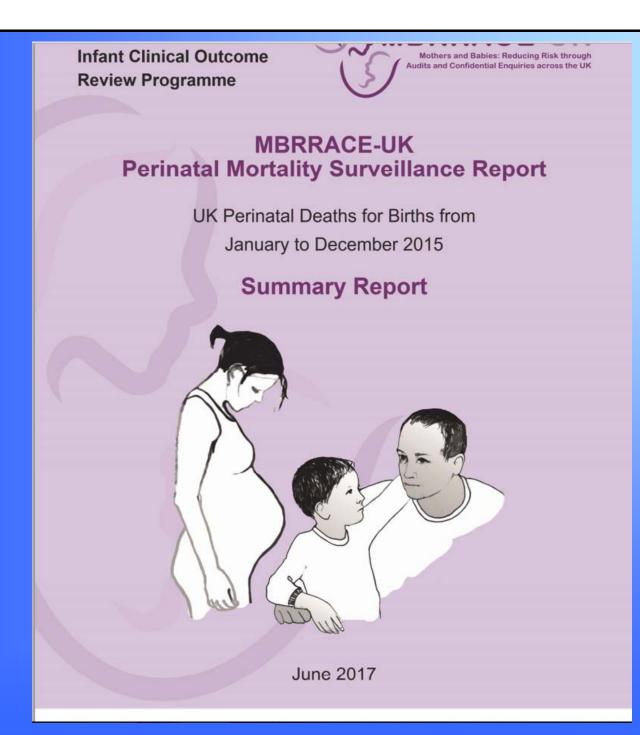
'Unexplained' Stillbirths in West Midlands, 2001 n=231; <10th percentile: 140 = 62 %



Stillbirths – Wigglesworth classification: consistently about two-thirds are 'Unexplained'

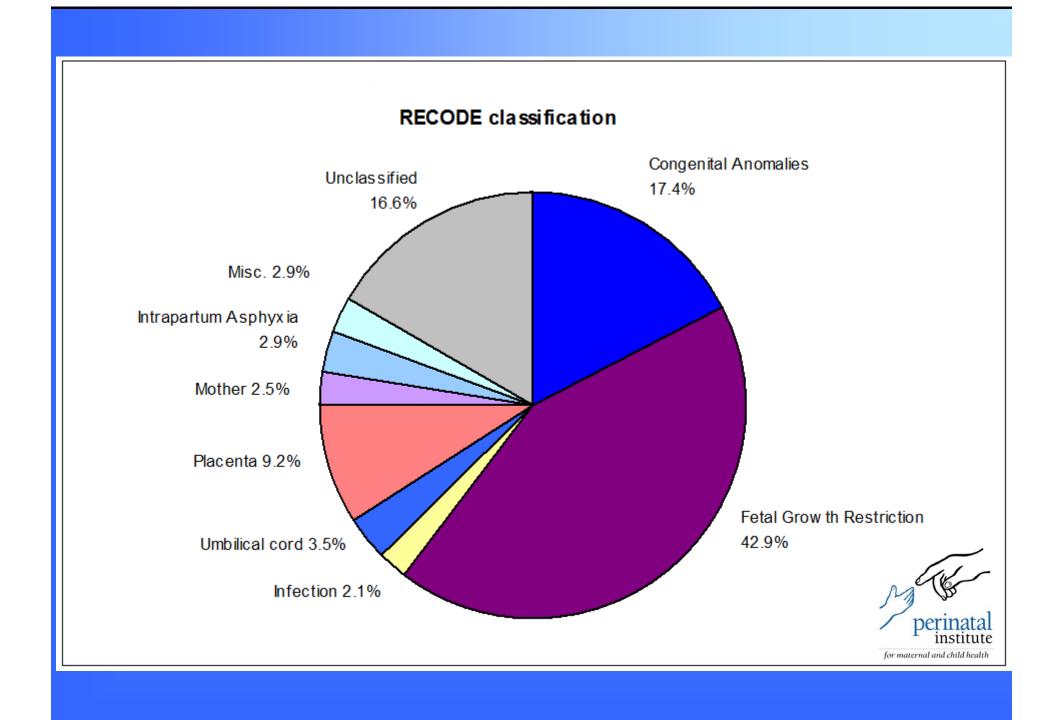






Improving our understanding – why babies die

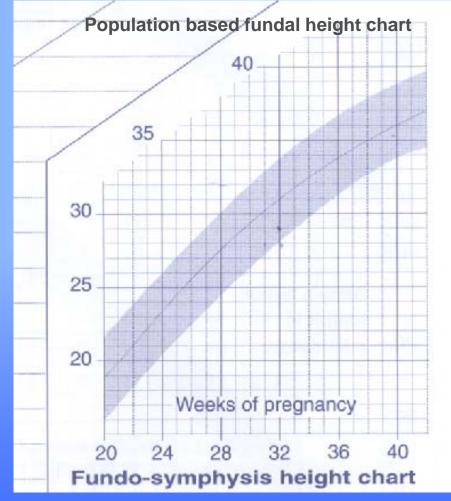
Previous reports have highlighted the number of stillbirths which are unexplained. This has fallen from 49% in 2014 to 42% in 2015. Almost one third of these unexplained stillbirths were identified as potentially having poor growth highlighting the importance of close monitoring of fetal growth during pregnancy.



Fetal growth surveillance

Methods

- Manual palpation
 Landmarks
- Landmarks
- Fundal height measurements
- Tape measure
- Interpretation
- Documentation
- <u>Ultrasound</u>
- > Biometry
- Estimated fetal weight
- Liquor volume
- Doppler





RCOG Guidelines



Royal College of Obstetricians and Gynaecologists

Bringing to life the best in women's health care

Green-top Guideline No. 31 2nd Edition | February 2013

The Investigation and Management of the Small-for-Gestational-Age Fetus

Executive Summary





Risk assessment at booking

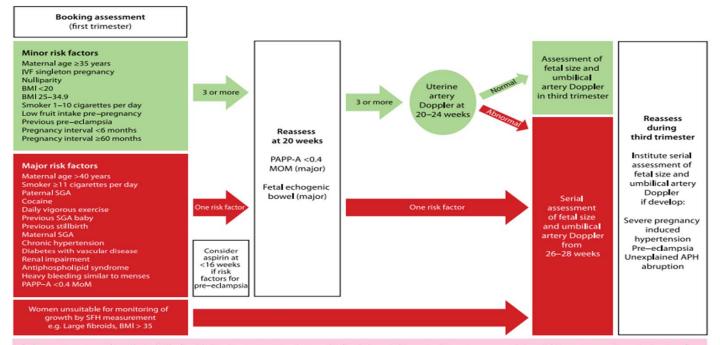
Major and Minor risk factors for SGA identified:

- Using RCOG 1 major or 3 minor risk factors = increased risk
- Increased risk = serial scans
- Many trusts find the algorithm too complex and cannot implement RCOG guidance



Booking Risk Assessment





Risk assessment must always be individualised (taking into account previous medical and obstetric history and current pregnancy history). Disease progression or institution of medical therapies may increase an individual's risk.

Points from RCOG guidelines

- Women with an SGA fetus between 24-35 weeks should receive a single dose of corticosteroids if delivery is being considered
- CTG should not be used as the only form of surveillance in SGA fetuses in 3rd trimester
- Early admission should be recommended in women in spontaneous labour with an SGA fetus in order to instigate continuous fetal heart monitoring



NHS England -Saving Babies' Lives: A care bundle for reducing stillbirth

Element 1- Reducing smoking in pregnancy

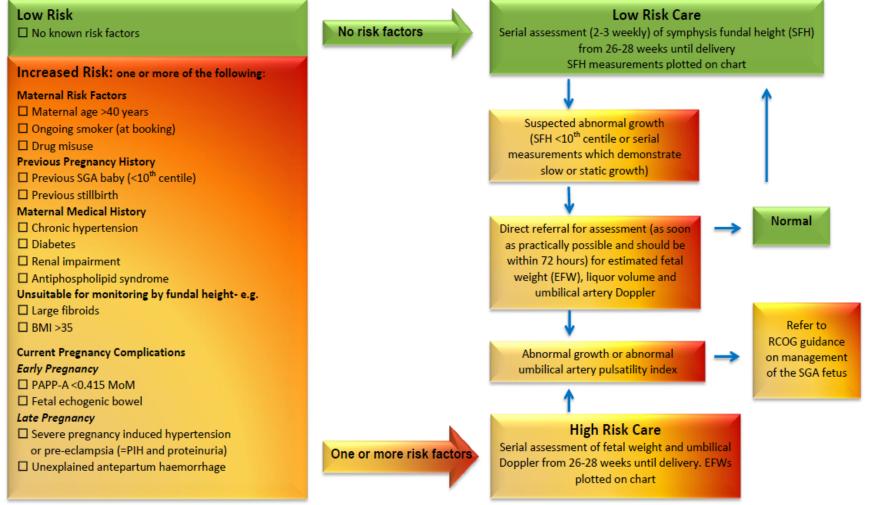
Element 2- Risk assessment and surveillance for fetal growth restriction

 Element 3- Raising awareness of fetal movement

Element 4- fetal monitoring during labour

Algorithm and Risk Assessment Tool: Screening and Surveillance of fetal growth in singleton

pregnancies



Risk assessment at booking





'increased risk'

perina

for maternal and child health

'low risk'

Women are unique





Centile calculator

Ethnicity:	European				•	
Parity:	0	•				
Height:	165	•	cm	5ft 5ins	•	
Booking weight:	65	•	kg	10st 3lbs	•	
Gender:	Female	•				
Birthweight:	3500	•	g	7lb 11oz	•	
Gestation:	40	•	wks	0	•	days
Calculate Centile:	56.2					
About Centile Calculator			Close			





Gestation Related Optimal Weight www.perinatal.org.uk





Customised growth chart

Generate once EDD by scan established

Adjusted for

- Height
- Weight
- Ethnic origin
- Parity

And <u>not</u> for

- Paternal
- Fetal



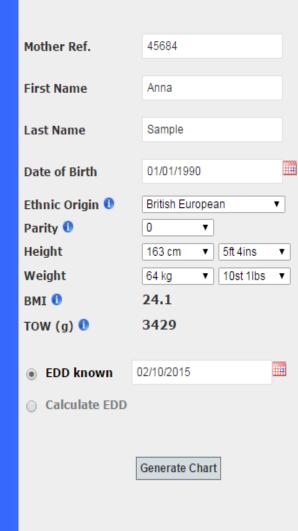


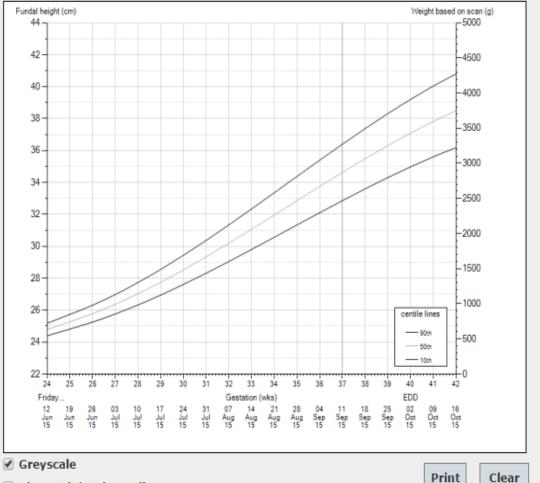


GROW-App UK

Helpdesk Hello, sue.turner Log off

Chart Centile Reports Help Users





Show 5th/95th centiles

Gridlines by weight

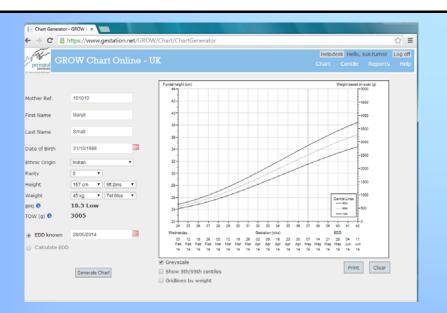
Clear

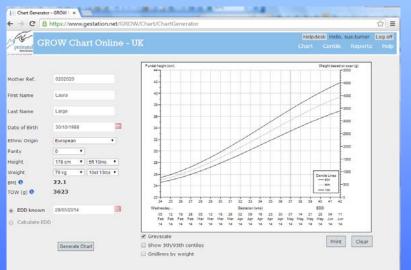
Co-efficients for the UK GROW web application

Using a multiple regression model, the term (280) day birthweight for a non-smoking British European primip of average weight (64kg) and average height (163cms) is calculated as 3453.4

When you input individual maternal characteristics the software then "adds on" or "subtracts from" the average we calculate the TERM OPTIMAL WEIGHT



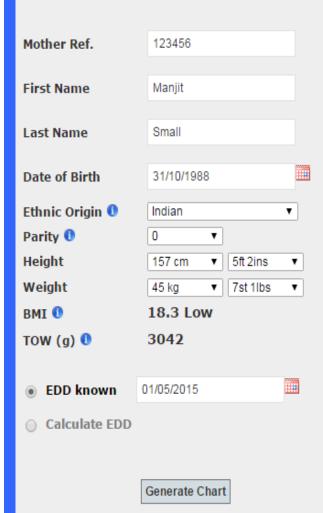






Helpdesk Hello, sue.turner Log off

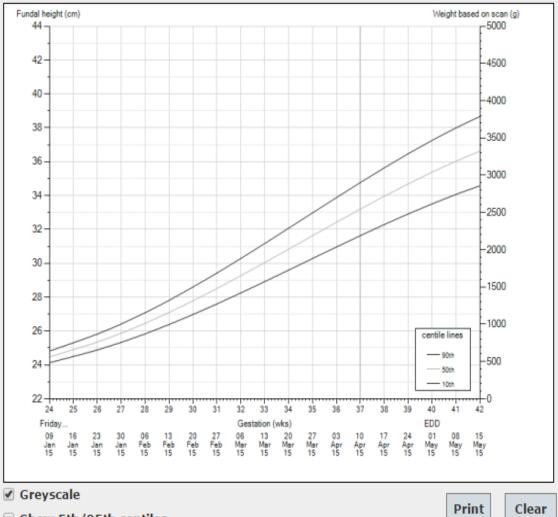
Chart Centile Reports Help Users



GROW-App UK

perinatal

or meternal and shift leadshift

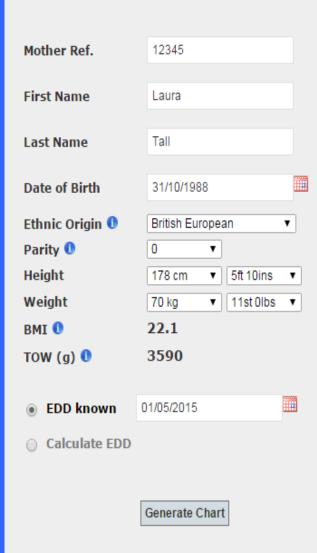


Show 5th/95th centiles

Gridlines by weight

Helpdesk Hello, sue.turner Log off

Chart Centile Reports Help Users

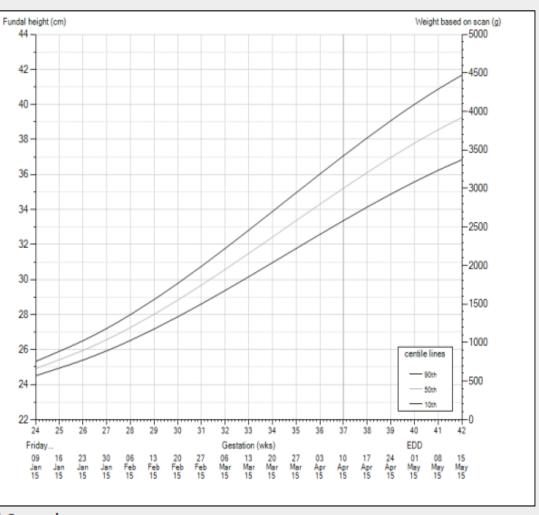


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perinatal

institute



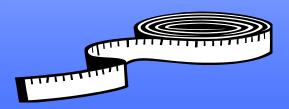
Greyscale

Show 5th/95th centiles

Print Clear

Gridlines by weight

Standardised Fundal Height Measurement





Fundal Height Measurement

- Primary screening tool
- Acceptable to women
- Easy to perform
- Non-invasive
- Inexpensive



Standardising Practice

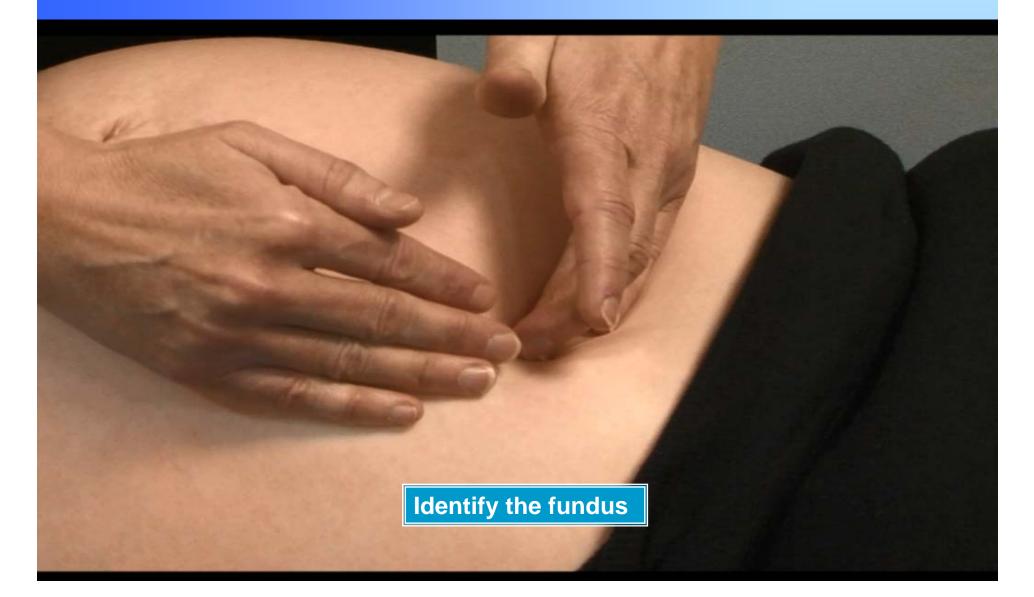
- Intra observer variation
- Inter observer variation
- Bladder volume
- Tape measure
- Frequency of assessment

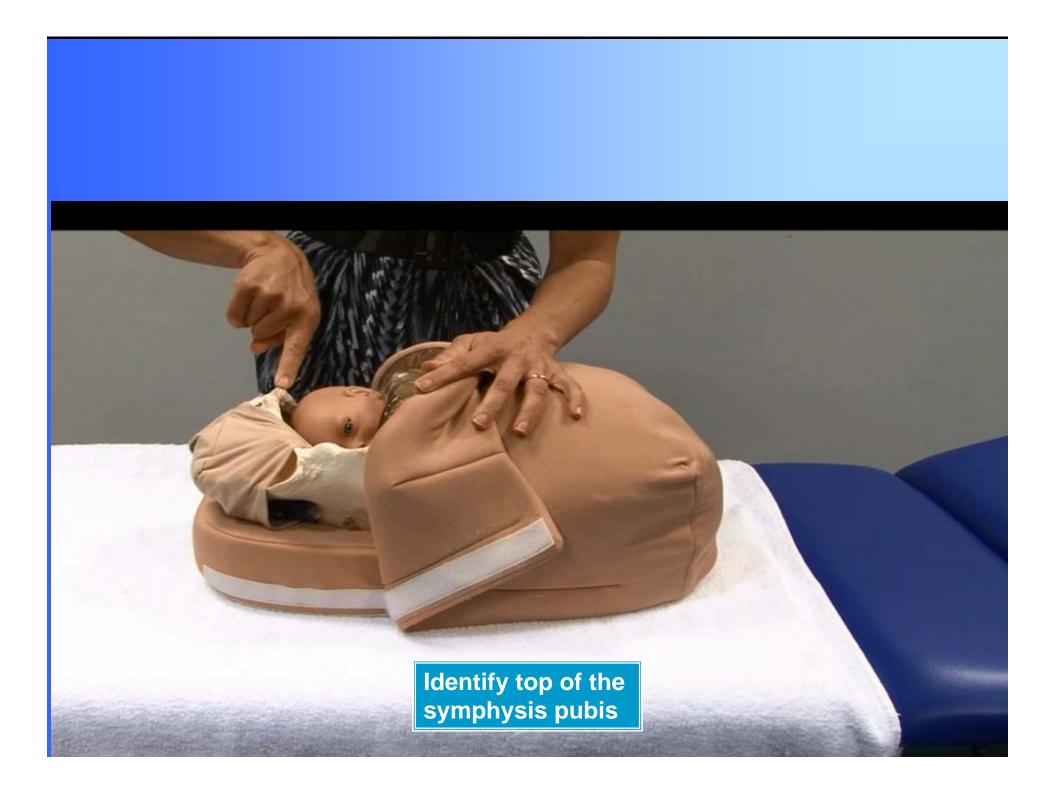


Semi recumbent-empty bladder



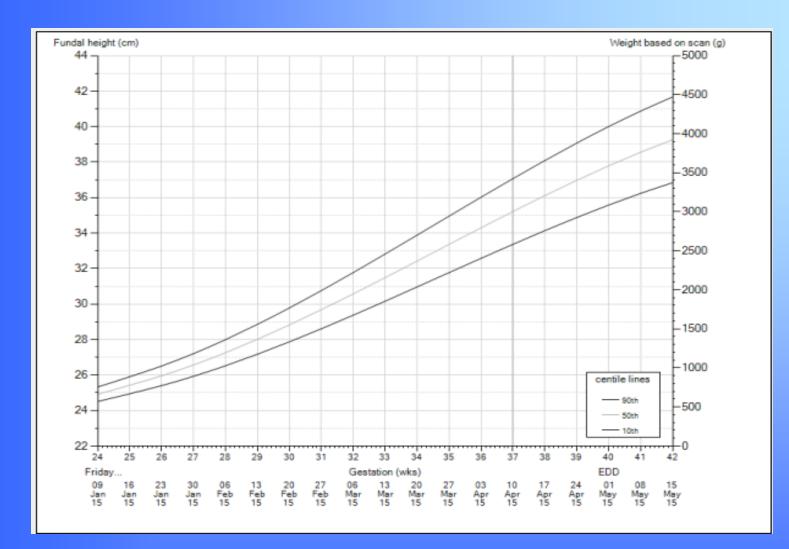
Fundal height





Semi recumbent-empty bladder

Measure the longitudinal axis, with an nonelastic tape measure and numbers hidden.



6. Plot measurement on customised growth chart and refer for USS if required

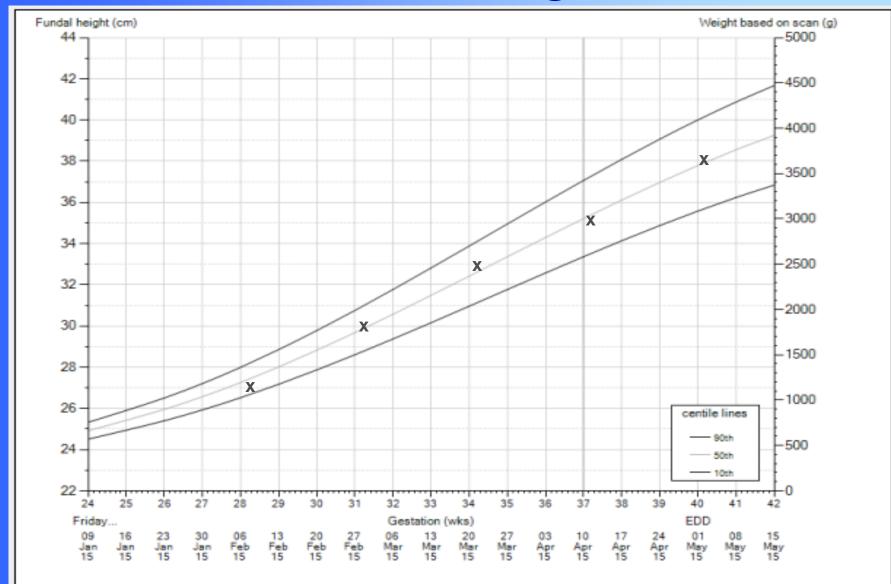


Considerations

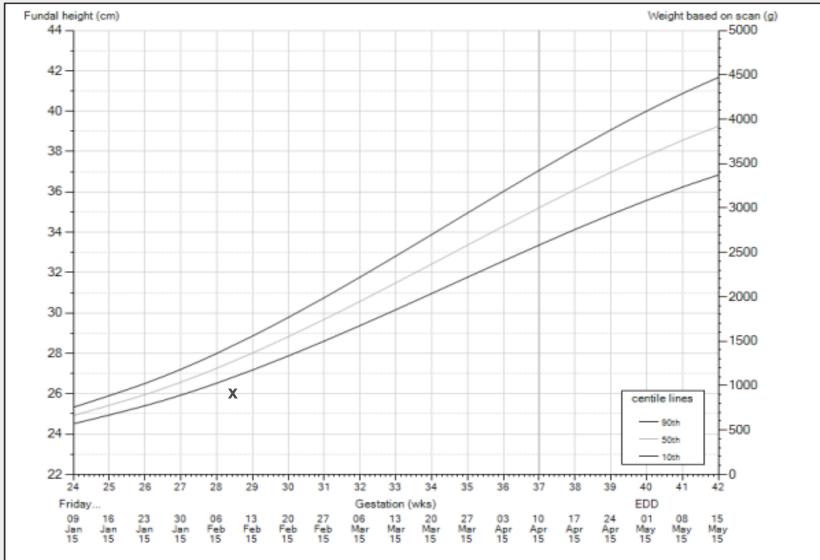
- Descent of the head
- Malpresentation
- Multiple Pregnancies
- Already having serial scans how frequent is serial?
- Obesity



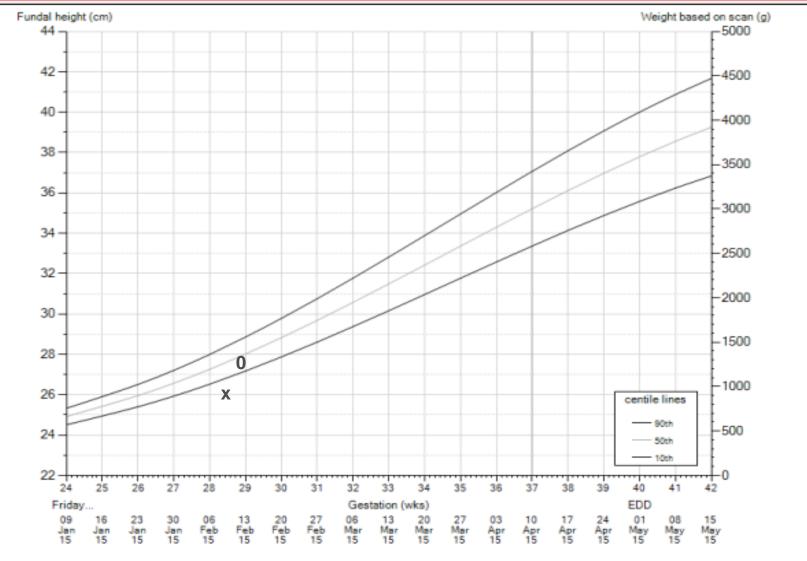
Is this normal growth?



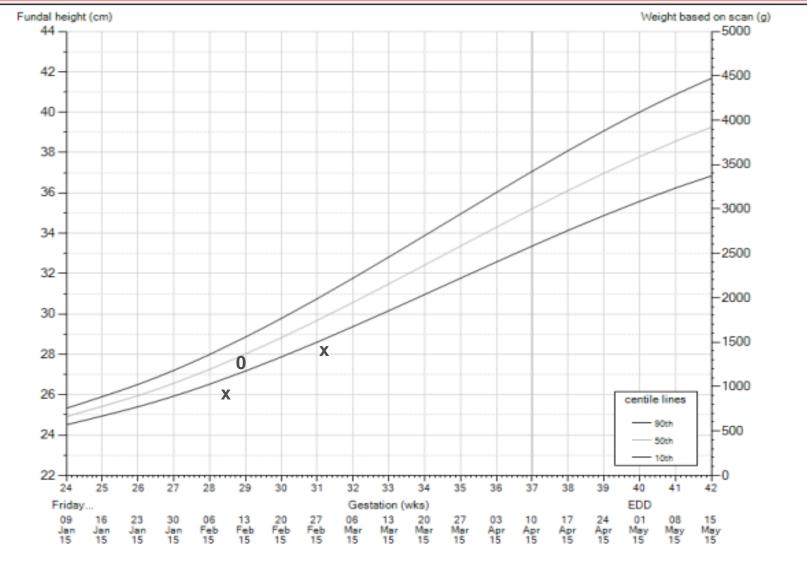
Referral recommendation



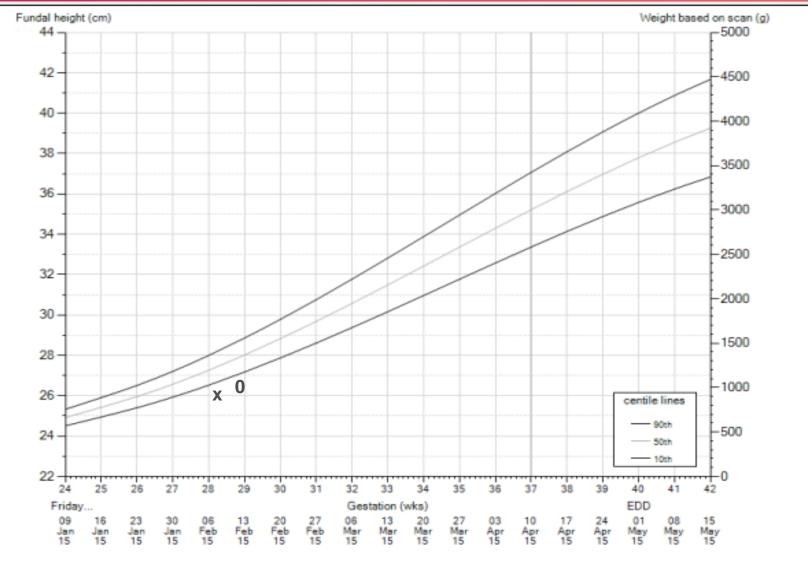
USS with EFW above 10th centile



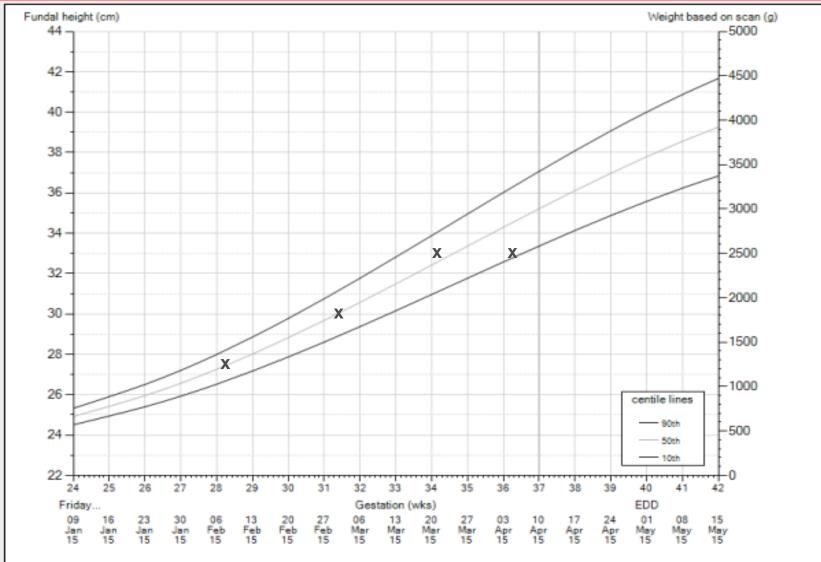
USS with EFW above 10th centile



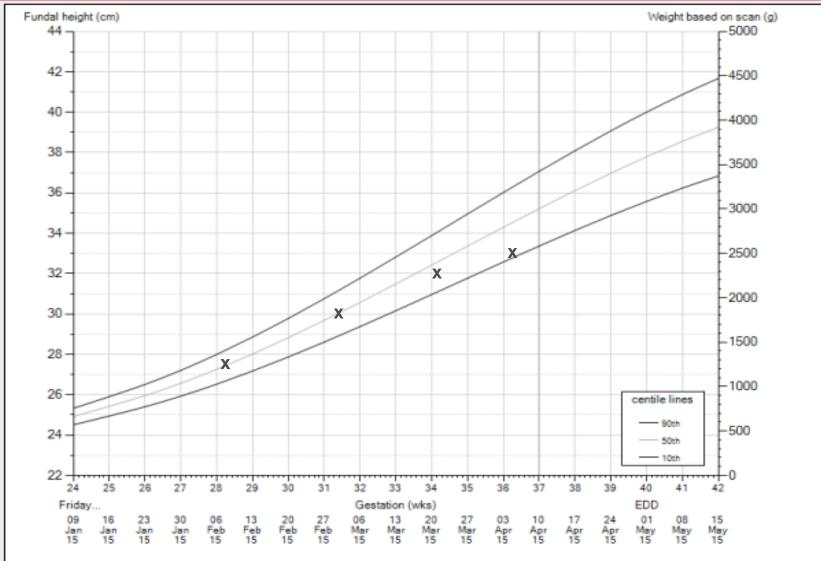
USS with EFW below 10th centile



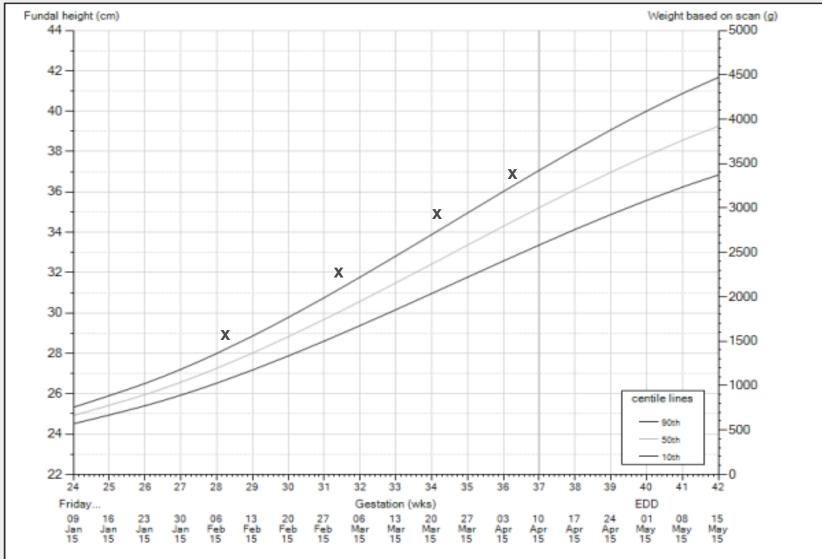
Referral recommendation



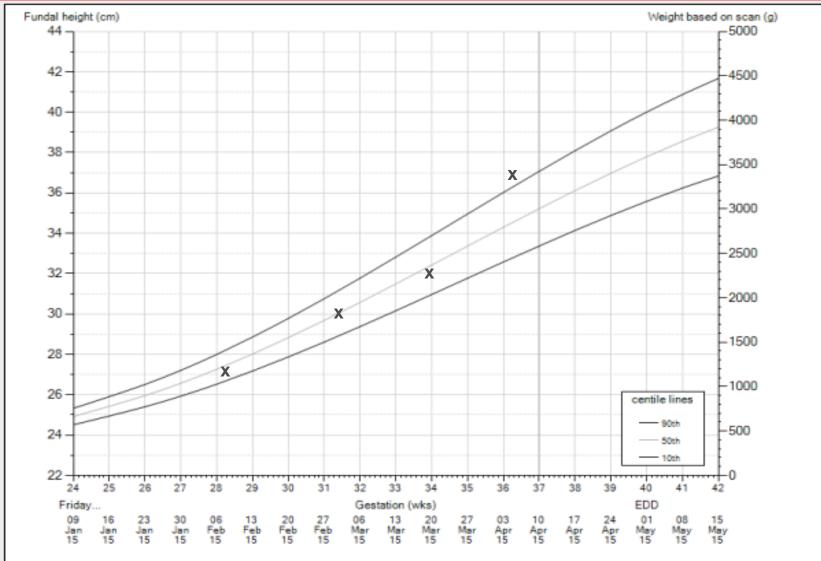
Referral recommendation



Is this normal growth?



Referral recommendation



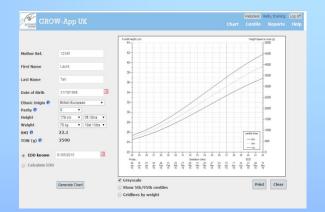
Fetal growth screening implementation strategy

- Standardised fundal height measurement
- Serial plotting on customised charts
- Clear referral protocols
- Revolving door policy



Growth Assessment Protocol

- Face-to-face training
- E learning
- Completion of baseline audit
- Competency assessments
- Template fetal growth protocol
- Monitoring detection rates
- Audit of non-detected cases of FGR
- GAP leads (midwife, obstetrician, sonographer)
- PI support



E-learning

Module 1 – Theory Module 2 - Practice

- Can be accessed from anywhere with an internet connection
- Will take approximately 1 hour to complete
- User can update themselves as required (every 12 months recommended)
- Email address required for every user
 Account will be set up and login details emailed to them
- Key leads will have a training log of all users who have completed on line training

Log in Screen



Perinatal Institute e-Learning

-	
Log	ın

Log In

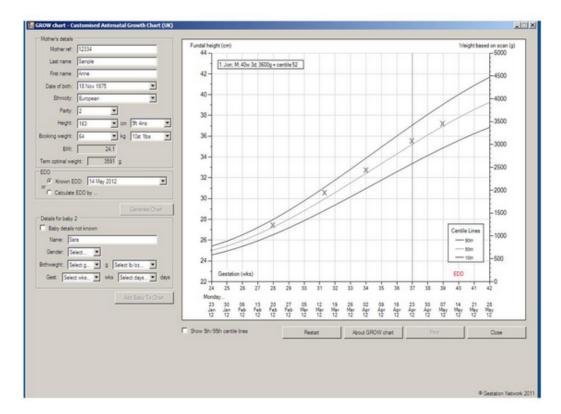
Username	
Password	
	Remember username
	Log in
	Forgotten your username or password?
	Cookies must be enabled in your browser 🕐
	Some courses may allow guest access
	Log in as a guest

Log in details will be emailed to users with details of how to access the system

Courses

	💭 Sue 👻 🗧
Perinatal Institute e-Learning	
🏘 Home 🛛 🔀 Dashboard 🛛 🚔 My Courses	j≡ ×
🕒 > gap NZ	E
Theory	Your progress 🕐
물리 Definitions 물리 FGR and pregnancy outcome 물리 Risk assessment	
물급 Screening and surveillance	
Detection rates and effect of training	
日本 Training and Protocols	
 GAP Theory Not available unless: The activity Definitions is marked complete The activity FGR and pregnancy outcome is marked complete The activity Risk assessment is marked complete The activity Screening and surveillance is marked complete The activity Detection rates and effect of training is marked complete The activity Training and Protocols is marked complete 	
Practice	

What does this chart show?



A. Accelerated growth

B. Static growth

C. Slow Growth

D. Normal growth

Test at the end of each module

Assists learner to retain information

Can take test as many times as required

Can print own certificate

Next

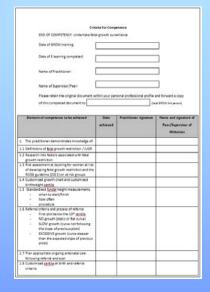
Competency Assessment

Knowledge of:

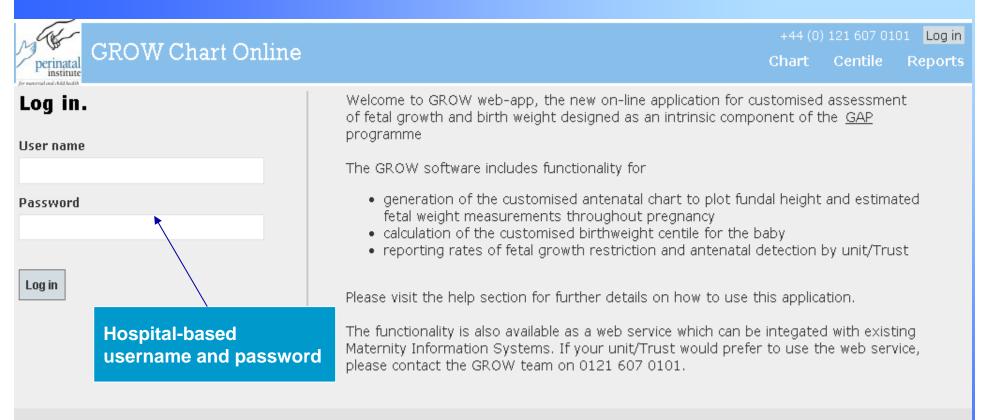
- Definitions of FGR
- Research evidence
- Risk assessment at booking
- Customised growth chart and referral criteria
- Standardised fundal height
- Customised centile at birth and on going management

Demonstration of:

- Production of a GROW chart
- Standardised fundal height
- Plotting measurements on a chart



GROW Web App



© 2014 Gestation Network

Customised Birthweight	t Centile.	Chart ID	- 52754625
------------------------	------------	----------	------------

Mother / Booking Deta	ils	Baby / Birth Details	
EDD	31/05/2016	Unit responsible for antenatal care 0	No Antenatal Care
Maternal Height	163 cm 💌 5ft 4ins 💌	Baby DOB	
Booking Weight	64 kg 👻 10st 11bs 👻	Gestation at birth	
Maternal Ethnicity	British European 👻	Outcome 🕕	Live birth 🔽
Parity	0 💌	Gender	select 💌
Please check that the Cl details	hart ID corresponds with the mother's	Birth Weight 0	grams 💌
Yes No - Re-ente	er Chart ID No - Generate new chart	Antenatal referral for suspected SGA or FGR by fundal height 0	select 💌
Ī		SGA or FGR detected antenatally by USS 0	select 💌
		Early pregnancy assessment 0	select
		Birthweight Centile 0	
	n mother's details are . If so select "yes"		

If mothers details are incorrect, re enter chart ID number. If details remain incorrect, generate a new chart, and use the new chart ID number.

Input unit responsible for antenatal care

Customised Birthweight Centile. Chart ID - 52754625

Mother / Booking Details	Baby / Birth Details	
EDD 31/05/2016	Unit responsible for antenatal No Antenatal Care	•
All maternity units in the United Kingdom are listed with the additional option for 'no antenatal care' or 'other' for care received outside of UK/ private	Other 1-2-1 Abbey Birthing Centre - Ashford & St Peter's Hospitals NHS Trust Aberdare Hospital - Cwm Taf NHS Trust Aberdeen Maternity Hospital - NHS Grampian Aboyne Birth Unit - NHS Grampian Airedale General Hospital - Airedale NHS Foundation Trust Alexandra Hospital - Worcester Acute Hospitals NHS Trust Alnwich Infirmary - Northumbria Healthcare NHS Foundation Trust Alnagelvin Hospital - Western Health & Social Care Trust Androver Birth Centre - Hampshire Hospitals NHS Foundation Trust Antrim Hospital - Northern Health & Social Care Trust Antore Park Hospital - Wirral University Teaching Hospital NHS Foundation Trust Ashcombe Maternity Unit - NHS Ayrshire & Arran Balfour Hospital - NHS Orkney Banff Birth Unit - NHS Grampian Barking, Havering and Redbridge University Hospitals NHS Trust Early pregnancy assessment ① select	
Information	×	xt
Unit responsible for antenatal care In the majority of cases the unit responsible for antenatal care will be yo some cross-boundary working, some women may have their antenatal of hospital. Please state which hospital provided the antenatal care as this note, there is also the option to choose "no antenatal care" or "other" (a care outside of the UK).	care provided by another s will affect your reports. Please	

Obtaining a birthweight centile

Customised Birthweight Centile. Chart ID - 52754625

Mother / Booking Deta	ils	Baby / Birth Details			
EDD	31/05/2016	Unit responsible for antenatal care 0	Other]
Maternal Height	163 cm 🝷 5ft 4ins 💌	Baby DOB	31/05/2016		
Booking Weight	64 kg 👻 10st 11bs 💌	Gestation at birth	40 weeks 0 days		
Maternal Ethnicity	British European 💌	Outcome 🕕	Live birth 💌		
Parity	0 -	Gender	female 💌		
Please check that the Cl details	hart ID corresponds with the mother's	Birth Weight 0	2975 g 💌		
		Antenatal referral for suspected SGA or FGR by fundal height ()	select 💌		
		SGA or FGR detected antenatally by USS ()	select 💌		
		Early pregnancy assessment 0	select	•]
		Birthweight Centile 0			
				Next	

Complete birth details

Input baby birth details

×

Ok

Ok

×

Confirm if SGA / FGR was suspected (from a fundal height) or detected by scan antenatally

Information

Antenatal suspicion of SGA or FGR leading to referral for further investigation is usually on the basis of a fundal height measurement below the 10th centile line, or sequential measurements suggesting no or slow growth.

Information

Antenatal detection / diagnosis of SGA indicates an ultrasound estimated fetal weight (EFW) below the tenth centile, or sequential measurements with slow or no growth, and/or one or more abnormal Dopplers.

Chart Centile				Hospitals
Baby / Birth Details				
Unit responsible for antenatal care ()	Other			*
Baby DOB				
Gestation at birth	40 weeks 0	days		
Outcome 0	Live birth	*		
Gender	female	Ŧ		
Birth Weight 0	2600 g	-		
Antenatal referral for suspected SGA or FGR by fundal height		Ŧ		
SGA or FGR detected antenatally by USS ①	no	Ŧ		
Early pregnancy assessment	1 Increased r	isk of SGA/I	-GR – no seri	al scans p 🚽
Birthweight Centile 0	2.7 ** SGA/	FGR		
	Edit			

a note of the customised centile or print this page for the health records.

Input baby birth details

Ok

Identify early pregnancy assessment for low or increased risk *for fetal growth restriction*.

RCOG Guideline and NHS Care Bu	undle Algorithm recommend serial fundal height measurements
for low risk women, and serial ult	trasound scans for women at increased risk of SGA or fetal growth
restriction. The information reque	ested here will improve the interpretation of referral rates.

Unit responsible for antenatal Other care 🕕 Baby DOB Gestation at birth 40 weeks 0 days Outcome ① Live birth 👻 female 👻 Gender 2600 g 👻 Birth Weight 0 Antenatal referral for suspected no SGA or FGR by fundal height () SGA or FGR detected no antenatally by USS Early pregnancy assessment () Increased risk of SGA/FGR - no serial scans p 👻 Birthweight Centile 2.7 ** SGA/FGR Edit a note of the customised centile or print this page for the health records.

To review the NHS England Saving Babies Lives care bundle algorithmclick here

New edit function for centile page outcome, gender, birth weight

Customised Birthweight Centile. Chart ID - 52754625

Mother / Booking De	tails	Baby / Birth Details	
EDD		Unit responsible for antenatal care ①	Other
Maternal Height	163 cm 👻 5ft 4ins 💌	Baby DOB	
Booking Weight	64 kg 👻 10st 11bs 🛩	Gestation at birth	40 weeks 0 days
Maternal Ethnicity	British European 💌	Outcome 0	Live birth 💌
Parity	0 -	Gender	female
Please check that the details	Chart ID corresponds with the mother's	Birth Weight 0	2775 g 👻
		Antenatal referral for suspected SGA or FGR by fundal height	no
		SGA or FGR detected antenatally by USS 0	no
		Early pregnancy assessment 0	Increased risk of SGA/FGR – no serial scans p 👻
		Birthweight Centile 0	6.80 ** SGA/FGR
			Edit

Customised	Birthweight	Centile.	Chart ID	- 52754625	
------------	-------------	----------	-----------------	------------	--

Mother / Booking D	etails	Baby / Birth Details	
EDD		Unit responsible for antenatal care 0	Other 👻
Maternal Height	163 cm 💌 5ft 4ins 💌	Baby DOB	
Booking Weight	64 kg 👻 10st 11bs 👻	Gestation at birth	40 weeks 0 days
Maternal Ethnicity	British European 💌	Outcome 0	Live birth
Parity	0	Gender	female Cutcome
Please check that the details	Chart ID corresponds with the mother's	Birth Weight	2775 g Gender Birth weight
		Antenatal referral for suspected SGA or FGR by fundal height	no
		SGA or FGR detected antenatally by USS 0	no
		Early pregnancy assessment 0	Increased risk of SGA/FGR – no serial scans p 👻
		Birthweight Centile 0	6.80 ** SGA/FGR
		Edit function:	Edit

Trust reports;

Show local report on GROW application web page:

app.growservice.org/uk

Benefits of Data collection

Baseline FGR and antenatal detection rates
Quarterly FGR reports
Benchmarking against other units (anonymously)
National picture

Can identify missed cases to audit
Can monitor performance and improvement
Commissioning support – Ultrasound resources
PI - Evaluation of GAP

Audit missed cases - Aim

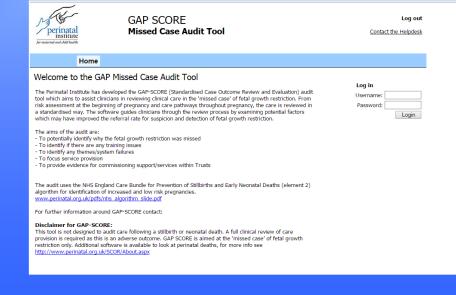
For each case:

- To identify why the FGR was missed if possible
- To identify if there are any training issues
- Overall
 - To identify themes/system failures
 - To focus service provision
 - To provide evidence for commissioning support/services

GAP-SCORE

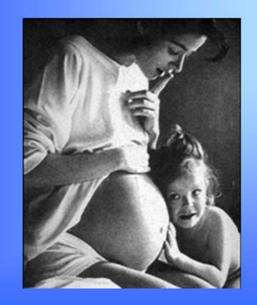
 We provide an electronic audit tool to audit to missed cases in an standardised manner

 GAP-SCORE = Standardised Case Outcome Review and Evaluation.



GAP-SCORE

- Based on risk at booking/throughout pregnancy and serial scanning (RCOG guideline, 2014 & NHS England Saving Babies Lives Care Bundle, 2016)
- Use of customised growth chart
- Plotting and referring
- Growth scans
- Provides taxonomies and action plans



Thank You

