

Advances in management of SGA-how can we do better?

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What can we do?

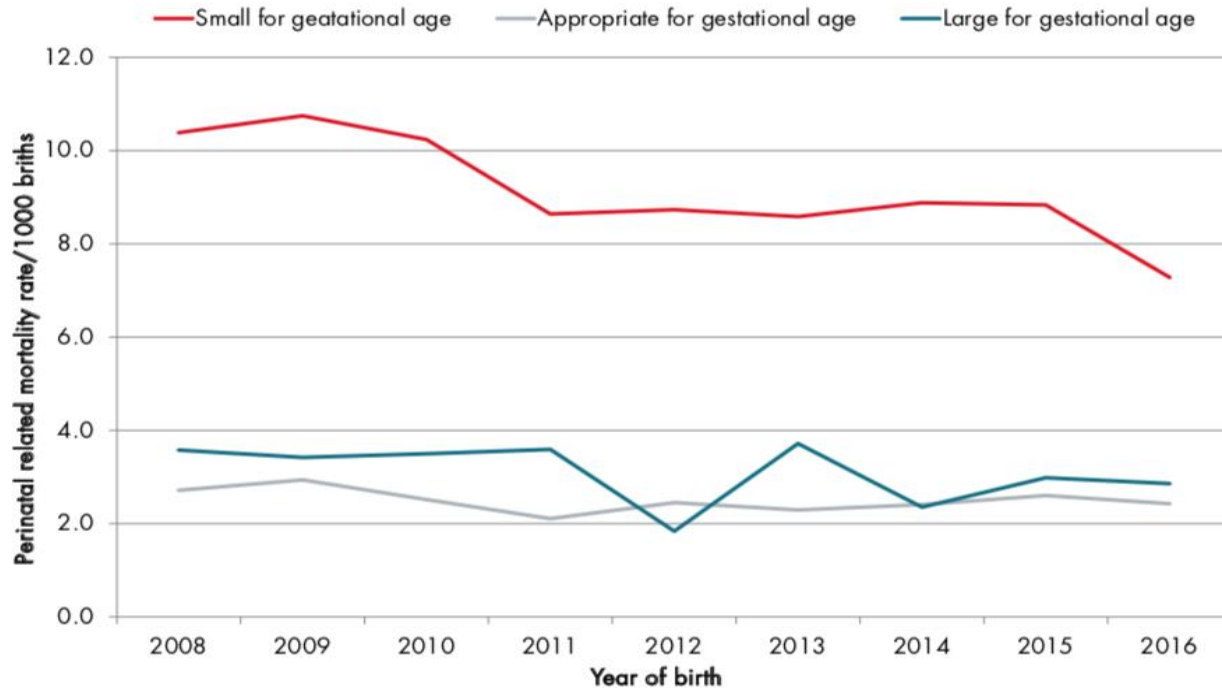
- GAP program
 - Correctly Identify more babies with SGA/FGR
 - Optimise management
 - Plan optimum time of delivery
 - Don't over-intervene in low risk pregnancies



NZ Perinatal related mortality in SGA infants born ≥ 26 weeks 2008-2016

Small for gestational age infants

Figure 4.17: Perinatal related mortality rate by customised birthweight centile group among singleton births* from 26 weeks gestation without congenital anomalies 2008–2016

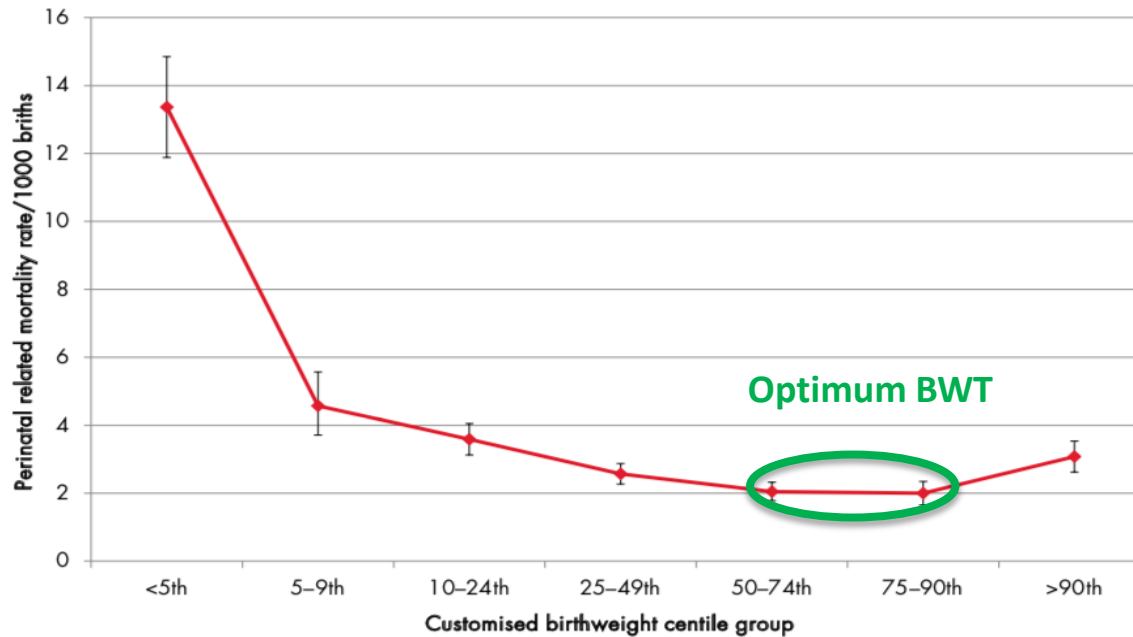


P=0.046 Chi-square for trend



Perinatal mortality ≥ 26 weeks by customised centile 2008-2016

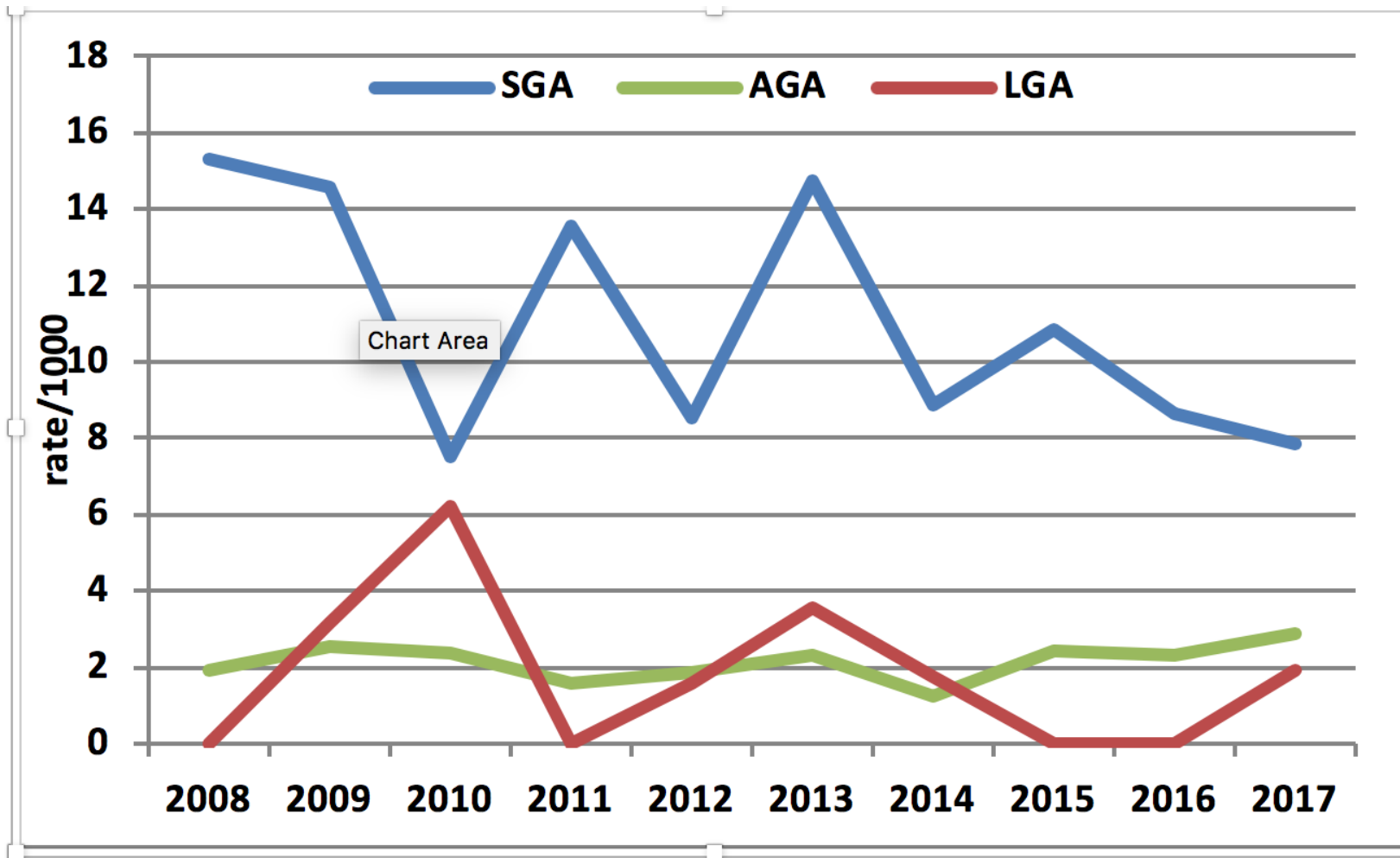
Figure 4.18: Perinatal related mortality rates (with 95% CIs) by customised birthweight centile group among singleton births from 26 weeks gestation without congenital anomalies 2008–2016*



* MAT data numerator and denominator; limited to mothers who were registered for care with an LMC (either a midwife, obstetrician or GP) claiming from the Section 88 Primary Maternity Services Notice.

Smaller the baby greater the risk has implications for practice

Perinatal related mortality in SGA at NWH born ≥ 26 weeks 2008-2017



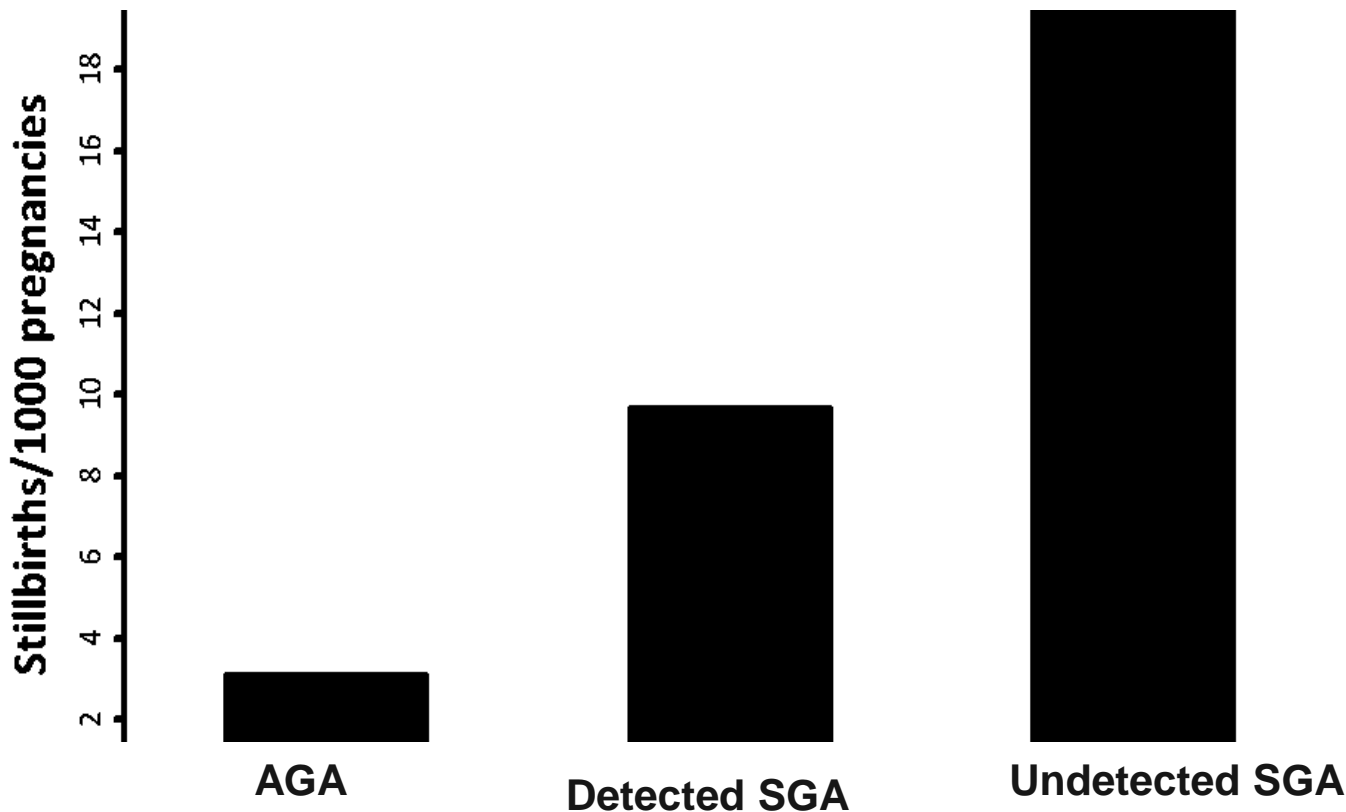
Chi-square
for trend
P=0.11



Antenatal identification of SGA & timely birth reduces stillbirth

GA at delivery: 270 detected vs. 280 days undetected

N=92,218 Deliveries



The Growth Assessment Protocol (GAP)

Joyce Cowan's slides



Brief Overview

Gems from GAP to enhance practice and reduce stillbirth

Evidence

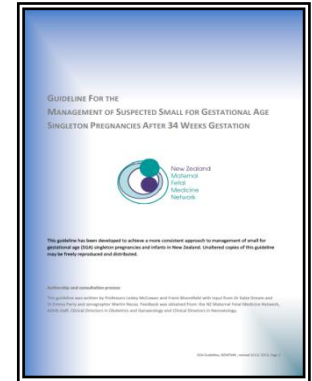
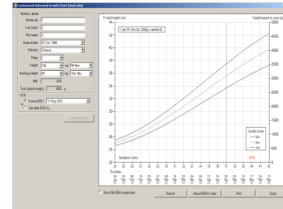
NZ data

The plan for GAP NZ

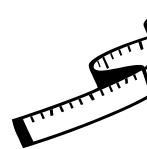


GAP - what is involved

- GAP leads (midwife, obstetrician, sonographer)
- Comprehensive training
- NZMFM SGA guideline
- Completion of baseline audit
- Monitoring SGA detection
- Audit of non-detected SGA
- Support from Perinatal Institute
- E learning



Q3 Oct-Dec 2017/18						Q4 Jan-Mar 2017/18					
SGA at birth ³		Antenatal referral for suspected SGA/FGR ⁴		SGA detected antenatally ⁵		SGA at birth ³		Antenatal referral for suspected SGA/FGR ⁴		SGA detected antenatally ⁵	
n	%	n	%	n	%	n	%	n	%	n	%
220	13.2	98	44.5	98	44.5	261	15.6	132	50.6	129	49.4



Individualizing care

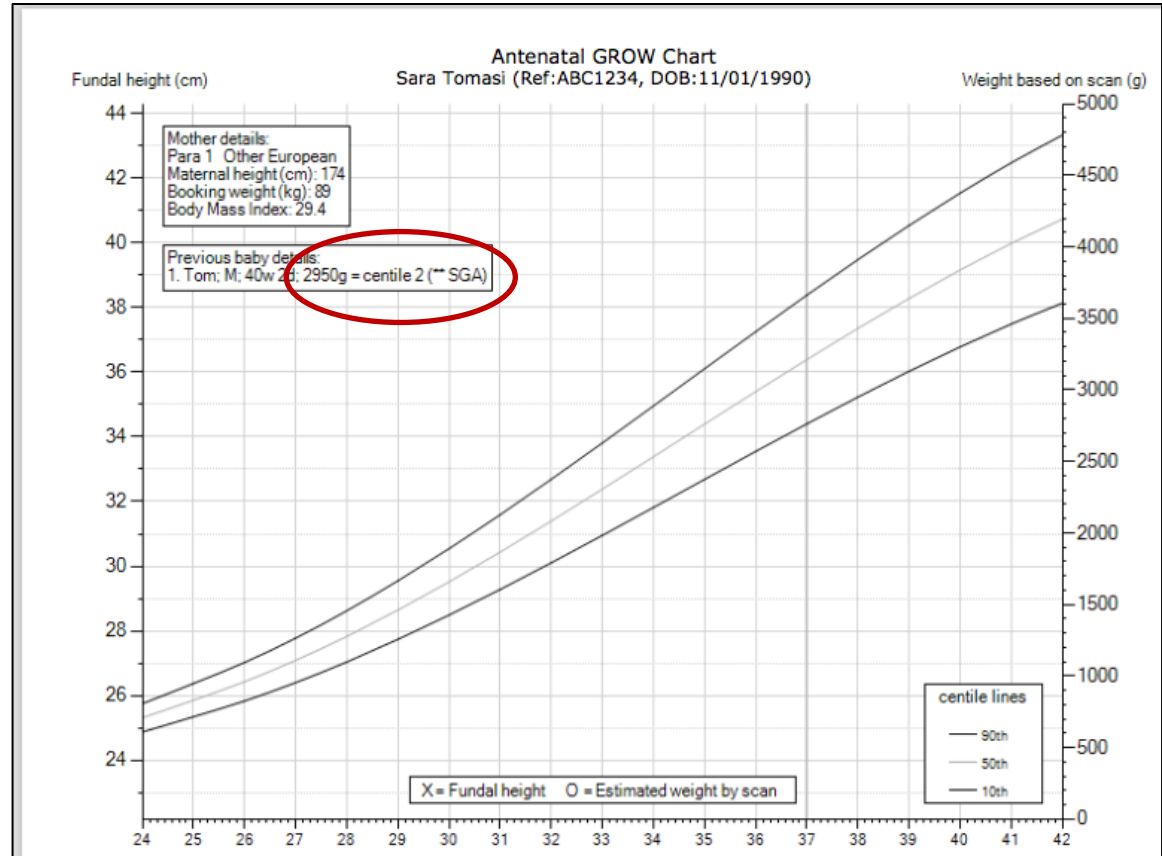
- Adds knowledge to enhance midwifery or obstetric skill
- Unique growth trajectory for each baby
- Enhances care plan



<https://www.midwiferycouncil.health.nz/midwives/midwifery-scope-practice>

GROW charts valuable for *every* pregnancy

- Generate GROW chart at booking- all women.
- Many SGA babies missed in low risk pregnancies
- Valuable information to inform care



Careful review of history at booking

- Identify those who may benefit from consultant review \pm low dose aspirin

https://assets.babycenter.com/ims/2014/05/457097703_wide.jpg?width=600

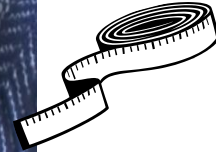


Low risk - Fundal height plotted from 26-28 weeks

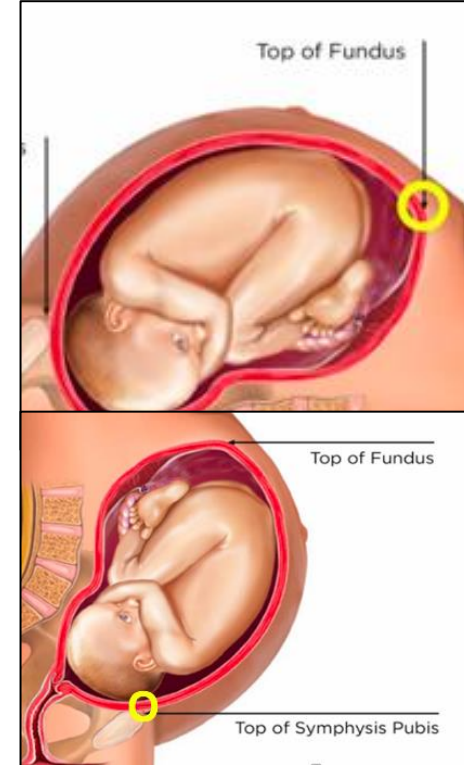


Higher risk - Obstetric review and schedule for growth scan. Consider LDA

Standardized fundal height measurement



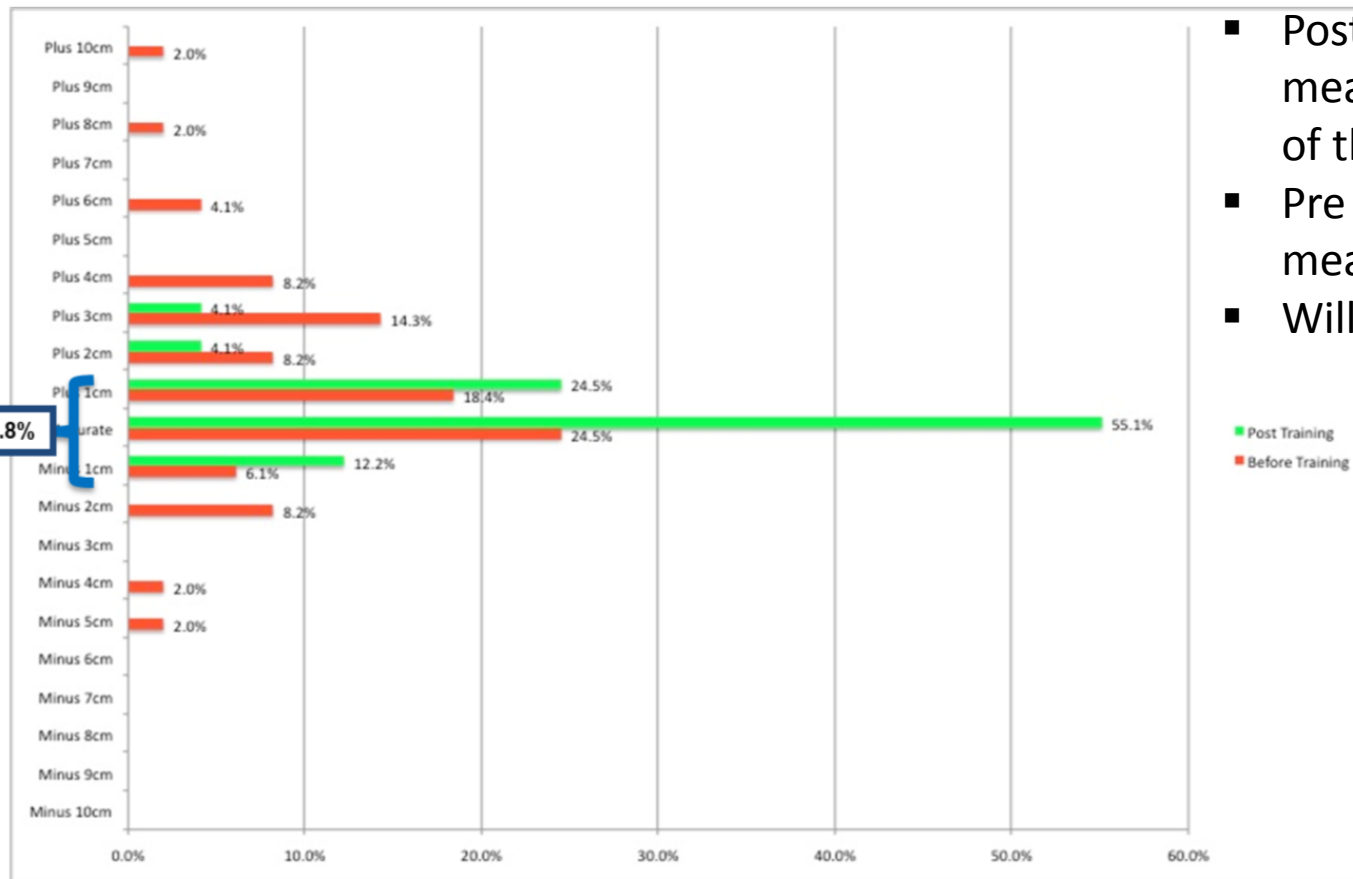
- Standardized fundal height measurement and plotting on GROW chart to assess uterine growth
- Growth scan and follow up according to NZMFM SGA guideline



From highest point of uterus

To central point of top of symphysis pubis

Pre and post training fundal height measurement



- Post training 92% of SFH measurements within 1 cm of the standard
- Pre training over measurement common
- Will underdiagnose SGA

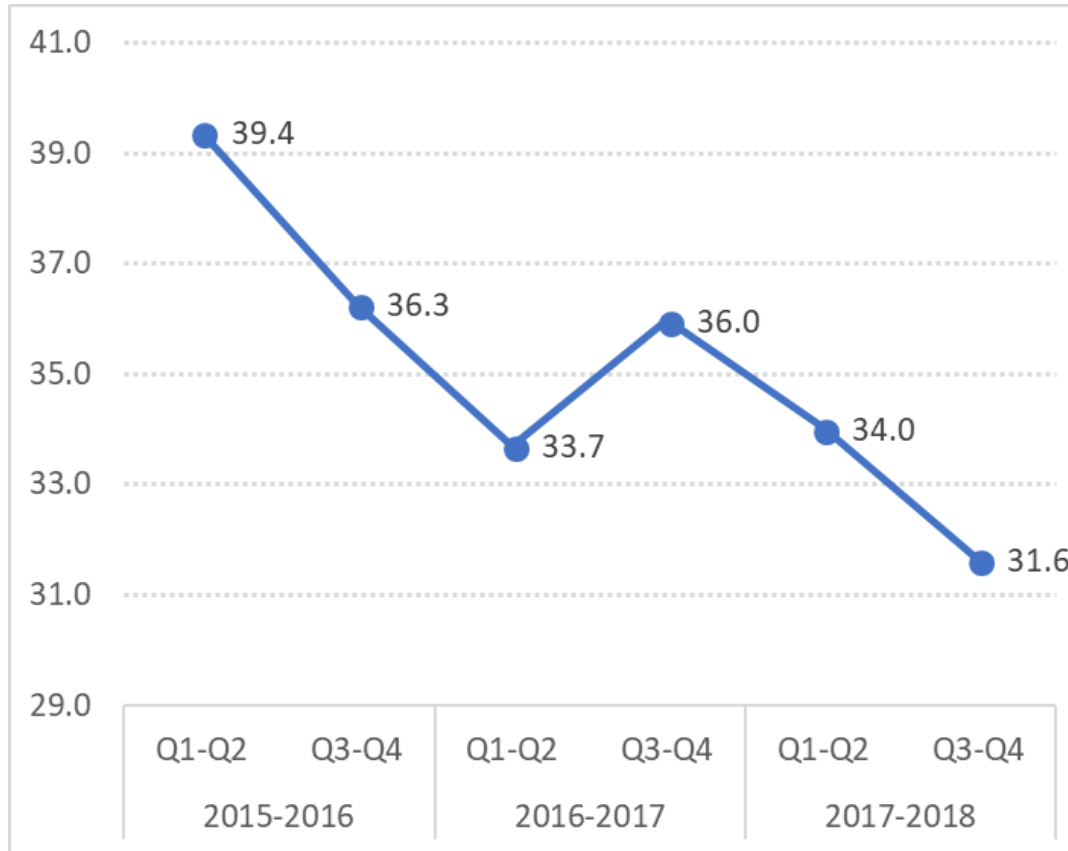
GAP Implementation data to date -CMH

Study group CMH booked women		
SGA cases after exclusions	Pre GAP n = 153 2012	Post GAP n = 140 2017-2018
SGA detected by ultrasound scan	22.9 %	53.6 %

SGA stillbirths in UK

GAP England, 3 years (2015/6 - 2017/8); n=703,279 incl. 2794 Stillbirths

SB SGA rate (%)



NZ GAP June 2018



- Nationwide roll out underway under ACC-GAP working group
- Champions in each DHB
- Ongoing audit and monitoring



Algorithm & SGA Risk Assessment Tool for New Zealand: Screening and Surveillance of fetal growth in singleton pregnancies

Adapted from NHS England stillbirth 'care bundle' and based on NZ MFM SGA Guideline

Major Risk for SGA

Recommend specialist referral 
Consider low dose aspirin 100mg nocte 









Maternal Risk Factors

- ☐ Maternal age >40 years
- ☐ Smoker (especially >10/day)
- ☐ Drug misuse

Previous Pregnancy History


- ☐ Previous SGA baby (<10th centile)  
- ☐ Previous stillbirth 

Maternal Medical History



- ☐ Chronic hypertension  
- ☐ Diabetes with vascular disease  
- ☐ Renal impairment  
- ☐ Anti-phospholipid syndrome  

Current Pregnancy Complications

Early Pregnancy


- ☐ PAPP-A <0.2 MoM 
- ☐ Bleeding like a period
- ☐ Fetal echogenic bowel

Late Pregnancy

- ☐ Pre-eclampsia /severe gestational hypertension 
- ☐ Unexplained antepartum haemorrhage 

Low Risk of SGA No known major risk factors

Unsuitable for fundal height measurement:-


- ☐ Large fibroids
- ☐ BMI 35+ 

Third trimester scanning based on local guidelines & resources

1 or more risk factors

- Serial growth scans until birth
- Plot estimated fetal weight (EFW) on customised chart
- Plot individual fetal measurements on population chart

Abnormal growth:

- EFW <10th centile
- Abdominal circumference (AC) ≤5th centile
- Serial measurements not following curve >30%  in AC or EFW

Refer to SGA guideline pathway
<http://www.healthpoint.co.nz/public/new-zealand-maternal-fetal-medicine-network/2solo-etherlist&ind=425>

Referral for ultrasound: measure

- Estimated fetal weight (EFW)
- Individual fetal measurements
- Umbilical artery Doppler if reduced growth or SGA suspected

Normal growth

Suspected reduced growth:

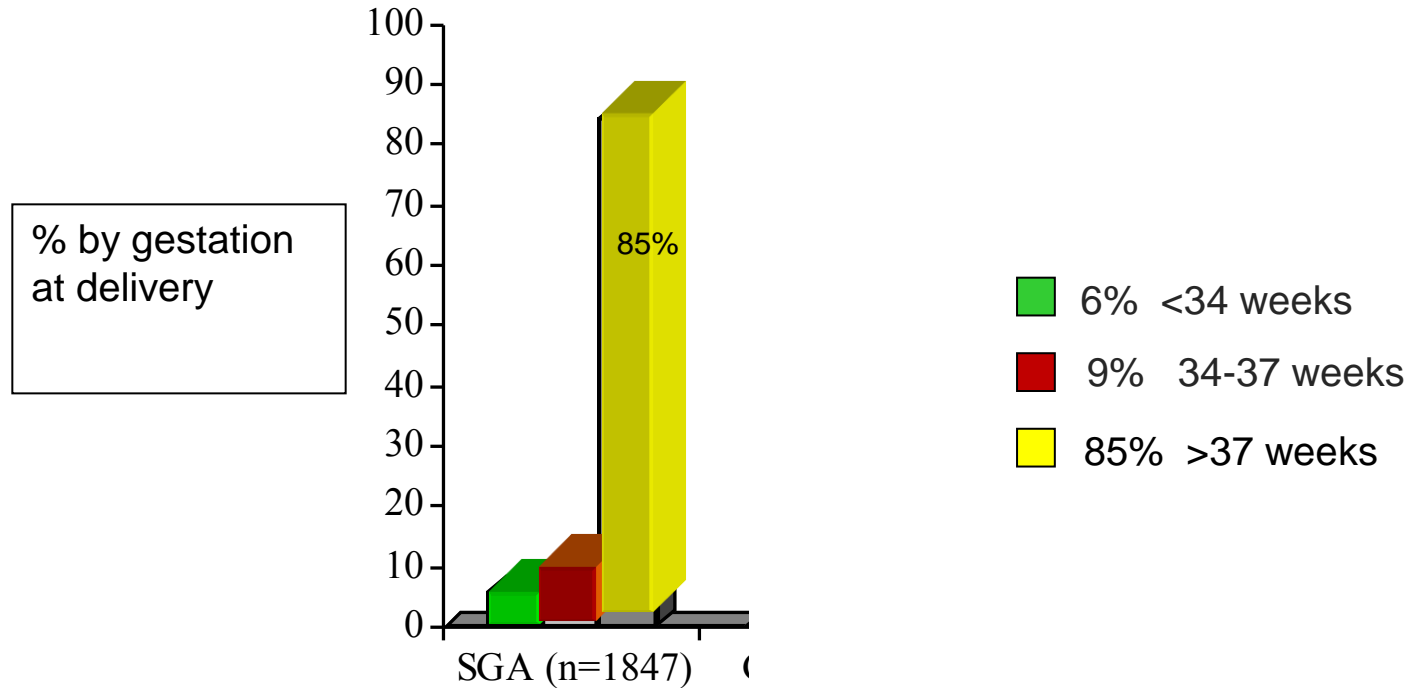
- FH <10th centile
- FH crossing centiles by >30%

No major risk factors

Low Risk Care

- Serial assessment of fundal height (FH) (not more frequently than 2 weekly) from 26-28 weeks until delivery
- FH plotted on customised chart.

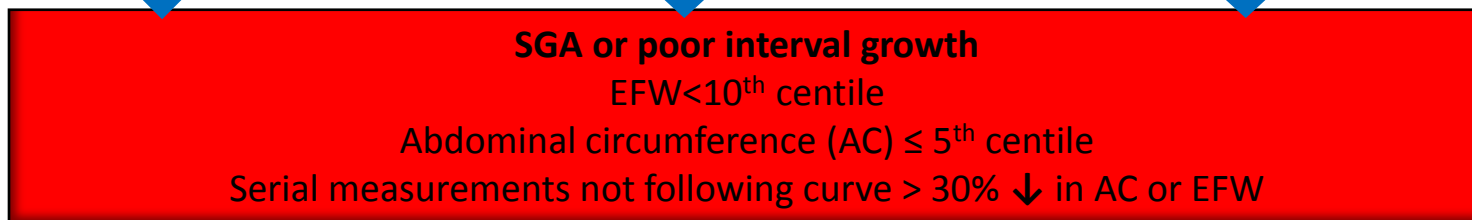
Growth scans- when to perform?



- 85% SGA babies (n=17,885) born at term !!
- ~70% of early onset SGA have preeclampsia
- Implications for when to scan

DRAFT Schedule of Growth Scans Depending on Local Resources / Guidelines

High risk early SGA severe medical, previous <34wk SGA or stillbirth, ↓ PAPP-A	High risk late SGA previous SGA >34 wk, mild chronic hypertension, age >40	Moderate risk late SGA (e.g. smoke >10/day) OR unsuitable for fundal height (BMI 35+, fibroids)
Monthly growth scans from 24 weeks to birth Consider uterine artery Doppler at 20 or 24wks	Monthly growth scans from 28-30 weeks to birth e.g. 30, 34, 38 weeks	Scan 30-32 & 36-38 weeks



Fortnightly scans. Plot individual measurements and estimated fetal weight (EFW) on customised chart.

Manage as per NZMFM SGA Guideline

<http://www.healthpoint.co.nz/public/new-zealand-maternal-fetal-medicine-network/?solo=otherList&index=5>

Low Dose Aspirin for Prevention of SGA

TABLE 1

Effect of gestational age at initiation of aspirin therapy for prevention of FGR or SGA at birth

	Relative risk	95% CI
Study-level meta-analysis ⁵³ (FGR), wks		
≤16	0.56	0.44–0.70
>16	0.95	0.86–1.05
IPD meta-analysis ⁵⁴ (SGA), wks		
<16	0.76	0.61–0.94
≥16	0.95	0.84–1.08

Study level meta-analysis⁵³ used FGR as outcome to assess fetal size, defined as birthweight <10th or <5th percentile for gestational age or similar definition. The IPD meta-analysis⁵⁴ used SGA as outcome to assess fetal size; SGA at birth was as defined by individual trialists, including centile charts and cutoff point used. *FGR*, fetal growth restriction; *IPD*, individual patient data; *SGA*, small for gestational age.

Groom. *Therapeutic interventions in fetal growth restriction*. *Am J Obstet Gynecol* 2018.

LDA:

- Dose 100-150mg
- Take in evening

SGA ≥ 34 weeks -risk stratification

High risk (FGR) $\sim 60\%$

High risk adverse outcome

- EFW $< 3^{\text{rd}}$ centile
- \uparrow umbilical /uterine Doppler
- \downarrow MCA or \downarrow CPR Doppler
- At least weekly assessment & Dopplers
- Fortnightly scans until birth
- Birth by 38 weeks

Lower risk SGA $\sim 40\%$

(constitutionally small)

Low risk adverse outcome

- EFW 3^{rd} to 10^{th}
- Dopplers & liquor normal
- Continued growth
- Usual clinical follow up
- Fortnightly scans until birth
- Birth by term

Fetal movement awareness for all

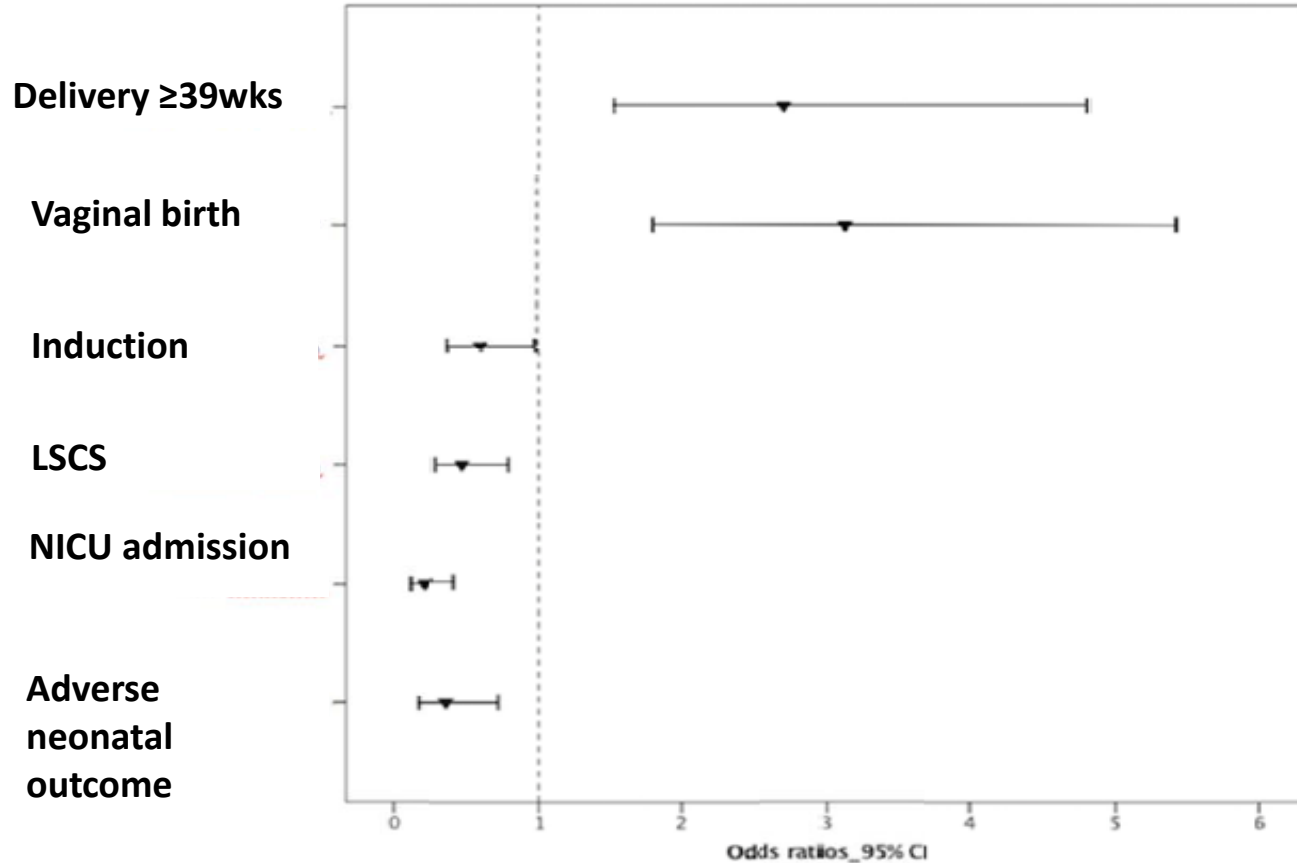
Evaluation of a risk stratification protocol for SGA >37 weeks UK study

- RCOG SGA guideline recommends induction for SGA at 37 wks
- Protocol for high & low risk SGA introduced Oxford (2014-2016)
- Compared outcomes with induction for all SGA at 37 wk (2013-14)
- Inclusion criteria normal Umbilical Doppler and EFW <10th
- High risk SGA (FGR)- deliver 37 weeks
 - EFW<3rd, CPR<5th, abnormal Ut Art Doppler (20wk scan), ↓ PAPPA hypertension
- Low risk SGA (constitutionally small)
 - Normal Doppler and EFW 3-10, normal PAPPA – deliver 40-41 wks

Findings

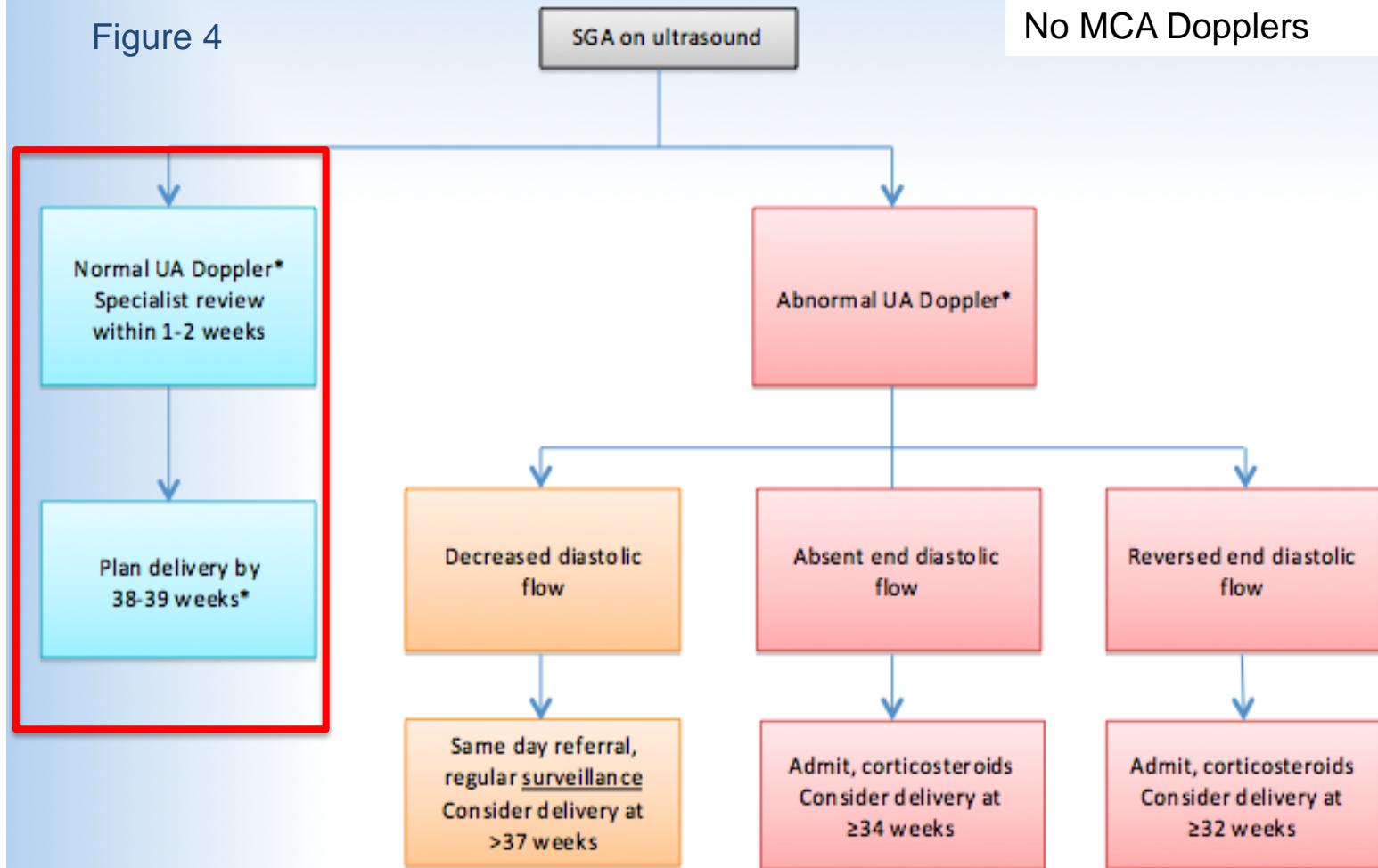
- ↓ maternal & neonatal morbidity with risk stratification approach

Results: RCOG vs risk stratification



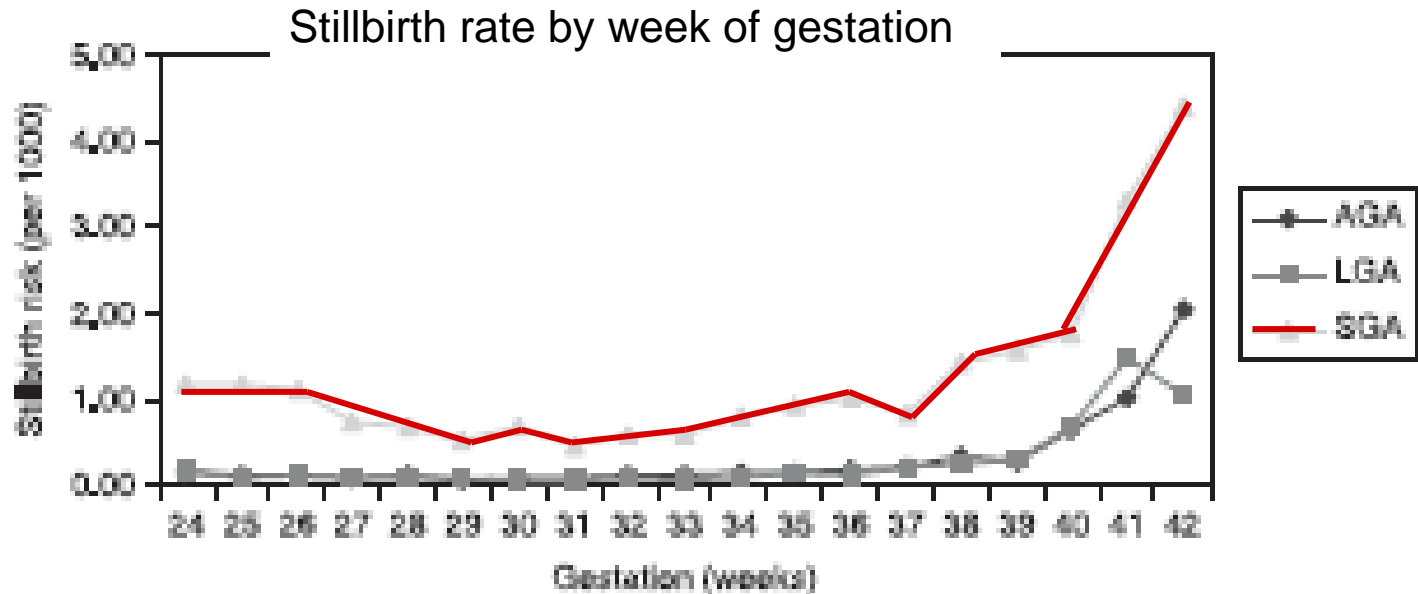
Simple SGA management algorithm

Figure 4



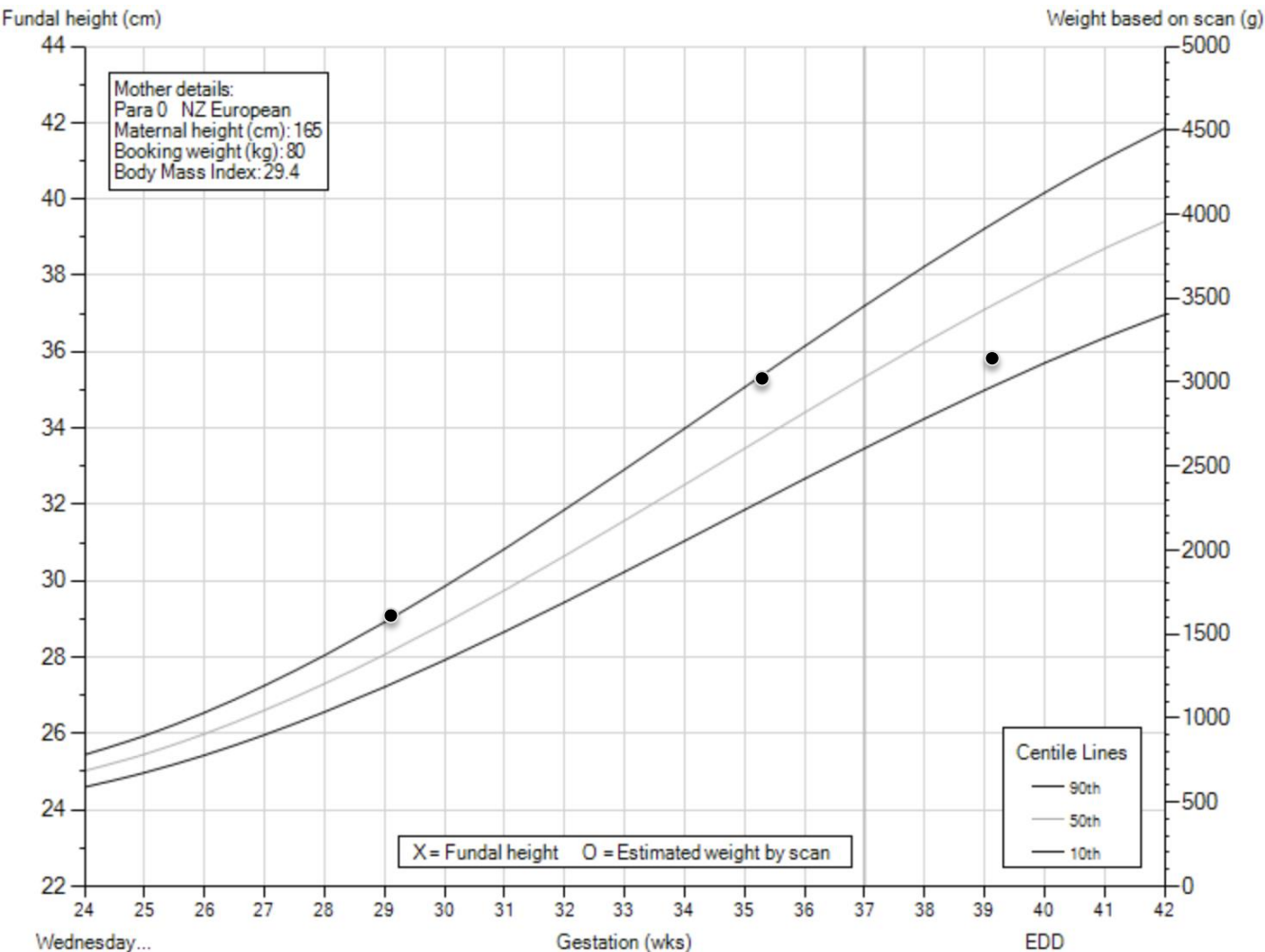
Risk of SGA stillbirths by gestation

Victorian data n=662,000 births 1992-2002, *Vashnevik Aust NZ J O+G* 2007



- Stillbirth risk for SGA fetus 4x > than AGA fetus
- Risk for SGA fetus > 38 wks 6.4/1000 vs 1.7/1000 for AGA

What about fetal growth restriction?



Defined as:

- $>30\%$ \downarrow in EFW or AC
- Perform Dopplers



Weight loss

Worksheet for
management of
women with FGR
pregnancies at
NWH

	Monday	DAU APPT: US APPT:	Tuesday	Wednesday	Thursday	Friday	Saturday & Sunday		
	Friday	DAU/APPT: US APPT:	<div> <div>SGA Worksheet</div> <div>(to be started at first specialist appointment)</div> <div>  </div> <div> Patient label <input type="text"/> </div> <div> EDD: <input type="text"/> Date this worksheet completed: <input type="text"/> </div> <div> Your Special Delivery Team LMC: <input type="text"/> LMC Contact No.: <input type="text"/> </div> <div> Specialist responsible: <input type="text"/> Specialist Contact No.: <input type="text"/> </div> <div> Hospital Team <input type="checkbox"/> Pink <input type="checkbox"/> Orange <input type="checkbox"/> Green <input type="checkbox"/> Yellow <input type="checkbox"/> Diabetes <input type="checkbox"/> MFM </div> <div> Diagnosis: (tick all that apply) <input type="checkbox"/> Discrepancy between AC and HC <input type="checkbox"/> AC or cust EFW crossing centiles <input type="checkbox"/> AC ≤ 5% <input type="checkbox"/> Customised EFW < 10% <input type="checkbox"/> Customised EFW < 3% </div> <div> Checklist: <input type="checkbox"/> Induction booked (Foley balloon) Date <input type="text"/> Time <input type="text"/> <input type="checkbox"/> Induction plan documented on Risk Sheet in HW <input type="checkbox"/> LMC aware of plan <input type="checkbox"/> This worksheet faxed to DAU and original placed in patient-held folder <input type="checkbox"/> Advice re fetal movements (pamphlet in folder) <input type="checkbox"/> Advice re symptoms of preeclampsia </div> <div>  </div> <div> Women's Health A Department of Auckland District Health Board </div> </div>					Monday	DAU/APPT: US APPT:
	Thursday	DAU/APPT: US APPT:	Tuesday	DAU/APPT: US APPT:	Wednesday	DAU/APPT: US APPT:			
	Friday	DAU/APPT: US APPT:	Thursday	DAU/APPT: US APPT:	Friday	DAU/APPT: US APPT:			
	Monday	DAU/APPT: US APPT:	Friday	DAU/APPT: US APPT:	Monday	DAU/APPT: US APPT:			
Saturday & Sunday	DAU/APPT: US APPT:	Saturday & Sunday	DAU/APPT: US APPT:	Saturday & Sunday	DAU/APPT: US APPT:				

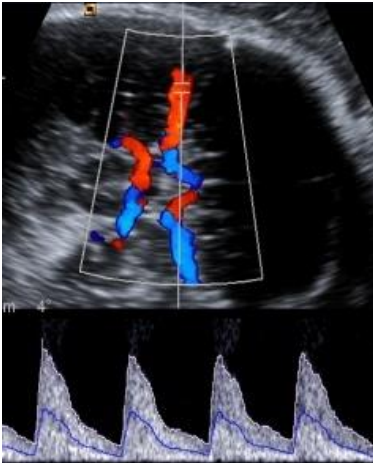


THANK
YOU

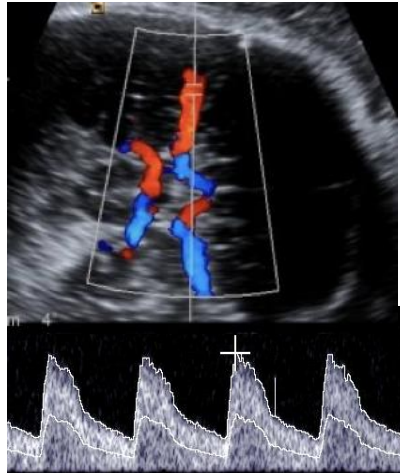
Doppler findings in late-onset SGA

- Normal umbilical artery Doppler usual in SGA ≥ 34 weeks
- Fetal response to hypoxia includes \uparrow cerebral flow
- Results in \downarrow MCA resistance
- Ratio of MCA/Umb PI=CPR
- \downarrow CPR occurs earlier than abnormal MCA

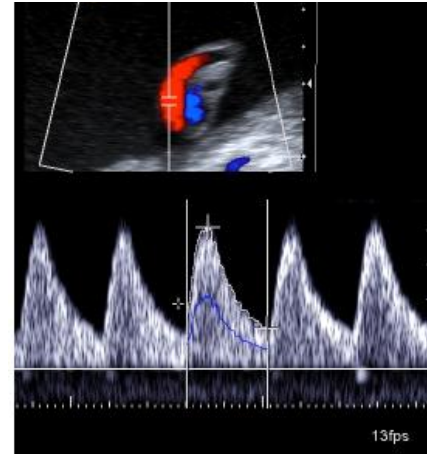
Normal MCA



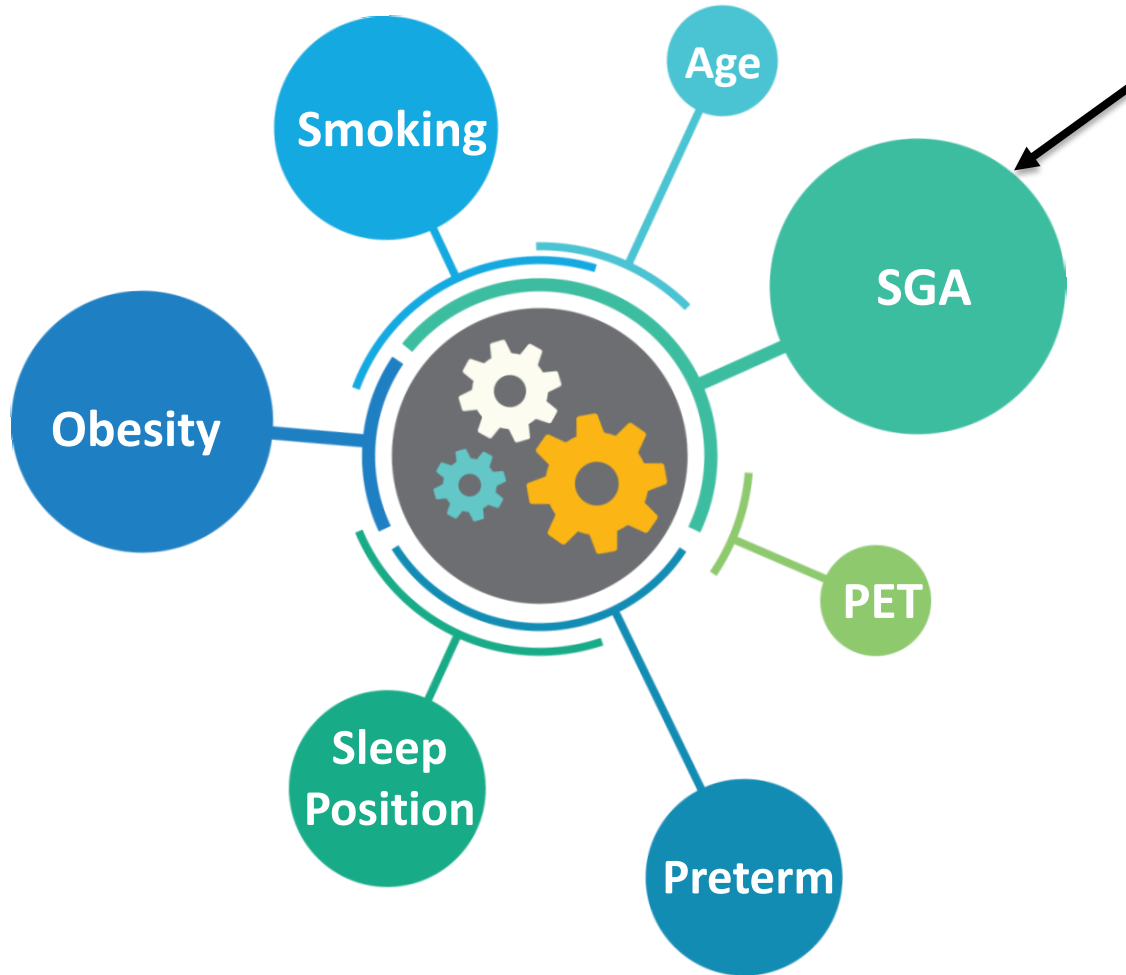
Abnormal MCA



Normal Umbilical Doppler

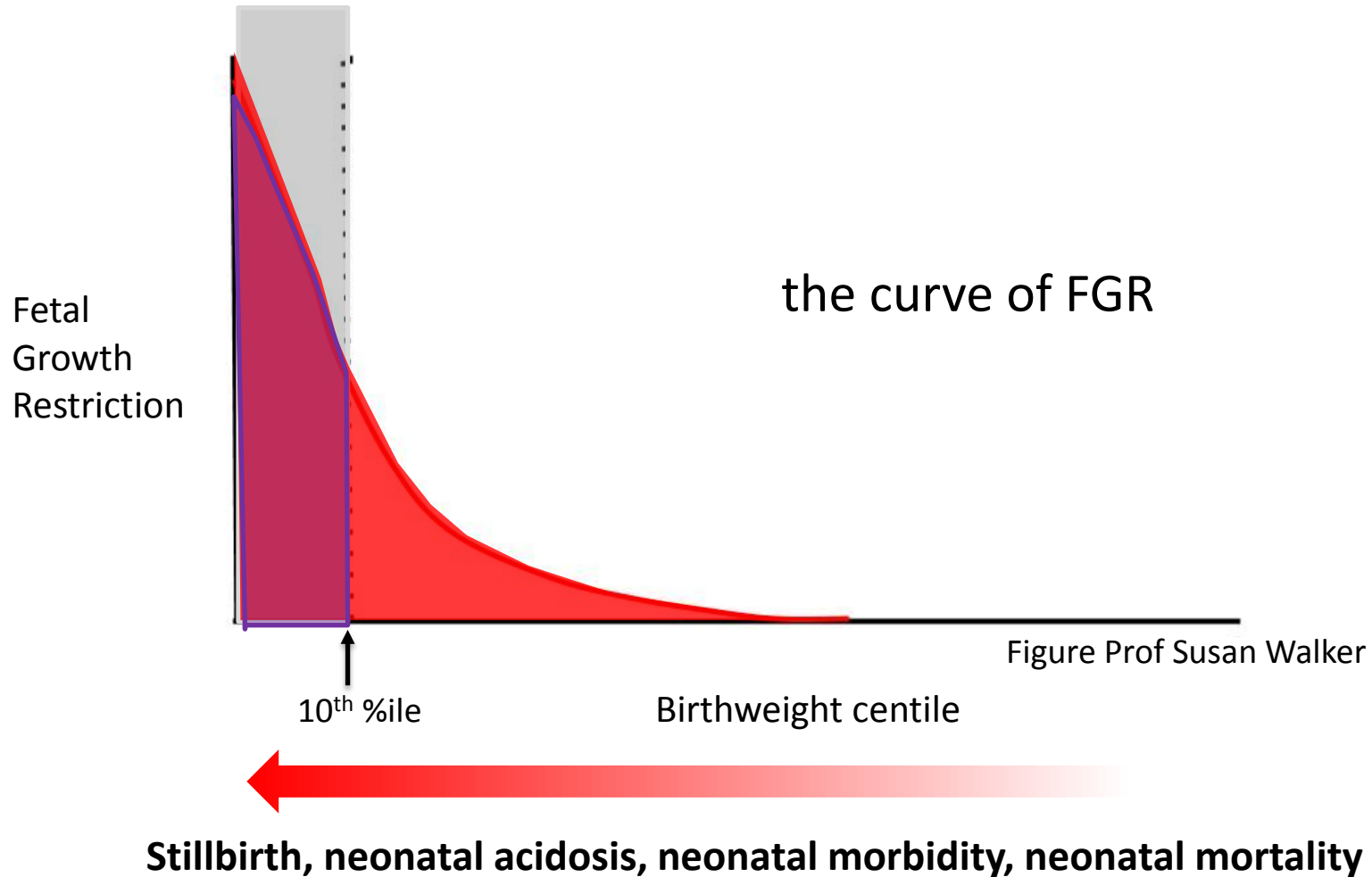


SGA a major risk factor for non-anomalous singleton stillbirth > 26 weeks



- SGA a common risk factor -26% stillbirths SGA
- Improved identification & timely delivery improves outcomes

Relationship between SGA and FGR?



Prompt referral if SGA detected

Refer for scan if:

- Low, static or slow \uparrow fundal height

Refer to specialist if:

- EFW < 10th centile
- AC \leq 5th centile
- Serial measurements show >30% \downarrow in AC or EFW

