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*

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


Figure adapted from Fig 1 page 14
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
Individualizing care

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

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 ± low dose aspirin

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

https://vimeo.com/148707303 Password “measureright"
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

<table>
<thead>
<tr>
<th>Study group CMH booked women</th>
<th>Pre GAP</th>
<th>Post GAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGA cases after exclusions</td>
<td>n = 153</td>
<td>n = 140</td>
</tr>
<tr>
<td></td>
<td>2012</td>
<td>2017-2018</td>
</tr>
<tr>
<td>SGA detected by ultrasound scan</td>
<td>22.9 %</td>
<td>53.6 %</td>
</tr>
</tbody>
</table>
SGA stillbirths in UK
GAP England, 3 years (2015/6 - 2017/8); n=703,279 incl. 2794 Stillbirths

SB SGA rate (%)

<table>
<thead>
<tr>
<th></th>
<th>Q1-Q2</th>
<th>Q3-Q4</th>
<th>Q1-Q2</th>
<th>Q3-Q4</th>
<th>Q1-Q2</th>
<th>Q3-Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td>39.4</td>
<td>36.3</td>
<td>33.7</td>
<td>36.0</td>
<td>34.0</td>
<td>31.6</td>
</tr>
</tbody>
</table>

p=0.03
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

**Previous 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

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**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

**Referral for ultrasound: measure**
- Estimated fetal weight (EFW)
- Individual fetal measurements
- Umbilical artery Doppler if reduced growth or SGA suspected

**Suspected reduced growth:**
- FH <10th centile
- FH crossing centiles by >30%

**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.

**Normal growth**

**No major risk factors**

**Refer to SGA guideline pathway**
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

Groom et al BJOG 2007;114:478–484.
High risk early SGA
severe medical, previous <34wk SGA or stillbirth, ↓ PAPP-A
Monthly growth scans from 24 weeks to birth
Consider uterine artery Doppler at 20 or 24wks

High risk late SGA
previous SGA >34 wk, mild chronic hypertension, age >40
Monthly growth scans from 28-30 weeks to birth
e.g. 30, 34, 38 weeks

Moderate risk late SGA
(e.g. smoke >10/day) OR unsuitable for fundal height (BMI 35+, fibroids)
Scan 30-32 & 36-38 weeks

SGA or poor interval growth
EFW < 10th centile
Abdominal circumference (AC) ≤ 5th centile
Serial measurements not following curve > 30% ↓ in AC or EFW

Fortnightly scans. Plot individual measurements and estimated fetal weight (EFW) on customised chart.
Manage as per NZMFM SGA Guideline
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

<table>
<thead>
<tr>
<th>Relative risk</th>
<th>95% CI</th>
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<tbody>
<tr>
<td><strong>Study-level meta-analysis</strong>&lt;sup&gt;53&lt;/sup&gt; (FGR), wks</td>
<td></td>
</tr>
<tr>
<td>≤16</td>
<td>0.56</td>
</tr>
<tr>
<td>&gt;16</td>
<td>0.95</td>
</tr>
<tr>
<td><strong>IPD meta-analysis</strong>&lt;sup&gt;54&lt;/sup&gt; (SGA), wks</td>
<td></td>
</tr>
<tr>
<td>&lt;16</td>
<td>0.76</td>
</tr>
<tr>
<td>≥16</td>
<td>0.95</td>
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</tbody>
</table>

Study level meta-analysis<sup>53</sup> used FGR as outcome to assess fetal size, defined as birthweight <10th or <5th percentile for gestational age or similar definition. The IPD meta-analysis<sup>54</sup> 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.


LDA:
- Dose 100-150mg
- Take in evening
SGA ≥34 weeks - risk stratification

High risk (FGR) ~60%

High risk adverse outcome
- EFW <3rd centile
- ↑ umbilical / uterine Doppler
- ↓ MCA or ↓ CPR Doppler
- At least weekly assessment & Dopplers
- Fortnightly scans until birth
- Birth by 38 weeks

Lower risk SGA ~40% (constitutionally small)

Low risk adverse outcome
- EFW 3rd to 10th
- 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
- 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

SGA on ultrasound

No MCA Dopplers

Normal UA Doppler*
Specialist review within 1-2 weeks

Plan delivery by 38-39 weeks*

Abnormal UA Doppler*

Decreased diastolic flow

Same day referral, regular surveillance
Consider delivery at ≥37 weeks

No MCA Dopplers

Absent end diastolic flow

Admit, corticosteroids
Consider delivery at ≥34 weeks

Reversed end diastolic flow

Admit, corticosteroids
Consider delivery at ≥32 weeks
Risk of SGA stillbirths by gestation


- 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% ↓ in EFW or AC
- Perform Dopplers

Weight loss
Worksheet for management of women with FGR pregnancies at NWH
Doppler findings in late-onset SGA

- Normal umbilical artery Doppler usual in SGA >=34 weeks
- Fetal response to hypoxia includes ↑ cerebral flow
- Results in ↓ MCA resistance
- Ratio of MCA/Umb PI = CPR
- ↓ CPR occurs earlier than abnormal MCA
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?

- Fetal Growth Restriction
- Small, not growth restricted
- Growth restricted, not small
- Growth restricted, and small
- Stillbirth, neonatal acidosis, neonatal morbidity, neonatal mortality

Figure Prof Susan Walker
Prompt referral if SGA detected

Refer for scan if:
- Low, static or slow ↑ fundal height

Refer to specialist if:
- EFW<10\textsuperscript{th} centile
- AC ≤ 5\textsuperscript{th} centile
- Serial measurements show >30% ↓ in AC or EFW