MATERNITY UNIT

GUIDELINE: Small for Gestational Age – Management of Singleton Pregnancies.

AUTHOR: Growth Assessment Protocol (GAP) Champion.

SCOPE: Obstetricians and Midwives in Maternity and the community.

PURPOSE: To provide guidance on risk assessment and management of suspected and diagnosed small for gestational age infants.

DEFINITIONS:

Small for gestational age (SGA) is defined as an infant with birthweight less than the 10th birth weight centile or a fetus with an estimated fetal weight (EFW) on a customised growth chart less than the 10th customised centile for gestation. Definitions which use customised standards to define SGA have been shown to be better associated with perinatal morbidity and mortality than definitions of SGA derived from population-based standards.

Fetal growth restriction (a fetus that has failed to reach its growth potential) is another commonly used term which has considerable overlap with SGA but is more difficult to define in practice as not all growth restricted infants are SGA. SGA pregnancies identified before birth with evidence of abnormal blood flow patterns (abnormal umbilical artery, uterine artery, middle cerebral artery, or cerebro-placental ratio Doppler indices) or with an estimated fetal weight <3rd centile are considered to be growth restricted. Note: a fetus with estimated fetal weight or abdominal circumference crossing centiles on serial scans or with a major discrepancy between head and abdominal circumference may also be growth restricted but may or may not meet the criteria for SGA.

GUIDELINE:
See appendix 1 for a quick reference to the NZMFM Algorithm & SGA Risk Assessment Tool for New Zealand: Screening and assessment of fetal growth in singleton pregnancies.

Risk Assessment
All women require assessment at booking for risk factors for SGA infants.

Maternal risk factors
- Maternal age >40 years
- Continued smoker after 16 weeks
- Recreational drugs

Previous Pregnancy History
- Previous SGA baby (<10th cust centile)
- Previous stillbirth

Maternal Medical History
- Chronic hypertension
- Diabetes with vascular disease
- Renal impairment
- Anti-phospholipid syndrome

Current Pregnancy
Early Pregnancy

- PAPP-A <0.4 MoM
- Heavy bleeding <20 weeks

Late pregnancy

- Pre-eclampsia/gestational hypertension
- Antepartum haemorrhage

Primary Prevention of SGA

When women at high risk of SGA are seen by an obstetrician at ≤ 16 weeks' gestation, prophylactic treatment with low dose aspirin (LDA) 100 mg per day may be considered as this reduces the risk of SGA, especially in women who also have risk factors for preeclampsia, such as those with underlying medical disorders.

Serial Growth Scans

a. Previous SGA infant These women have a three-fold increase in risk of SGA. The gestation at which growth scans are started can be individualised, depending on the gestation at birth and the severity of SGA in the previously affected infant e.g. if a previous SGA infant was born at 32 weeks, 3-4 weekly scans may be planned from 24 weeks; if the previous SGA infant was born at term, 3-4 weekly scans from 30-32 weeks may be appropriate.

b. Underlying Medical Conditions Serial growth scans (3-4 weekly) are recommended with more frequent growth scans (2-3 weekly) if sup-optimal growth is suspected. The gestation at which to initiate serial growth scans will be recommended by the specialist according to the estimated magnitude of risk.

c. Cigarette Smokers Smoking >10 cigarettes daily is considered a major risk factor for SGA by the RCOG. Women who become smoke-free by 15 weeks have no increase in risk of SGA compared with non-smokers. As with non-smokers, local data show that 80% of SGA infants born to women who smoke are also born at term.

d. Obese Women The BMI at which fundal height measurement is unreliable is difficult to prescribe as it depends on distribution of maternal fat and also height. A plan for growth scans is recommended with a BMI of >35. Antenatal detection of SGA is reduced in obese women and risk of SGA is increased after adjustment for confounding factors such as chronic hypertension. When it is not possible to assess fetal growth clinically, growth scans may be considered at 30-32 weeks' and at 36-38 weeks' to enable serial assessment of fetal growth. If a single growth scan is performed, detection of size abnormalities is better at 36-38 weeks' but will not enable assessment of late pregnancy growth velocity. More frequent and / or earlier initiation of growth scans may be indicated if additional risk factors for SGA, such as chronic hypertension, are present.

e. Abnormal Serum Analytes First trimester aneuploidy screening includes measurement of PAPP-A. Low PAPP-A is associated with increased risks of SGA and preeclampsia and low

PAPP-A is considered a major risk factor for SGA by the RCOG and an indication for serial growth scans. First trimester aneuploidy screening currently reports PAPP-A results. LDA (100 mg per day) is recommended in women with low PAPP-A (<0.2 MoM) starting at <16 weeks', especially in those who also have other risk factors.

f. Multiple Pregnancies Monthly scans are recommended for di-chorionic di-amniotic twin pregnancies, and fortnightly scans for mono-chorionic di-amniotic twins – links to RANZCOG guidelines can be found at the following site: http://www.ranzcog.edu.au/college-statements-guidelines.html#obstetrics Under Multiple pregnancy select: Monochorionic Twin Pregnancy, Management of (C-Obs 42).

g. Late pregnancy risk factors: hypertension and antepartum haemorrhage (APH). A recent New Zealand publication has identified late pregnancy risk factors for infants who are SGA by customised birthweight centiles including: preeclampsia aOR 2.94 (2.49-3.48), preeclampsia superimposed on chronic hypertension aOR 4.49 (2.94-6.88), placental abruption aOR 2.57 (1.74-3.78), APH of unknown origin aOR 1.71 (1.45-2.00). Women identified with these pregnancy complications should be considered for serial scans if the pregnancy is continuing after the condition is diagnosed**.**

Interpretation of Growth Scans

Definition of suspected SGA and FGR It is recommended that individual ultrasound measurements of the fetal head, abdomen and femur length are plotted on the Australasian Society of Ultrasound in Medicine (ASUM) population ultrasound charts and the estimated fetal weight plotted on the GROW chart. The information from both sources is used to make a full assessment. See appendix 2 for a copy of the Auckland DHB ASUM chart.

NOTE: The abdominal circumference (AC) is usually the first fetal measurement to become reduced in SGA. Suboptimal fetal growth is suspected when: The abdominal circumference on the population (ASUM) scan chart is <5th centile Discrepancy between head and abdominal circumferences (e.g. HC 75th centile and AC 20th centile which suggests wasting) AC is >5th centile but is crossing centiles by > 30th centile e.g. reduction from 50th centile to 20th centile A change in AC of <5 mm over 14 days EFW on the GROW chart is <10th centile EFW on the GROW chart is crossing centiles with >one third reduction in EFW percentile.

Referral Process

- Risk factors identified at booking: LMC to send referral to antenatal clinic, initial O&G consult may be virtual as long as LMC happy to prescribe Low Dose Aspirin (LDA) and organise regular USS, plotting growth on customised GROW chart and referring back to ANC if/when SGA suspected
- Once SGA is confirmed, ongoing serial growth scans are ordered by the obstetrician
- Women are seen as needed in antenatal clinic to review progress and management.
- Scheduling for CTG monitoring is completed by the obstetrician or shift coordinator in the Maternity Schedule
- Ensure risk assessment and management plan are documented in MCIS

Antenatal Monitoring and Timing of Birth

SGA with normal UA Doppler

- Once weekly CTG monitoring
- Two-three weekly USS with Doppler studies
- Plan birth by 40 weeks gestation

SGA with abnormal UA Doppler

- Twice-weekly CTG monitoring
- Once-twice weekly liquor volume and Doppler studies
- Birth by 38 weeks

A low threshold for birth is recommended if there is any concern about maternal or fetal well-being or if there is suspected cessation of fetal growth.

Abnormal MCA Doppler or CPR indices

- Twice-weekly CTG monitoring
- Once-twice weekly liquor volume and umbilical artery and MCA Doppler studies
- Birth by 38 weeks

Abnormal Umbilical artery Doppler

- Decreased diastolic flow

Same day referral – urgent obstetric review
Consider birth at >37 weeks

- Absent end diastolic flow

Urgent obstetric review
Corticosteroids
Consider birth ≥34 weeks

- Reverse end diastolic flow

Urgent obstetric review
Corticosteroids
Consider birth ≥32 weeks with consultation with Paediatrician.

Monitoring in Labour

Continuous cardiotocography (CTG) monitoring in labour is imperative for fetuses diagnosed as SGA, this ensures fetal tolerance of and wellbeing in labour.

ASSOCIATED DOCUMENTS:

National Womens' Health 2012, Fetal Growth Chart modified form ASUM 2000
https://nationalwomenshealth.adhb.govt.nz/assets/Uploads/Fetal-Growth-Chart.pdf

Royal College of Obstetricians, The investigation and management of small-for-gestational-age fetus: Green-top guideline No 31. 2013. https://www.gestation.net/RCOG_Green_Top_-_SGA_2013.pdf

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists, Management of monochorionic twin pregnancy http://www.ranzcog.edu.au/college-statements-guidelines.html#obstetrics

Hauora Tairāwhiti Guideline: Hypoglycaemia, infants at risk of

REFERENCES:

McCowan L, Bloomfield F. (2014). Guideline for the management of suspected small for gestational age singleton pregnancies and infants after 34 weeks' gestation. New Zealand Maternal Fetal Medicine Network https://www.cdhb.health.nz/wp-content/uploads/e5d180ea-nzmfm-sga-guideline.pdf

Ministry of Health. 2019. New Zealand Obstetric Guidelines: Consultation document. Wellington: Ministry of Health. https://consult.health.govt.nz/nsu/obstetric-ultrasound-guidelines/supporting_documents/newzealandobstetricultrasoundguidelinesconsultationdocumentmar2019.pdf

Appendices
Appendix 1 NZMFM SGA Algorithm 2019
Appendix 2 Auckland DHB ASUM Chart

EVALUATION: By audit for compliancy

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Authorised By (HOD Obstetrics)

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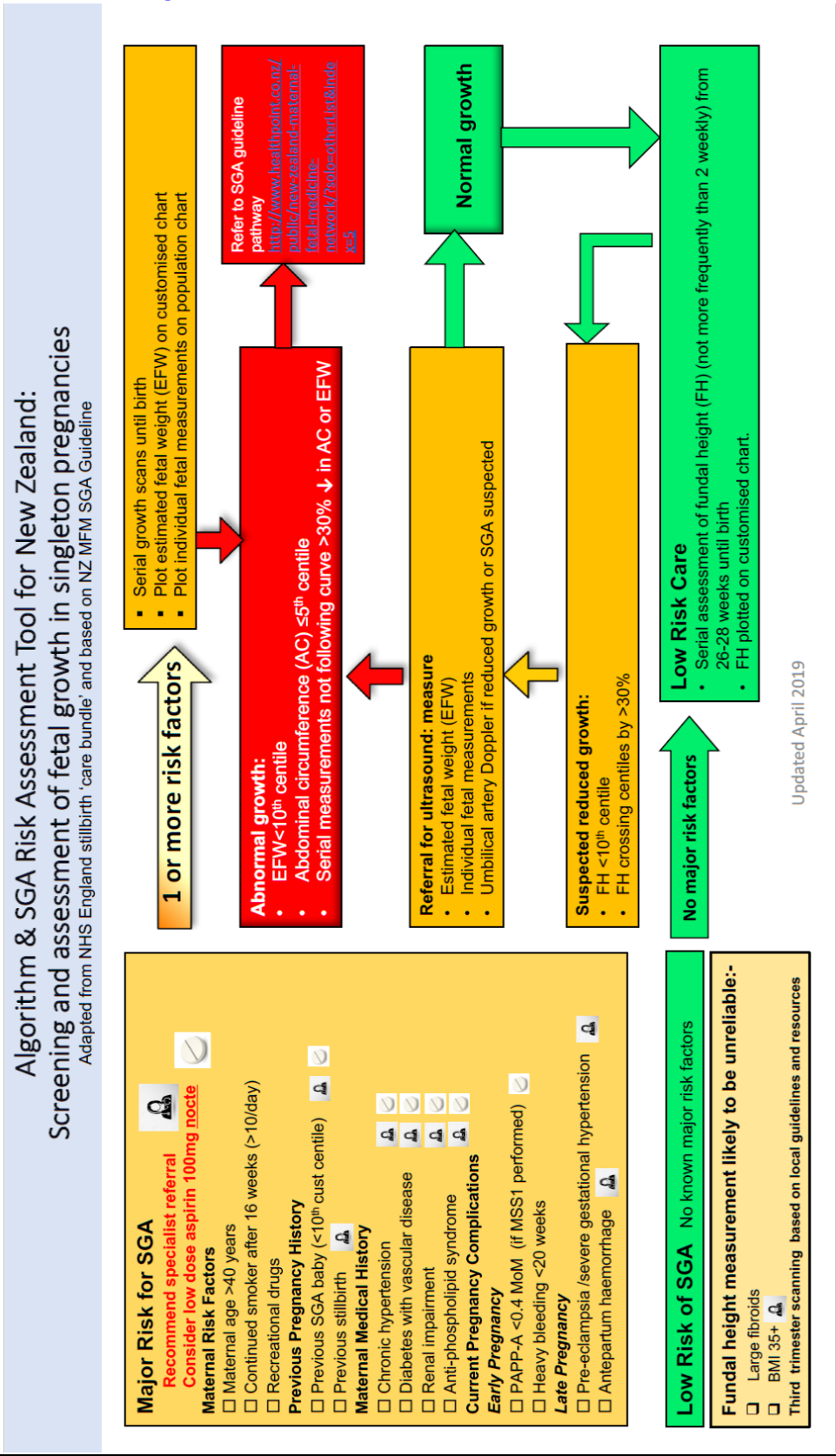
Authorised By (Director of Midwifery)

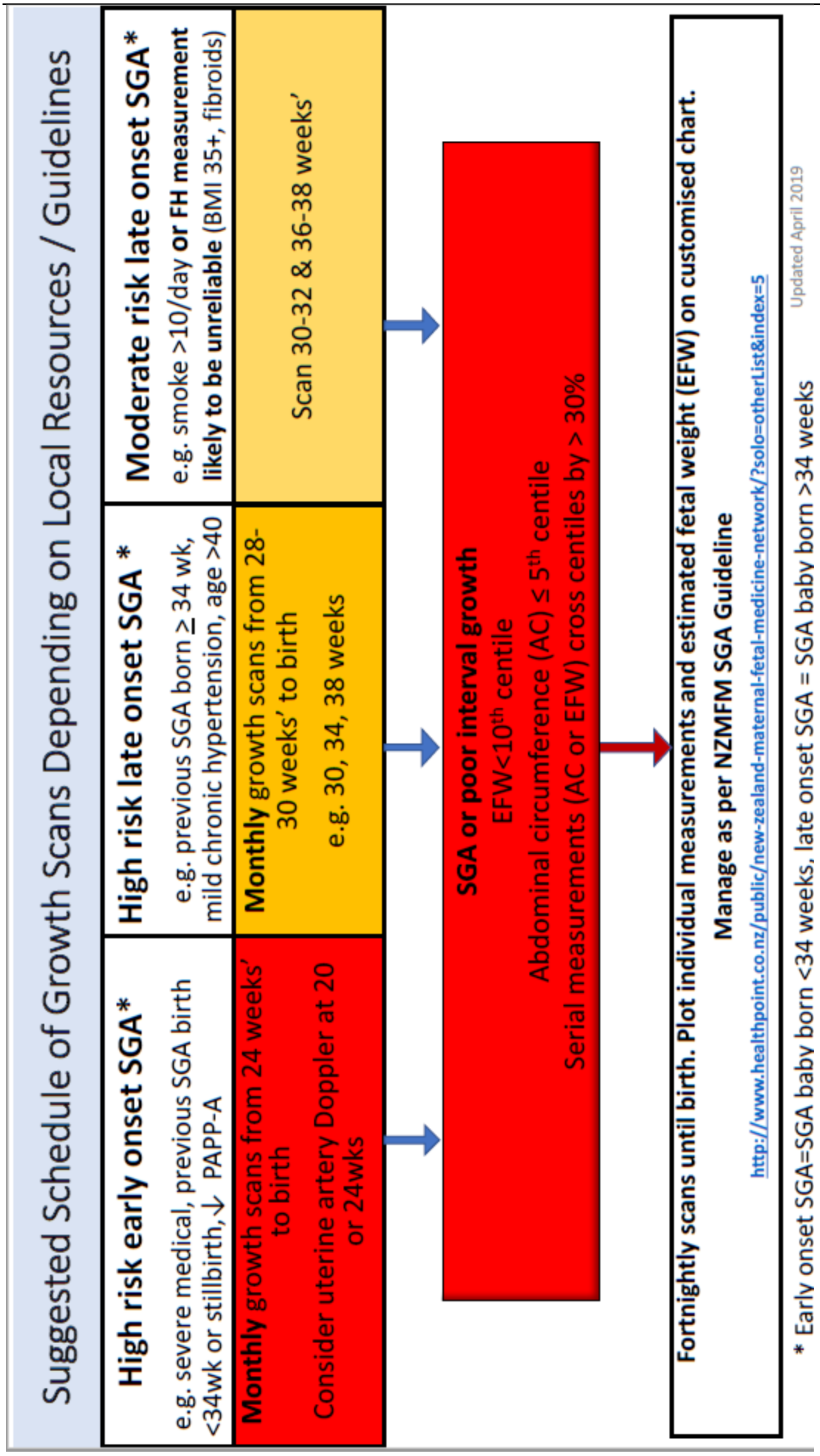
Date of Approval: 08.10.2020

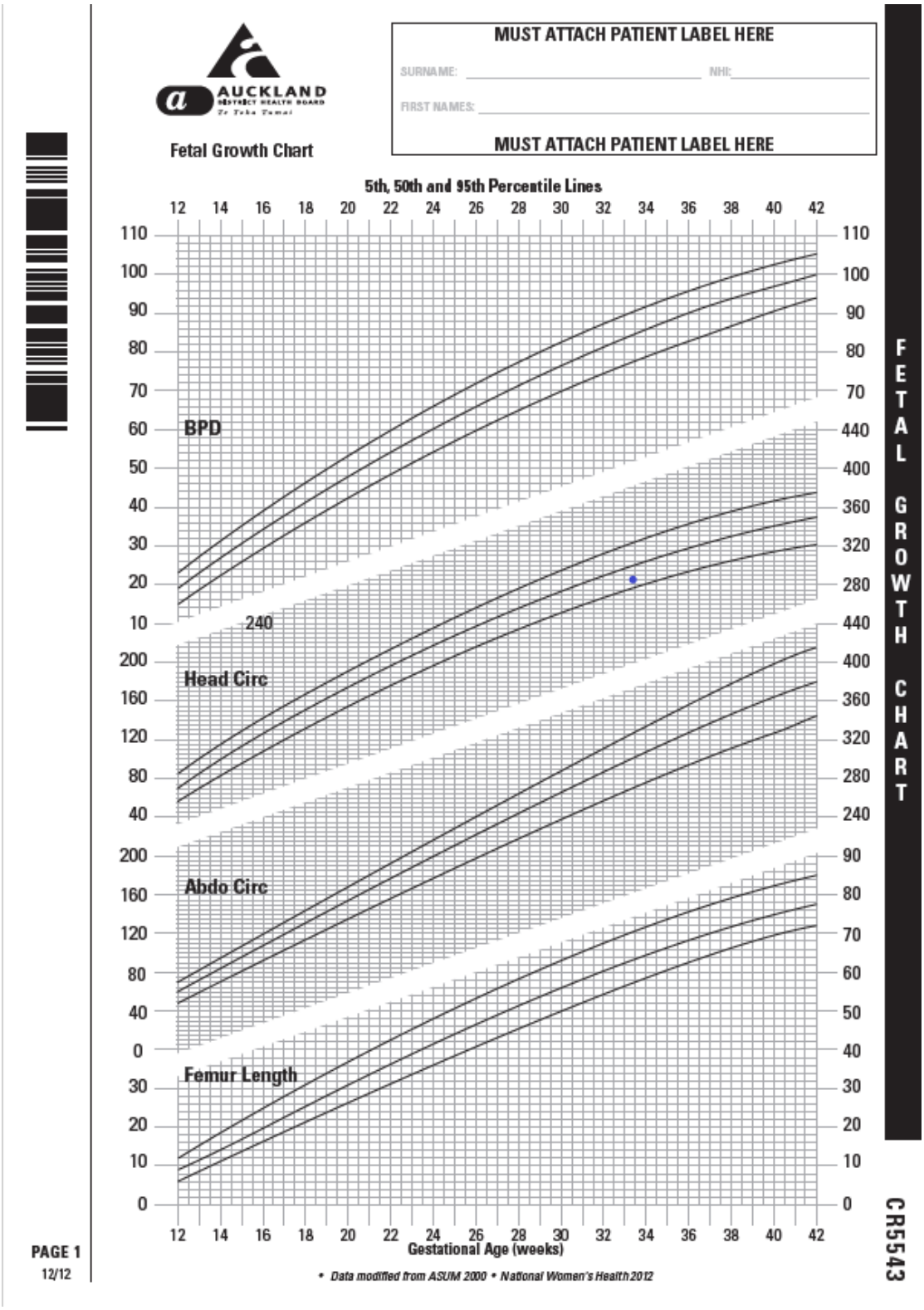
Next Review Date: 07.10.2023

APPENDIX 1:

NZMFM SGA Algorithm 2019




Suggested Schedule of Growth Scans Depending on Local Resources / Guidelines
High risk early onset SGA*
e.g. severe medical, previous SGA birth <34wk or stillbirth,↓ PAPP-A
Monthly growth scans from 24 weeks' to birth
Consider uterine artery Doppler at 20 or 24wks
High risk late onset SGA *
e.g. previous SGA born ≥ 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 onset SGA*
e.g. smoke >10/day or FH measurement likely to be unreliable (BMI 35+, fibroids)
Scan 30-32 & 36-38 weeks'
SGA or poor interval growth
EFW<10th centile
Abdominal circumference (AC) ≤ 5th centile
Serial measurements (AC or EFW) cross centiles by > 30%
Fortnightly scans until birth. 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
* Early onset SGA=SGA baby born <34 weeks, late onset SGA = SGA baby born >34 weeks
Updated April 2019

APPENDIX 1:

Auckland DHB Fetal Growth Chart – Modified from ASUM 2000, National Women's Health 2012