Clinical Practice Guideline	Indications for Antenatal Ultrasound
Department	Women's Health Unit

Purpose
The purpose of this guideline is to assist in identifying women who's pregnancies are at greater risk of growth restriction or adverse outcomes, and to provide an appropriate template for the frequency of ultrasound in women at higher risk. The summary is derived from a combination of local, national and international guidelines.

Scope
The guideline may involve medical staff in O&G, midwives, sonographers, radiologists.

Definitions

AC	**Abdominal circumference**
APH	**Antepartum Haemorrhage**
ASUM	**Australian Society for Ultrasound in Medicine**
BMI	**Body mass index**
BPD	**Bi-parietal diameter**
BPP	**Biophysical profile (liquor volume, tone, movement, breathing movements and CTG)**
CRL	**Crown–rump length**
DV	**Ductus venosus flow**
EDF	**End diastolic flow**
FGR	**Fetal growth restriction**
FL	**Femur length**
FVL	**Factor V Leiden**
Growth	**Physical fetal measurements that include BPD, HC, AC and FL**
HC	**Head circumference**
LV	**Liquor volume**
MCA PI	**Middle cerebral artery pulsatility dopplers**
MCA PSV	**Middle cerebral artery peak systolic velocity (indication of fetal anaemia)**
PAPP-A	**Pregnancy associated plasma protein**
PGM	**Prothrombin gene mutation**
PI	**Pulsatility index (systolic–diastolic)/mean flow over the cycle length**
RCOG	**Royal College of Obstetricians and Gynaecologists**
SFH	**Symphyso-fundal height**
UAD	**Umbilical artery dopplers**
US	**Ultrasound**

Indications

All women should be screened for risk factors for fetal growth restriction as part of the antenatal booking visit and any existing or new risk factors should be considered at each subsequent visit. Regular ultrasound for women with risk factors will help to detect signs of fetal growth restriction and is recommended as part of a more global strategy to reduce rates of stillbirth.

Contraindications

Women who decline ultrasound examinations should have a discussion with an obstetric consultant regarding the pros and cons of this decision. This discussion must be documented in the medical records.

Guideline

- All clinicians should be mindful of the indications for antenatal ultrasound, and the risk factors that require more intensive ultrasound assessment.
- A risk assessment should be performed at booking by the booking midwife. This risk assessment must be discussed with the woman and documented in BOS and the Victorian Medical Records (VMR) as level 1, 2 or 3 (see table below).
- Risk factors for FGR must also inform the appropriate model of care (see Risk Assessment for Model of Pregnancy Care) with an obstetric booking visit to be arranged prior to 16/40 for women in group B or C and for women where the model of care is uncertain.
- The risk of fetal growth restriction must be considered at each antenatal visit, especially where new risk factors may have developed, and re-documented in BOS and VMR if that risk level has changed.
- Women who may benefit from low dose Aspirin should commence it prior to 16/40. The dose can be taken as either 100mg daily, which can be bought from any pharmacy, or 150mg daily, taken by halving a 300mg tablet. Low dose Aspirin is safe in pregnancy but medical contraindications should be considered.
- Contraindications to aspirin include: Allergy or sensitivity to aspirin or NSAIDs, active peptic ulcer disease, active bleeding or bleeding tendency, pregnancy after 36/40.

The accompanying chart is for the guidance of clinicians. Modification of the recommended frequency of scans may be required depending on the individual circumstances of the pregnant woman.

The obstetrician in the antenatal clinic or on the Women's Health Unit is responsible for arranging the ultrasound. The indication for the ultrasound must be clearly outlined on the request. Appropriate follow up is to be arranged to review and discuss the results of the ultrasound and discuss any further management.

Guideline for Shared Care GPs

GPs should assess risk factors for fetal growth restriction at the woman's first antenatal visit. Due to their early involvement in women's care, and the clinical benefit of starting treatment prior to 16 weeks, GPs are able to recommend that women with risk factors for pre-eclampsia or FGR commence low dose aspirin 100 or 150mg daily. Contraindications to low dose Aspirin are same as in the general population (known allergy or sensitivity to aspirin, active peptic ulcer disease, bleeding disorders, active bleeding). Aspirin should be stopped at 36/40.

Women with risk factors for fetal growth restriction should have this discussed with them and an early referral for antenatal booking. Any risk factors should be documented in the referral letter.

Evaluation

Effectiveness of this guideline will be monitored and evaluated through:
Review of babies with a birth weight below the 3rd centile at 40wks (Victorian state KPI)
Audit of the identification of risk and appropriate management plan as documented in the medical records.
Audit of the frequency of ultrasound scans performed for women with risk factors.

Key Aligned Documents

Management of Pregnancy & Childbirth for Women with a BMI >35, Peninsula Health CPG
Twin Pregnancy, Peninsula Health CPG.
Cholestasis of Pregnancy, Peninsula Health CPG.
Decreased Fetal Movements, Peninsula Health CPG.
Diabetes in Pregnancy, Peninsula Health CPG
Management of the Small for Gestational Age or Growth Restricted Fetus, Peninsula Health CPG
Risk Assessment for Model of Pregnancy Care, Peninsula Health CPG
Management of Women with a BMI ≥35 in Pregnancy Peninsula Health CPG

References

ASUM. Guidelines, Policies and Statements, D2, Statement on the Mid Trimester Obstetric Scan Revised September 2014
The Investigation and Management of The Small for Gestational Age Fetus. RCOG Green Top Guideline 31. January 2014
Measurement of Cervical Length for Prediction of Preterm Birth. RANZCOG College Statement C-Obs 27. July 2012
Inherited Thrombophilias in Pregnancy. Up To Date 2016
Detection and Management of Women with Fetal Growth Restriction in Singleton Pregnancies. Position Statement. Stillbirth Centre of Research Excellence. 2019

Appendix

Guide to Antenatal Ultrasound Assessment

Document management	Position
Executive Sponsor:	Executive Director Frankston Hospital
Document Owner:	Clinical Director Women's Health
Document Author	Clinical Director Women's Health
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Guide to Antenatal Ultrasound Assessment

Peninsula Health

Routine Assessment (not to be booked for Peninsula Health US)

Indication	Parameter	Timing	Reference
Dating scan	CRL	1st Trimester	
First trimester screening	CRL, Nuchal Lucency, Nasal Bone	11-13+6 wks	
Fetal anatomy scan	See guideline	18-22/40 wks	ASUM Guideline D2
Placental localisation (if low at anatomy scan)	Distance from placenta to os	32 wks	ASUM Guideline D12
Mild fetal renal pelvic dilatation	Growth, renal pelvis	32 wks	

Risk Assessment for FGR (to be documented at booking and reviewed each subsequent visit)

<table>
<tr><th>Level 1</th><th colspan="2">Level 2</th><th>Level 3</th></tr>
<tr>
<td>No FGR risk factors identified[A]

One minor risk factor with normal clinical growth[A/B]

Note: more than 50% of FGR cases have no risk factors</td>
<td>2 or more minor risk factors
• Age ≥35yrs[B]
• Nulliparity[A]
• IVF singleton pregnancy[B]
• Aboriginal or Torres Strait Islander[A]
• Smoking ≤10/day
• BMI 30 to 34kg/m^2 [A/B]
• BMI < 18kg/m^2
OR
• Previous late (≥32/40) FGR or pre-eclampsia[B]

Advise low dose Aspirin 150mg nocte prior to 16/40 up to 36/40</td>
<td>Antenatal Complications
• Suspected FGR/SGA (SFH>2cm behind projected fundal height, static growth, SFH<10th %)[B]

Arrange US fetal growth.
If growth normal but ongoing clinical suspicion, arrange FU growth assessment.</td>
<td>High Risk of Early FGR[C]
• Maternal age ≥40yrs
• Smoker >10/day, substance use
• Previous early (<32/40) FGR/SGA or pre-eclampsia
• PAPP-A <0.4 MoM
• Congenital CMV
• Pre-eclampsia or hypertension
• APH heavier than menstrual loss
• Previous stillbirth with FGR/SGA
• Maternal medical conditions (eg antiphospholipid syndrome, renal impairment, diabetes with vascular disease, chronic inflammatory conditions)
• BMI ≥35 kg/m^2 [A/B] *</td>
</tr>
<tr>
<td>Standardised serial SFH at each visit from 24/40
Plot SFH on growth chart</td>
<td colspan="2">US fetal growth at 28 and 34-36wks
Review model of care group (see CPG)</td>
<td>Advise low dose aspirin (150mg nocte) prior to 16/40 up to 36/40
Review model of care (see CPG)
US growth 4 weekly from 24/40
* BMI ≥35 see CPG US growth/AFI/Doppler 28, 32, 36 weeks</td>
</tr>
</table>

A/B/C denotes relevant model of care – see Risk Assessment for Model of Pregnancy Care CPG

Ongoing Assessment of High Risk Pregnancies

Indication	Parameter	Timing	Reference
Pregnancy Induced Hypertension	Growth, LV, UA	2-4 weekly if stable	Peninsula Health CPG
Pre-eclampsia	Growth, LV, UA	2 weekly if normal	Peninsula Health CPG
FGR (EFW or AC <10th%, normal Dopplers) Deliver: >34/40 if static growth by 37+6 if MCA PI<5th% by 38+6 if normal dopplers	Growth, LV, UA, MCA PI	2 weekly if normal Weekly UA and MCA from 36/40	RCOG Guideline 31 Peninsula Health CPG
FGR (impaired UAD or MCA, EDV present) Deliver: >34/40 if static growth by 37/40 if UA>95th% or CPR<5th%	Growth, LV, UA, MCA PI	Twice weekly UA, MCA PI, LV 2 weekly growth	RCOG Guideline 31
FGR (absent or REDV) <32/40 refer, 32/40 deliver	Growth, LV, UA, DV	Daily UA, DV	RCOG Guideline 31
Preterm ruptured membranes	Growth, LV	2 weekly growth, weekly LV	
Reduced fetal movements (persistent)	Growth, LV, BPP	If persistently reduced FM or non-reassuring but non-sinister CTG	Peninsula Health CPG

Routine Screening of High Risk Pregnancies

Indication	Parameter	Timing	Reference
Gestational diabetes (diet controlled)	Growth, LV	32wks (+36 only if macrosomia suspected or poor control)	Peninsula Health CPG
Gestational diabetes (treatment)	Growth, LV	32, 36 wks	Peninsula Health CPG
Insulin dependent or type II diabetes	Growth, LV	28, 32, 36 wks	Peninsula Health CPG
Monochorionic twins	Growth, LV, Bladder, MCA PSV	2 weekly from 16 wks	RANZCOG (C-Obs 42)
Dichorionic twins	Growth, LV	24, 28, 31, 34, 36 wks	Peninsula Health CPG
Inherited Thrombophilia (FVL, PGM etc)		Only if other risk factors	Up To Date 2016
Previous preterm birth	Cervical length	20 wks (sooner if mid-tri loss)	RANZCOG (C-Obs 27)
Obstetric cholestasis	Growth, LV, UA	2 weekly growth, weekly dopplers	Peninsula Health CPG
Breech (pre ECV)	Growth, LV	36-37wks	Peninsula Health CPG
Unable to assess FH due to fibroids	Growth, LV	4 weekly from 28wks	Peninsula Health CPG

Abbreviations:

AC	Abdominal circumference	IUGR	Intrauterine growth restriction
APH	Antepartum Haemorrhage	LV	Liquor volume
ASUM	Australian Society for Ultrasound in Medicine	MCA PI	Middle cerebral artery pulsatility dopplers
BMI	Body mass index	MCA PSV	Middle cerebral artery peak systolic velocity (indication of fetal anaemia)
BPD	Bi-parietal diameter	PAPP-A	Pregnancy associated plasma protein
BPP	Biophysical profile (liquor volume, tone, movement, breathing movements and CTG)	PGM	Prothrombin gene mutation
CRL	Crown–rump length	PI	Pulsatility index (systolic–diastolic)/mean flow over the cycle length
DV	Ductus venosus flow	RCOG	Royal college of Obstetricians and Gynaecologists
EDF	End diastolic flow	SGA	Small for gestational age
FGR	Fetal growth restriction	SFH	Symphyso-fundal height
FL	Femur length	UAD	Umbilical artery dopplers
FVL	Factor V leiden	US	Ultrasound
Growth	Physical fetal measurements: BPD, HC, AC and FL		
HC	Head circumference		

References:

ASUM. Guidelines, Policies and Statements, D2, Statement on the Mid Trimester Obstetric Scan Revised September 2014
Management of Pregnancy & Childbirth for Women with a BMI >35, Peninsula Health CPG. 2015
Twin Pregnancy, Peninsula Health CPG.
Cholestasis of Pregnancy, Peninsula Health CPG.
Reduced Fetal Movement, Peninsula Health CPG.
Diabetes in Pregnancy, Peninsula Health CPG
Risk Assessment for Model of Pregnancy Care, Peninsula Health CPG
Low Dose Aspirin Use During Pregnancy. ACOG Committee Opinion. 743. July 2018
The Investigation and Management of The Small for Gestational Age Fetus. RCOG Green Top Guideline 31. January 2014
Measurement of Cervical Length for Prediction of Preterm Birth. RANZCOG College Statement C-Obs 27. July 2012
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