ST JOHN OF GOD
Midland Public & Private Hospitals

Antenatal Shared Care

Guidelines for General Practitioners

SJGMPPH Contact Numbers

Antenatal Clinic	9462 4570
Antenatal Clinic fax	9462 4869
Clinical Midwife Specialist	9462 4555
Diabetes Service SJGMPPH	9462 4000
Early Pregnancy Assessment Service (EPAS) Fax	9462 4085 9462 4085
Moort Boodjari Mia (MBM)	0406 880 142
Obstetric Registrar (urgent issues only)	9462 4203
Perth Radiology Clinic (onsite)	6274 3500
Raphael Services	1800 292 292
SJGMPPH Referrals Fax	9462 4085
SJGMPPH MFAU	9462 4558
SJGMPPH Switchboard	9462 4000

Useful Resources:

Breastfeeding Centre of WA (KEMH)	6458 1844
Childbirth and Mental Illness (CAMI) (service for pre-conception counselling)	6458 1521
Diabetes Service KEMH	6458 2163
Genetic Services WA	6458 1683
Perth Radiology Clinic (onsite)	6274 3500
Raphael Services	1800 292 292
Red Cross	9421 2374
Bloodbank	9213 2136

Introduction

This guideline has been developed for general practitioners (GPs) who are involved with shared care of low risk antenatal patients with St John of God Midland Public Hospital (SJGMPPH).

"Shared maternity care represents an opportunity to practice collaborative holistic obstetric care by combining the varied skills of midwives, GPs and Obstetricians to the benefit of the community and mutual understanding between colleagues". RANZCOG statement WPI July 2016.

Administration

Obstetric shared care (OSC) is recommended for all low risk women who have access to an accredited GP and a participating hospital.

Medical indemnity

The risk of litigation in Obstetrics is mainly related to intrapartum care, however, it can occur due to omission of screening tests and if obstetric complications or serious medical problems are missed antenatally.

While the responsibility for the health of the woman and her baby is shared in obstetric shared care, medical indemnity insurance is the responsibility of the medical officer involved. Medical insurers have specific requirements related to this care and it is recommended that GP's clarify these with their medical indemnity insurers.

All GP's engaging in GP shared care must have AHPRA registration in WA and have adequate antenatal experience or supervision. It is desirable that GP's engaging in shared care, have a Women's Health Certificate.

More information on the Certificate in Women's Health (RANZCOG) can be found at: https://ranzcog.edu.au/Training/Certificate-Diploma

Contents

Mandatory requirements for GP obstetric shared care with SJGMPPH

1. **Use of Pregnancy Hand Held Record (PHR)**

   The hospital will provide GP's with the PHR and if not, can be obtained by calling 9462 4570 to arrange delivery/collection of the PHR. This document must be used to document the care provided for all women involved in GP OSC. Pathology and ultrasound results are to be filled in and included in the PHR. If duplication is required, it is recommended that the PHR be photocopied.

   The PHR should be given to the woman at her first antenatal visit after confirmation of pregnancy. She should be instructed to carry this with her to all appointments during her pregnancy, including those with other health professionals. The woman should be made aware that the PHR is the ONLY complete medical record maintained for her antenatal care, and it is vital that it is used to record the care given to her at each visit. The woman should also be aware that the PHR will become part of the hospital's medical records after the birth of her child.

2. **Gap and Grow**

   This is a customised growth chart that is generated in the hospital for individual patients and is located in the coloured file with the women's PHR. It is expected that from 26 weeks gestation that the symphysio-fundal height (SFH) measurement is plotted on the graph at every visit. A formal growth scan should be requested when appropriate (ie SFH at or below 10th centile, drop off or plateau in growth based on SFH, SFH above 95th centile). If the growth scan corresponds with the SFH findings then a review in the antenatal clinic is required.

3. **Postcodes within catchment area of SJGMPPH**

   Postcodes within SJGMPPH catchment area are:
   6054-6058, 6063, 6068-6074, 6081-6085, 6107 (Wattle Grove), 6111 (Canning Mills), 6556, 6558 (plus Wheatbelt region)

   GP's are requested to refer antenatal patients from the above catchment area to SJGMPPH.

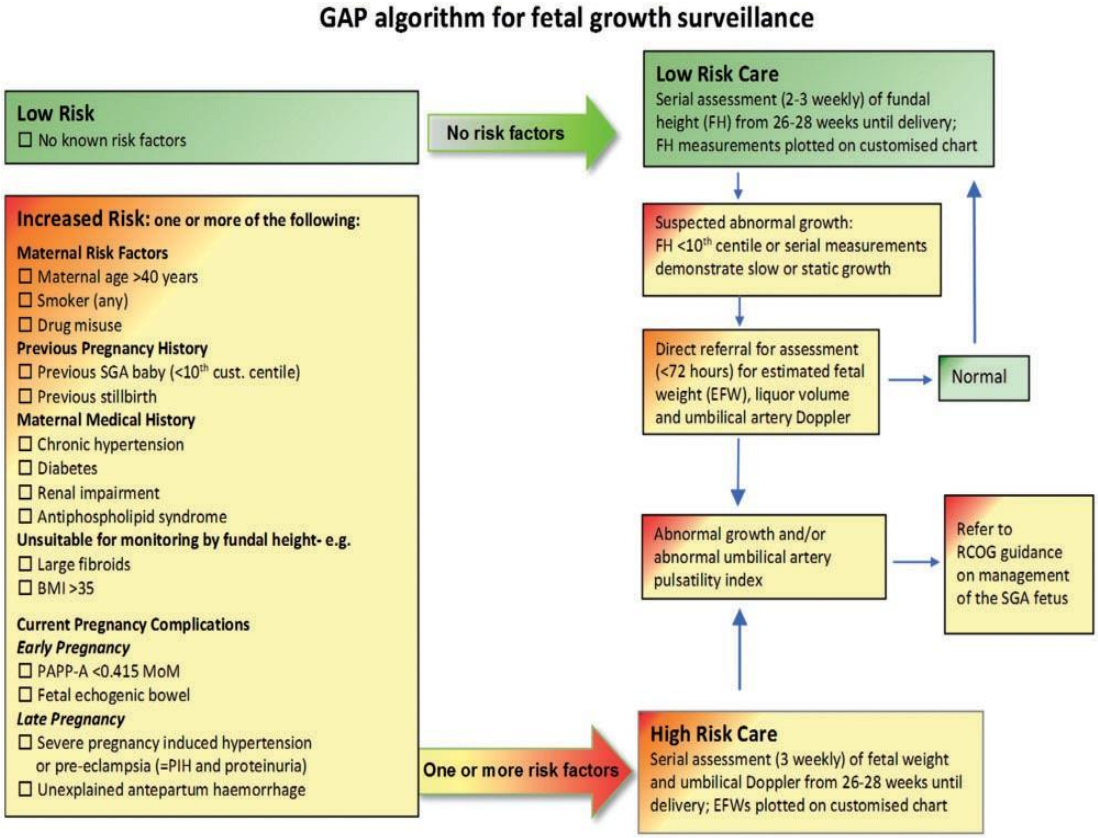
Gap and grow

Gap and Grow Charts

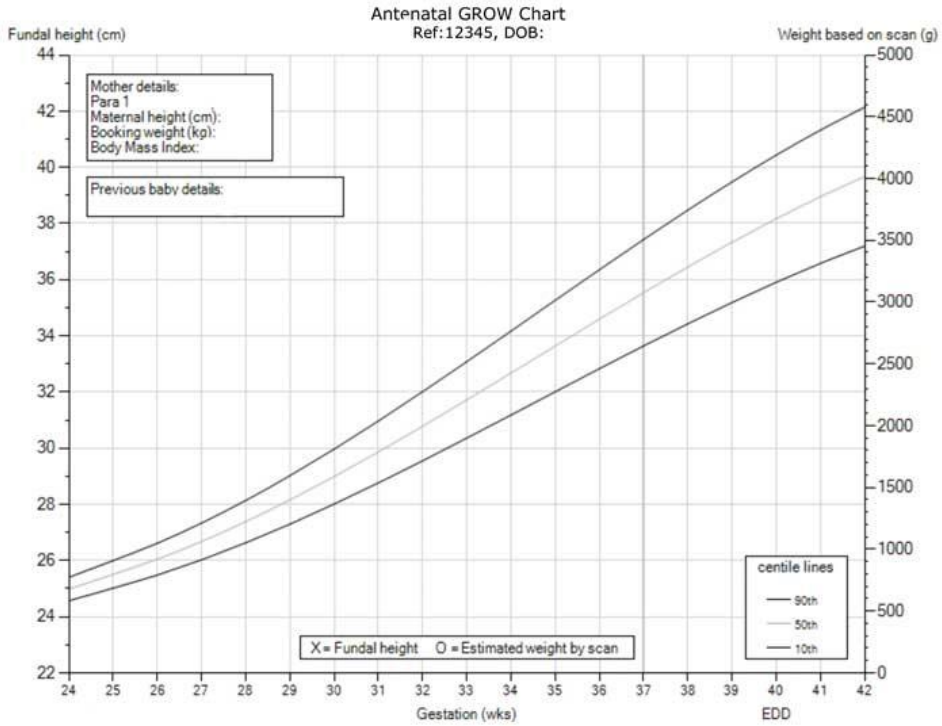
Fetal growth restriction is associated with stillbirth, neonatal death and perinatal morbidity.

The Perinatal Institute provides tools for assessment of fetal growth and birthweight by defining each pregnancy's growth potential through the Gestation Related Optimal Weight (GROW) software. It is adjusted according to height, weight, parity, sex of the baby and ethnic variations and excludes pathological factors that affects growth. This customized growth chart will be generated (printed) by SJGMPPH at the 20 week visit and plotting of the symphysio-fundal height commences from 26 weeks gestation.

Gap Protocol (Growth Assessment Tool)



Customised Chart for SFH and Scan Plotting



What Do We Do Here?

Every women has a customised growth chart generated at her 20 weeks visit and kept in her handheld record (SFH = Symphysial Fundal Height)

Low risk

- SFH is plotted at each visit on this chart as **X**.
- If SFH is static or reduces over a 2 week period OR if SFH trajectory line crosses more than 30 centiles over a 2 week period = Growth restriction suspected = referred for Growth Scan within 24hrs.
- EFW plotted on the same chart as **O**.

High risk

- BMI>/=35
- Factors present for suspecting IUGR according to risk assessment at booking.
- Refer for Obstetrician review and 3-4 weekly serial USS scan for EFW, AFI and Umb. Art. Doppler's.
- SFH **X** and EFW **O** both plotted on the Growth Chart for review.

Resources and Training Links

http://www.perinatal.org.uk/FetalGrowth/GAP/GAP.aspx

https://www.gestation.net/grow_documentation.pdf

rcog.org.uk/womens-health/investigation-and-management-small-gestational-age-fetus-green-top-31

Referrals to SJGMPPH

All antenatal referrals (except urgent- see below) are triaged by the Clinical Midwife Specialist for Ambulatory Services/ Antenatal Coordinator.

All referrals for SJGMPPH should be sent directly to the Central Referral Service (CRS):
Fax: 1300 365 056
Email: centralreferralservice@health.wa.gov.au

SJGMPPH uses the National Midwifery Guidelines for Consultation & Referral for all antenatal triaging. See: https://www.midwives.org.au/resources/national-midwifery-guidelines-consultation-and-referral-3rd-edition-issue-2-2014

Patients are categorised as Category A, B or C

A: Low risk – eligible for GP shared care
B: Intermediate – needs consultation, may be eligible for GP shared care
C: High risk – referral to secondary or tertiary care

Timeframe for first antenatal clinic appointment

Cat A: booking visit at 20 weeks gestation

Cat B: booking visit at 14-20 weeks gestation
Cat C: booking visit at 12-14 weeks gestation

Patients who are triaged as Category C that require tertiary care will be referred to King Edward Memorial Hospital (KEMH) after their booking visit.

For **urgent referrals** that require an appointment within 7 days, please contact the Clinical Midwife Specialist for Ambulatory Services/ Antenatal Coordinator to expedite the booking appointment.

Tel: (08) 9462 4555
Fax: (08) 9462 4085 (please mark as **URGENT**)

Referral Letter – Information Required

- Accurate patient contact details
- LMP or early dating scan report if uncertain dates
- EDD
- Gravidity and Parity
- Height, **Weight**, BMI, **Booking BP**
- Current medications
- Allergies
- Significant past obstetric history
- Significant past medical history
- Language spoken and need for interpreter
- State if intention for shared care and attach results of all relevant investigations

Exclusion criteria from care at SJGMPPH

- Expecting triplets or more
- Co-existing malignancy - significant
- Recognised severe respiratory syndrome
- Active TB
- Teenage pregnancy where mum <16yo
- Known major fetal abnormalities
- HIV
- Woman is an organ transplant recipient (due to medications being taken)
- VBAC where the woman has previously had 2 or more CS
- Planned Vaginal Breech Births either as singleton
- MCMA twins
- MCDA twins (as unable to provide MCA Doppler monitoring)
- Pre-existing Type 1 and 2 diabetes mellitus (All GDM patients are cared for in SJGMPPH including GDM on insulin)
- Autoimmune disorder not well controlled
- New York Heart Classification > 1
- Uncorrected heart defect

BMI > 40 (can have antenatal care at SJGMPPH, but will birth at KEMH)

The above patients can be referred directly to KEMH by their GP.

Obstetric shared care visit schedule

This is the recommended schedule of care for low risk primiparous and multiparous women deemed suitable for OSC. Additional visits can be scheduled for the 'at risk' woman.

SCHEDULED VISIT	PROVIDER	COMMENTS
First visit may be with GP, preferably before 10 weeks	**GP**	❑Calculate EDD by dates and cycle. If uncertain, order dating ultrasound ❑Commence Pregnancy Handheld Record Order following bloods and perform urine dipstick (copy to the hospital) ❑Complete blood picture ❑Syphilis serology ❑Blood group and antibody ❑Hepatitis B ❑Rubella titre ❑Hepatitis C ❑Ferritin ❑HIV ❑MSSU ❑Vitamin D (for at risk women) ❑Oral Glucose Tolerance Test (OGTT) (for high risk) ❑PCR test for chlamydia and gonorrhoea (endocervical swab, self- obtained lower vaginal swab or first void urine) ❑Screen for perinatal mental health as per the National Perinatal Mental Health Initiative (EDPS) ❑ Recommend and offer prophylactic influenza vaccination ❑Check for use of Folate supplement ❑Commence Iodine supplement 150mcg/day ❑Discuss breastfeeding and antenatal education ❑Offer first trimester Down syndrome screening for women 10 – 13+6 weeks ❑Discuss options of CVS or amniocentesis to women at increased risk If the patient has vaginal bleeding a direct referral to EPAS should be made – please see page 16 for further details. If the patients has abdominal pain and an intrauterine pregnancy has not been confirmed on ultrasound scan, a referral to EPAS should be made – please see page 16 for further details. Patients requiring urgent review will need to be referred to SJGMPPH Emergency Department.
14 weeks	**GP**	❑Routine assessment ❑Ensure patient has the results of their first trimester screening test if performed – check and document in PHR ❑Counsel and offer maternal serum screening at 15 to 17 weeks if first trimester screening not done. ❑Refer to booking hospital. If you are ordering maternal serum screening or 19 week ultrasound indicate this on the referral letter ❑Discuss parent education classes. ❑Discuss maternal blood screening, morphology & ultrasound results & refer as appropriate

		❑Offer second trimester Down syndrome and Neural Tube Defect screening if woman 14 – 20+6 weeks if indicated ❑Book morphology ultrasound for 18-20 wks
20 weeks	**SJGMPPH**	❑Discuss prophylactic Anti-D with Rh (-) negative women (earlier in case of PV bleed) ❑Antenatal visit at SJGMPPH – assess suitability for shared care, rebook for 36 weeks ❑Edinburgh Postnatal Depression Scale (EPDS) ❑Audit C (alcohol assessment) & smoking assessment ❑Discuss breastfeeding, when to go to hospital, parent education classes, allied health services ❑Recommend and offer Whooping Cough (Pertussis) vaccination at 20-32 weeks
24 weeks	**GP**	❑Routine assessment. ❑Order 28 week investigations: full blood count + Ferritin, blood group and antibody screen if Rhesus negative, oral GTT (unless previous positive result)
28 weeks	**GP**	Check and send copy to the hospital ❑Complete blood picture (CBP) Blood group antibodies ❑Oral glucose tolerance test (OGTT) Vitamin D (if previously deficient) ❑Repeat syphilis serology if at increased risk of STIs, e.g. change of sexual partner after booking visit, STI detected at booking visit ❑Administer prophylactic Anti-D to Rh negative women as per protocol for Rh negative women ❑Recommend and offer whooping cough (pertussis) and influenza vaccination if not given in the first or second trimesters
30 weeks	**GP**	❑Routine assessment for primigravida women or those with previous complications
32 weeks	**GP**	❑Routine assessment ❑Discuss breastfeeding
34 weeks	**GP**	❑Routine Assessment ❑Administer prophylactic Anti-D as per protocol for Rh negative women☐
36 weeks onwards	**SJGMPPH**	❑Follow-up in SJG Midland ❑Repeat Complete blood picture, Ferritin ❑Undertake Group B strep (GBS) screening ❑Repeat chlamydia and gonorrhoea PCR test, and syphilis and HIV serology if at increased risk of STIs, e.g. change of sexual partner after booking visit, STI detected at booking visit ❑Recommend and offer whooping cough (pertussis) and influenza vaccination if not given during this pregnancy

The following should be covered at the first antenatal visit

- Longer appointment
- Full medical and obstetric history
- Nutrition and activity
- Smoking, alcohol and substance misuse
- Support networks and psychosocial needs

Recommended weight gain in pregnancy

Pre-pregnancy BMI	Recommended weight gain (kg)
<18.5	12.5-18
18.5-24.9	11.5-16
25-29.9	7-11.5
>30	5-9

Advise women that sticking to recommended weight gain reduces risks of macrosomia, caesarean section and hypertensive disease.

BMI

- Low BMI – associated with risk of SGA and preterm delivery
- Raised BMI associated with :
    - Miscarriage
    - Congenital anomalies
    - GDM
    - Hypertensive disease
    - Preterm and post dates labour
    - SGA and LGA
    - VTE
    - More difficult deliveries

Alcohol & Smoking

Alcohol and smoking should be avoided in pregnancy.

- NRT is safer than smoking – intermittent therapy better than patches
- Cutting down is better than continuing
    - 50% reduction in smoking can lead to 92g increase in birth weight

Useful resources:
https://www.health.gov.au/resources/apps-and-tools/quit-for-you-quit-for-two-app

Exercise

- Aim for 150-300 minutes a week
- Women aged 20-29 should aim for a heart rate 135-150
- Strengthening and aerobic activity
- Avoid scuba diving, contact sports, racquet sports

Low dose aspirin (LDA)

- 3% of pregnancies affected by pre-eclampsia (PET)
- Aspirin from first trimester reduces the risk for high risk women by 10-20%
- Maximum benefit must commence before 16 weeks
- Women at high risk of PET, aspirin also reduces the risk of IUGR by 10% and preterm delivery

Indication for low dose aspirin (100mg/day)

- Major risk factors :
    - History of PET
    - Chronic hypertension
    - Pre-existing diabetes
    - Auto immune conditions – anti-phospholipid or SLE
    - Pre-existing kidney disease
    - Scleroderma
    - Assisted conception with egg donation

All women with major medical risk factors for pre-eclampsia require early specialist consultation.

- Moderate risk factors (2 or more)
    - Nulliparity
    - BMI >30
    - Multiple pregnancy
    - Pregnancy interval > 10 years
    - Family history of PET (mother or sister)
    - Age 35 or older

Bleeding in early pregnancy

Approximately 20% of women who have ongoing pregnancies will experience vaginal bleeding before 20 weeks.

Women taking LDA who experience bleeding should be advised to contact their midwife or maternity care provider.

LDA can be continued if spotting or light vaginal bleeding occurs in early pregnancy, however specialist advice is recommended for all women with moderate to heavy bleeding (bleeding like a period or with blood clots). If moderate to heavy bleeding occurs discontinue aspirin and arrange specialist consultation.

Cervical length

- Commence progesterone pessaries from 16 weeks in women with a history of spontaneous preterm birth (20-34 weeks) 200mg nocte
- Progesterone if cervix <25mm on TV scanning at 16-24 weeks, and refer to hospital
- Continue until 36 weeks
- Cervical cerclage are indicated in some women – refer for specialist consultant appointment

Preconception counselling, folate and iodine

Identify women who are thinking about pregnancy.

- For those at high risk of fetal abnormality, referral for genetic counselling may be appropriate. Phone Genetic Services of W.A. (08) 6458 1683.
- Women with Type 1 or Type 2 Diabetes, should be referred to KEMH for counselling. Phone (08) 6458 2163.
- Women with a severe mental illness such as schizophrenia, bipolar affective disorder or puerperal psychosis, can be referred to the CAMI (Childbirth and Mental Illness) Service for pre-conception counselling. Phone (08) 6458 1521.

Folate

Folate supplementation from 1 month pre-conception and during the first trimester (up to 12 weeks), is associated with a 50-70% reduction in the rate of neural tube defects (NTD).

Folate	Indication
0.4mg/day	Most women
5mg/day	Women with a multiple pregnancy Women at high risk of a neural tube defect Personal history of open NTD Previous affected child or family history of NTD Anticonvulsant medication Obesity Pre-pregnancy diabetes Malabsorptive conditions

Iodine

The National Health and Medical Research Council (NHMRC) recommends that all women who are considering pregnancy, pregnant or breastfeeding, take an iodine supplement of 150mcg/day. Women with pre-existing thyroid conditions should seek advice from their doctor prior to taking a supplement.

Pregnancy is a time of increased iodine requirements for production of thyroid hormones, which are important in the growth and development of the nervous system. There has been some re-emergence of iodine deficiency in Australia with the reduction in consumption of iodine fortified food and salt.

Genetic carrier screening

Please note the current RANZCOG statement on Genetic Carrier Screening in particular for Cystic Fibrosis, Spinal Muscular Atrophy and Fragile X Syndrome

Summary of Recommendations

Recommendation 1	**Grade**
All couples intending to have children, or who are pregnant, should have a family history taken with a view to identifying relatives with heritable genetic disorders, as well as the presence of consanguinity. Those identified with a family history of a specific inherited disorder should be offered referral to a genetic counselling service for information about carrier screening and prenatal diagnosis/ pre-implantation genetic diagnosis for the condition.	Consensus-based recommendation
Recommendation 2	**Grade**
All pregnant women should be offered basic screening for thalassaemia carrier status by a full blood examination at initial presentation. Screening with specific assays for haemoglobinopathies (such as HPLC or EPG and haemoglobinopathy DNA testing) should be considered in high probability ethnic or population groups.	Consensus-based recommendation
Recommendation 3	**Grade**
Information on carrier screening for other genetic conditions should be offered to all women planning a pregnancy or in the first trimester of pregnancy. Options for carrier screening include screening with a panel for a limited selection of the most frequent conditions (e.g. cystic fibrosis, spinal muscular atrophy and fragile X syndrome) or screening with an expanded panel that contains many disorders (up to hundreds).	Consensus-based recommendation
Recommendation 4	**Grade**
For individuals of Eastern European (Ashkenazi) Jewish descent, additional screening for Tay Sachs disease, Niemann Pick disease type A, Fanconi anaemia group C, familial dysautonomia, Bloom syndrome, Canavan disease and mucolipidosis type IV should be offered.	Consensus-based recommendation
Good Practice Point	**Grade**
Screening can be sequential or couple screening. In sequential screening, one member of the couple is screened (usually the woman since the woman's carrier status for X-linked conditions is relevant) and the second member of the couple is only screened if the first member is a carrier of one or more autosomal recessive conditions. In couple screening both members of the couple are screened at the same time.	Consensus-based recommendation
Recommendation 5	**Grade**
Women wanting more information about carrier screening should be given the opportunity to have a more detailed discussion about carrier screening with an informed clinician. Informed consent for screening should be obtained and this should include any out of pocket expenses that are required for this testing.	Consensus-based recommendation
Recommendation 6	**Grade**
Laboratories should only report carrier status for class 4 and 5	Consensus-

mutations. Variants of unknown significance should not be reported.	based recommendation
Recommendation 7	**Grade**
All couples with a high chance of having a child with one of the conditions screened for should be referred for genetic counselling to be informed of available reproductive options and to assist with prenatal testing if the woman in the couple found to have a high chance is pregnant when the result becomes known.	Consensus-based recommendation
Good Practice Point	**Grade**
It may be appropriate to refer couples with a high probability of having a child with a genetic condition to see a clinician with the relevant clinical expertise. The couple should also be offered the opportunity to access community resources and/or a patient support group if available.	Consensus-based recommendation

Documentation and routine assessments

At each visit ensure routine checks are recorded in the hand-held Pregnancy Health Record. Writing should be clear, concise and legible.

A routine assessment consists of:
- Blood pressure (<140/90)
- Weight (please see the table below for recommended weight gain based on BMI)
- Urinalysis (< + protein)
- Fundus should be measured from 26 weeks
- Fetal movements from 24 weeks
- Fetal heart rate from 20 weeks (earlier if Doppler available)

Non-Medicare eligible patients

Cannot be booked at SJGMPPH but can be referred to KEMH.

Early pregnancy assessment service (EPAS)

SJG has a specialised service to review patients with problems in the first trimester of pregnancy including pain and bleeding which may represent suspected miscarriage or ectopic pregnancy. Patients need to be referred to the service and are given an appointment to attend.

Please note ultrasound scans both trans-abdominal and trans-vaginal are performed in EPAS. A prior scan is not required.

Time: 1.00pm to 4.30pm Monday (excluding public holidays)
Time: 1.00pm to 4.30pm Thursday (excluding public holidays)
Please fax referrals to (08) 9462 4085

Who may be referred?

Women in the first trimester of pregnancy who have had a **positive pregnancy test** and one or more of the following:

- abdominal/pelvic pain
- vaginal bleeding
- previous ectopic
- previous tubal surgery
- two or more previous miscarriages
- IUCD in-situ

Please advise patients to fast from 7.00am (they may have water only) in case they need to go to theatre that day.

If the patient is haemodynamically unstable, has severe pain or heavy vaginal bleeding please refer the patient to the Emergency Department.

Anti-D

It is recommended that anti-D is given to all Rhesus negative and antibody negative women if there is risk of fetal-maternal transfusion of blood, such as a miscarriage. If women do not require a medical review at SJGMPPH it is usually more convenient for them to be given anti-D by their GP.
For further information on how to obtain anti-D, see page 36.

Guidelines for problems requiring immediate antenatal assessment

Listed below are problems which should be discussed with the patient's booking hospital to organise patient review. This is not an exhaustive list.

For women booked at SJGMPPH, please contact MFAU for advice. Phone: (08) 9462 4558 MFAU Midwife.

Pregnancy complications

- Antepartum haemorrhage
- Hypertension (>140/90)
- Threatened preterm labour
- Premature rupture of membranes
- Abnormal fetal anatomy ultrasound scan – refer directly to KEMH if appropriate
- Reduction in fetal movements
- High presenting part and unstable lie in late pregnancy
- Polyhydramnios
- Intrauterine growth restriction (IUGR)
- Abnormal fetal presentation after 36 weeks e.g. breech
- Rhesus antibodies
- Proteinuria greater than one plus (>1+)

Immunisation in pregnancy

- Live attenuated vaccines are not recommended during pregnancy (e.g. MMR, varicella, rotavirus, BCG, oral typhoid vaccine). If given inadvertently, specialist consultation is advised.
- Inactivated influenza vaccine is safe to give during pregnancy and is recommended as pregnant women are at increased risk of influenza related infectious complications.
- Pertussis vaccine is recommended from 20-32 weeks.
- For routine advice on pregnancy, travel and vaccinations, please contact a specialised travel medicine clinic.

Investigations

Investigations may be ordered privately or at SJGMPPH. Photocopies of all tests should be sent to SJGMPPH - Fax (08) 9462 4085. Please write 'copy to SJGMPPH Antenatal Clinic' to assist clerks.

*Results received are electronically scanned into Infomedix (electronic system in SJGMPPH), however it is the responsibility of the ordering clinician to action on any abnormal results.

1. Initial routine investigations required for each pregnancy at first antenatal visit (obtain informed consent for each test):
- Full blood picture
- Blood group and atypical antibody screen
- Syphilis serology
- Rubella titre
- Hepatitis B surface antigen
- Hepatitis C antibodies
- HIV antibodies
- Blood sugar level
- If random BSL ≥ 7.8 needs Oral Glucose Tolerance Test (OGTT)
- If fasting BSL ≥ 5.1 indicates Gestational Diabetes Mellitus.
- Midstream urine
- Chlamydia/Gonorrhoea screening

2. All women should be counselled and offered fetal anomaly screening.

3. Investigations to be considered depending on the woman's clinical circumstances:
- Early dating ultrasound if dates uncertain
- Pap smear (if not done within two years)
- Early OGTT if high risk of gestational diabetes
- Iron studies if at risk of anaemia.
- Haemoglobinopathy screening if in high-risk group e.g. high risk ethnic background, FHx of haemoglobinopathy
- Twin pregnancy: Order 12 week ultrasound to determine chorionicity.
- If monochorionic diamniotic, please send referral to KEMH.
- Vitamin D:
    - Vitamin D screening is recommended if women are at risk of Vitamin D deficiency (dark skinned women, women with lack of sunlight exposure

including women with religious covering, obese women and women with fat malabsorption)
    - Vitamin D = 50nmol/L is considered normal
    - If Vitamin D deficiency is identified (mild if Vitamin D 30-49 nmol/L, severe if <30 nmol/L), supplementation is recommended until cessation of breastfeeding.

4. 19 weeks gestation:
- Fetal anatomy ultrasound (GP to organise).

5. 28 Weeks (arrange prior to 28 week visit e.g. at 24 week visit)
- Full blood picture +/- iron studies (if at risk of anaemia)
- Blood group and atypical antibody screen (for rhesus negative women)
- Oral Glucose Tolerance Test (OGTT) for all women – unless early GTT was abnormal
- Repeat syphilis serology if at increased risk of STIs, e.g. change of sexual partner after booking visit, STI detected at booking visit
- Recommend and offer whooping cough (pertussis) and influenza vaccination if not given during this pregnancy.

6. 36 weeks (SJGMPPH will organise)
- Full blood picture and Ferritin
- Blood group and atypical antibody screen if rhesus negative (only if the woman missed her 28 week anti-D)
- Low vaginal swab and rectal/perianal swab for group B streptococcus screening. Patients with a positive result will receive intravenous antibiotics during labour.
- Repeat chlamydia and gonorrhoea PCR test, and syphilis and HIV serology if at increased risk of STIs, e.g. change of sexual partner after booking visit, STI detected at booking visit
- Recommend and offer whooping cough (pertussis) and influenza vaccination if not given during this pregnancy.

Group B streptococcus (GBS) infection

All patients with the following risk factors will need to receive intravenous antibiotics during labour to reduce the risk of infant infection:
- previously infected infant with Group B streptococcus
- Group B streptococcus identified in the urine in pregnancy (GBS urinary tract infection or bacteriuria), regardless of GBS swabs at 36 weeks
- positive vaginal/rectal/perianal swabs at 36 weeks.

Please send in all urine and swab results to SJGMPPH.

Chlamydia and Gonorrhoea screening

- For all women at booking first void urine PCR
- For at risk women:
    - between 28 & 36 weeks gestation, repeat HIV and Syphilis serology
    - 36 weeks gestation repeat chlamydia and gonorrhoea screening

Hepatitis B – chronic carriers

- Chronic carriers of Hepatitis B have core Antigen positive and e Antibody negative.
- Check viral load and refer to Hepatology Service at Royal Perth Hospital advising that the woman is pregnant.
- Antiviral therapy in pregnancy may reduce vertical transmission to the fetus.
- Lifelong antiviral therapy may reduce cirrhosis and hepatocellular carcinoma.

Vitamin supplementation in pregnancy

In addition to folate and iodine (see page 14), some women may require other vitamins during pregnancy and breastfeeding.

Vitamin D

Maternal Vitamin D deficiency is associated with hypocalcaemia in the newborn, which can lead to convulsions, muscle cramps or weakness. Severe deficiency of vitamin D can disrupt skeletal mineralisation and lead to rickets and defective tooth enamel. It may also be associated with other long term health problems for the infant. The prevalence of Vitamin D deficiency in Australian neonates is up to 40-57%, with severe deficiency in 11-19% (rates vary according to season and location).

General population screening of pregnant women is not currently recommended. Instead, a risk based screening approach is adopted. Those considered at high risk of Vitamin D deficiency should have levels performed with initial antenatal screening bloods and treatment initiated as necessary.

High Risk groups include:
- Dark Skinned women
- Lack of sunlight exposure: religious covering (veiled women), chronic illness or hospitalisation.
- Obesity (pre-pregnancy BMI ≥ 40)
- Medical conditions: Fat malabsorptive conditions

	Vitamin D Level (nmol/L)	**Treatment**
Optimal	>78	-
Sufficient/normal	>50	Consider 400 IU/day as part of a pregnancy multivitamin
Mild Deficiency or insufficiency	30-49	1000 IU/day plus calcium (RDI) – for 6 weeks (RDI = recommended daily intake)
Severe Deficiency	<30	2000 IU/day plus calcium (RDI) – for 6 weeks

After 6 weeks of treatment, a maintenance dose of 1000 IU/day plus calcium (RDI) is recommended until cessation of lactation. The Vitamin D level is not required to be rechecked (babies born to Vitamin D deficient women will require Vitamin D supplementation).

Vitamin B12

Consideration may be given to supplement vegetarians and vegans with Vitamin B12, with a recommended daily intake of 2.6mcg/day.

Iron

Routine iron supplementation is not recommended during pregnancy due to the associated side effects which may include nausea and constipation.
There is a greater requirement for iron during pregnancy and the recommended daily intake of iron during pregnancy is 27mg/day. Screening with a haemoglobin at initial antenatal bloods and at 28 weeks is routine. If anaemia is detected then further investigation and treatment is necessary.
Iron deficiency is common during pregnancy and there is additional risk if women are vegetarians or have a multiple pregnancy. Preparations with high elemental iron content (>100mg/unit) are recommended to reverse anaemia.

Iron absorption is impaired if women take their iron supplement at the same time as supplements containing calcium. Vitamin D/Calcium supplements should therefore be taken at a different time to iron supplements.

Brands of iron

For further information, please go to the following link:
http://resources.transfusion.com.au/cdm/singleitem/collection/p16691coll1/id/866/rec/1

Calcium

The recommended daily intake for Calcium is 1300mg (14-18years old) and 1000mg (19-50 years old) during pregnancy and lactation. If oral intake of calcium rich food (dairy, soy products) is inadequate, than oral supplementation with 1000mcg Calcium is recommended. There is also evidence of a benefit of calcium supplementation in reducing the risk of complications of hypertensive disease and pre-eclampsia in those at high risk, particularly in people with low calcium intake in their diet. The World Health Organisation (WHO) recommends 1.5-2g of Calcium supplementation in pregnant women with low dietary calcium intake.

Pregnancy care for Aboriginal and Torres Strait Islander women

Moort Boodjari Mia

Moort Boodjari Mia delivers a hospital based community pregnancy service for Aboriginal and Torres Strait Islander families living in the Midland area and women carrying Aboriginal and Torres Strait Islander babies.

The Moort Boodjari Mia team takes a holistic approach to care. We can also support families with other issues they may be facing, so they can focus on their pregnancy journey.

Our team

Moort Boodjari Mia includes Aboriginal workers and a dedicated team will work closely with women throughout their pregnancy journey. This team includes a midwife, Aboriginal health liaison officer and Aboriginal liaison grandmother who develop care plans that meet the women's health and cultural needs.

What we offer

We provide a free, confidential service. This includes referrals to other health and wellbeing agencies, assistance with completing Centrelink forms or support at Department of Child Protection and Family Support meetings.

Our team is experienced in working with Aboriginal families expecting a baby and can support families to develop the knowledge and skills needed to stay healthy during pregnancy and for the new baby.

We provide

- A culturally safe, secure and confidential pregnancy service
- Continuity of care by experienced midwives supported by a team of Aboriginal midwives and grandmothers
- Personalised clinical care during pregnancy and up to two weeks after your baby is born
- Home visits and transport to some appointments
- Support at hospital and other appointments as needed
- Referrals to other services
- Free dental antenatally + 6 weeks after
- Home visiting in the community
- Over the phone support during business hours
- Flexible appointment times and short wait times at our clinic
- Support and assistance at hospital appointments including some transport
- Postnatal care for 2 weeks

Our clients

To register for Moort Boodjari Mia's services, patients much:

- Be pregnant
- Live in the Midland area
- Identify as being Aboriginal or Torres Strait Island, or the father of the unborn child is Aboriginal or Torres Strait Islander.

Referral is very simple, for more information please call: 0406 880 142

Problems in pregnancy

Obesity in pregnancy (BMI = 30 and above)

50% of pregnant women are now overweight or obese. Obesity in pregnancy increases morbidity and mortality for both mother and baby.

The BMI limit for delivery at SJGMPPH is 40.

Complications of obesity in pregnancy

Maternal
- Early miscarriage
- Stillbirth – 2-3 fold increase
- Hypertension/Pre-Eclampsia – 50% increase
- Diabetes- 3 times more common
- Nutritional deficiencies
- Pre-term labour/Delivery
- Thromboembolism

Fetal
- Congenital anomalies – cardiac/neural tube defects
- Macrosomia
- Early neonatal death
- Increased obesity and metabolic disorders in childhood.

Pre-pregnancy management

- Advice on weight reduction including exercise and dietician referral
- Commence folic acid 5mg/day to prevent neural tube defects.

Bariatric surgery

- Previous bariatric surgery increases the risk of nutritional deficiencies during pregnancy
- Maternal complications are decreased by bariatric surgery though the risk of intrauterine growth restriction is increased.
- OGTT or alternative in obese women.

Pregnancy management

First trimester
- Influenza vaccination is especially recommended
- Discussion regarding healthy weight gain i.e. total weight gain of 5-9kg
- Screened for and correct nutritional deficiencies (anaemia, Vit C/Vit D)

Second trimester
- Early OGTT should be organised
- Anatomy scan: request at 18-22 weeks, include BMI on request form

Third trimester
- Increased frequency of visits is required to monitor for complications such as pre-eclampsia and intrauterine growth restriction
- OGTT should be repeated at 28 weeks if early OGTT normal

- Referrals: Physician referral if additional risk factors or medical history
- Anaemia and nutritional deficiencies are screened for again at 28 weeks
- Consider thromboprophylaxis if two or more risk factors are present
- Ultrasounds:
    - Minimum of two growth and wellbeing scans should be performed

Delivery planning

- Home birth is not recommended
- Previous caesarean section – the likelihood of successful VBAC is very low in obese women and BMI >40 have increased risk of scar dehiscence

Intrapartum

- All obese women require IV access +/- increased monitoring in labour with fetal scalp electrode for fetus/intrauterine pressure catheter for contractions
- Early epidural is recommended if patient requests

Post-partum

- Venous thromboembolism prophylaxis

Contraception

- Oral contraceptives are less effective in women >90kg

Gestational diabetes mellitus (GDM) screening

Definition

GDM is defined as glucose intolerance of variable severity with onset or first recognition during pregnancy.

Screening principles

The Australian Diabetes in Pregnancy Society (ADIPS) recommends universal screening for diabetes in pregnancy.

KEMH recommends inclusion of plasma glucose with booking bloods and results acted on as follows:

Non-fasting plasma glucose	≥ 7.8mmol/L proceed to OGTT
Fasting plasma glucose	≥ 5.1mmol/L is diagnostic of GDM

The routine screening tool for GDM is a 75g Oral Glucose Tolerance Test (OGTT) which is recommended at 24-28 weeks for low risk women. If women are identified as being at increased risk, OGTT should be performed at the first opportunity after conception. If the initial OGTT is negative, these women should be monitored closely and have a follow-up OGTT @28/40.

Any woman may be tested for diabetes at any time during pregnancy if there is clinical suspicion based on symptoms or other factors such as heavy glycosuria, fetal macrosomia or polyhydramnios.

Diagnostic criteria

The current ADIPS guidelines (Nov 2014) have been produced with the assistance of the Royal Australasian College of Obstetrics and Gynaecology (RANZCOG) and the Royal College of Pathologists of Australia (RCPA).

A diagnosis of GDM is made if one or more of the following glucose levels are elevated after OGTT:

Fasting plasma glucose	≥ 5.1mmol/L
1 hour plasma glucose	≥ 10.0mmol/L
2 hour plasma glucose	≥ 8.5mmol/L

If OGTT is logistically difficult, the following may be considered to investigate and diagnose GDM:

Non-fasting plasma glucose	≥ 7.8mmol/L proceed to OGTT
Fasting plasma glucose	≥ 5.1mmol/L is diagnostic of GDM
HbA1C	> 48mmol (6.5%)

Recommendations for early testing for GDM for women with risk factors

Women, not known to have pre-existing glucose abnormalities, but with risk factors for GDM, should be tested early in pregnancy according to a tiered approach.

Moderate risk factors for GDM

1. Ethnicity: Asian, Indian subcontinent, Aboriginal, Torres Strait Islander, Pacific Islander, Maori, Middle Eastern, non-white African
2. BMI 25 – 35

Women with **either** ethnicity or a body mass index (BMI) of 25-35 as their only risk factor should be considered as "moderate risk" and should initially be screened with either random or fasting plasma glucose in early pregnancy. If this is normal then follow with an OGTT at the usual time of 24-28 weeks gestation, unless clinically indicated earlier.

High risk factors for GDM

1. Previous GDM or elevated blood glucose level
2. Maternal age ≥ 40 years
3. BMI > 35
4. Hypertension prior to 20 weeks gestation in current pregnancy
5. Polycystic ovarian syndrome
6. Medications: corticosteroids, antipsychotics
7. Family history DM (1st degree relative with diabetes or a sister with GDM)
8. Previous macrosomic baby (birth weight > 4500 g or > 90th centile)
9. Previous unexplained stillbirth
   OR presence of both moderate risk factors: ethnicity and BMI 25-35

Women at "high risk" of GDM (one high risk factor or two moderate risk factors) should undergo an OGTT at the first opportunity after conception. If this is normal then follow with an OGTT at the usual time of 24-28 weeks gestation, unless clinically indicated earlier.

	Pre 24 weeks gestation*	24-28 weeks gestation
Low risk	Plasma glucose with booking bloods	OGTT
Moderate risk Ethnicity (as above) BMI 25-35	If 1 risk factor: Plasma glucose with booking bloods If 2 risk factors: screen as if high risk*	OGTT
High risk • Previous GDM or high BSL • Maternal age ≥ 40 • BMI > 35 • Hypertension prior to 20 weeks • Polycystic ovarian syndrome • Medications: corticosteroids, antipsychotics • Family history of DM • Previous macrosomic baby • History of unexplained stillbirth • *Ethnicity(as above) plus BMI 25-35	OGTT at the first opportunity after conception.	OGTT

After diagnosis

If a woman is diagnosed with GDM, she will be referred to the diabetes educators/dietitian for education and to learn how to monitor her blood glucose levels at home.

Recommended target capillary blood glucose levels for women diagnosed with GDM are:

Fasting capillary blood glucose (BG)	≤ 5.0 mmol/l
1 hour Blood glucose after commencing meal	≤ 7.4mmol/l
2 hour Blood glucose after commencing meal	≤ 6.7mmol/

Management in the post-partum period

1. Women diagnosed with GDM should have a 75g OGTT, preferably at 6-12 weeks post-partum, with classification according to the WHO criteria for Diabetes Mellitus.
2. Women diagnosed with GDM should have regular ongoing surveillance as they have an approximate 30% risk of a recurrence of their GDM in a subsequent pregnancy and up to 50% risk of developing type 2 Diabetes Mellitus within 10-20 years.

Preterm birth prevention

Definition and incidence

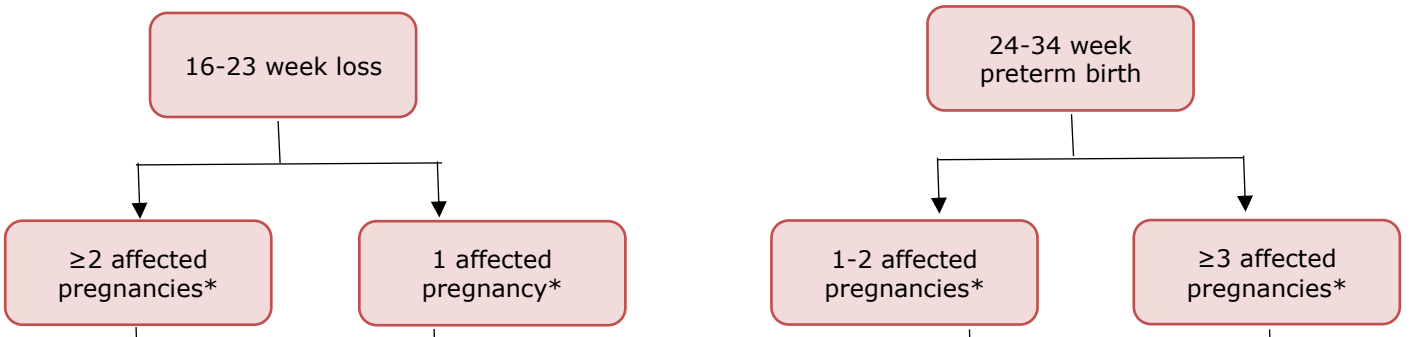
Preterm birth is defined as birth before 37 and after 20 completed weeks of gestation.
In Western Australia, the rate of preterm birth is 8-9%, resulting in 2800 preterm infants each year from the state's total birth number of 34,000.
In Aboriginal Western Australians, the rate is approximately double.

Management of High Risk Women

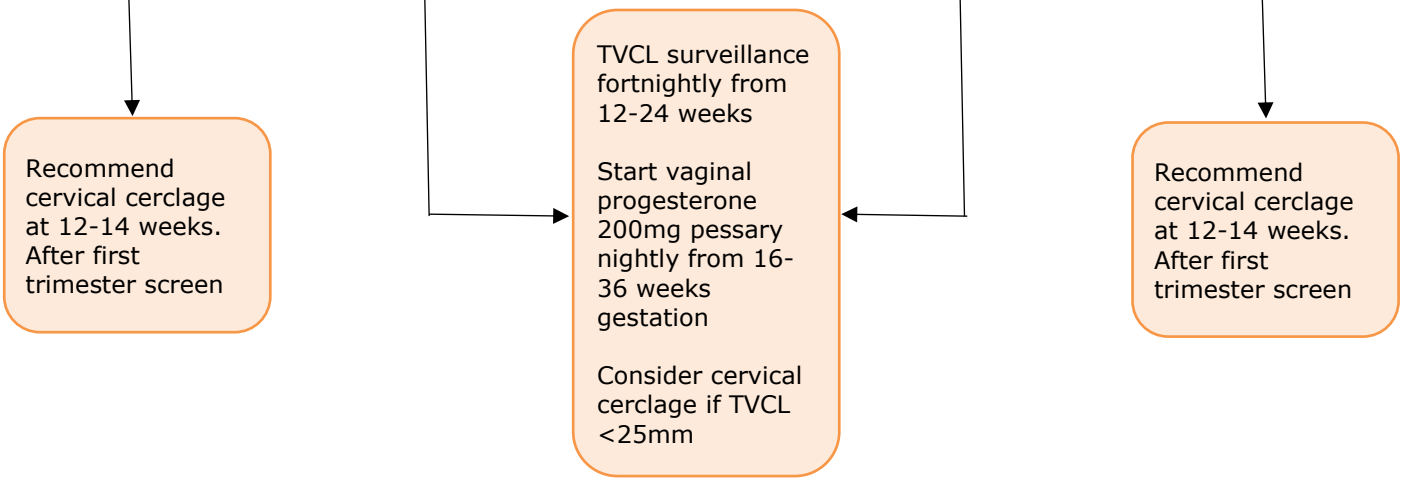
HIGH RISK

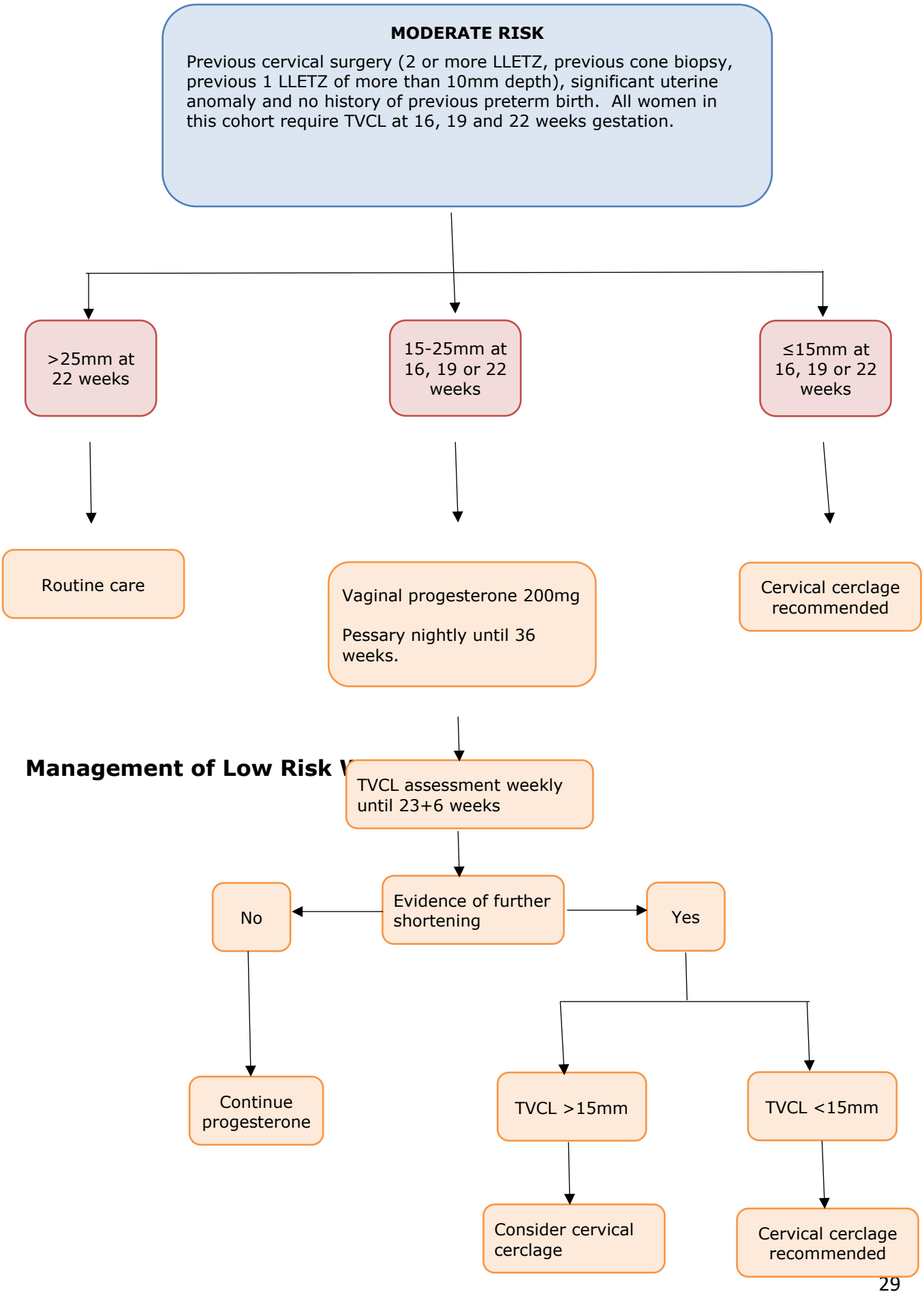
- Previous preterm birth at <34 weeks gestation and/or previous pregnancy loss at 16-24 weeks gestation

*Affected pregnancy = 16-23 week loss not associated with placental dysfunction or fetal anomaly
OR
24-34 spontaneous preterm birth

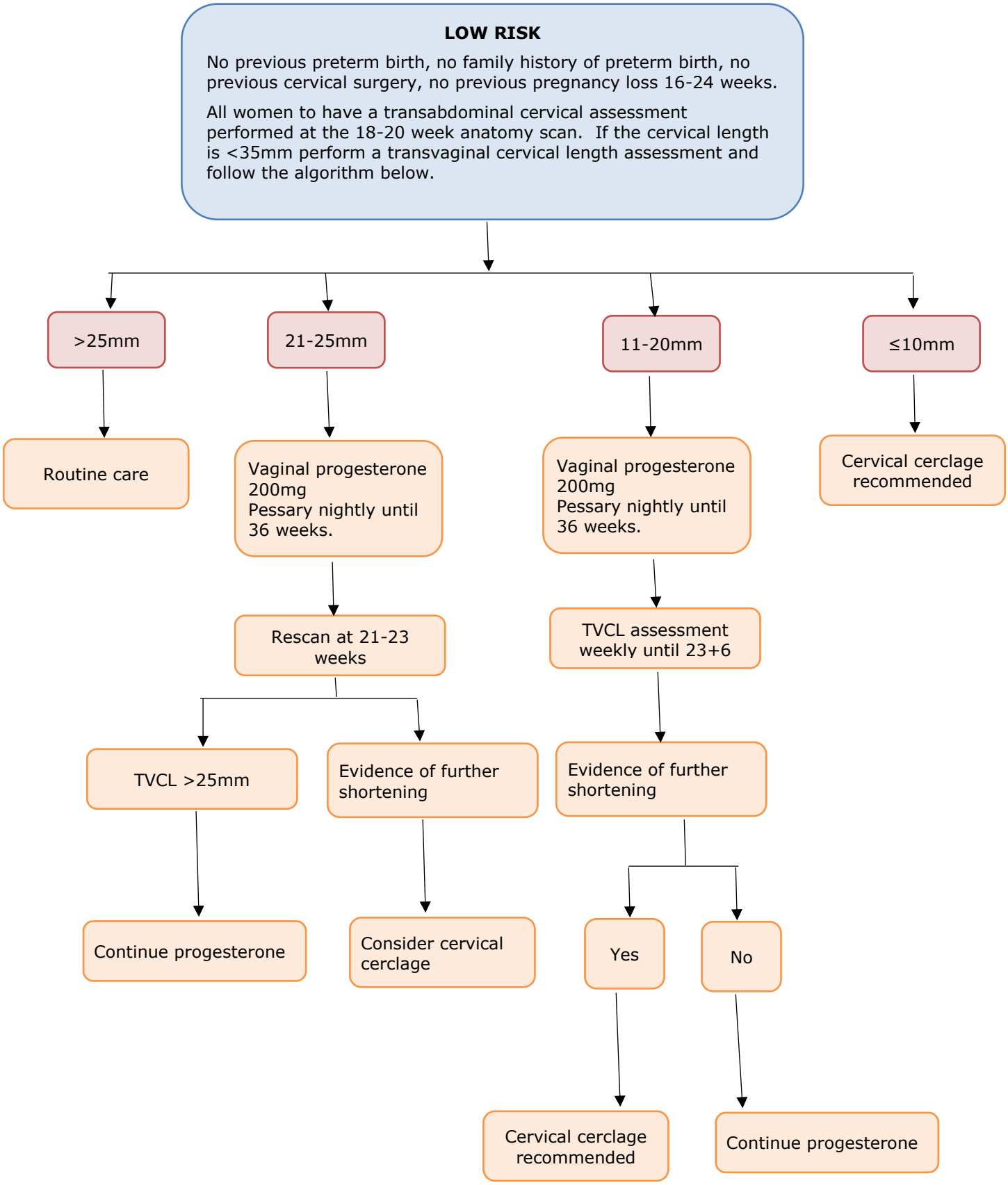


Management of Moderate Risk Women





Management of Low Risk W



Fetal anomaly screening

All women, regardless of age, should be counselled and offered the option of fetal anomaly screening. First trimester screening is the recommended screening test for fetal chromosomal abnormalities (mainly trisomy 21, 13 and 18).

Women with high risk screening tests for chromosomal abnormalities should be referred to SJGMPPH. Please contact Antenatal Coordinator to organise an urgent appointment. Ph (08) 9462 4555, Fax (08) 9462 4085.

Screening for Down syndrome

First trimester screening (FTS)

- The first part of this test is a blood test to determine the levels of the hormones free BHCG and PAPP-A. This is ideally done at 10 weeks (but can be done anytime from 9 weeks to 13 weeks 6 days). The blood test was previously routinely done on the day of the ultrasound, however the Fetal Medicine Foundation has found that an earlier test improves the sensitivity and specificity of the test.
- The second part of the test is an ultrasound that is performed between 11+4 and 13+4 weeks (ideally 12 weeks). The ultrasound determines the thickness of the nuchal translucency - an area behind the neck and under the skin of the fetus that appears black on the ultrasound image.
- Based on a woman's age, the nuchal thickness and the hormone levels, a result is given in terms of the particular woman's risk of carrying a fetus with Down syndrome, compared to her age-related risk.

Table of maternal age vs Down syndrome risk

Maternal Age	**Chance of having a live-born baby with Down**
20 to 24	1:1500
25	1:1350
30	1:900
35	1:400
40	1:110
45	1:30

1. Maternal serum screening (Triple Test)

This test involves a blood test which is performed between 15 and 17 weeks gestation. No pre-test ultrasound is required unless the EDD needs to be confirmed. The test gives two results:

- the risk of a chromosomal abnormality (Down syndrome most commonly)
- the risk of an open neural tube defect - based on the maternal serum alpha fetoprotein level (MSAFP).

2. Non-invasive prenatal testing

Non-invasive prenatal testing (NIPT) employs genome sequencing technology to assess cell free fetal DNA in the maternal circulation and has application as a high-level screening test for trisomy 21, 18, and 13, and sex chromosome aneuploidy. This field is rapidly evolving.

Clinical Labs and most private pathology providers offer NIPT. It is not currently funded by Medicare and patients are required to pay out of pocket for this service. SJGMPPH does not offer NIPT except in a strictly limited number of high risk women with contraindications to invasive diagnostic testing, where it is considered on a case-by-case basis. Turnaround times are up to 14 days from sample collection. In 5% of cases, the level of cell free fetal DNA is not great enough to report a result and a recollection is required.

NIPT may be employed in screening for aneuploidy in two ways:

1. As a **primary screening modality**, where a maternal blood sample is collected after 10 weeks gestation. This allows a detection rate of around 99% for trisomy 21, with a positive predictive value of around 80% in the average-risk population. False positive results do occur, and results should be confirmed with invasive testing prior to acting on the result. **All women who have primary NIPT screening MUST also be offered a 12- week ultrasound scan to assess for major fetal structural anomalies and to determine the chorionicity of multiple pregnancies.**

2. As a secondary screening modality, in women who have screened high risk with either the first trimester screen (FTS) or maternal serum screen. This approach avoids the risks of invasive diagnostic testing. Some authorities advocate offering NIPT to women at intermediate risk after FTS, such as those of risk 1:2500 or greater, to improve the detection rate of trisomy 21. Such an approach may detect around 98% of cases of trisomy 21, by performing NIPT in those 20% of women who screen at intermediate risk by FTS.

   NIPT has wider applications which are evolving rapidly with technological advances. NIPT is currently being marketed for rare microdeletion syndromes (e.g. "22q" or Di George Syndrome). Routine use of these "extended panels" is not currently recommended due to a relatively high false positive rate and low positive predictive value.

3. PAPP-A (pregnancy associated plasma protein-A)

Maternal serum pregnancy associated plasma protein-A (PAPP-A) is one of the blood tests taken at 9-14 weeks (ideally 10 weeks) as part of the First Trimester Screen. A low PAPP-A (< 0.4MoM) is associated with poor early placentation and increased frequency of adverse obstetric outcomes.

A low PAPP-A in the first trimester may indicate an increased risk of Trisomy 21. A low PAPP-A in the first trimester with normal chromosomes is associated with stillbirth, infant death, intrauterine growth restriction (IUGR), preterm birth and pre-eclampsia.

All women should be counselled and offered first trimester screening. If a woman returns a low PAPP-A result, a specialist referral should be made by 20 weeks gestation for assessment regarding the need for closer maternal and fetal surveillance. This may include Growth scans with Doppler assessment at 24, 28, 32 and 36 weeks.

Screening for Neural Tube Defects

This can be done as part of the maternal serum screening test at 15 to 17 weeks or by testing Maternal Serum Alpha-Fetoprotein Screening (MSAFP) alone at 15 to 17 weeks. If the screening test shows the pregnancy to be at increased risk for an open neural tube defect (MSAFP > 2.5 MoM), referral for a targeted fetal ultrasound examination is indicated. This is a technically demanding ultrasound examination and should be conducted by practitioners with expertise in fetal ultrasound.

Who should be offered MSAFP testing?

1. Women considered at high risk for having a fetus with an open neural tube defect. This includes women with an open neural tube defect themselves, women who have had a previous pregnancy with an open neural tube defect, women taking anticonvulsant medication and women with Diabetes Mellitus who have poor peri-conceptual control (HbA1C > 8.5%).

2. Morbidly obese women, in whom fetal ultrasound imaging quality is compromised, should also be offered MSAFP to potentially improve detection rates of severe structural fetal anomalies.

Fetal morphology ultrasound

Fetal anatomy ultrasounds are the recommended screening test for fetal structural anomalies and placental localisation. It is offered to all women between 18 and 20 weeks gestation (ideally 19 weeks).

As the SJGMPPH booking visit for low risk patient is done at 20 weeks gestation, general practitioners are requested to arrange this ultrasound externally prior to the booking visit and women should bring their ultrasound report with them to this appointment.

The Maternal Fetal Assessment Unit

The staff in the Maternal Fetal Assessment Unit (MFAU) assess women who develop complications after 20 weeks of gestation including (but not limited to): hypertension, possible premature rupture of membranes, reduced fetal movements, threatened premature labour, antepartum haemorrhage, urinary tract infections and concerns about fetal growth and wellbeing.

This unit is open 24 hours per day.
Phone: (08) 9462 4859 to speak to a midwife

Guidelines for investigation of patients at risk of a Haemoglobinopathy

Haemoglobinopathies are autosomal recessive disorders which imply that they must be inherited through both parents who may have the disorder themselves, or be carriers. Normal haemoglobin contains a haem molecule that combines with four globin chains; two are classified as alpha and two as beta chains.

Thalassaemia results from decreased synthesis of the globin chains in adult haemoglobin. It is classified as alpha (α)-thalassaemia when there is absent or decreased α-chain synthesis, or beta (β)-thalassaemia when there is absent or decreased β-chain synthesis.

Sickle cell disease occurs when the structure of the beta globin chain is abnormal. Defective genes produce abnormal haemoglobin beta chains resulting in Haemoglobin S (HbS). Sickle cell disease (HbSS) occurs when abnormal genes are inherited from both parents. A sickle cell trait is when a person inherits only one sickle cell gene and does not have disease.

Effect of Haemoglobinopathies:

HAEMOGLOBINOPATHY	GENE INHERITANCE	EFFECT
Alpha thalassaemia minor or α-thalassaemia trait	One or two defective α genes	Asymptomatic normally. May have mild anaemia.
Beta thalassaemia minor or β-thalassaemia trait.	One defective β gene	Asymptomatic normally. May have mild anaemia.
HbH Disease	Three defective β genes	Ranges from asymptomatic to requiring regular blood transfusion.
Alpha thalassaemia major	Four defective α genes	Bart's disease / Hydrops fetalis
Beta thalassaemia major	Two defective β genes	Severe anaemia. Require frequent blood transfusions. May result in death in early childhood.
Sickle Cell trait	One defective β gene	Asymptomatic.
Sickle Cell Disease	Two defective β genes	Spontaneous abortion. Pre-term birth, intra-uterine growth restriction, perinatal death.

Ethnic groups with a clinically significant prevalence of haemoglobin disorders:

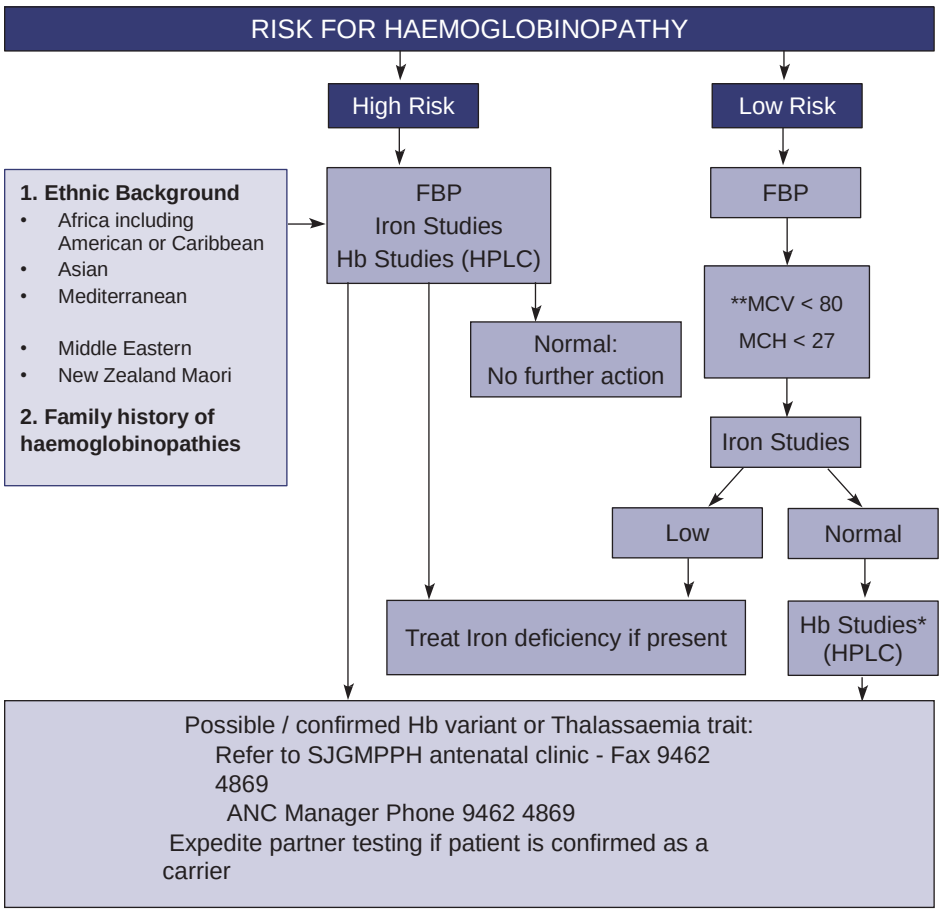
Beta Thalassaemia	All ethnic groups other than Northern European
Alpha0 Thalassaemia (☐☐/--)	Chinese, South East Asian, Mediterranean
Haemoglobin E	South East Asian

Haemoglobin S	African (including African-American and African-Caribbean), Greek, Southern Italian, Turkish, Arab, Indian.

Screening:

- The aim of screening (or carrier testing) is to identify carriers of haemoglobin disorders in order to assess the risk of a couple having a severely affected child and to provide information on the options available to manage their risk.
- Ideally, high-risk individuals are offered pre-conception testing.
- In the antenatal setting, time is important. Early (first trimester) screening is recommended since it can be difficult to achieve antenatal screening and fetal diagnosis within a suitable timeline if the couple is unaware of the risk.
- Diagnosis of the haemoglobin disorders requires combined assessment of the FBP, iron status and Haemoglobin HPLC (High-performance liquid chromatography). See algorithm below.
- Where a woman is pregnant and a carrier, organise partner testing and refer to the SJGMPPH Antenatal Clinic.
- Genetic counselling is available from Genetic Services of Western Australia (08) 6458 1525 for couples if both partners are carriers.

Investigations of patients for Haemoglobinopathy



* Hb studies can be requested as an add-on to the FBP

** MCV = mean cell volume, MCH = mean cell haemoglobin

Use of anti-D in pregnancy

It is recommended that anti-D (625 IU) be given to **all** rhesus negative, antibody negative women at 28 and 34 weeks gestation. These women will therefore need to be seen at 28 weeks and 34 weeks. Anti-D is also given to these women at SJGMPPH after the birth of their baby if the baby is rhesus positive. A blood test for blood group and antibodies needs to performed prior to administering the 28 week dose of anti-D.

It is recommended that anti-D be given to all rhesus negative, antibody negative women if there is risk of fetal-maternal transfusion of blood.
Anti-D should be given within 96 hours of the onset of bleeding (the earlier the better).

The dose is as follows:
First trimester – *250 IU (minidose vial).*
Indications are threatened or inevitable miscarriage, termination of pregnancy, chorionic villus sampling and ectopic pregnancy.
Note: For a multiple pregnancy give 625 IU.

Second and third trimester, postnatally – *625 IU (full dose vial).*
Indications are at 28 weeks, 34 weeks, postnatally (if baby is rhesus positive) and episodes when a fetal-maternal haemorrhage may occur such as amniocentesis, external cephalic version, antepartum haemorrhage or abdominal trauma.
Note: For second and third trimester, a Kleihauer test should be performed (1-24 hours after the bleeding or sensitising event) so additional anti-D may be given if required.

How to obtain anti-D

SJGMPPH prefers women in the catchment area, who have a small early pregnancy bleed or minor antepartum haemorrhage and do not need a hospital assessment, to see their GP for anti-D. This is usually more convenient as women who are referred to ED or MFAU for anti-D may have to wait a few hours during business hours while paperwork is completed, and blood group and antibody testing is performed (even if grouping has already been performed by a private laboratory). After business hours, women may experience a longer delay. (page 17 Anti D)

Clinical Labs

- GP's currently using the services of Australian Clinical Labs can access Anti-D by calling our Bloodbank department on 9213 2136.
- 24 hours' notice is required for delivery (not including weekends).
- Clinics not using the services of Australian Clinical Labs should contact their pathology provider or call the Red Cross on 9421 2374.

Regional hospitals usually keep a small stock of anti-D.

Record keeping

Anti-D is a blood product and must be traceable. GP's must keep a register of patients who are given Anti-D and the batch number they receive. This register must be kept in a central location, not in the individual patient notes.

Pathology request forms

When requesting blood testing for blood group and antibody screening, the request form should include the following information: current gestation, number and gestation of previous pregnancies, history of blood transfusions, any previous antibodies detected and dates of anti-D prophylaxis.

Perinatal mental health services

St John of God Raphael Services

St John of God Raphael Services provides low-cost or no out-of-pocket specialised, community-based mental health treatment and support for parents (mums, dads, families) during the perinatal period, up to the child's fourth birthday.

How do I refer?

Patients need a completed Raphael Services referral form and Mental Health Care Plan for focussed psychological strategies (item numbers 2700, 2701, 2715 or 2717).

For more information, please refer to our website: https://www.sjog.org.au/our-services/community-and-youth-services/st-john-of-god-raphael-services/health-professionals

The Edinburgh Postnatal Depression Score (EPDS)

The EPDS is a recognised screening tests for possible depression and anxiety, both in pregnancy and the postnatal period.

EPDS should be undertaken at least once in early pregnancy and again at around 32 weeks. However, the scales can be used at any stage of the pregnancy and/or the postnatal period.

For EPDS: Ask the woman to mark the response that most accurately reflects how she has felt in the last seven days for each of the questions. The scoring is from zero to three except in the questions marked with an * where the scoring is reversed, i.e. three to zero. Add all of the scores together.

If the woman scores higher than zero in the last question or has a total score of 12 or above assess her clinically for depressive illness. If the score is 9, 10 or 11, she is at increased risk for mood disorder and should be monitored closely.

Postnatal complications

Post-partum haemorrhage (PPH)

Traditionally PPH has been defined as a blood loss of 500ml or more during puerperium and severe PPH as a blood loss of 1000ml or more. Post-partum haemorrhage can also be classified as primary (within 24 hours of delivery) and secondary (between 24 hours and six weeks postpartum).
Women who experience a major primary post-partum haemorrhage may require one or more of the following interventions:

- Urgent transfer to theatre for investigation / management
- Urgent return to theatre for investigation / management
- Placement of Bakri tamponade balloon or similar
- Laparotomy
- Insertion of uterine compression suture (B-Lynch suture or similar)
- Uterine artery ligation
- Internal iliac artery ligation
- Arterial embolisation
- Hysterectomy

Recommended GP follow up for major post-partum haemorrhage

Anaemia / Iron deficiency

Many women who experience a major post-partum haemorrhage receive packed cells while an inpatient. Packed cells have a shorter half-life than a patient's own red blood cells and thus, the patient may experience a fall in Haemoglobin (Hb) on discharge. Women are likely to be discharged on oral iron supplementation to counter this. Iron supplementation three times daily should result in a 2g/dL increase in Hb over 3 weeks if taken and absorbed properly. A check of Hb at 4 weeks is helpful to determine if your patient requires further iron supplementation (possibly parenteral) or rarely, a packed cell transfusion.

Debriefing

Prior to discharge, a woman who has experienced a major post-partum haemorrhage, and if possible their support person, should have been debriefed by a senior member of her treating team regarding her delivery and post-partum haemorrhage management. Post-partum haemorrhage can occur very quickly and may involve a sudden requirement for transfer to an operating theatre, a general anaesthetic, being parted from a newborn infant and in severe cases being asked to consent to a hysterectomy. For many women it is not until they leave hospital that questions and concerns regarding what was occurring at this time emerge.

It is important that any issues are addressed promptly as postnatal depression and rarely post-traumatic stress disorder have been seen in women following major PPH. If you feel your patient requires further debriefing or discussion please contact the treating team at SJGMPPH who will organise a time to see her.

Implications for future pregnancies

Post-partum haemorrhage has up to a 10% recurrence rate. Your patient's history should be made aware to any obstetrician or obstetric unit you refer her to. Maintaining an adequate antepartum Hb and active management of the third stage of labour would be recommended in future pregnancies.

Rare complications

Asherman's Syndrome, intra-uterine adhesions caused by endometrial damage from curettage, is a rare complication following PPH. Infertility is the most common clinical presentation but patients may also present with hypomenorrhoea or amenorrhoea, cyclical pelvic pain or recurrent pregnancy loss. If Asherman's syndrome is suspected the patient should be referred to a gynaecologist for a hysteroscopy.

Sheehan's Syndrome, infarction of the pituitary gland after PPH resulting in hypopituitarism, occurs in the setting of severe hypotension complicating PPH. Severe cases present in the first few days to weeks post-partum with lethargy, anorexia, loss of weight and an inability to lactate. Less severe cases may not present for many weeks to months and involve an inability to lactate, failure to resume menses and a loss of pubic hair. Mild fatigue, anorexia and weight loss can also occur in less severe cases. On investigation growth hormone, prolactin, gonadotrophin and thyroid stimulating hormone levels are all deficient. Patients should be referred to an endocrinologist for further management.

Pre-eclampsia

Recommended GP Follow Up for Pre-eclampsia

- Early return to GP around two weeks post discharge.
- Wean hypertensive medication if still on them
- Regular blood pressure checks for three months
- If still hypertensive at three months postpartum, there is likely to be underlying hypertension. Investigate for the cause.
- All patients with early pre-eclampsia should be screened for antiphospholipid syndrome and be referred for obstetric physician review at three months postpartum
- Recurrence risk
    - early onset pre-eclampsia (<34 weeks): recurrence rate 25-65% (more likely if underlying thrombophilia, connective tissue disease or renal problems)
    - late onset pre-eclampsia (>34 weeks): recurrence rate 5-7%
- Severity of disease is lower with subsequent pregnancies

If women have a history of pre-eclampsia and are considering a subsequent pregnancy:

- Preconception counselling is helpful
- Preconception referral (or early referral in pregnancy) if she is likely to have a high risk of recurrence and/or she has underlying disease
- Identify the 'hidden' pre-eclampsia – intra-uterine growth restriction in the first pregnancy

In the next pregnancy

- Always record a first trimester blood pressure for comparison (blood pressure routinely drops in the second trimester)
- Start calcium supplement (1.5gm calcium) and low dose aspirin (100 mg) in the first trimester
- Low PAPP-A on the first trimester screen is associated with an increased risk of pre-eclampsia
- Monitor more closely in late second and third trimesters
- Consider serial scans for intra-uterine growth restriction
- Cease aspirin at 36 weeks

Appendix 1 – Edinburgh Postnatal Depression Scale (EPDS)

Ask the woman to mark the response that most accurately reflects how she has felt in the last seven days for each of the questions.

The scoring is from 0-3 except in the questions marked with an * where the scoring is reversed, i.e. 3-0. Add all of the scores together.

IN THE PAST 7 DAYS	First Visit	32 wks
1. I have been able to laugh and see the funny side of things (1) As much as I could (2) Not quite so much now (3) Definitely not so much now		
2. I have looked forward with enjoyment to things (1) As much as I always did (2) Rather less than I used to (3) Definitely less than I used to (4) Hardly at all		
3. I have blamed myself unnecessarily when things go wrong* (3) Yes, most of the time (2) Yes, some of the time (1) Not very often		
4. I have been anxious or worried for no good reason (1) No, not at all (2) Hardly ever (3) Yes, sometimes (4) Yes, very often		
5. I have felt scared or panicky for no good reason* (3) Yes, quite a lot (2) Yes, sometimes (1) No, not much (0) No, not at all		
6. Things have been getting on top of me* (3) Yes, most of the time I haven't been able to cope at all (2) Yes, sometimes I haven't been coping as well as usual (1) No, most of the time I have coped well		
7. I have been so unhappy that I have had difficulty sleeping* (3) Yes, most of the time (2) Yes, sometimes (1) Not very often		

8. I have felt sad or miserable* (3) Yes, most of the time (2) Yes, quite often (1) Not very often (0) No, not at all		
9. I have been so unhappy that I have been crying* (3) Yes, most of the time (2) Yes, quite often (1) Only occasionally (0) No, not at all		
10. The thought of harming myself has occurred to me* (3) Yes, quite often (2) Sometimes (1) Hardly ever		
TOTAL		

JL Cox, JM Holden, R Sagovsky (1987)

Note: The new National women-held Pregnancy Record EPDS does not include scoring for individual questions.

1. ANTENATAL CLINICS (ANC) - low risk

Description	
Midwives provide care for women with low risk pregnancies in the Antenatal Clinic. These clinics are 7.15 am – 7.30 pm, Monday – Friday.	
Pregnancy care	Midwife sees the woman for antenatal visits at SJGMPPH and will refer to medical team if required. **Shared care with the woman's GP is encouraged.**
Planned place of birth	SJGMPPH Labour and Birth Suite (L&BS)
Care provider during labour	L&BS midwife L&BS medical
Care provider following the birth	Postnatal ward midwife Medical
Possible referrals of	No referrals required
Transfer home	Vaginal births from 4-6 hours. Caesarean births
Midwifery care at	VMS midwife visits until day five.
Contact number	Clinical Midwifery Specialist (Ambulatory Services) Phone (08) 9462 4555

2. ANTENATAL CLINICS (ANC) - high risk

Description	
The ANC has a team of doctors, midwives and other health professionals who care for women who may have pregnancies with a high risk of complication. • Diabetes Service – women with pregnancies complicated by Diabetes.	
Pregnancy care	Medical team at ANC. After seeing the consultant, antenatal care can be provided by the midwife, if the woman requests. **Shared care with the woman's GP may be an option for some appointments.**
Planned place of birth	SJGMPPH Labour and Birth Suite (L&BS)
Care provider during labour	L&BS midwife L&BS medical
Care provider following the birth	Postnatal ward midwife Medical
Possible referrals of	KEMH if tertiary care required
Transfer home	Vaginal births from 4-6 hours. Caesarean births
Midwifery care at	VMS midwife visits until day five.
Contact number	Clinical Midwifery Nurse Manager (Ambulatory Services) Phone (08) 6458 2222 page 3419

Free-call for GPs anywhere in WA to obtain medical advice from a senior staff member 1800 428 615.

Acknowledgements / Resources:

KEMH Antenatal Shared Care, Guidelines for General Practitioners

SA GP Obstetric Shared Care Protocols