Guidelines for General Practitioners

Antenatal Shared Care

Seventh Edition (adapted and revised 2018)

joondaluphealthcampus.com.au

Joondalup Health Campus
Part of Ramsay Health Care

Contents Page

Introduction

The aim of this booklet is to provide clear guidelines for general practitioners (GPs) involved in the shared care of low-risk antenatal patients with Joondalup Health Campus (JHC). The purpose of shared care is to improve the quality and convenience of care for women.

Referring women to JHC

Routine referrals

GPs are requested to refer low risk antenatal patients to their local maternity service based on their postcode of residence. (See Table 1 on page 4)

GPs are requested to clearly indicate their intention to share care on the referral.

For low-risk women who are referred to JHC, the first visit is usually at 14-20 weeks gestation. If GPs are unsure if a woman is low or high risk, they can refer to JHC Antenatal Clinic who will evaluate risk. JHC is able to take women with a BMI up to 40, at booking visit.

High risk antenatal patients may be referred directly to JHC Antenatal Clinic. Please refer early as these women may need to be seen at an earlier gestation.

Fax: (08) 9400 9073

Referrals for women requiring review within 7 days

If the woman resides within JHC catchment area, the GP should contact JHC Clinical Midwifery Manager (Antenatal), Phone (08) 9400 9486

If woman resides outside JHC catchment area, the GP needs to contact their local maternity service to discuss the referral

Urgent referrals

<20 weeks gestation	Contact the JHC Gynaecology Registrar Ph: (08) 9400 9400 (switchboard to page)
>20 weeks gestation	Contact the JHC Obstetric Registrar Ph: (08) 9400 9116

Referrals using GP software that include all the relevant history and information are also welcome.

The following information is required on all referrals to the hospital:

- Woman's current contact details
- Last Menstrual Period (if known)
- Estimated Due Date
- Gravida and parity
- Weight, height and BMI
- Booking blood pressure
- GP's intention to share care
- Any relevant medical and obstetric history
- If interpreter services are required

Which general practitioners can provide shared care with JHC?

All GPs who undertake shared care must be registered medical practitioners in WA, have appropriate personal medical defence cover to undertake shared antenatal care, be of good character and have adequate antenatal experience or supervision.

For Queries

The Clinical Midwifery Manager (Antenatal), can be contacted on (08) 9400 9486 from 8.00am to 3.00pm Monday to Friday, or fax (08) 9400 9073, if you have any queries regarding these guidelines.

For urgent issues call (08) 9400 9400 and ask for the appropriate staff member:

- For gestation less than 20 weeks – Gynaecology registrar
- For gestation over 20 weeks – Obstetric registrar
- For gynaecology issues – Gynaecology registrar

Table 1 Postcodes within hospital catchment areas

HOSPITAL	POSTCODES (inclusive of all numbers within ranges)
Armadale Health Service	6108-6112, 6121-6126
Bentley Hospital	6100-6105, 6107, 6151, 6152
Fiona Stanley Hospital	6147-6150, 6153-6160, 6162-6164, 6166
Joondalup Health Campus	6019, 6020, 6023-6038, 6061, 6064-6067
King Edward Memorial Hospital	6000, 6001, 6003-6013, (6014 Jolimont/Floreat/Wembley),
Osborne Park Hospital	6014-6015, 6017-6022, (6052 Inglewood), 6059-6061, 6063
Peel Health Campus	6180, 6207, 6208, 6210, 6211
Rockingham General Hospital	6165, 6167-6176
St John of God Midland Public Hospital	6054-6058, 6066, 6068-6074, 6081-6085, 6090, 6500, 6556, 6558 (plus Wheatbelt region)

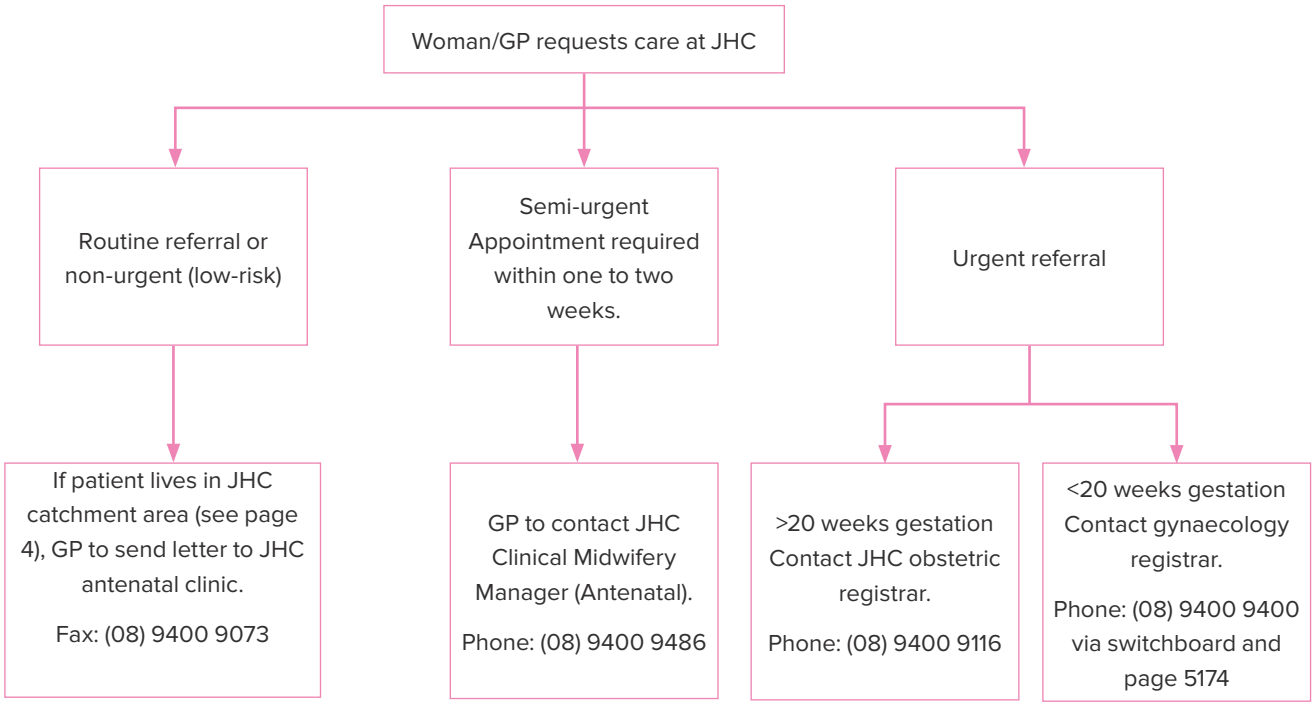
Please Note: Frequent review of postcodes is undertaken taking into account population growth, service demand and service capacity.

Requests for female practitioners

Patients at JHC will be seen by medical practitioners on the basis of their clinical need, without reference to the medical practitioner's gender, age, religion, race or nationality. JHC doctors are well qualified medical practitioners who conduct themselves professionally and the Hospital does not discriminate between doctors on the basis of the above criteria.

This information should be made clear to patients who book at JHC.

Requests for female practitioners



Antenatal shared care visits

The table below details the recommended practice for women with low-risk pregnancies undertaking shared care. More frequent visits may be relevant depending on the clinical situation.

Please note: women may not be seen by a doctor at JHC antenatal clinic.

Visit	Encounter	Provider
1st visit	Confirm pregnancy and expected date of delivery. Medical history and examination: cardiovascular, respiratory and breast Complete initial routine investigations - see page 15. Counsel and offer first trimester screening, regardless of woman's age (ideally 10 weeks for blood test, 12 weeks for ultrasound scan) - see page 25. Complete Edinburgh Postnatal Depression Scale (appendix 1, page 39). Discuss alcohol, smoking, diet, exercise, back care, minor discomforts, illicit drug use. Discuss influenza vaccine (depending on time of the year) and recommend vaccine is given prior to influenza season. Check for use of folate supplements.	GP
14 weeks	Routine assessment Ensure patient has the results of their first trimester screening test (or NIPT) if performed. Counsel and offer maternal serum screening at 15 to 17 weeks if first trimester screening not done – see page 25. Book 19 week ultrasound anatomy scan – see page 25. Refer to booking hospital – see page 4 (Antenatal Referrals). If you are ordering maternal serum screening or 19 week ultrasound indicate this on the referral letter. Discuss parent education classes.	GP
14 to 20 weeks	Antenatal visit at JHC – assess suitability for shared- care, rebook for 36 weeks. Edinburgh Postnatal Depression Scale (EPDS). (Appendix 1). Perinatal Anxiety Screening Scale (PASS). (Appendix 2). Audit C (alcohol assessment) & smoking assessment. Discuss breastfeeding, when to go to hospital, parent education classes, allied health services.	JHC
24 weeks	Routine assessment. Order 28 week investigations: full blood count +/- iron studies (if at risk of anaemia), blood group and antibody screen if Rhesus negative.	GP
28 weeks	Routine assessment. Administer prophylactic anti-D if Rhesus negative - see page 32 Pertussis vaccine to be given between 28-32 weeks gestation. Review investigation results	GP
30 weeks	Routine assessment for primigravida women or those with previous complications.	GP
32 weeks	Routine assessment.	GP
34 weeks	Routine assessment.	GP
36 weeks on	Follow up JHC / GP obstetrician Organise investigations - see page 15. Blood group and antibody screen if required. Administer anti-D if Rhesus negative – see page 32. EPDS, PASS, Audit C (alcohol) and smoking assessment. Discuss birth plan, pain relief, car seats and capsules, child health nurse, contraception, choices for feeding, community resources, support at home, six week postnatal assessment, six week infant assessment by GP.	JHC
40 weeks	Remainder of care at JHC (if under GP obstetrician).	JHC
Postnatal check 6-8 weeks	**Baby check:** weight and head circumference, full examination, first immunisations (6-8 weeks) **Mother check:** discuss delivery, check blood loss/uterine size and perineum or LUSCS wound, breastfeeding, screen for PND/anxiety, discuss contraception, CST if due, update immunisations (rubella and varicella), OGTT if GDM (repeat 1-2 yearly) **Medications:** review/adjust any changes made during pregnancy e.g. thyroxine, anticonvulsants, antihypertensives. **Third degree tears:** if women have problems contact the Gynaecology Outpatient Clinic (Suite 211) via telephone (08) 9400 9631fax on (08) 9400 9955 to 9400 9631 or fax 9400 9955 for review. **Fourth degree tears:** women are routinely reviewed at JHC GOPC at approximately six weeks postpartum.	GP

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, are invited to attend the Diabetes Service at JHC for counselling, phone 9400 9400.
- 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 at King Edwards Memorial Hospital (KEMH). 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 Dose	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.

Obstetric medication information

The Pharmacy Department at KEMH provides an information service on the safety of medications taken during pregnancy and breastfeeding.

The Obstetric Drug Information Service can be contacted on (08) 6458 2723, Monday to Friday from 8.30am to 5.00pm. If GPs have urgent enquiries after hours, a pharmacist can be contacted via KEMH switchboard

Phone: (08) 6458 2222.

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. If using Medical Director or other software, please print out each visit and include this in the hand-held record.

A routine check 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 24 weeks
- Fetal movements from 24 weeks
- Fetal heart rate from 20 weeks (earlier if Doppler available)

Documentation to be done in progress notes, if no allocated section for any of the above.

Note: Some peripheral oedema is now usually regarded as normal in pregnancy.

Pre-pregnancy BMI	Total Weight Gain	Rate of Weight Gain Second and Third Trimester
Underweight BMI <18.5	12.5kg - 18kg	510g/week
Normal Weight BMI 18.5-24.9	11.5kg - 16kg	420g/week
Overweight BMI 25-29.9	7kg - 11.5kg	280g/week
Obese BMI > 30	5kg - 9kg	220g/week

Non-Medicare eligible patients

Patients who are not eligible for Medicare (including overseas students and non-insured patients) who require antenatal care are able to access care at King Edward Memorial Hospital if they live in the north metropolitan area or Fiona Stanley Hospital if they live in the south metropolitan area. Fees will apply and patients will be asked to pay prior to their appointment.

For more information please contact the Private Patient Liaison Officer. **Phone: (08) 9400 9400**

Email: JHCpplo@health.wa.gov.au

Early Pregnancy Assessment Service (EPAS)

JHC 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.

Referrals should be by letter or by an EPAS referral form (see Appendix 3) and blood and scan results must accompany letter.

Time: 9.15 to 12.00 then 13.30 to 15.15 Monday - Friday (Dr availability permitting & excluding public holidays). Urgent matters should be directed to ED.

Venue: Suite 105, Medical Centre West

Appointment: Booking an appointment at EPAS is possible by calling reception between 08.30-16.30, Monday – Friday, outside of these hours referrals can be faxed.

Phone: (08) 9400 9937 or Fax 9400 9382

Alternatively, call the JHC switchboard on **(08) 9400 9400**

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 call the ED on **9400 9400 (or GP priority line 9400 9775).**

Emergency Department

Women will be seen at anytime in the Emergency Dept if they have severe pain, heavy vaginal bleeding or an ectopic pregnancy is suspected.

Note: An ultrasound will not necessarily be performed, particularly out of hours or outside of EPAS hours.

If you are referring a patient, notification by phone is always appreciated by the staff in the Emergency Dept. Please advise patients to fast from 7.00am (they may have water only) in case they need to go to theatre that day. If there is heavy bleeding or suspected ectopic they should begin fasting immediately.

For early pregnancy loss, the EPAS offers management by:

- Expectant management
- Medical management using misoprostol
- Dilatation and curettage (D&C)

This will be discussed with patients on an individual basis and if a woman elects to have medical management, she will be followed up in the EPAS.

If you require clinical advice, a registrar or consultant is available. **Please phone (08) 9400 5174**.

0800-2200	Gestation < 20 weeks	Gynaecology
	Gestation > 20 weeks	Obstetric Registrar
2200-0800	weeks	On-call Registrar

When you refer a patient to the Emergency Dept, please send reports of any relevant investigations with the patient, such as ultrasound, blood group or quantitative BhCG.

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 JHC 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 32.

Guidelines for exclusion from shared care

The following are guidelines to help GPs identify women who are not suitable for antenatal shared care. Any concerns can be discussed with the Clinical Midwifery Manager (Antenatal) 9400 9486 or the JHC Senior Obstetric Registrar - Phone (08) 9400 9400 and ask for the staff member to be paged.

General

No documented evidence of antenatal care prior to 24 weeks gestation.

Medical history

- Significant cardiac disease
- Essential hypertension
- Previous deep vein thrombosis or pulmonary embolus
- Renal disease
- Type 1 or Type 2 Diabetes Mellitus
- Unstable thyroid disease
- Chemical dependency - Refer to Women and Newborn Drug and Alcohol Service at KEMH (WANDAS) – see page 31
- Epilepsy/seizures or use of anticonvulsant drugs
- Bleeding disorders
- Chronic carriers of Hepatitis B – see page 17
- HIV infection
- Known bony pelvic deformity
- Systemic lupus erythematosus
- Current malignant disease
- Asthma requiring hospitalisation or requiring oral or parenteral steroid therapy in the past five years
- Rubella titres indicating recent infection
- Significant anaemia (Hb <100 g/L)
- Maternal Phenylketonuria (PKU)

Any significant condition for which the woman is being monitored by a physician or psychiatrist

Previous obstetric/gynaecological history

- Previous pregnancy requiring intensive monitoring or with poor outcome.
- History of preterm delivery (prior to 34 weeks). (See below)
- One or more pregnancies with Intra Uterine Growth Restriction (IUGR)
- Gestational Diabetes Mellitus requiring insulin
- Severe pre-eclampsia.
- Recurrent miscarriage including mid-trimester loss.
- Infertility requiring surgery or fertility drugs other than clomiphene.
- Previous infant with major congenital anomaly and/or inherited disorder.

Current pregnancy

- Twin pregnancy: Order 12 week ultrasound to determine chorionicity.
- If monochorionic diamniotic, arrange a 16 week scan to look for twin-to-twin transfusion and contact JHC if results abnormal.
- Atypical red cell antibodies.
- Adolescent (if first pregnancy and due date before 18th Birthday) – Refer to Adolescent Antenatal Clinic at KEMH.
- Morbid obesity BMI > 40 (JHC accepts patients with BMI up to 45in the absence of other risk factors e.g. Gestational Diabetes).

Preterm birth (WA Preterm Birth Prevention Initiative)

- Many cases of preterm birth may now be preventable
- Women with prior spontaneous preterm birth between 20-34 weeks should be prescribed natural vaginal progesterone 200mg daily from 16-36 weeks.
- Measurement of cervical length should be routine in the “anatomy” scan.
- Women with a shortened cervix (10-20 mm) in mid-pregnancy should be prescribed natural vaginal progesterone 200mg daily until 36 weeks.
- Babies should be delivered from 38 weeks, unless unavoidable.
- Practitioners should continue to support pregnant women to reduce smoking.
- Women at high risk of preterm birth may benefit from referral to, or consultation with, the Preterm Birth Prevention Clinic at KEMH. Outpatient Fax (08) 6458 1031.

For more information contact MFM Service @ KEMH: Phone (08) 6458 2848 Fax (08) 6458 1060 or see website

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 JHC, please contact the Obstetric Registrar for advice. Phone: (08) 9400 9116.

Pregnancy complications

- Antepartum haemorrhage
- Hypertension (>140/90)
- Threatened preterm labour
- Premature rupture of membranes
- Abnormal fetal anatomy ultrasound scan
- 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+)

Infectious diseases and immunisation in pregnancy

- Women with infectious diseases in pregnancy often do not need referral to KEMH. Please phone KEMH (08) 6458 2222 first to discuss the patient.
  - Gestation < 20 weeks: Gynaecology registrar
  - Gestation > 20 weeks: Obstetric registrar
- 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 in the third trimester (28 - 32 weeks).
- For other clinical advice, please contact the on-call Microbiologist at KEMH through the KEMH switchboard (08) 6458 2222.

For routine advice on pregnancy, travel and vaccinations, please contact a specialised travel medicine clinic.

Investigations

Investigations may be ordered privately. **Photocopies of all tests should be sent to JHC - Fax (08) 9400 9073. Please write 'copy to JHC Antenatal Clinic' to assist clerks.**

1. Initial routine investigations 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 (see page 26).

3. Investigations to be considered depending on the woman's clinical circumstances:

- Early dating ultrasound if dates uncertain
- Cervical screening test (if due as per current National Cervical Screening Program guidelines)
- Early OGTT if high risk of gestational diabetes (see page 22)
- Iron studies if at risk of anaemia.
- Haemoglobinopathy screening if in high-risk group e.g. high risk ethnic background, family history of haemoglobinopathy (see page 32)
- Twin pregnancy: Order 12 week ultrasound to determine chorionicity.
- If monochorionic diamniotic, arrange a 16 week scan to look for twin-to-twin transfusion and contact JHC if results abnormal.
- FTS at 11 – 13 weeks.
- Twin pregnancy, 12 week scan to determine chorionicity. Monochorionic if uncomplicated at 12 weeks should then have fortnightly scans (next one at 14 weeks)
- 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 (see page 18).

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 not already known to be diabetic

6. 36 weeks (JHC will organise)

- Full blood picture
- 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.

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 JHC.

Chlamydia and Gonorrhoea screening

- For all women at booking – self obtained lower vaginal swab (SOLVS) and first void urine PCR (FVU)
- Women living in STI endemic areas (Kimberley, Pilbara and Goldfields) should be offered additional screening:
  - Between 28 and 36 weeks gestation repeat HIV and syphilis serology
  - At 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 8), 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

High dose elemental iron (>100mg/unit): Ferrograd C, Ferrogradumet, Ferro-f-tab, Ferro-tab

Medium dose elemental iron (30-99mg/unit): Fefol, Elevit

Low dose elemental iron (<30mg/unit): Iron Maxx, Pure Innovation, Spatone, Fab Iron, Swisse Multi, Metagenics Veggie Caps, Floradix (liquid iron), some pregnancy multivitamins

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.

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.

At the time of publication, all maternity services (excluding Bentley Hospital), were able to provide antenatal care and delivery for women up to BMI = 40. Rockingham and Fiona Stanley Hospitals were able to provide antenatal care and delivery for women up to BMI = 45. KEMH has no limit for BMI.

JHC will accept BMI up to 45 as long as no other co-morbidities exist.

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.

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 20-22 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
  - BMI > 40 should have additional growth scan at 38 weeks

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.

JHC 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 at 24-28 weeks.

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 Australian & New Zealand College of Obstetrics and Gynaecology (RANZCOG) and the Royal College of Pathologists of Australasia (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 baby with congenital abnormalities 10.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	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 • Previous baby with congenital abnormalities • *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.

Further information

Any queries about testing, screening, diagnosing or managing diabetes should be directed in business hours to the antenatal clinic or diabetes team (08) 9400 9400.

Urgent out-of-hours queries can be referred to the obstetrics registrar on duty or physician on call by phoning (08) 9400 9400.

Fetal morphology ultrasound

All women, regardless of age should be offered screening for fetal aneuploidy and fetal structural assessment at 12 – 13+6 weeks and again at 19 weeks.

Women with a family history of genetic abnormality or previous pregnancy with fetal anomaly should be referred pre-pregnancy for counselling and assessment, and if already pregnant at presentation should be referred for specialist opinion as early as possible.

Screening for fetal aneuploidy

This field has developed rapidly in the past few years which has resulted in some confusion.

In the absence of prior history which requires other testing, there are two options for aneuploidy screening:

1. First trimester combined screening (PAPP-A and free B HCG together with NT scan at 11 – 13+6 weeks.)

- 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 weeks, 4 days and 13 weeks, 4 days (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.

2. NIPT together with early fetal morphology at 12 – 14 weeks.

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. Position statements from several international organisations (e.g. International Society for Prenatal Diagnosis, American Congress of Obstetricians and Gynaecologists) regarding the clinical use of NIPT are available online.

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. 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.

There is no role for ordering both combined FTS and NIPT as primary screening. If a patient has had combined FTS , the only role for NIPT is as a secondary test for high risk FTS.

What if the patient presents later than 13+6 weeks:

There are two options in this situation:

1. NIPT together with early morphology as soon as possible.
2. Triple serum screen with early morphology as soon as possible.

What if the FTS is high risk?

The patient should be counselled regarding further testing. Options include invasive testing by CVS or amniocentesis, or NIPT as a secondary screen. The test of choice depends on the level of risk, findings on early morphology scan, nuchal translucency measurement, previous history and patient preference. It is important that the patient is aware of the pros and cons of all these options and that if NIPT is performed as a secondary screen, a high risk NIPT would require confirmatory invasive testing.

This counselling may require specialist referral.

Some authorities suggest offering NIPT to women at intermediate risk after FTS such as those with risk between 1:300 and 1:1000. This approach will increase the detection rate for aneuploidy with minimal increase in the invasive testing rate. The patient should however be aware of the possibility of a false positive result which would result in recommendation for invasive testing.

What if the NIPT is high risk?

It is not advisable for the patient to make a definitive decision about the pregnancy on the results of the NIPT alone. A high risk NIPT should be followed by fetal karyotype or micro-array on amniocentesis.

Extended NIPT testing

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.

If a patient has had NIPT and early structural scan, should one request a PAPP-A as well?

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.

In patients who have had NIPT, it is not necessary to perform FTS in order to obtain a PAPP-A level. In low risk patients, it is not essential to test PAPP-A. If however the practitioner feels it is relevant to have a PAPP-A level in a particular case, this can be ordered as a stand alone blood test without having to perform full FTS.

Screening for fetal structural anomaly:

Ultrasound examination is the mainstay of screening for fetal structural abnormalities. Early morphology should be performed in the late first trimester with or without FTS (depending on whether the patient has had NIPT). And detailed morphology at approximately 19 weeks.

Estimates vary according to various studies and between organ systems, however a high quality detailed fetal anatomy assessment in a patient with normal BMI will allow detection of about 80 % of structural abnormalities. Some structural defects are not yet visible at the 19 week scan, some defects eg bleeds and other destructive lesions can arise after 19 weeks and some anomalies (eg autism) are not visible on ultrasound.

In women with a high BMI views can be limited and the detection rate of anomalies will be lower.

Unless an associated structural anomaly is identified (eg cardiac anomaly) the 19 week anatomy scan is not useful as screening for fetal aneuploidy and a normal scan will not exclude anueuploidy. Hence the fact that aneuploidy screen is best peformed in the late first trimester by NIPT or FTS.

Screening for fetal anomaly in twins:

Fetal aneuploidy options are the same as for singleton pregnancies. It is important to note on the referral for the screening tests that it is a twin pregnancy.

Counselling for a high risk test in twin pregnancies is complex due to the possibility of discordance for anomaly and the management options, depending on chorionicity

Chorionicity is the most important factor in the management of twin pregnancies. This should be identifiable at the time of dating scan, and if it has not been clearly identified by then, should definitely be documented at FTS or early morphology scan. It becomes more difficult and sometimes impossible to determine chorionicity later eg at anatomy scan.

Dichorionic twins where the aneuploidy screen is low risk and early scan unremarkable, should have anatomy scan at 19 weeks as usual.

Monochorinic twins should be referred early on as they require fortnightly scans from 12 weesk to screen for signs of TTS.

JHC Obstetrics & Gynecology Ultrasound Clinic

The JHC Ultrasound Clinic provides tertiary level ultrasound assessment and diagnosis of pregnancy complications and ongoing pregnancy management by a multidisciplinary team. The service provides assessments in particular for conditions such as congenital abnormalities, rhesus disease, intrauterine growth restriction and twin to twin transfusion syndrome.

The specialists of the JHC O&G Ultrasound Clinic can provide counselling and/or management for women who have an increased risk of fetal abnormality on their screening test. They also monitor and manage women who have a high-risk pregnancy. This includes women at risk of preterm birth (see page 15).

Phone: (08) 9400 9937
Fax: (08) 9400 9832

Guidelines for Investigation of patients at risk of a haemoglobinopathy

Haemoglobinopathies are autosomal recessive disorders that 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 the 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 α 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.

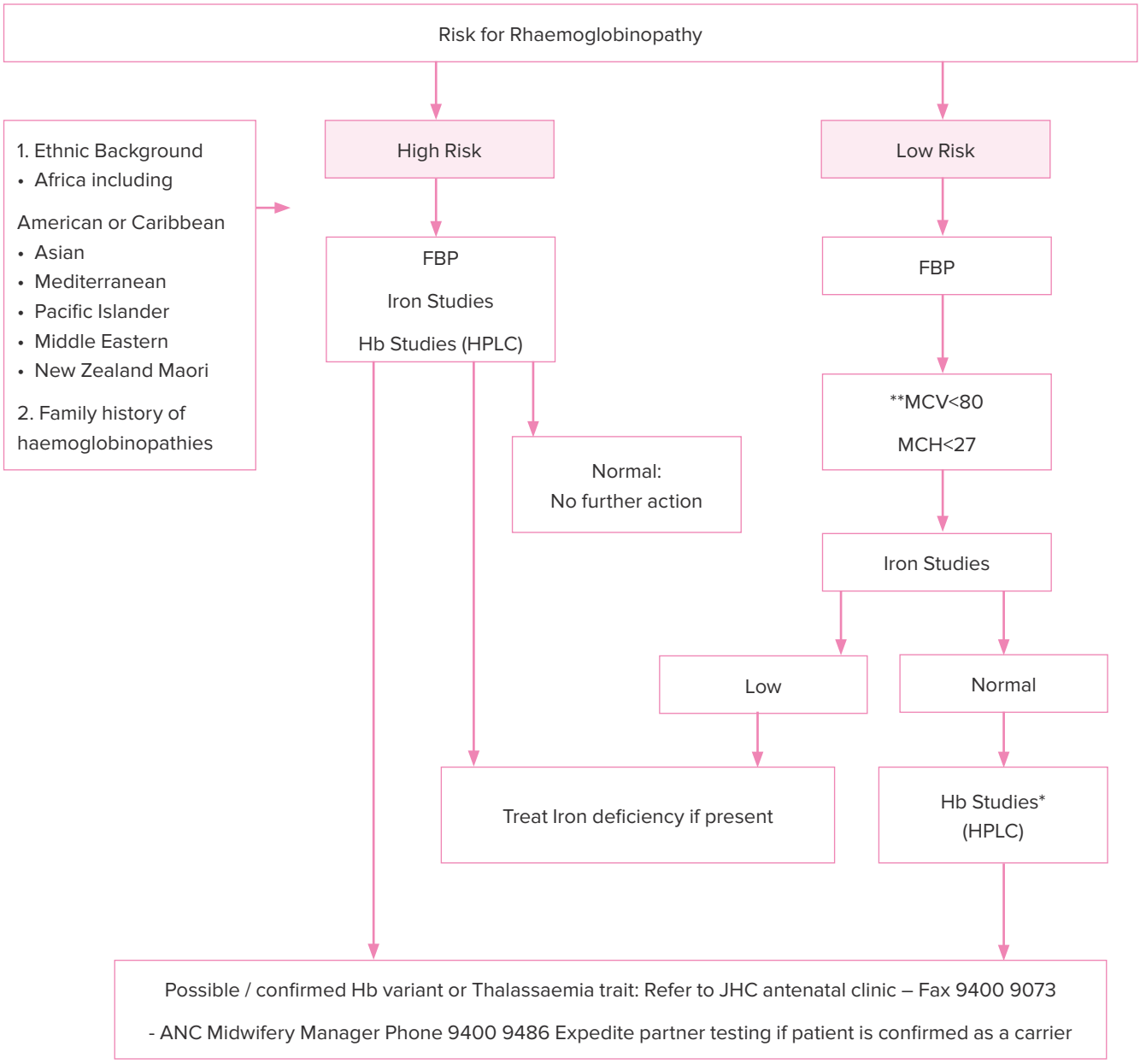
Ethnic groups with a clinically significant prevalence of haemoglobin disorders:

Beta Thalassaemia	All ethnic groups other than Northern European
Alpha 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 JHC Antenatal Clinic.
- If results show there is no risk of significant haemoglobinopathy to the offspring of the couple, the woman will be referred back to the GP to organise local antenatal care and birth at her local hospital. This may occur without a face-to-face consultation with the woman.
- 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 Risk



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 JHC 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 sensitising event (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-materal 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

JHC prefers women in the metropolitan area, who have a small early pregnancy bleed or minor antepartum haemorrhage and do not need a specialist assessment, to see their GP for anti-D. This is usually more convenient as women who are referred to the Emergency Dept or EPAS at JHC 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.

Metropolitan GPs may obtain anti-D from the Red Cross by phoning (08) 9325 3030 anytime with patient details. Delivery is at the patient's expense. Patients or relatives may pick up GP orders from the Red Cross.

Anti-D itself is free of charge. GPs who undertake ongoing antenatal shared care are able to obtain a small quantity of anti-D from the Red Cross to keep in their practice.

Certain private pathology laboratories are able to provide anti-D for patients in addition to performing antibody screening. Some laboratories will courier the anti-D to your GP surgery or may even be able to administer the anti-D to the patient. The following laboratories are able to provide anti-D:

- **St John of God Pathology Hollywood** ph**:** (08) 9346 7102 Murdoch ph: (08) 9366 1750 Subiaco ph: (08) 9382 6690
- **Western Diagnostics Pathology Myaree:** (08) 9317 0863
- **Clinipath West Perth:** (08) 9476 5222

A phone call to your laboratory will ascertain whether they stock Anti-D and/or administer it.

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

Record keeping

Anti-D is a blood product and must be traceable. GPs 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

JHC offers a Psychiatric Nurse Service (OPLN) which can be contacted on (08) 9400 9400.

JHC Obstetric Psychiatric Liaison Nurse Service (OPLN)

Once a patient has been booked at JHC, the OPLN service is available upon referral from a JHC midwife or Dr.

The OPLN services are non-urgent related services and all urgent issues should be referred to JHC's Emergency Department.

The OPLN Team provide assessments and support during pregnancy and may refer to Psychiatry Services if the need arises.

There are two clinical services located at KEMH that provide perinatal mental health care and advice. These are the Department of Psychological Medicine and the Mother and Baby Unit (MBU).

Mother and Baby Unit @ KEMH

The Mother and Baby Unit (MBU) is an eight bed, authorised acute care, inpatient unit for the care and treatment of mothers (and their babies up to 12 months) with perinatal mental health disorders. The unit is a state-wide tertiary service and cannot provide an emergency response. Referrals are accepted from GPs, Mental Health Services, Emergency Departments, Child Health Nurses, concerned relatives and/or the patients themselves.

Once a referral is accepted, the referred patient will either be invited for an assessment at the Unit or MBU staff will assess the patient in other health services if an inpatient, before an offer of admission is made. The unit is a family friendly, home-like environment and partners are also encouraged to stay overnight when appropriate.

Staff members from the unit are available to provide information to GPs and other health care professionals and are able to provide links to the JHC Psychiatrists if additional information is required.

Contact with MBU nursing staff in the first instance can be made by ringing the Nurses (08) 6458 1771.Station on

The Edinburgh Postnatal Depression Score (EPDS) and Perinatal Anxiety Screening Scale (PASS) (see pages 42-45) are recognised as valuable screening tests for possible depression and anxiety, both in pregnancy and the postnatal period.

It is recommended that both tests are 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.

For PASS: Ask the woman to mark the response that most closely describes her experience of symptoms over the past month for every question. The scoring is from zero ("not at all") to three ("almost always") and all scores are added together.

A cut-off score of 26 is recommended to differentiate between high and low risk for presenting with an anxiety disorder.

Range of scores also gives an indication about severity of anxiety with asymptomatic women more likely to score between 0-20, women with mild- moderate symptoms more likely to score between 21-41 and women with severe symptoms more likely to score between 42-93. Women with higher scores are at increased risk for anxiety 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 JHC 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 patient's 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 (necessitating delivery < 34 weeks) 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 usually 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 Weeks
1. I have been able to laugh and see the funny side of things (0) As much as I could (1) Not quite so much now (2) Definitely not so much now (3) Not at all		
2. I have looked forward with enjoyment to things (0) As much as I always did (1) Rather less than I used to (2) Definitely less than I used to (3) 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 (0) No, never		
4. I have been anxious or worried for no good reason (0) No, not at all (1) Hardly ever (2) Yes, sometimes (3) 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		
SUBTOTAL		
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 (0) No, I have been coping as well as ever		
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 (0) No, not at all		
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 (0) Never		
SUBTOTAL		

Appendix 2 – Perinatal Anxiety Screening Scale (PASS)

☐ ANTENATAL ☐ POSTNATAL DATE: _____

Weeks pregnant _____ Baby's age _____

	Not at all	Some times	Often	Almost Always
1. Worry about the baby/pregnancy	0	1	2	3
2. Fear that harm will come to the baby	0	1	2	3
3. A sense of dread that something bad is going to happen	0	1	2	3
4. Worry about many things	0	1	2	3
5. Worry about the future	0	1	2	3
6. Feeling overwhelmed	0	1	2	3
7. Really strong fears about things, eg needles, blood, birth, pain, etc	0	1	2	3
8. Sudden rushes of extreme fear or discomfort	0	1	2	3
9. Repetitive thoughts that are difficult to stop or control	0	1	2	3
10. Difficulty sleeping even when I have the chance to sleep	0	1	2	3
11. Having to do things in a certain way or order	0	1	2	3
12. Wanting things to be perfect	0	1	2	3
13. Needing to be in control of things	0	1	2	3
14. Difficulty stopping checking or doing things over and over	0	1	2	3
15. Feeling jumpy or easily startled	0	1	2	3
16. Concerns about repeated thoughts	0	1	2	3
17. Being 'on guard' or needing to watch out for things	0	1	2	3
18. Upset about repeated memories, dreams or nightmares	0	1	2	3
19. Worry that I will embarrass myself in front of others	0	1	2	3
20. Fear that others will judge me negatively	0	1	2	3
21. Feeling really uneasy in crowds	0	1	2	3
22. Avoiding social activities because I might be nervous	0	1	2	3
23. Avoiding things which concern me	0	1	2	3
24. Feeling detached like you're watching yourself in a movie	0	1	2	3
25. Losing track of time and can't remember what happened	0	1	2	3
26. Difficulty adjusting to recent changes	0	1	2	3
27. Anxiety getting in the way of being able to do things	0	1	2	3
28. Racing thoughts making it hard to concentrate	0	1	2	3
29. Fear of losing control	0	1	2	3
30. Feeling panicky	0	1	2	3
31. Feeling agitated	0	1	2	3
Global Score				

Reference:
Somerville, S., Dedman, K., Hagan, R., Oxnam, E., Wettinger, M., Byrne, S., Coo, S., Doherty, D., Page, A.C. (2014).
The Perinatal Anxiety Screening Scale: development and preliminary validation. Archives of Women's Mental Health, DOI: 10.1007/s00737-014-0425-8

Appendix 3 – EPAS Referral

Joondalup Health Campus
Part of Ramsay Health Care

EPAS CLINIC REFERRAL FORM
(to be completed byGP)

MRN: .....
Surname: .....
Given Name: .....
Gender: ..... D.O.B: .....
(Affix patient identification label here)

PATIENT INFORMATION	GP INFORMATION
Surname: ..... Name:	Name: .....
D.O.B:	Pactice address: .....
Address:	.....
.....	Contact Tele Number.: .....
Contact Tele No.:	Fax Number.: .....

Date: ..... **Time:** .....

Presenting Problem: .....

.....

.....

.....

LMP: ..... EDD: ..... POA: .....

Relevant Clinical Findings: .....

.....

.....

.....

.....

Ultrasound findings:

Date scan completed: ..... Where scan performed?: .....

Relevant Findings: .....

.....

.....

.....

.....

Blood Results: ☐ Hb – Date: ..... ☐ Bega HCG – Date: ..... ☐ WCC – Date: .....

Blood Group and RH: .....

Anti D given: ☐ Yes ☐ No Amount Given: ..... Date given: .....

CONSULTING DOCTOR

.....	.....	.....
Printed Name	Signature	Provider No.

EPAS CLINIC REFERRAL FORM BY GP

HR 305-0

Appendix 4 – Care choices provided at JHC

1. ANTENATAL CLINICS (ANC) - low risk

Description	
Midwives provide care for women with low risk pregnancies in the Antenatal Clinic. These clinics are available during normal clinic hours, Wednesday evenings and Saturdays.	
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.** If home visits are required VMS midwife will visit.
Planned place of birth	JHC Labour and Birth Suite (L&BS)
Care provider during labour and birth	L&BS midwife L&BS medical team
Care provider following the birth	Postnatal ward midwife Medical team
Possible referrals of care	No referrals required
Transfer home	Vaginal births from 4-6 hours. Caesarean births from 24 hours.
Midwifery care at home	VMS midwife visits daily until day five.
Contact number	Antenatal Clinical Midwifery Manager Phone (08) 9400 9486

2. ANTENATAL CLINICS (ANC) – not low 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. • Pregnant women with complications in pregnancy e.g. hypertension, heart disease, kidney disease, twin-to-twin transfusion, congenital anomaly. • Diabetes Service – women with pregnancies complicated by Diabetes.	
Pregnancy care	Midwife sees the woman for antenatal visits at JHC and will refer to medical team if required. **Shared care with the woman's GP is encouraged.**
Planned place of birth	JHC Labour and Birth Suite (L&BS)
Care provider during labour and birth	L&BS midwife L&BS medical team
Care provider following the birth	Postnatal ward midwife Medical team
Possible referrals of care	Nil referrals required
Transfer home	Vaginal births from 4-6 hours. Caesarean births from 24 hours.
Midwifery care at home	VMS midwife visits daily until day five.
Contact number	Antenatal Clinical Midwifery Manager Phone (08) 9400 9486

Appendix 5 – Important Telephone Numbers

JHC Antenatal Clinic	(08) 9400 9486
JHC Antenatal Clinic Fax	(08) 9400 9837
JHC Clinical Midwifery Manager (Antenatal Clinic)	(08) 9400 9486
JHC Lactation Consultant	(08) 9400 9400
JHC Department of Obstetrics / Gynaecology	(08) 9400 9400
JHC Diabetes Service	(08) 9400 9400
JHC Early Pregnancy Assessment Service	(08) 9400 9937
JHC Emergency Dept JHC (24 hours)	(08) 9400 9400
KEMH Family Birth Centre	(08) 6458 1800
Genetics Services of WA	(08) 6458 1683
Gynaecology Senior Registrar (switchboard to page)	(08) 9400 9400
JHC Switchboard (24 hours)	(08) 9400 9400
KEMH Maternal Fetal Assessment Unit (24 hours)	(08) 6458 2199
KEMH Maternal Fetal Medicine Service	(08) 6458 2848
KEMH Obstetric Drug Information Service (7 days)	(08) 6458 2723
Obstetric Senior Registrar (switchboard to page)	(08) 9400 9400
Parent Education	(08) 9400 9400
Pharmacy	(08) 9400 9400
Physiotherapy	(08) 9400 9400
Social Work	(08) 9400 9400
Ultrasound Department	(08) 9400 9937
KEMH Visiting Midwifery Service	(08) 6458 1530
KEMH Women and Newborn	
Drug & Alcohol Service (WANDAS)	(08) 6458 1582

Appendix 6 – VBAC Consent Form

Joondalup Health Campus
Part of Ramsay Health Care

CONSENT FOR VAGINAL BIRTH AFTER CAESAREAN SECTION (VBAC)

MRN: .....

Surname: .....

Given Name: .....

Gender: ..... D.O.B: .....

(Affix patient identification label here)

This form is intended to provide information to patients who have had a caesarean section in the past and would like to attempt a trial of labour (se overleaf)	**Patient Initials**
1. I understand that I have had a prior caesarean section.	
2. I understand that I have the option of undergoing an elective repeat caesarean section or attempting a vaginal birth after a caesarean section (VBAC).	
3. I understand that the risk of a uterine rupteure during a VBAC is around 1%.	
4. I understand that there are risks to myself during VBAC, both from uterine rupture, complicated emergency Caesarean or the complications of vaginal delivery.	
5. I understand that if my uterus ruptures during my VBAC there may not be sufficient time to operate and prevent the death or permanent brain injury to my baby.	
6. I understand that during a VBAC, the use of oxytocin (syntocinon) hormone to make my uterus contract increases the risk of uterine rupture. The use of oxytocin is at the discretion of the consultant on call at the time.	
7. The risks to me after rupture of the uterus may include but are not linited to: • Hysterectomy (loss of utereus) • Blood transfusion • Infection • Injury to internal organs (bladder, bowel, ureter) • Blood coagulation problems • Multi-organ failure, ICU admission • Death	
8. I understand that if I choose a VBAC and end up having a caesarean section during labour, I have a greater risk of problems than if I had an elective repeat caesarean section.	
9. I understand that not all consultants will authorise an induction of labour in a VBAC.	

(Please tick)

I want to attempt a VBAC ☐ Yes ☐ No

I want a repeat caesarean section ☐ Yes ☐ No

I, Patients name: ..... certify that I have read, understood and acknowledged the above information and any questions concerning the above have been discussed with my doctor.

Patients name (print): ..... Patients signature: .....

Interpreter name (print): ..... Interpreter signature: .....
(if applicable)

Date of consent: ...../...../.....

Name of Doctor taking consent: ..... Signature: .....

CONSENT FOR VBAC

HR 309-0

There are large randomised controlled trials assessing birthing optionsin women who have had a previous caesarean section. Our advise is based mainly on retrospective studies. Advice is limited to women if the inter-delivery interval is at least 18 months.

There has been a wide range of success rates (23-85%) reported for those achieving vaginal birth following a planned VBAC.

Factors favouring success include

- A previous safe vaginal birth
- A previous safe VBAC
- Spontaneous onset of labour
- An uncomplicated pregnancy without other risk factors.

Factors reducing success include

- Previous C/S for poor arrested progress in labour (dystosia)
- Induction of labour
- Coexisting fetal, placental or maternal complications
- Maternal BMI >/= 30kg/m2
- Fetal nacrosomia of 4kg or more
- Advanced maternal age >35yrs
- Short stature
- More than 1 previous C/S

The benefits of a successful VBAC if uncomplicated include:

- Less morbidity for the current pregnancy and future pregnancies
  The avoidance of major surgery
- Earlier Mobilisation and discharge from hospital

The risks associated with VBAC include:

- an increased perinatal loss (1.3/1000) compared with ERCS at 39 weeks (1/1000)
- stillbirth after 38 weeks
- Intrapartum or neonatal death related to scar rupture
- Hypoxic Ischaemic ancephalopathy (HIE). This risk is 0.7/1000 and is related to labour, vaginal birth and scar rupture
- There is also an increased morbidity of emergency C/S (13.2%) compared to elective C/S (7%)
- Increased risk of pelvic floor trauma with vaginal delivery

The complication rates related to scar rupture per 1000 women attempting VBAC

Complications		**Risk/1000 attempting VBAC**
1.	Uterine rupture	5-7/1000
2.	Reinatal death	0.4-0.7/1000
3.	Maternal death	0.02/1000
4.	Major maternal morbity	3/1000
	Hystorectomy	0.5-2/1000
	Genitourinary Injury	0.8/1000
	Blood transfusion	1.8/1000
5.	Major perinatal mobidity	1/1000
	Foetal acidosis ph <7.0	1.5/1000
	HIE	0.4/1000

The benefits of elective C/S at 39 weeks include

- Avoidance of late stillbirth
- Reduced perinatal morbidity and morbidity (especially HIE) related to labour delivery and scar rupture
- Reduced maternal risks associated with an emergency caesarean section
- The avoidance of trauma to the maternal pelvic floor
- The convenience of a planned date of birth

The risks of elective CS include

- Surgical morbidity and complications with both index pregnancy and further pregnancies
- An increased risk of neonatal respiratory morbidity if < 39 weeks
- An association with lower rates of initiating breast feeding

All women electing to labour after previous C/S at Joondalup Health Campus have ready access to obstetric, neonatal, anaesthetic, operating theatre and resuscitation services (including the availability of blood products) in the event that complications occur.

Patients undergoing VBAC at Joondalup Health Campus will be assessed in early labour. All members of the on-call team will be notified in a timely manner of the admission and the relevant clinical circumstances. Continuous midwifery support and electronic monitoring will be provided.

Intravenous access will be required once labour is established, and a blood specimen for group and save will be ordered. Oral intake will need to be restricted to clear fluids.

A trial of labour mandates vigilant assessment of progress of labour with vaginal examination at least 4 hourly in the active phase of labour and more frequently as full dilation approaches.

2 hourly assessments will be offered from 7cm dilation in order to detect a secondary arrest of labour. There needs to be evidence of progress in labour in both the 1st and 2nd stages of labour.

Lack of progress will trigger a clinical assessment by a credentialeddoctor.

An epidural is not contra-indicated. Some studies have shown VBAC success rates to be higher in women with epidurals (73% vs 50%) than without.

There is no single specific clinical feature that is indicative of uterine rupture but the presence of any of the following during labour should raise the concern of possibility of this event.

- Abnormal CTG (present in 55-87%)
- Severe abnormal pain especially persisting between contractions
- Chest pain or shoulder-tip pain, sudden onset of shortness of breath
- Acute onset of scar tenderness, abnormal vaginal bleeding or haematoma
- Cessation of previous efficient uterine activity
- Maternal tachycardia
- Hypotension or shock
- Loss of station of the presenting part

Induction of labour may be a consideration however induction of labour reduces the success rate of achieving a VBAC and increases the rate of uterine rupture.

Induction of labour with prostaglandins is not offered at Joondalup Health Campus as the rate of uterine rupture is considered unacceptably high (1.4-2.45%).

Information regarding the effectiveness and safety of induction of labour with trans cervical catheters in planned VBAC is limited and valid conclusions are not possible.

The use of oxytocin to improve contractions separate from induction of labour has provided mixed results. An Australian study suggests an increase in uterine rupture from 0.19%-1.9% with the use of oxytocin.

The use of a trans-cervical catheter for induction of labour and oxytocin augmentation will be a consultant led decision.

Joondalup Health Campus does not offer induction of labour of labour or VBAC after more than 1 previous caesarean section.

As there is some uncertainty regarding the safety and efficacy of planned VBAC in a twin pregnancy this too will be a consultant led decision.

Please refer to:

https://www.ranzcog.edu.au/Womens-Health/Patient-Information-Resources/Vaginal-Birth-after-Caesarean-Section

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The first edition of this booklet was produced in 2003 by the Shared Care Coordinating Group, consisting of representatives from KEMH and the Perth Central Coastal Division of General Practice. The booklet forms part of the "Shared Care Program at KEMH" initiated in 2003 to meet the requirements of the "Policy Statement of the Joint Consultative Committee on Obstetrics" of 4 February 2002. Metropolitan and rural divisions of General Practice have been consulted on the implementation of this policy. These guidelines are also available on the Internet Website: www.wnhs.health.wa.gov.au Health Professionals Manuals and Directories

This booklet has been revised by JHC for the purposes of the JHC Shared Care Model and copies can be obtained by contacting the Obstetrics and Gynaecology Clinical Care Unit on (08) 9400 9400

This document can be made available in alternative formats on request for a person with a disability.

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Website: www.wnhs.health.wa.gov.au

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WOMEN AND NEWBORN HEALTH SERVICE

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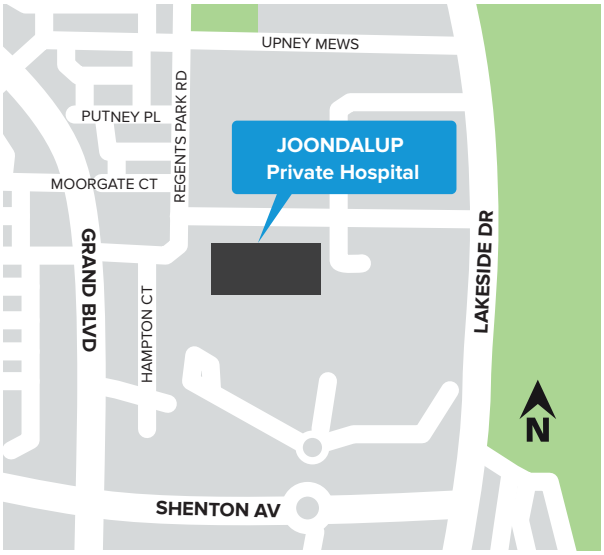

Government of **Western Australia**
North Metropolitan Health Service
Women and Newborn Health Service

Healthy WA
Health Information for Western Australians

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