Antenatal Shared Care Guidelines for General Practitioners
Sixth Edition
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 King Edward Memorial Hospital (KEMH) and other maternity care providers in Western Australia. The purpose of shared care is to improve the quality and convenience of care for women.

Referring women to KEMH

In 2014, the Department of Health launched the Central Referral Service (CRS) to manage specialist outpatient referrals in the public health system.

Antenatal referrals

At the time of publication, antenatal referrals were outside the scope of the Central Referral Service. Please refer to the Health Professionals page of the KEMH website for updates.

Routine referrals

GPs are requested to refer low risk antenatal patients to their local maternity service based on their postcode of residence. 
See Tables 1 and 2 on page 2 and 3.

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

Guidelines for exclusion from shared care

High risk antenatal patients may be referred directly to KEMH Outpatient Department. Please refer early as these women may need to be seen at an earlier gestation.

Fax: (08) 9340 1031

Referrals for women requiring review within 7 days

If the woman resides within KEMH catchment area, the GP should contact KEMH Clinical Midwifery Nurse Manager (Ambulatory Services)

Phone (08) 9340 2222 page 3419.

If woman resides outside KEMH catchment area, the GP needs to contact their local maternity service to discuss the referral.
Urgent referrals

<20 weeks gestation  Contact the KEMH Gynaecology Registrar
Ph: (08) 9340 8222 and request them to be paged

>20 weeks gestation  Contact the KEMH Obstetric Registrar
Ph: (08) 9340 2222 and request them to be paged

The KEMH Outpatient Referral Form can be downloaded from the Health Professionals section of the KEMH website:

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
- GP’s intention to share care
- Any relevant medical and obstetric history
- If interpreter services are required

Table 1
Postcodes within hospital catchment areas from May 2015

<table>
<thead>
<tr>
<th>HOSPITAL</th>
<th>POSTCODES (inclusive of all numbers within ranges)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armadale Health Service</td>
<td>6108-6112, 6121-6126</td>
</tr>
<tr>
<td>Bentley Hospital</td>
<td>6100-6105, 6107, 6151, 6152</td>
</tr>
<tr>
<td>Fiona Stanley Hospital</td>
<td>6147-6150, 6153-6160, 6162-6164, 6166</td>
</tr>
<tr>
<td>Joondalup Health Campus</td>
<td>6019, 6020, 6023-6038, 6061, 6064-6067</td>
</tr>
<tr>
<td>KEMH</td>
<td>6000, 6001, 6003-6013, (6014 Jolimont/Floreat/Wembley), 6015, 6016, 6050, 6051, (6052 Bedford), 6053, 6062</td>
</tr>
</tbody>
</table>

Table 2
Proposed postcodes within hospital catchment areas from November 2015

<table>
<thead>
<tr>
<th>HOSPITAL</th>
<th>POSTCODES (inclusive of all numbers within ranges)</th>
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<td>6000, 6001, 6003-6013, (6014 Jolimont/Floreat/Wembley), 6015, 6016, 6050, 6051, (6052 Bedford), 6053, 6062</td>
</tr>
<tr>
<td>Osborne Park Hospital</td>
<td>6014-6015, 6017-6022, (6052 Inglewood), 6059-6061, 6063, 6066</td>
</tr>
<tr>
<td>Peel Health Campus</td>
<td>6180, 6207, 6208, 6210, 6211</td>
</tr>
<tr>
<td>Rockingham General Hospital</td>
<td>6165, 6167-6176</td>
</tr>
<tr>
<td>Swan District Hospital</td>
<td>6054-6058, 6068, 6070-6074, 6081-6085, 6090, 6500, 6556, 6558 plus Wheatbelt region</td>
</tr>
</tbody>
</table>

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

Patients at KEMH 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. KEMH 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 KEMH.

Which general practitioners can provide shared care with KEMH?

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.

Obstetric medication information

The Pharmacy Department at KEMH provides an information service on the safety of medications taken during pregnancy. The Obstetric Drug Information Service can be contacted on (08) 9340 2723.

For queries

The Clinical Midwifery Nurse Manager (Ambulatory Services), can be contacted on (08) 9340 2222, pager 3419 from 8.00am to 3.00pm Monday to Friday, or fax (08) 9340 1031, if you have any queries regarding these guidelines.

For urgent issues call (08) 9340 2222 and ask for the appropriate staff member below:

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

Summary

These guidelines are available on the KEMH website at:

A one page summary on Antenatal Shared Care for the desktop can also be found at:
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 the KEMH antenatal clinic.**

<table>
<thead>
<tr>
<th>Visit</th>
<th>Encounter</th>
<th>Provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st visit</td>
<td>Confirm pregnancy and expected date of delivery. Medical history and <strong>cardiovascular, respiratory and breast</strong> examination. Complete initial routine investigations - see page 16. Counsel and offer first trimester screening for 11 to 13 weeks, regardless of woman’s age (ideally 10 weeks for blood test, 12 weeks for ultrasound scan) - see page 21. Complete Edinburgh Postnatal Depression Scale (page 37). Discuss alcohol, smoking, diet, exercise, back care, minor discomforts, illicit drug use. Check for use of folate tablets and iron supplements.</td>
<td>GP</td>
</tr>
<tr>
<td>14 weeks</td>
<td>Routine assessment - ensure patient has the results of first trimester genetic screening test performed at 11 to 13 weeks. Refer to booking hospital, see Antenatal Referrals (page 1). If you are ordering maternal serum screening or 19 week ultrasound indicate this on the referral letter. Counsel and offer maternal screening at 15 to 17 weeks if first trimester screening has not been undertaken. Book 19 week ultrasound anatomy scan – see page 25. Discuss parent education classes.</td>
<td>GP</td>
</tr>
<tr>
<td>20 to 22 weeks</td>
<td>Antenatal visit at KEMH – assess suitability for shared-care, rebook for 36 weeks. Discuss breastfeeding, when to go to hospital, parent education classes (metro), allied health services. Women advised to commence iron supplements.</td>
<td>KEMH</td>
</tr>
<tr>
<td>24 weeks</td>
<td>Routine assessment. Order 28 week investigations: full blood count +/- iron studies (if at risk of anaemia), blood group and antibody screen if Rhesus negative.</td>
<td>GP</td>
</tr>
<tr>
<td>28 weeks on</td>
<td>Follow up KEMH / GP obstetrician. Organise investigations. Blood group and antibody screen if required. Administer anti-D if Rhesus negative – see page 30. 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.</td>
<td>KEMH</td>
</tr>
<tr>
<td>30 weeks</td>
<td>Routine assessment for primigravida women or those with previous complications.</td>
<td>GP</td>
</tr>
<tr>
<td>32 weeks</td>
<td>Routine assessment. Edinburgh Postnatal Depression Score – see page 37.</td>
<td>GP</td>
</tr>
<tr>
<td>34 weeks</td>
<td>Routine assessment.</td>
<td>GP</td>
</tr>
</tbody>
</table>
| Postnatal check 6-8 weeks | **Baby check:** weight and head circumference, full examination, first immunisations (8 weeks)  
**Mother check:** discuss delivery, check blood loss/uterine size and perineum or LUSCS wound, breastfeeding, screen for PND, discuss contraception, Pap smear if due, update immunisations (whooping cough, 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 Clinic Referral Coordinator on 9340 2222 page 3548 to fast-track an outpatient review.  
**Fourth degree tears:** women are routinely reviewed at KEMH at approximately six weeks postpartum. | GP       |
Preconception counselling, iron and folate

Identify women who are thinking about pregnancy.

- For those at high risk of fetal abnormality, referral for genetic counselling may be appropriate.
- Women with Type 1 or Type 2 diabetes, are invited to attend the Diabetes Service at KEMH for counselling, phone (08) 9340 2163.

**Folate:**
- Encourage folate supplements until the end of the first trimester (see table below for doses).
- Pregnancy formulations should not contain Vitamin A.

<table>
<thead>
<tr>
<th>Supplement</th>
<th>Dose</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Folate</td>
<td>0.5 mg per day</td>
<td>Preconception to 14 weeks gestation.</td>
</tr>
</tbody>
</table>
| Folate     | 5 mg per day   | Preconception to 14 weeks gestation for women considered at high risk for an open neural tube defect:  
- Personal history of an open neural tube defect  
- A previous pregnancy with an open neural tube defect  
- PMHx of diabetes mellitus  
- Women taking anticonvulsants  
- Obese women |

**Iron:**
- Iron supplementation is recommended during pregnancy and should be commenced from 20 weeks, or earlier if the woman is already iron deficient.
- Women who commence oral iron supplementation in early pregnancy are less likely to need intravenous iron therapy.
- Sub-optimal iron dosing is common as there are many different brands of iron available and they may contain low, medium or high doses or elemental iron.
- Iron preparations with high elemental iron content (>100mg/unit) are recommended to reverse anaemia.

- If cost is a barrier, consider providing a written prescription for those with a Health Care Card to purchase iron at a subsidised rate (Ferro-tab and Ferro-f-tab are PBS listed).
- See table below for brands and doses of elemental iron.

**Brands of iron**

<table>
<thead>
<tr>
<th>High dose elemental iron &gt;100 mg/unit</th>
<th>Medium dose elemental iron 30-99mg/unit</th>
<th>Low dose elemental iron &lt;30mg/unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrograd C</td>
<td>Fefol</td>
<td>Iron Maxx</td>
</tr>
<tr>
<td>Ferrogradumet</td>
<td>Elevit</td>
<td>Pure Innovation</td>
</tr>
<tr>
<td>Ferro-f-tab</td>
<td></td>
<td>Pregnancy multivitamin</td>
</tr>
<tr>
<td>Ferro-tab</td>
<td></td>
<td>Spatone</td>
</tr>
<tr>
<td>Fefol</td>
<td></td>
<td>Fab Iron</td>
</tr>
<tr>
<td>Elevit</td>
<td></td>
<td>Swisse Multi</td>
</tr>
<tr>
<td>Iron Maxx</td>
<td></td>
<td>Metagenics Veggie Caps</td>
</tr>
<tr>
<td>Pure Innovation</td>
<td></td>
<td>Floradix (liquid iron)</td>
</tr>
<tr>
<td>Pregnancy multivitamin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spatone</td>
<td></td>
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</tr>
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<td>Fab Iron</td>
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</table>

- Many women do not volunteer to health professionals if they have stopped taking their iron supplements. It is therefore important for GPs and other health professionals to be proactive in formally assessing adherence to oral iron supplementation at every antenatal visit.
- Research suggests it is not possible for pregnant women to obtain adequate iron from their diet alone, particularly in subsequent pregnancies.
- 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.

If your patients would like to access further information about pregnancy and childbirth via the Internet, the following site may be suggested: http://kemh.health.wa.gov.au/having_a_baby_in_WA/
**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

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

### Pre-pregnancy BMI

<table>
<thead>
<tr>
<th>Pre-pregnancy BMI</th>
<th>Total Weight Gain</th>
<th>Rate of Weight Gain Second and Third Trimester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight BMI &lt;18.5</td>
<td>12.5kg - 18kg</td>
<td>510g/week</td>
</tr>
<tr>
<td>Normal Weight BMI 18.5-24.9</td>
<td>11.5kg - 16kg</td>
<td>420g/week</td>
</tr>
<tr>
<td>Overweight BMI 25-29.9</td>
<td>7kg - 11.5kg</td>
<td>280g/week</td>
</tr>
<tr>
<td>Obese BMI &gt; 30</td>
<td>5kg - 9kg</td>
<td>220g/week</td>
</tr>
</tbody>
</table>

**Early Pregnancy Assessment Service (EPAS)**

KEMH 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.

**Time:** 8.30 to 12.30 Monday to Friday (excluding public holidays)

**Venue:** Emergency Centre, KEMH

**Appointment:** Booking an appointment at EPAS is possible 24 hours a day.

**Phone:** (08) 9340 1431

Alternatively, call the KEMH switchboard on (08) 9340 2222 and ask for EPAS midwife (Pager: 1431).

**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 Emergency Centre on (08) 9340 1431.**
Emergency Centre

Women will be seen at anytime in the Emergency Centre 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 Centre. Please advise patients to fast from 7.00am (they may have water only) in case they need to go to theatre that day.

For early pregnancy loss, the Emergency Centre 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 Emergency Centre.

If you require clinical advice, a registrar or consultant is available in-hours in the Emergency Centre. Please phone (08) 9340 1431 or (08) 9340 1433.

Alternatively, phone the KEMH switchboard (08) 9340 2222 and ask for the appropriate staff member depending on the time of day:
- 0800-2200 Gestation < 20 weeks Gynaecology Registrar
- 2200-0800 Any gestation On-call registrar

When you refer a patient to the Emergency Centre, please send any reports with the patient, such as ultrasound, blood group or quantitative BhCG, but do not worry if these tests have not been done.

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 KEMH 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 30.

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 Nurse Midwifery Manager (Ambulatory Services) or the KEMH Senior Obstetric Registrar. Phone (08) 9340 2222 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 (WANDAS)
- Epilepsy/seizures or use of anticonvulsant drugs
- Bleeding disorders
- Chronic carriers of Hepatitis B – see page 18
- 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.
• Uterine surgery eg. caesarean section, myomectomy, cone biopsy.
• 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

• Multiple pregnancy (perform 12 week ultrasound to determine chorionicity). If monochorionic, arrange a 16 week scan to look for twin to twin transfusion and refer to KEMH if results are abnormal (contact the on call obstetric registrar to discuss)
• Atypical red cell antibodies.
• Adolescent (if first pregnancy and due date before 18th Birthday) – Refer to Adolescent Antenatal Clinic.
• Morbid obesity BMI > 40.

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) 9340 1031.
• For more information contact MFM Service: Phone (08) 9340 2848 Fax (08) 9340 1060 or see website: www.thewholeninemonths.com.au

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 KEMH, please contact the Obstetric Senior Registrar for advice. Phone: (08) 9340 2222 and ask switchboard to page.

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) 9340 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.
• For other clinical advice, please contact the on-call Microbiologist at KEMH through the KEMH switchboard (08) 9340 2222.
• For routine advice on pregnancy, travel and vaccinations, please contact a specialised travel medicine clinic.
Investigations

Investigations may be ordered privately or at KEMH. Photocopies of all tests should be sent to KEMH - Fax (08) 9340 1031. Please write ‘copy to KEMH 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 > 5.5 indicates gestational diabetes
   - Midstream urine
   - Chlamydia screening

2. All women should be counselled and offered fetal anomaly screening (see page 21).

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 (see page 19)
   - Haemoglobinopathy screening if in high-risk group e.g. high risk ethnic background, FHx of haemoglobinopathy (see page 29)
   - Twin pregnancy: Ultrasound to determine chorionicity plus 16 week scan for twin-to-twin transfer syndrome if monochorionic diamniotic.
   - Iron studies if at risk of anaemia.

4. Vitamin D:
   - Vitamin D screening if at risk for Vitamin D deficiency e.g. women who have reduced sun exposure, veiled women and dark skinned women.
   - If Vitamin D deficiency is identified (Vitamin D serum level <50 nmol/mL, supplementation is required: 5000 IU Vitamin D3 per day plus calcium 1000mg per day. (Vitamin D is available in tablet form e.g. Ostelin 1 capsule = 25microgram = 1000 IU or solution form e.g. Bio-Logical Vitamin D3 solution 1000 IU/0.2mL).
   - Repeat Vitamin D assay after 6-8 weeks and continue this dose if level < 50nmol/L.
   - Repeat serum levels again in four weeks if this dose was continued.
   - Maintenance dose: 25microgram = 1000 IU per day plus 1000mg calcium per day until cessation of lactation.

5. 19 weeks gestation:
   - Fetal anatomy ultrasound (GP to organise)

6. 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)
   - Glucose tolerance test (for all women)

6. 36 weeks (KEMH 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 KEMH.

Chlamydia 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:
  - At booking include testing for gonorrhoea with chlamydia specimens
  - 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.

Gestational Diabetes Mellitus (GDM) screening

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

The routine screening tool is a 75g Oral Glucose Tolerance Test (OGTT) which is recommended at 24-28 weeks for low risk women. However if there is a clinical suspicion of GDM (e.g. previous GDM or symptoms or signs suggestive of diabetes such as heavy glycosuria, fetal macrosomia, polyhydramnios), a random venous plasma glucose or OGTT may be performed at any gestation. If early screening is negative, women at high risk should be monitored closely and undergo a repeat OGTT.

Screening tests

- Fasting plasma glucose: GDM if >= 5.5mmol/L
- Random (non-fasting) plasma glucose. Proceed to OGTT if >= 7.8mmol/L
- Oral Glucose Challenge Test (OGTT): fasting, 75g glucose load, performed in a laboratory, takes two hours
- No longer recommended: The Oral Glucose Challenge Test (OGCT): a non-fasting test using a 50g glucose load

Diagnostic criteria for GDM after OGTT (KEMH recommendations)

- Fasting plasma glucose >= 5.5mmol/L
- two hour plasma glucose >= 8.0mmol/L

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.

Maternal steroids

An OGTT should not be performed within a week of maternal steroid administration.
Further information

Any queries about testing, screening, diagnosing or managing diabetes should be directed in business hours to the diabetes midwife (08) 9340 2222 page 3309 or the physician’s registrar, (08) 9340 2222 page 3369. Queries can also be directed to the Diabetes Service phone (08) 9340 2163 and messages can be recorded on an answering machine if the office is unattended. These messages will be followed up on the next business day.

Urgent out-of-hours queries can be referred to the senior obstetric registrar on duty or physician on call by phoning (08) 9340 2222.

Please note: The proposed Australian Diabetes in Pregnancy Society (ADIPS) guidelines have not adopted at KEMH. Patients referred to KEMH will not be managed according to these guidelines.

<table>
<thead>
<tr>
<th></th>
<th>Pre 24 weeks gestation*</th>
<th>24 to 28 weeks gestation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low-risk</strong></td>
<td>Blood sugar level with booking bloods</td>
<td>OGTT</td>
</tr>
<tr>
<td><strong>High-risk</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Maternal age &gt; or = 40 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Women with a family history of diabetes</td>
<td></td>
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<tr>
<td>- Maternal obesity</td>
<td></td>
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<tr>
<td>- Hypertension prior to 20 weeks</td>
<td></td>
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<tr>
<td>- Previous macrosomic baby (&gt;4000g)</td>
<td></td>
<td></td>
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<tr>
<td>- History of unexplained stillbirth</td>
<td></td>
<td></td>
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<tr>
<td>- Previous baby with congenital anomalies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Ethnicity - Aboriginal, Asian, Indian, Middle Eastern</td>
<td></td>
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</tr>
</tbody>
</table>

1. Standard 75g OGTT before or at first opportunity after conception.
2. If OGTT not feasible, fasting plasma glucose or non-fasting plasma glucose.
3. If early screening is negative, monitor every 6-8 weeks and request OGTT at 24 to 28 weeks.

OGTT

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 the Maternal Fetal Medicine (MFM) service. A referral for opinion/management does not satisfy Medicare requirements for an ultrasound or diagnostic test such as chorionic villus sampling or amniocentesis. It is therefore necessary to include a request for ultrasound or diagnostic test in your referral so that the MFM midwives do not have to contact the GP/referring doctor for another referral. For example - ‘Please provide assessment and management +/- ultrasound +/- CVS/amniocentesis as appropriate’.

Please also indicate on the referral if you would like KEMH to take over management if an anomaly is found. In the case of an actual anomaly, it is suggested that the woman is referred directly to Maternal Fetal Medicine. In this case, to ensure Medicare requirements are met and the woman’s experience is as efficient as possible, the referral will need to include the following information: ‘Please provide counselling, tertiary review ultrasound and management’.

For enquiries, please contact the MFM Clinical Midwife Consultant.
MFM: (08) 9340 2848 Fax: (08) 9340 1060
Ultrasound Department: (08) 9340 2830

For more information on the MFM service see page 26.

For women who require assessment and management of third trimester growth and wellbeing please contact the Maternal Fetal Assessment Unit Ph (08) 9340 2199 (see page 26).
Screening for Down syndrome

1. 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 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. 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).

3. Non-invasive prenatal testing
   Non-invasive prenatal testing (NIPT) has recently become available in some countries as a high-level screening test for trisomy 21, 18 and 13. This technology utilises cell-free fetal DNA in the maternal circulation and can be used from 10 weeks gestation onwards.

   At the time of publication, NIPT was not being provided by any laboratory in Australia and was not being funded by Medicare. For women who have the financial resources to pay, this service can be accessed through external private laboratories (e.g. Western Diagnostic Pathology, Sonic Health Care) and sent internationally for testing with a turn around time of about 10-14 days. There are now position statements on NIPT by several professional bodies available (e.g. American Congress of Obstetricians and Gynecologists and the International Society for Prenatal Diagnosis) and these can be accessed online.

   KEMH does not offer NIPT at present, except for an extremely limited number of very high risk cases where amniocentesis or chorionic villus sampling (CVS) would pose significant risks to the mother or fetus (e.g. maternal HIV, multiple uterine fibroids). NIPT in these extremely high risk cases is only accessible through the Maternal Fetal Medicine Service on an individual case review basis. NIPT is a rapidly changing field of prenatal testing and it is be expected that its indications and use will be expanded over time.

4. 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 is associated with poor early placentation. 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. A low PAPP-A is defined as a maternal serum PAPP-A value < 0.4MoM, with increased frequency of adverse obstetrical outcomes noted below this level.
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 KEMH booking visit for low risk patients 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 with them to this appointment.

If ultrasounds are booked at KEMH, this needs to be arranged 2-3 weeks in advance. Please fax the referral to the Ultrasound Department on (08) 9340 2700 and an appointment letter will be sent to the patient.

Any queries should be directed to the Ultrasound Department by phoning (08) 9340 2830. Enquiries regarding procedures (e.g. CVS or amniocentesis) or high-risk results should be directed to the Maternal Fetal Medicine service Ph: (08) 9340 2848 or Fax: (08) 9340 1060.

Rural patients:
KEMH will endeavor to coordinate an ultrasound with a woman’s antenatal clinic appointment if this is pre-arranged.

High-risk pregnancies:
if there is a history of a previous fetal anomaly, recurrent pregnancy loss, abnormal screening results, multiple gestation or morbid obesity, ultrasounds for these women may be booked at KEMH.

Rural patients
Ultrasounds for rural women may be performed at KEMH either the day before the Antenatal Clinic appointment or early in the morning on the day of the appointment but this must be pre-arranged.

Rural doctors requiring assistance with arrangements for their rural patients can liaise with the Clinical Nurse Manager via (08) 9340 2222, pager 3419 between 8.00am and 3.00pm Monday to Friday, or fax (08) 9340 1031. The Antenatal Clinic Manager can assist with coordinating appointments, arranging ultrasounds, accommodation needs and if a patient requires referral to another service, such as a social worker.

If rural doctors require medical advice including patient management and need for transfer/admission, they can contact the obstetric consultant or senior registrar via the 24 hour free-call number 1800 428 615.

KEY POINTS

- All women should be counselled and offered first trimester screening (blood tests including measurement of PAPP-A level done ideally at 10 weeks and ultrasound ideally at 12 weeks) with adequate pre-test counselling.
- If a woman returns a low PAPP-A result (<0.4MoM), a referral should be made to a specialist obstetrician or specialist obstetric service by 20 weeks gestation with assessment regarding the need for closer maternal and fetal surveillance.
- Routine anatomy scan with Doppler assessment at 18 – 20 weeks.
- Growth scan with Doppler assessment at 24, 28, 32 and 36 weeks.
- Assessment of BP and urinalysis for presence of proteinuria at each antenatal visit.

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 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.

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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.
Maternal Fetal Medicine Service
The Maternal Fetal Medicine (MFM) Service provides tertiary level ultrasound assessment and diagnosis of pregnancy complications and ongoing pregnancy management by a multidisciplinary team.

The service provides maternal fetal medicine diagnosis and treatment, in particular for conditions such as congenital abnormalities, rhesus disease, intrauterine growth restriction and twin to twin transfusion syndrome. The specialists and midwives of the MFM Service at KEMH 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 14).

Phone: (08) 9340 2848
Fax: (08) 9340 1060

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.

The Unit is open 24 hours a day.

Phone: (08) 9340 2199

The Women and Newborn Drug and Alcohol Service
The Women and Newborn Drug and Alcohol Service (WANDAS) offers obstetric and social support to pregnant women who are using drugs and alcohol.

Services include:
• Close monitoring during pregnancy
• Counseling and information on drug and alcohol treatment options
• Information about the effects of drugs and alcohol during pregnancy

Phone: (08) 9340 1582

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:

<table>
<thead>
<tr>
<th>HAEMOGLOBINOPATHY</th>
<th>GENE INHERITANCE</th>
<th>EFFECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha thalassaemia minor or α-thalassaemia trait</td>
<td>One or two defective α genes</td>
<td>Asymptomatic normally. May have mild anaemia.</td>
</tr>
<tr>
<td>Beta thalassaemia minor or β-thalassaemia trait.</td>
<td>One defective β gene</td>
<td>Asymptomatic normally. May have mild anaemia.</td>
</tr>
<tr>
<td>HbH Disease</td>
<td>Three defective β genes</td>
<td>Ranges from asymptomatic to requiring regular blood transfusion.</td>
</tr>
<tr>
<td>Alpha thalassaemia major</td>
<td>Four defective α genes</td>
<td>Bart’s disease / Hydrops fetalis</td>
</tr>
<tr>
<td>Beta thalassaemia major</td>
<td>Two defective β genes</td>
<td>Severe anaemia. Require frequent blood transfusions. May result in death in early childhood.</td>
</tr>
<tr>
<td>Sickle Cell trait</td>
<td>One defective β gene</td>
<td>Asymptomatic.</td>
</tr>
<tr>
<td>Sickle Cell Disease</td>
<td>Two defective β genes</td>
<td>Spontaneous abortion. Pre-term birth, intra-uterine growth restriction, perinatal death.</td>
</tr>
</tbody>
</table>
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 KEMH 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) 9340 1525 for couples if both partners are carriers.

<table>
<thead>
<tr>
<th>Beta Thalassaemia</th>
<th>All ethnic groups other than Northern European</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha^a Thalassaemia (αα/--)</td>
<td>Chinese, South East Asian, Mediterranean</td>
</tr>
<tr>
<td>Haemoglobin E</td>
<td>South East Asian</td>
</tr>
<tr>
<td>Haemoglobin S</td>
<td>African (including African-American and African-Caribbean), Greek, Southern Italian, Turkish, Arab, Indian.</td>
</tr>
</tbody>
</table>

Ethnic groups with a clinically significant prevalence of haemoglobin disorders:

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 KEMH 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) 9340 1525 for couples if both partners are carriers.

Investigations of patients for Haemoglobinopathy

1. **Ethnic Background**
   - Africa including American or Caribbean
   - Asian
   - Mediterranean
   - Pacific Islander
   - Middle Eastern
   - New Zealand Maori

2. **Family history of haemoglobinopathies**

<table>
<thead>
<tr>
<th>Low Risk</th>
<th>High Risk</th>
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<tbody>
<tr>
<td>FBP</td>
<td>FBP</td>
</tr>
<tr>
<td>Iron Studies</td>
<td>Iron Studies</td>
</tr>
<tr>
<td>Hb Studies (HPLC)</td>
<td>Hb Studies* (HPLC)</td>
</tr>
</tbody>
</table>

- FBP: Normal:
  - MCV < 80
  - MVH < 27
  - No further action
- Iron Studies: Low or Normal
- Treat Iron deficiency if present

Possible / confirmed Hb variant or Thalassaemia trait:
- Refer to KEMH antenatal clinic - Fax 9340 1031
- ANC Manager Phone 9340 2222 Page 3419
- Expedite partner testing if patient is confirmed as a carrier

* Hb studies can be requested as an add-on to the FBP
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 36 weeks gestation. These women will therefore need to be seen at 28 weeks and 36 weeks. Anti-D is also given to these women at KEMH 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, 36 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

KEMH prefers women in the metropolitan area, who have a small early pregnancy bleed or minor antepartum haemorrhage and do not need a tertiary assessment, to see their GP for anti-D. This is usually more convenient as women who are referred to the Emergency Centre at KEMH 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. GPs may download an Anti-D register from the following website:


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

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).

Department of Psychological Medicine

The Department of Psychological Medicine provides psychiatric, psychological and mental health nursing services to KEMH patients and consultancy to staff in relation to patients’ mental health care. Patients referred from medical specialists, clinics, wards of the hospital and the community are offered responsive triage, assessment, management, referral and treatment services as appropriate to their presenting mental health issues. Psychiatry staff are happy to be contacted by GPs who require clinical advice and the perinatal mental health liaison nurses can assist with procedural issues and making appointments.

The department can be contacted on (08) 9340 1521.

Mother and Baby Unit

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, homelike environment and partners are also encouraged to stay overnight when appropriate.

Staff from the unit are available to provide information to GP’s and other health care professionals and are able to link to the KEMH Psychiatrists if additional information is required.

Contact with MBU nursing staff in the first instance can be made by ringing the Nurses Station on (08) 9340 1771.

The Edinburgh Postnatal Depression Score (see page 37) is recognised as a very valuable screening test for possible depression, both in pregnancy and the postnatal period.

It is recommended that scoring is undertaken at least once in early pregnancy and again at around 32 weeks. However, the scale can be used at any stage of the pregnancy and/or the postnatal period.

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.

More information can be found on the KEMH website at http://kemh.health.wa.gov.au/development/ and clicking on the link to WA Perinatal Mental Health Unit

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 KEMH 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 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

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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.

<table>
<thead>
<tr>
<th>IN THE PAST 7 DAYS</th>
<th>First Visit</th>
<th>32 wks</th>
</tr>
</thead>
<tbody>
<tr>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

### IN THE PAST 7 DAYS

<table>
<thead>
<tr>
<th>Question</th>
<th>First Visit</th>
<th>32 wks</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Things have been getting on top of me*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Yes, most of the time I haven’t been able to cope at all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Yes, sometimes I haven’t been coping as well as usual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) No, most of the time I have coped well</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0) No, I have been coping as well as ever</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I have been so unhappy that I have had difficulty sleeping*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Yes, most of the time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Yes, sometimes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Not very often</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0) No, not at all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I have felt sad or miserable*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Yes, most of the time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Yes, quite often</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Not very often</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0) No, not at all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I have been so unhappy that I have been crying*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Yes, most of the time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Yes, quite often</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Only occasionally</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0) No, not at all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. The thought of harming myself has occurred to me*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Yes, quite often</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Sometimes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Hardly ever</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0) Never</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL**

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### Appendix 2 – Care choices provided at KEMH

The obstetric team includes obstetrician, obstetric senior registrar, registrar and resident.

<table>
<thead>
<tr>
<th>1 FAMILY BIRTH CENTRE (FBC) / MIDWIFERY GROUP PRACTICE (MGP)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>Care for healthy women with uncomplicated pregnancies during pregnancy, labour, childbirth, postnatally, and after transfer home. Care is provided by midwives in the Family Birth Centre.</td>
</tr>
<tr>
<td><strong>Pregnancy care</strong></td>
</tr>
<tr>
<td>FBC / MGP midwife. Option for shared care with GP. If home visits required FBC / MGP midwife will visit.</td>
</tr>
<tr>
<td><strong>Planned place of birth</strong></td>
</tr>
<tr>
<td>Family Birth Centre - access located off Railway Parade.</td>
</tr>
<tr>
<td><strong>Care provider during labour and birth</strong></td>
</tr>
<tr>
<td>FBC / MGP midwife.</td>
</tr>
<tr>
<td><strong>Care provider following the birth</strong></td>
</tr>
<tr>
<td>FBC / MGP midwife.</td>
</tr>
<tr>
<td><strong>Possible referrals of care</strong></td>
</tr>
<tr>
<td>To Antenatal Clinic (ANC) for pregnancy complications.</td>
</tr>
<tr>
<td>To Labour and Birth Suite (L+BS) for birth complications.</td>
</tr>
<tr>
<td>To postnatal wards for complications such as infection, feeding problems.</td>
</tr>
<tr>
<td><strong>Transfer home</strong></td>
</tr>
<tr>
<td>Within 24 hours.</td>
</tr>
<tr>
<td><strong>Midwifery care at home</strong></td>
</tr>
<tr>
<td>FBC / MGP midwife visits daily until day five.</td>
</tr>
<tr>
<td><strong>Contact number</strong></td>
</tr>
<tr>
<td>Family Birth Centre - (08) 9340 1800.</td>
</tr>
</tbody>
</table>

### 2 TEAM MIDWIFERY

<table>
<thead>
<tr>
<th>Description</th>
<th>A team of midwives provides continuity of care and information to women in pregnancy, labour, childbirth and postnatally within the KEMH Clinics, Labour and Birth Suite (L+BS) and obstetric wards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy care</td>
<td>Team midwife for pregnancy care. No option for shared care with GP. Obstetric consultant sees woman at 36 weeks and otherwise as required. If home visits required VMS (Visiting Midwifery Service) midwife will visit.</td>
</tr>
<tr>
<td>Planned place of birth</td>
<td>KEMH Labour and Birth Suite</td>
</tr>
<tr>
<td>Care provider during labour and birth</td>
<td>Team midwife L+BS Medical team</td>
</tr>
<tr>
<td>Care provider following the birth</td>
<td>Team midwife Medical team</td>
</tr>
<tr>
<td>Possible referrals of care</td>
<td>Most complications in pregnancy cared for within the team. Some exceptions include Diabetes, illicit substance use.</td>
</tr>
<tr>
<td>Transfer home</td>
<td>Vaginal births within 24 - 48 hours. Caesarean births within 72 hours.</td>
</tr>
<tr>
<td>Midwifery care at home</td>
<td>VMS midwife visits daily until day five.</td>
</tr>
<tr>
<td>Contact number</td>
<td>Midwife (08) 9340 1809</td>
</tr>
</tbody>
</table>

### 3 ANTENATAL CLINICS (ANC) - low risk

<table>
<thead>
<tr>
<th>Description</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy care</td>
<td>Midwife can provide antenatal care and will refer to medical team if required. Option for shared care with GPs. If home visits required VMS midwife will visit.</td>
</tr>
<tr>
<td>Planned place of birth</td>
<td>KEMH Labour and Birth Suite (L+BS)</td>
</tr>
<tr>
<td>Care provider during labour and birth</td>
<td>L+BS midwife L+BS medical team</td>
</tr>
<tr>
<td>Care provider following the birth</td>
<td>Postnatal ward midwife Medical team</td>
</tr>
<tr>
<td>Possible referrals of care</td>
<td>Nil referrals required</td>
</tr>
<tr>
<td>Transfer home</td>
<td>Vaginal births within 24 - 48 hours. Caesarean births within 72 hours.</td>
</tr>
<tr>
<td>Midwifery care at home</td>
<td>VMS midwife visits daily until day five.</td>
</tr>
<tr>
<td>Contact number</td>
<td>Clinical Midwifery Nurse Manager (Ambulatory Services) Phone (08) 9340 2222 page 3419</td>
</tr>
</tbody>
</table>
### Care choices provided at KEMH continued

<table>
<thead>
<tr>
<th>Description</th>
<th>4 ANTENATAL CLINICS (ANC) - high risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>• Maternal Fetal Medicine – pregnant women with complications in pregnancy eg. hypertension, heart disease, kidney disease, twin to twin transfusion, congenital anomaly.</td>
</tr>
<tr>
<td></td>
<td>• Diabetes Service – women with pregnancies complicated by Diabetes.</td>
</tr>
<tr>
<td></td>
<td>• Chemical Dependency – women with pregnancies complicated by illicit substance use.</td>
</tr>
<tr>
<td></td>
<td>• Adolescent Clinic – women who will give birth to their first baby before the age of 18.</td>
</tr>
</tbody>
</table>

| Pregnancy care | Medical team at ANC. After seeing the consultant, antenatal care can be provided by the midwife, if the woman requests. Option for shared care with GPs for some appointments. If home visits required VMS midwife will visit. |

<table>
<thead>
<tr>
<th>Planned place of birth</th>
<th>KEMH Labour and Birth Suite (L+BS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care provider during labour and birth</td>
<td>L+BS midwife</td>
</tr>
<tr>
<td>Care provider following the birth</td>
<td>Postnatal ward midwife</td>
</tr>
<tr>
<td>Possible referrals of care</td>
<td>Nil referrals required</td>
</tr>
<tr>
<td>Transfer home</td>
<td>Vaginal births within 24 - 48 hours. Caesarean births within 72 hours.</td>
</tr>
<tr>
<td>Midwifery care at home</td>
<td>VMS midwife visits daily until day five.</td>
</tr>
<tr>
<td>Contact number</td>
<td>Clinical Midwifery Nurse Manager (Ambulatory Services) Phone (08) 9340 2222 page 3419</td>
</tr>
</tbody>
</table>

### Appendix 3 – Important telephone numbers

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

- **Antenatal Clinic**: (08) 9340 1377
- **Antenatal Clinic Fax**: (08) 9340 1031
- **Clinical Midwifery Nurse Manager (Ambulatory Services)**: (08) 9340 2222 (Page 3419)
- **Breastfeeding Centre of WA**: (08) 9340 1844
- **Department of Obstetrics**: (08) 9340 1382
- **Department of Psychological Medicine**: (08) 9340 1521
- **Diabetes Educator**: (08) 9340 2163
- **Early Pregnancy Assessment Service**: (08) 9340 1431
- **Emergency Centre KEMH (24 hours)**: (08) 9340 1431
- **Family Birth Centre**: (08) 9340 1800
- **Genetics Services of WA (24 hours)**: (08) 9340 1525
- **Gynaecology Senior Registrar (switchboard to page)**: (08) 9340 2222
- **KEMH Switchboard (24 hours)**: (08) 9340 2222
- **Maternal Fetal Assessment Unit (24 hours)**: (08) 9340 2199
- **Maternal Fetal Medicine Service**: (08) 9340 2848
- **Obstetric Drug Information Service (7 days)**: (08) 9340 2723
- **Obstetric Senior Registrar (switchboard to page)**: (08) 9340 2222
- **Parent Education**: (08) 9340 1368
- **Pathology**: (08) 9340 2767
- **Pharmacy**: (08) 9340 2727
- **Physiotherapy**: (08) 9340 2790
- **Social Work**: (08) 9340 2777
- **Ultrasound Department**: (08) 9340 2700
- **Visiting Midwifery Service**: (08) 9340 1530
- **Women and Newborn Drug and Alcohol Service (WANDAS)**: (08) 9340 1377 (Page 3425)
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.

This booklet has been revised by KEMH with GP input and is up-to-date at the time of publishing. These guidelines are also available on the Internet Website: www.wnhs.health.wa.gov.au Health Professionals Manuals and Directories

Copies of this booklet can be obtained by contacting the Obstetric and Gynaecology Clinical Care Unit on (08) 9340 1382.