

GP Guidelines for Maternity and GP Shared Care Program

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This publication is available on the EH website: easternhealth.org.au

Disclaimer

These guidelines have been developed for the provision of shared maternity care between EH and shared maternity care affiliates accredited at these hospitals.

Irrespective of these guidelines, every health service provider and health professional must individually exercise the standard of professional judgement and conduct, expected of them in selecting the most appropriate care for a pregnant woman and in the management of her pregnancy.

Guideline Working Group

Main authors and project lead

Kate Longden – Midwife Box Hill Hospital
Dr Penny Gaskell – GP Liaison Eastern Health
Kathy Evans – CMC Box Hill Hospital
Brindie McPhee – Maternity Unit Manager Antenatal Clinic Box Hill Hospital

Endorsement

Dr Penny Sheehan – Director of Obstetrics Eastern Health
Christine Lamotte – Women's and Children's Program Director
Kym Harrisson – Director of Midwifery Eastern Health and Associate Program Director Box Hill Hospital
Edwina Dowling - Associate Program Director Angliss Hospital

Acknowledgments

Danni Woolhouse – CMC Angliss Hospital. Jo Baumgartner – Midwife.
Dr Jamie Mackay, GP. Dr Pauline Martin, GP
Dr Chris Davenport, GP. Dr Sara Whitburn, GP

Dr Kelly Tulloch, GP. Dr Swaroopini Thangarajah, GP

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1. Eastern Health Maternity Hospital Locations

Eastern Health currently offers Birthing Services and Outpatient Maternity care at two of its sites;

The Angliss Hospital



Albert Street, Upper Ferntree Gully, VIC 3156
Ph: 1300 342 255 or 1300 EH CALL

Box Hill Hospital



Building A, 8 Arnold St, Box Hill, VIC 3128
Ph: 1300 342 255 or 1300 EH CALL

Maternity outpatient services (antenatal and Post-natal) are also available at

Yarra Ranges Health



24 Market Street, Lilydale, VIC 3140
Ph: 1300 342 255 or 1300 EH CALL

Eastern Health will decide which hospital your Patient attends based on her clinical needs, the hospital's capacity to accommodate her booking and her residential address.

1.1. Useful Contact Details:

Maternity Bookings

Phone: 1300 521 319 **Fax:** 03 98954817 **Email:** maternity.bookings@easternhealth.org.au

Angliss Hospital Birthing Suite

Phone: 9764 6310

Box Hill Hospital Birthing Suite

Phone: 9975 6364

Angliss Antenatal Clinic

Phone: 9764 6309

Fax: 9764 6193

Box Hill Hospital Antenatal Clinic

Phone: 9975 6333

Fax: 9975 6663

Angliss Fetal Monitoring Assessment Centre (FMAC)

Phone: 9759 1865

Box Hill Fetal Monitoring Assessment Centre (FMAC)

Phone: 9975 6334

Angliss Special Care Nursery

Phone: 9764 6307

Box Hill Special Care Nursery

Phone: 9975 6347

Angliss Maternity Ward

Phone: 1300 342 255

Box Hill Maternity Ward

Phone: 1300 342 255

Angliss Extended Post Natal Care:

Ph: 9764 6322

Box Hill Extended Post Natal Care:

Ph: 8396 8347

Yarra Ranges Antenatal Clinic:

Enquiries:

Phone: 8706 9601

Fax: 9091 8899

Fetal Diagnostic Service Screening

FDS@easternhealth.org.au.

Phone: 0466 571 451

Yarra Ranges FMAC:

Phone: 9091 8888

GP Liaison: Dr Iftah Amith

Phone: 0403 914 357

gpliaison@easternhealth.org.au

For Urgent Assistance please contact Ambulance Victoria on 000

**For all other enquiries Eastern Health Switch will be able to assist with your enquiries on
1300 EH CALL or 1300 342 255**

2. Shared Care at Eastern Health

2.1. Requirements for becoming a shared care provider at Eastern Health

To be considered for initial accreditation, GP shared care applicants are required to have obtained a **Fellowship of the Royal Australian College of General Practitioners (FRACGP) or equivalent** in addition to **one** of the following criteria:

- **Primary qualification within the last 5 years** (recertification required) of one of:
Diploma of the Royal Australian and New Zealand College of Obstetrics and Gynaecology (DRANZCOG)
Or Certificate in Women's Health from RANZCOG
- **Primary qualification more than 5 years ago of one of:**
Diploma of the Royal Australian and New Zealand College of Obstetrics and Gynaecology (DRANZCOG),
Diploma Obstetrics Royal Australian College of Obstetrics and Gynaecology (RACOG)
Or Certificate in Women's Health from RANZCOG
- **Plus**, significant recent experience as an antenatal care provider
- **Significant Experience as an Antenatal Care Provider.**
Applications will be considered for GPs who can demonstrate either relevant experience, accredited shared care with another Victorian health service or post graduate qualifications as well as professional development. You will be requested to provide relevant documentation, for example, a CV with dates and contact names and numbers, evidence of attendance at hospital antenatal clinics or evidence of other training.
Education in areas of **direct relevance** to pre-conception, pregnancy, Post-natal and neonatal care will be considered.
- **Plus**
 - a) Working at an Accredited General Practice
 - b) Current Working with children's check or police check

If you would like to apply for GP Shared care email Eastern Health GP liaison Officer on gpliaison@easternhealth.org.au

NB All applications are processed on-line.

2.2. Reaccreditation as GP shared care provider

All GP shared care providers will have the opportunity to apply for reaccreditation every 3 years. This is in line with the RACGP triennium (2020-2022). An email will be sent to all GPs in Sept 2022 outlining the process for reaccreditation. As of writing this document, current requirements as:

- Medical indemnity
- Unrestricted medical registration
- Ongoing continuing professional development related to pre-pregnancy, antenatal and post pregnancy care
- Agreement to undertakings as per shared care application form

2.3. Responsibilities of the GP shared care

- To inform relevant ante natal clinic maternity unit manager if the woman does not attend her scheduled appointment or has a poor attendance for antenatal care
- Escalate clinical concerns to Eastern Health
- Comply with accreditation/ reaccreditation requirements
- Read and follow these guidelines
- Notify Eastern Health of a change in clinical address or cessation of clinical practice (to Penny.gaskell@easternhealth.org.au)

3.0 Pre-Pregnancy Care

GPs are advised to review “*Guidelines for preventative activities in general practice*” - The Red Book; Chapter 1. Preventative activities prior to pregnancy available from: <https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/red-book/preventive-activities-prior-to-pregnancy>

Vaccines

- Hepatitis B
- Measles, Mumps and Rubella (MMR)
- Rubella – Rubella vaccination is contraindicated during pregnancy, but rubella immunity should be checked antenatally and highlighted if low. The Measles Mumps Rubella (MMR) vaccine will be administered postpartum prior to discharge from hospital, and is considered safe whilst breastfeeding.
- Varicella
- Influenza

For further information please refer to link : <https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/red-book/preventive-activities-prior-to-pregnancy>

COVID-19 vaccines are safe during pregnancy

A United States study of more than 35,000 pregnant women showed no difference in side effects between those who were pregnant and those who were not. Women who were pregnant did not show any unique side effects.

Results from the vaccine program in Israel have also shown that Pfizer is effective in preventing COVID-19 in pregnancy.

Vaccination does not increase the chances of pregnancy complications such as premature delivery, stillbirth, and small for gestational age infants and birth defects.

Talk to your GP if you are pregnant, breastfeeding, or planning pregnancy.

Protection from COVID-19 for your baby

Research shows that the antibodies created during pregnancy after receiving a COVID-19 vaccine can cross the placenta. This occurred in women who received their first dose early in pregnancy and were fully vaccinated before their baby was born.

These antibodies may provide the baby with some protection against COVID-19 for the first few months of life.

Third and booster doses during pregnancy

Pregnant women with severe immune-compromise should receive a third dose of a COVID-19 vaccine as part of your primary course.

Pregnant women should also have a booster dose, 3 months after your primary course. This includes severely immune-compromised people who had 3 doses as part of their primary course.

Some people are also recommended to have an additional booster dose, or fourth dose. This additional booster will be a fifth dose for people who are severely immunocompromised, have an underlying medical condition or disability.

Pregnant women aged between 30 to 50 years old have the option to receive a fourth dose following a discussion with their GP, to see if it is right for their individual health needs. While there are no safety concerns, a fourth dose is not recommended by ATAGI for all pregnancies at this time.

Find out more about [booster doses](#).

Vaccination after COVID-19

If you have had COVID-19 you should wait to be vaccinated with a COVID-19 vaccine for 3 months after the confirmed infection.

This is to optimise your vaccine protection. A longer gap between infection and vaccination is likely to lead to a better immune response and result in longer protection from reinfection.

The next scheduled dose of COVID-19 vaccine should be given as soon as possible after 3 months. You should still have all the recommended doses.

Staying up to date

To be considered up to date with COVID-19 vaccination, you must have completed all the doses recommended for your age and health status.

Find out about how to [stay up to date with COVID-19 vaccines](#).

Side effects after COVID-19 vaccination during pregnancy

Most potential side effects from COVID-19 vaccines are mild and go away in a few days. See our [general guidance on side effects](#).

If you have any of these side effects after your vaccination, you can take paracetamol to ease the symptoms. Paracetamol is safe in all stages of pregnancy.

Studies from around the world have not found any side effects specific to pregnancy or birth.

Why the advice has changed?

Pregnant women were not included in the first clinical trials for COVID-19 vaccines. There was limited evidence available during the early stages of the vaccine rollout.

Over time, real-world evidence has shown that the mRNA COVID-19 vaccines [Comirnaty \(Pfizer\)](#) and [Spikevax \(Moderna\)](#) are safe to use in any stage of pregnancy.

Getting more information

You can get more information about COVID-19 vaccines during pregnancy from:

- The Jean Hailes podcast – [Vaccines, safety and women](#)
- Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) – [Pregnancy and COVID-19 Vaccination Webinar](#), translated versions are [also available](#)
- RANZCOG statement - [reiterating advice on COVID-19 vaccination](#)
- Australian Academy of Science – [Pregnancies, periods and COVID-19 vaccines: what you need to know](#)
- Australian College of Midwives – [COVID-19 vaccination online e-learning space](#)
- Midwife Cath's podcast – Professor Alison McMillan discusses COVID-19 vaccines and pregnancy – [Birth, Baby and Beyond](#).

4.0 Early Pregnancy and Standard Schedule of Visits and Investigations for GP shared care

Link to Eastern Health hand held record: https://www.easternhealth.org.au/images/hand_held.pdf

The following is the recommended standard schedule of visits for women with low-risk uncomplicated pregnancy. This schedule may vary slightly according to individual needs.

Gestation	Recommended Appointments for GP shared care	Investigations
6-12 weeks	GP visit – confirmation of pregnancy E-referral to EH maternity services	Antenatal screening tests See section 3.1 & 4.2 for required & recommended investigations
10-13 weeks		Genetic Screening - refer to 4.3 for options <ul style="list-style-type: none"> - Pathology - Ultrasound
14 weeks	Midwife Visit – Hospital visit to orientate woman to EH Care	
16 weeks	Senior Obstetrician Visit – hospital-based visit to assess suitability for low-risk care	20-week medical imaging request slip to be provided if not already by GP
15-17 weeks		Maternal serum screening to be considered if no NIPT or CSST not performed. <i>See section 4.3</i>
20 - 22 weeks		20-week Fetal Morphology Ultrasound – <i>See section 4.4</i>
22 weeks	GP visit – review of 20-week morphology scan	Pathology slips to be provided for OGTT FBE and iron studies Blood Group & Rhesus

		See section 4.4
26 – 27+6 weeks		Pathology investigations as stated above to be performed See section 4.4
28 weeks	Midwife Visit – Hospital based visit to review pathology results and Anti D requirements	GTT results reviewed and referral made if required. Anti D administered if Rh Neg
31 weeks	GP Visit	
34 weeks	GP Visit	Woman to be referred to FMAC for 2 nd Anti D administration if rhesus negative FBE/Iron studies ordered if required (see section 4.5)
36 weeks	Senior Obstetrician Visit – hospital based	GBS Screening Performed, GP to be included to receive results (see section 4.5)
38 weeks	GP Visit	
40 weeks	GP Visit	
41 weeks	Midwife Visit – Hospital based visit for Induction of labour (IOL) plan	Fetal Monitoring appointment organized for CTG, AFI and IOL plan

4.1 GP Booking Visit – Confirmation of Pregnancy

This visit is ideally performed prior to 10 weeks pregnancy To refer a woman to a hospital for maternity care, the general practitioner (GP) should complete and send an e-referral after pregnancy is confirmed, see link https://au.healthlink.net/au_registration/
GPs to provide all relevant information and referrals should be completed as directed within the form.

Practices without conformant software can register for a 'free' Health Link Portal licence by completing the online registration form and notate in the Comments/Message field that you would like to use the Smart Forms and select the two checkboxes - Receive Electronic Correspondence (Free of charge) and Send Electronic Smart Forms (My Aged Care, Transport for NSW, Monash Health etc).

Completing the E-referral will ensure timely access to appropriate level of maternity care. Women will be contacted directly about their appointments.

Antenatal Screening: (Further information relating to antenatal screening in section 5)

The following antenatal screening tests should be discussed in regard to the benefits and limitations of these, and ordered as appropriate:

Required

- Blood Group and Antibody Screen
- Full Blood examination (FBE)
- Ferritin
- Rubella
- Syphilis Serology
- Mid-Stream Urine (MSU) sample for bacteriuria

- Hepatitis B and C Virus
- Human Immunodeficiency Virus (HIV)

Optional – as indicated

- Vitamin D Screening – if indicated
- Thyroid function – indicated by risk factors as per the MBS funding requirements
- Varicella Screening if the patient is unsure of status
- Cervical screen for HPV – if not performed within the last 5 years
- Chlamydia screening if indicated (age<25years)
- Thalassaemia screening
- Renal function and uPCR if indicated eg HT/ increased BMI or previous PET/SGA/PTB

Medical Imaging –

The following medical imaging should be discussed and offered where appropriate

Dating Scans - If there is uncertainty about EDC, then a dating scan should be offered. This should occur between 8 weeks and 0 days and 13 weeks 6 days. This scan can be used to determine gestational age, detect multiple pregnancies and accurately time fetal anomaly testing.

<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-d-clinical-assessments/gestational-age>

Early Pregnancy Scan – All women should be offered Nuchal Translucency (NT) Ultrasound between 11 and 13+6 weeks. This scan can assist in identifying fetal anomalies, multiple pregnancies, and be used in combination with screening blood tests to calculate risks of aneuploidy.

Genetics screening options should be discussed and offered

These tests involve some out of pocket costs for patients and cannot be organised through the public hospital.

- Combined First Trimester Screening
 - Blood serum sample collected between 9+0 and 13+6 weeks
 - Nuchal Translucency (NT) Ultrasound performed between 11 and 13+6 weeks
- Non-invasive prenatal test (NIPT)
 - blood test collected from 10+0 weeks
 - Nuchal Translucency (NT) Ultrasound performed between 11 and 13+6 weeks

For additional information and resources see the Victorian Clinical Genetics Services (VCGS) and section of this guide see link: <https://www.vcgs.org.au/tests>

ABNORMAL genetic screening results should be faxed to maternity bookings and/or fetal diagnostics service midwife contacted for urgent follow up – see useful contacts p6

Note that NIPT is difficult to interpret in women with a solid organ transplant due to graft-derived cell-free DNA being released into the maternal circulation and hence should not be ordered unless in discussion with Clinical Genetics for a specific indication.

Early-Onset PET Screening options

This is offered by VCGS and Monash US for Women, and women may be referred by their GP. Please note, where there is already a clinical risk factor for pre-eclampsia, this test is of no additional benefit in clinical decision making, and probably should not be offered. The cost is out-of-pocket for patients.

Physical and Mental wellbeing Assessment

A physical assessment should be performed within this initial appointment including

- Blood pressure
- Auscultation of maternal heart and lungs
- Thyroid assessment
- Cervical screening - past history results should be discussed. Women who have never been screened or are overdue should be strongly encouraged to undertake cervical screening which is considered safe in pregnancy. Please refer to National Cervical Screening Program and clinical practice guideline:
https://wiki.cancer.org.au/australia/Guidelines:Cervical_cancer/Screening#_ga=2.76750741.1055921654.1611873603-759936738.1611873603
- Mental health – early identification of women experiencing symptoms of depression and/or anxiety allows for supports to be initiated, and referral to additional relevant services.
- It is recommended that women are screened as early as possible in pregnancy using the Edinburgh Post-natal Depression Scale (EPDS) and repeated at least once throughout pregnancy.
<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-e-social-and-emotional-screening>
<https://www.cope.org.au/health-professionals/health-professionals-3/calculating-score-epds/>

For women with mental health conditions requiring additional support, please refer to Section 9.0 mental health in pregnancy

Education –

It is recommended the following are discussed during this first appointment -

- Folic acid supplementation – daily folate recommendation for women in first trimester is 0.5mg for low-risk women. Those women with an increased BMI, Diabetes Mellitus or high risk for neural tube defects should be guided by their GP as to an increased dose.
 - <https://www.betterhealth.vic.gov.au/health/healthyliving/folate-for-pregnant-women>
- Food Hygiene, including how to reduce the risk of food acquired infection. Highlighting Listeria, mercury and safer food choices.
 - <https://www.betterhealth.vic.gov.au/health/healthyliving/pregnancy-and-diet>
- Diet – Nutritional requirements vary in pregnancy between different women. A well-balanced diet is recommended to ensure the nutritional requirements of both the mother and baby are met. Supplementation of some minerals and vitamins may be required. Women with restrictive diets or gross intolerances should be encouraged to seek further advice from dietitians for individualized plans to allow for adequate nutritional intake. Women on low calcium diets benefit from 1g/d elemental calcium supplementation to reduce their risk of PET. Iodine deficiency is common in Australia and multivitamins including iodine or iodine/folate are commonly prescribed. Early identification of iron deficiency/insufficiency may

reduce the need for intravenous iron later in the pregnancy. Where women are iron deficient at the outset of pregnancy, this cannot be attributed to pregnancy.

- https://www.eatforhealth.gov.au/sites/default/files/content/The%20Guidelines/n55h_h_healthy_eating_during_pregnancy_0_0.pdf
- <https://www.betterhealth.vic.gov.au/health/healthyliving/pregnancy-and-diet>
- Exercise – Current guidelines recommend that women participate in physical activity every day, aiming for a minimum of at least 3 days per week for an average 50 minutes using a combination of aerobic exercise, strength, and flexibility training; this has been associated with less weight gain and reduced incidence of hypertensive disorders in pregnancy; there are no significant adverse effects of exercise in pregnancy. Safe examples of exercises for women to participate in when pregnant include brisk walking, swimming and cycling. Physical activities that involve the risk of abdominal trauma, falls or excessive joint stress should be avoided. https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Patient%20information/Exercise-during-pregnancy-pamphlet.pdf?ext=.pdf
- Smoking – Both women and their partners should be educated regarding the risks associated with smoking in pregnancy. Health professionals have an important role in assessing smoking status on first contact with a woman and supporting efforts to stop or reduce smoking at subsequent contacts.
- Ongoing guidance and QUIT tools should be provided throughout the pregnancy, to encourage the reduction or cessation of smoking.
- <https://www.quit.org.au/articles/the-risks-of-smoking-while-pregnant/>
- Weight optimization - There are recommended Gestational Weight Gain (GWG) ranges dependant on BMI. There is insufficient evidence to recommend additional weight gain to obese pregnant women if they are eating a healthy balanced diet and not meeting the minimum weight gains below.
- Women with a BMI > 40kg/m² can be referred to the Pregnancy care, Elevated BMI, Ante-natal risk reduction and Lifestyle clinic (PEARL) by highlighting BMI and requesting PEARL via usual booking system.

Pre-pregnancy BMI (kg/m ²)	1 st trimester total weight gain	Rate of gain 2 nd and 3 rd trimester (per week)	Recommended total gain range
Non-Asian background			
<18.5	0.5-2kg	0.5kg	12.5 to 18kg
18.5 to 24.9		0.4kg	11.5 to 16kg
25.0 to 29.9		0.3kg	7 to 11.5kg
≥30.0		0.2kg	5 to 9kg
Asian background			

<18.5	0.5-2kg	0.5kg	12.5 to 18kg
18.5 to 22.9		0.4kg	11.5 to 16kg
22.9 to 27.5		0.3kg	7 to 11.5kg
>27.5			7kg
Twin and Triplet pregnancy			
18.5 to 24.9			17-25kg
25.0 to 29.9			14-23kg
≥30.0			11-19kg

- Alcohol - For women who are pregnant or planning a pregnancy, no alcohol is the safest and recommended option. <https://adf.org.au/insights/alcohol-and-pregnancy/>
- Drugs Consumption – whether recreational, pharmaceutical or over the counter (OTC) medication or supplements, most women will take some sort of drug in their pregnancy, often without realizing the potential for harm during pregnancy. A full drug and medication history is important in identifying those that may have the potential for harm and alternative solutions or medications discussed.
- Additional resources are available to Health professionals and patients and provides information and telephone advice on medication, adverse reactions and interactions during pregnancy and breastfeeding

Medicines Information Centre, at Monash Health,
Hours Monday to Friday 9am to 5pm, Phone: (03) 9594 2361 Fax: (03) 9594 6283
<https://monashhealth.org/health-professionals/medicines-information-centre/>

Medicines Information at The Royal Women's Hospital
 Phone: (03) 8345 3190 Fax: (03) 8345 3195 Email: drug.information@thewomens.org.au
<https://www.thewomens.org.au/patients-visitors/clinics-and-services/support-services/medicines-information>

<https://www.betterhealth.vic.gov.au/health/healthyliving/pregnancy-medication-drugs-and-alcohol>

- Vaccinations during pregnancy

- Covid -19; Pfizer vaccination is now recommended and should be routinely offered in pregnancy at any stage to reduce associated risks of disease. To ensure adequate protection pregnant women are recommended to complete the routine schedule of Pfizer, which is two doses, three weeks apart. The recommended interval between Covid -19 vaccine and any other vaccine is seven days.

https://www.health.gov.au/initiatives-and-programs/covid-19-vaccines/getting-vaccinated-for-covid-19/when-will-i-get-a-covid-19-vaccine?fbclid=IwAR31durINhPiS8NO9J6qMFqqrI0UK2_U5aP14gDa84Ch_d-00ndrxtUTp2U

- Influenza (flu) vaccination is recommended to all women annually. The vaccination is safe to be administered during any stage of pregnancy or whilst breastfeeding.

<https://immunizationhandbook.health.gov.au/vaccination-for-special-risk-groups/vaccination-for-women-who-are-planning-pregnancy-pregnant-or>

- Pertussis DTPa - (whooping cough) is recommended between 20-32 weeks' gestation to all women, in each pregnancy; Vaccination during pregnancy reduces the risk of pertussis in pregnant women and their young infants by 90%. If the recommended timeframe is missed, women are encouraged to vaccinate during the third trimester prior to birth.

- Partners or close contacts to the newborn are also encouraged to receive the DTPa vaccine at least 2 weeks prior to beginning close contact with the baby; especially if it has been greater than 10 years since their last vaccination.

<https://immunizationhandbook.health.gov.au/vaccination-for-special-risk-groups/vaccination-for-women-who-are-planning-pregnancy-pregnant-or>

Note: *there are many vaccines contraindicated in pregnancy as per the Australian Immunization Handbook: <https://immunizationhandbook.health.gov.au/resources/handbook-tables/table-vaccines-that-are-contraindicated-in-pregnancy-live-attenuated>*

4.2 Models of Care

Eastern Health provides maternity services as per the Capability Frameworks for Victorian maternity and newborn services stipulated by the Department of Health and Human Services;

<https://www2.health.vic.gov.au/hospitals-and-health-services/patient-care/perinatal-reproductive/maternity-newborn-services/maternity-newborn-care>

Eastern Health offers a variety of pregnancy care options at each of the Eastern Health hospitals. Our team of doctors and midwives provide a high level of care and expertise to support women throughout pregnancy, birth and post-partum.

Care options vary and are dependent on general health, individual needs and risk assessment.

Following risk assessment at initial booking appointment with a midwife, women will be allocated to either a "Green Pathway" (low risk) or "Red Pathway" (high risk). Pathways can be interchangeable throughout the pregnancy and birthing continuum.

Eastern Health has four options for Maternity Care

a) Midwife Continuity of Care (Green Pathway)

Midwife Continuity of Care – Aimed at the majority of women who have no past history of major health or obstetric complications and who remain well throughout their pregnancy. Women will see midwives predominantly for their antenatal care; but will be referred to obstetric doctors if concerns or abnormalities are identified.

When admitted to hospital for labour and birth, women will be cared for collaboratively by midwives and hospital obstetric doctors.

https://www.easternhealth.org.au/images/services/midwife_care.pdf

Midwifery Group Practice - MGP is a model of maternity care where women receive one to one care with a midwife for their pregnancy, labour, birth and post-natal care. The primary midwife is on call for labour care for the women in her caseload. Women in this model are expected to have a shorter stay in hospital post birth. This option is only available to low risk

healthy women; or women hoping for a vaginal birth after caesarean (VBAC) that are otherwise low risk.

https://www.easternhealth.org.au/images/services/midwifery_group_practice.pdf

b) Shared Maternity Care with your GP (Green Pathway)

GP shared care is aimed at women who wish to have the majority of their antenatal care provided by an Eastern Health accredited general practitioner. Care is collaboratively provided between Eastern Health and the woman's chosen GP. The majority of antenatal appointments are with their GP with a minimum of 3 hospital visits with a midwife. Hospital visits provide women the opportunity to discuss their hospital stay, breastfeeding, any hospital specific questions they may have and to plan for discharge home.

When admitted to hospital for labour and birth, women will be cared for collaboratively by the midwives and hospital obstetric doctors.

<https://www.easternhealth.org.au/services/maternity-services/i-am-pregnant/first-14-weeks/pregnancy-care-options/shared-maternity-care-with-your-gp/item/139#what-about-my-care-after-the-birth>

c) Obstetric Care (Red Pathway)

Aimed at women who have a history of health or obstetric complications and require specialist obstetric care and management. Women will see obstetric doctors predominantly for their antenatal care; but will be referred to midwives where possible and on request from women. For women, whose pregnancies have increased complexity or high-risk additional services will be discussed and referred to as appropriate, such as Maternal Fetal Medicine and Obstetric Medicine.

When admitted to hospital for labour and birth, women will be cared for collaboratively by midwives and hospital obstetric doctors.

d) Private Obstetrician Pregnancy & Labour Care – Available at Angliss and Box Hill Hospital

This model of care is only available for women booking into Box Hill Hospital. With private obstetric consultant care, women are able to choose a specific obstetrician from a dedicated list of doctors, who will provide their antenatal care and be present for birth and Post-natal review. When admitted to hospital for labour and birth, women will be cared for collaboratively

by the hospital midwives and their chosen private obstetrician. Women opting for this model will be admitted to Box Hill Hospital as a booked private patient and are responsible for their obstetrician's fees, and any additional hospital costs.

For further information please contact relevant antenatal midwifery unit manager from section 1.2.

e). Private Obstetrician Antenatal Pregnancy Care – Only Available at Angliss Hospital

This model of care is only available for women booking into Angliss Hospital. With private obstetric antenatal care, women can choose a specific obstetrician from a dedicated list of doctors, who will provide their antenatal care only. (On call - Labour and Birth care is not provided by these obstetricians in this model). Women will be responsible for their chosen obstetrician's antenatal care fees and some costs.

When admitted to hospital for labour and birth, women will be cared for collaboratively by the hospital midwives and the designated hospital obstetric doctors. Women opting for this model will be admitted to Angliss Hospital as a public patient in a public hospital and the fees from that point are as standard.

For further information please contact relevant antenatal midwifery unit manager from section 1.2.

4.3 Location of Care:

Eastern Health provides antenatal maternity care at the Angliss Hospital (Ferntree Gully), Box Hill Hospital and Yarra Ranges Health (Lilydale), and Birthing services at Angliss Hospital and Box Hill Hospital.

Eastern Health will decide which hospital a woman attends for birthing services based on;

- Clinical risk as determined by the hospital
- The hospital's capability to manage pregnancies as per the Victorian Capability Framework
- The hospital's capacity to accommodate bookings
- Residential address.

GPs are kindly asked to refrain from nominating which location their patient is booked into, as unfortunately these requests may not be fulfilled.

4.4 How to Refer/Book into Eastern Health:

To refer a woman to a hospital for maternity care, the general practitioner (GP) should complete and send an e-referral after pregnancy is confirmed, see link https://au.healthlink.net/au_registration/

GPs to provide all relevant information and referrals should be completed as directed within the form.

Practices without conformant software can register for a 'free' HealthLink Portal licence by completing the online registration form and notate in the Comments/Message field that you would like to use the

Smart Forms and select the two checkboxes - Receive Electronic Correspondence (Free of charge) and Send Electronic Smart Forms (My Aged Care, Transport for NSW, Monash Health etc).

Completing the E-referral will ensure timely access to appropriate level of maternity care. Women will be contacted directly about their appointments.

Eastern Health requests that all relevant pathology results and imaging reports be included in the referral where possible and women provided with a hard copy of results to bring to initial booking appointment. Unavailable results should **NOT** delay referral and can be sent at a later date. Once GP referral complete please advise women to book in on-line as soon as possible. Women who no longer require maternity services should have their referral cancelled where possible.

All women booking to Eastern Health Maternity Services require a doctor's referral

4.5 Referral to Obstetric Medicine

Obstetric Medicine works with obstetrics, maternal-fetal medicine and midwifery. The Eastern Health Obstetric Medicine Service provides co-ordinated medical input into pre-pregnancy, antenatal and post-natal care of women with medical disorders, risks or complications.

Wherever possible, it is important for chronic medical conditions and their management to be optimised pre-pregnancy, as there is evidence that this improves both maternal and fetal outcomes. It also gives women an opportunity to make informed decisions. Pre-pregnancy assessment in women who have, or are at risk of, specific medical disorders and complications, gives clinicians the opportunity to mitigate those risks more effectively.

We take direct GP outpatient referrals and in-house referrals from Eastern Health's Maternity Service, as well as offering phone advice and support to GPs regarding patients of our service, where necessary.

We have a weekly, multidisciplinary, High-Risk Pregnancy Clinic staffed by

- Obstetric physicians with background specialties not only in obstetric medicine, but also in nephrology, haematology, and gastroenterology;
- Consultant obstetricians/MFM sub-specialists;
- Midwives.

A letter containing a full assessment and recommended management plan will be returned to the GP following the appointment.

<https://www.easternhealth.org.au/services/item/639-obstetric-medicine>

4.6 Section 4 References and resources

- EH Policy 2193: Eastern Health Expected Pathways of Care for Pregnant Women
 - Green collaborative Maternity Care Pathway Version 7:19.11.2020
 - Guidelines for Consultation and Collaborative Maternity Care Planning
- Alcohol and Drug Foundation (2020) Alcohol and Pregnancy:
<https://adf.org.au/insights/alcohol-and-pregnancy/>
- Australian Technical Advisory Group on Immunization (ATAGI). Australian Immunization Handbook, Australian Government Department of Health, Canberra, 2018, immunizationhandbook.health.gov.au.
- <https://immunizationhandbook.health.gov.au/vaccination-for-special-risk-groups/vaccination-for-women-who-are-planning-pregnancy-pregnant-or>
- Centre of Perinatal Excellence (2020) Edinburgh Perinatal Depression Scale – Questionnaire and Scoring guide
<https://www.cope.org.au/health-professionals/health-professionals-3/calculating-score-epds/>
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health.
<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-d-clinical-assessments/gestational-age>
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care.Canberra: Australian Government Department of Health.
<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-e-social-and-emotional-screening>
- Department of Health and Human Services Victoria (2019) Better Health Channel
<https://www.betterhealth.vic.gov.au/health/healthyliving/folate-for-pregnant-women>
- Department of Health and Human Services Victoria (2019) Better Health Channel
<https://www.betterhealth.vic.gov.au/health/healthyliving/pregnancy-and-diet>
- Department of Health and Human Services Victoria (2019) Better Health Channel
<https://www.betterhealth.vic.gov.au/health/healthyliving/pregnancy-medication-drugs-and-alcohol>
- Guidelines for Shared Maternity Care Affiliates 2015, the Royal Women's Hospital, Mercy Public Hospitals Incorporated and Western Health, Melbourne, 2015.
<https://www.thewomens.org.au/health-professionals/for-gps/shared-maternity-care/shared-care-guidelines>

- National Health and Medical Research Council (2020) Australian Dietary Guidelines: Healthy Eating During your Pregnancy. Canberra: Australian Government Department of Health and Aging.
https://www.eatforhealth.gov.au/sites/default/files/content/The%20Guidelines/n55h_healthy_eating_during_pregnancy_0_0.pdf
- Quit Victoria (2020) The risks of Smoking while Pregnant

<https://www.quit.org.au/articles/the-risks-of-smoking-while-pregnant/>
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2020) Exercise During Pregnancy – Guidelines:
[https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Exercise-during-pregnancy-\(C-Obs-62\).pdf?ext=.pdf](https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Exercise-during-pregnancy-(C-Obs-62).pdf?ext=.pdf)
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2019) Routine antenatal assessment in the absence of pregnancy complications:
[https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Routine-antenatal-assessment-in-the-absence-of-pregnancy-complications-\(C-Obs-3b\)_2.pdf?ext=.pdf](https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Routine-antenatal-assessment-in-the-absence-of-pregnancy-complications-(C-Obs-3b)_2.pdf?ext=.pdf)
- Victorian Clinical Genetic Services: <https://www.vcgs.org.au/tests>
- Eastern Health Website - Midwifery Care:
https://www.easternhealth.org.au/images/services/midwife_care.pdf
- Midwifery Group Practice - Midwifery Group Practice (MGP)
https://www.easternhealth.org.au/images/services/midwifery_group_practice.pdf
- GP Shared Care: <https://www.easternhealth.org.au/services/maternity-services/i-am-pregnant/first-14-weeks/pregnancy-care-options/shared-maternity-care-with-your-gp/item/139#what-about-my-care-after-the-birth>
- Department of Health and Human Services Victoria (2019) Capability Framework for Victorian Maternity and Newborn Services. Victoria.
<https://www2.health.vic.gov.au/hospitals-and-health-services/patient-care/perinatal-reproductive/maternity-newborn-services/maternity-newborn-care>

- Eastern Health Website: <https://www.easternhealth.org.au/services/maternity-services/i-am-pregnant/maternity-booking-form>

5.0 Pregnancy Investigations

5.1 Calculating Estimated Due Date

The estimated due date can vary between the different means of calculation, ie: last menstrual period (LMP) dates versus ultrasound suggested date. Selection of the better estimate of the date of birth is based on the following criteria:

If the LMP was certain and menstruation regular, compare the LMP estimate to the ultrasound estimate:

- ultrasound performed between 6- and 13-weeks' gestation: if the two dates differ by 5 days or less, use the LMP estimate; if the dates differ by more than 5 days, use the ultrasound estimate
- ultrasound performed between 13- and 24-weeks' gestation: if the two dates differ by 10 days or less, use the LMP estimate; if the dates differ by more than 10 days, use the ultrasound estimate
- if the ultrasound was performed between 6- and 24-weeks pregnancy and the LMP was not certain or menstruation irregular, use the ultrasound estimate
- if the LMP was certain and menstruation regular and no ultrasound was performed between 6- and 24-weeks pregnancy (or none with a heartbeat), use the LMP estimate.

<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-d-clinical-assessments/gestational-age>

Online Due Date Calculator:

<https://www.pregnancybirthbaby.org.au/due-date-calculator>

5.2 First trimester

This section provides information on routine antenatal screening and investigations that are recognised and recommended by Eastern Health.

Antenatal investigations can be performed in the community or at the hospital. Considering the time-sensitive nature of some investigations, and the timely intervention for some conditions, it is preferable that investigations are performed by a woman's GP prior to her first hospital visit.

If a test is performed in the community, a copy of the results should be provided where possible to Eastern Health and a copy also given to the woman to bring to her hospital visits. All hard copy results will be kept her Eastern Health maternity record.

It is the responsibility of the provider ordering a test to follow up results. Any abnormal finding should be escalated and referred appropriately to enable follow up, communication and management.

Recommended initial investigations include:

Blood group and antibody screen– It is vital to have a current record of a woman's blood group in pregnancy.

If a woman is Rhesus negative and has no Rh antibodies – (see Section 7.2 p44 for further information)

- Women are to receive a routine prophylactic dose of RH D immunoglobulin (Anti D) at the hospital at 28 and 34 weeks of gestation.

- GPSC women are expected to attend for a hospital appointment at 28 weeks and will have Anti D administered in FMAC following this appointment. All routine screening bloods **MUST** be completed prior to this appointment.
- For 34 weeks administration of Anti D - GP to call relevant ANC to arrange FMAC appointment date and time and document in maternity hand held record
- Post-Natal women will be given an additional prophylactic dose of Anti D in hospital, if her baby is Rhesus positive.
- In the event of a sensitizing event, or concern of a sensitizing event, women are to be referred to the closest Maternity hospital emergency department for review and prophylactic anti D where appropriate.

Antibody screen – Regardless of Rhesus status, it is recommended that all women have an antibody screen in every pregnancy, as antibodies can change over time and antibodies other than Rhesus may still affect the pregnancy

Full Blood Examination (FBE) screening for anaemia, thrombocytopenia, iron deficiency and haemoglobinopathies (e.g., thalassaemia, sickle cell anaemia).

A normal MCV excludes thalassemia. If a low haemoglobin/MCV is identified, further testing and partner testing may be required for haemoglobinopathy. This is best organized early in pregnancy to enable genetic counselling should it be required. Partner testing only necessary if the woman is a carrier. If a woman and partner have been previously tested please provide a copy of the results where possible.

Iron Studies – Iron studies testing should be obtained for all women as a baseline for iron deficiency and/ or anaemia for more information on Iron deficiency/anaemia see section 7. In pregnancy it is recommended that optimum ferritin levels should be greater than 30.

Hepatitis B screening - Eastern Health recommends screening should be offered to all women in pregnancy. All women should be appropriately counselled prior to testing. If a woman returns a abnormal liver function test, a high viral load or is newly diagnosed. *Women should be referred to the infectious disease outpatient clinic at Box Hill Hospital for all new diagnoses. eReferral is preferred. For assistance and guidance with e Referrals See: <https://www.easternhealth.org.au/site/item/65-outpatients#eastern-health-clinics>*

Hepatitis C serology - Eastern Health recommends screening should be offered to all women in pregnancy. All women should be appropriately counselled prior to testing and if a woman has an abnormal liver function test, a high viral load or is newly diagnosed. *Referral to the infectious disease outpatient clinic at Box Hill Hospital for all new diagnoses. E-Referral is preferred. For assistance and guidance with e Referrals see: <https://www.easternhealth.org.au/site/item/65-outpatients#eastern-health-clinics>*

HIV serology - Testing for HIV in pregnancy enables measures to be initiated to reduce the risk of mother-to-child transmission and for the woman to be offered treatment and psychosocial support. It is imperative that a woman receive appropriate counselling prior to any testing of the potential implications of a positive or negative finding. The test should only be ordered by a clinician suitably

qualified to provide this counselling. *Women should be referred to the infectious disease outpatient clinic at Box Hill Hospital for all new diagnoses. E-Referral is preferred. For assistance and guidance with E-Referrals See: <https://www.easternhealth.org.au/site/item/65-outpatients#eastern-health-clinics>*

Syphilis serology – all women should be offered a screening test for syphilis in pregnancy. Syphilis cases have been rising recently in Australia, particularly in Victoria. If left untreated, it can have severe consequences to the mother and baby. In regard to specific syphilis testing; RANZCOG recommend that screening should occur with a specific treponema pallidum assay, for example Treponema pallidum haemagglutination assay (TPHA) or the Treponema pallidum particle agglutination assay (TPPA). The non-specific Treponema pallidum assays, such as the rapid plasma regain (RPR) or Venereal Diseases Reference Laboratory (VDRL) tests, although cheaper, are less likely to pick up latent infection.

Women identified as high risk should be rechecked in the third trimester, time of birth and six weeks post-natally.

Refer to ASHM for further guidance on BBV & STI in pregnancy:

<https://ashm.org.au/resources/australian-sti-management-guidelines/> AND/OR

<https://ashm.org.au/wp-content/uploads/2022/10/ASHM-BBVs-STIs-in-Antenatal-Care-Resource-2022.pdf>

Rubella antibodies - Rubella immunity should be checked antenatally and highlighted if low immunity or non-immune. Please refer to the individual pathology services reference ranges for report guidance for non-immune and low immunity levels as they are service specific. If a woman has no immunity or low immunity, The MMR vaccine will be offered/administered in the hospital postpartum period to protect future pregnancies.

Urinalysis - Asymptomatic bacteriuria is the persistent bacterial colonisation of the urinary tract without symptoms. Testing during pregnancy allows treatment to be offered to reduce the risk of progression to pyelonephritis. If detected, asymptomatic bacteriuria should be treated with a full course of an appropriate antibiotic, and a repeat MSU performed following the treatment to ensure treatment efficacy.

Investigations to consider include:

Chlamydia (urine sample or cervical swab) – The current national recommendation is that all women under the age of 25 are offered routine screening at their first visit. Women identified as high-risk populations (for example Aboriginal or Torres Strait islander peoples) or are symptomatic for chlamydia should also be offered screening. Women should be informed on the increased association between untreated chlamydia and preterm birth and low birth weight, and that it is easily treated with antibiotics.

NB: Women who self-identify as being at higher risk for sexually transmitted infections and infectious diseases, such as those employed in the sex industry or those with multiple partners should be offered re-screening for syphilis and chlamydia in the third trimester.

Vitamin D level – RANZCOG and the 2020 Clinical Practice Pregnancy Care Guidelines do not recommend routine Vitamin D testing.

Testing should only occur for the highest risk group which includes indigenous women, dark-skinned women or women who frequently cover up outside.

If testing is performed, only recommend vitamin D supplementation for women with vitamin D levels lower than 50 nmol/L.

Varicella antibodies – Women should be asked when booking in of their previous medical history in regards to chicken pox/shingles infection. A varicella antibodies screening test will determine the presence of past infection/immunization.

Women, who have never had chicken pox or are known to be sero-negative, should be advised to avoid contact with any persons with chickenpox or shingles whilst pregnant and to inform their healthcare provider of any potential exposures without delay. Post birth – women who are non-immune to chicken pox should be encouraged to be immunized through their GP.

Early Glucose tolerance test (GTT) –

Where there are *high risk factors* for gestational diabetes (GDM) women should be screened as early as possible for GDM, with gold standard practise being that of an OGTT.

The 75g Oral Glucose Tolerance Test (OGTT) is a 2-hour fasting test and is considered the current gold standard for diagnosis. Women should be instructed to fast for 12 hours prior to the test. A fasting plasma glucose is measured, before women are required to drink a 75gram glucose drink, and have their plasma glucose levels rechecked 1 hour and 2 hours post consumption.

Diagnosis of Gestational diabetes at Eastern Health is made if **one or more** of the following glucose levels are elevated;

Fasting glucose	≥ 5.1 mmol/L
1-hr glucose	≥ 10.0 mmol/L
2-hr glucose	≥ 8.5 mmol/L

****For an extensive breakdown of risk factors for gestational diabetes and the recommended testing schedule and management see section 7.1 p43 of this guide – Gestational diabetes****

For women at risk of hypertension or pre-eclampsia in pregnancy; Renal function and urinary Pr:Cr ratio

Thyroid stimulating hormone (TSH) – Routine thyroid testing of all women is not recommended in pregnancy.

Testing is only indicated for women with one or more of the following factors;

- A history of thyroid dysfunction or surgery
- Family history of thyroid disease
- Goitre
- Antithyroid antibodies present
- Symptoms or signs of hypothyroidism or hyperthyroidism
- Women with type 1 diabetes
- History of miscarriage or preterm delivery
- Autoimmune disorder (including coeliac disease)
- Infertility

- Prior head or neck irradiation
- Morbid obesity (BMI>40)
- Age 30 years or older
- Treatment with amiodarone
- Treatment with lithium
- Recent exposure to iodinated contrast

Cervical Screening – if a woman is due for a screening test as specified by the National Cervical Screening Program. Screening can safely be performed up to 20 weeks gestation provided the cytobroom and **NOT** the endocervical brush is used.

For women who have never been screened or are under-screened and meet criteria, consider offering 'self-collection' as outlined by Cancer Council Australia Cervical Screening Guidelines.

Refer to the Cancer Council Australia Cervical Screening Guidelines for further advice.

https://wiki.cancer.org.au/australia/Clinical_question:Screening_in_pregnancy

Dating Scans - If there is uncertainty about EDC, then a dating scan should be offered. This should occur between 8 weeks and 0 days and 13 weeks 6 days. This scan can be used to determine gestational age, detect multiple pregnancies and accurately time fetal anomaly testing.

<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-d-clinical-assessments/gestational-age>

5.3 Genetic/Chromosomal Abnormality Screening in Pregnancy

All women regardless of age, religion, ethnicity or medical history should be appropriately counselled and offered genetic and fetal abnormality screening in their pregnancy. This should ideally be performed within the first trimester. This enables women time to make an informed decision, discuss the possible implications of screening and next steps.

Given the sensitive nature of genetic testing, when counselling women and their partners/families over the possible implications of genetic screening, it is important to differentiate between screening and diagnostic testing.

The majority of women who choose to partake in testing will require Genetic Screening only. In Australia, the most common genetic screening tests undertaken are;

- Down Syndrome (Trisomy 21)
- Edwards Syndrome (Trisomy 18)
- Patau Syndrome (Trisomy 13)

These tests provide women with an individualised risk assessment for the likelihood of their baby having one of these conditions based on a scan, blood test result, and factors such as the women's age, smoking status and family medical history.

Women who have received a high-risk result from their screening tests can be referred to the Eastern Health Genetics Midwife Service for additional management, follow up and the organization of additional diagnostic testing if required.

**Fax ALL abnormal results to Maternity Bookings and/or call fetal diagnostic service enquiries
– see p6 for contact details**

Genetic Screening Options:

	Non-Invasive prenatal Testing (NIPT)	Combined 1st Trimester Screening (CFTS)	Second Trimester Maternal Serum Screening (2TMSS)
Screens For:	Down Syndrome T21 Edwards Syndrome T18 Patau Syndrome T13	Down Syndrome T21 Edwards Syndrome T18 Patau Syndrome T13	Down Syndrome T21 Edwards Syndrome T18
Sensitivity of Test	99% of cases of Down Syndrome will be identified	90% of cases that have a high risk of Down Syndrome will be identified	75-80% of cases that have a high risk of Down syndrome will be identified
Gestation available to perform test:	Bloods: from 10+0, No upper limit however the recommended time frame is 11+0 – 16+0	Bloods: 9+0 to 13+6 U/S: 11+0 to 13+6	Bloods: 14+0 to 20+0 Best performed between 15+0 and 17+0
Approximate Cost: As of August 2020	Approx. \$449 However expanded testing available for additional costs	Approx. \$92-101 This does not include the cost of the required ultrasound.	Approx. \$79-88.
1 st trimester U/S required for screening result	No, But 13+0 week U/S recommended to assess fetal structural development	Yes	No, But 13+0 week U/S Recommended to assess fetal structural development
Additional information	https://www.vcgs.org.au/tests/perceptnipt	https://www.vcgs.org.au/tests/maternal-serum-screening	https://www.vcgs.org.au/tests/maternal-serum-screening

Diagnostic Screening Tests

If a woman receives a screening result with a high-risk for fetal chromosomal abnormalities, following counselling her and her partner/family may decide to proceed with further testing. The type of testing offered is dependent on gestation.

Diagnostic Tests involve invasive procedures and carry an element of risk to the woman and her baby. The two tests available are chorionic villus sampling (CVS) and amniocentesis. These tests work through an analysis of fetal chromosomal cells collected from placental tissue (CVS) or fetal skin cells present in amniotic fluid (amniocentesis).

Chorionic Villus Sampling (CVS)

Chorionic Villus Sampling (CVS) can be performed through Eastern Health at Box Hill Hospital. At Eastern Health CVS can only be performed after 12 weeks gestation. CVS carries a risk of 1 in 500 of causing a miscarriage.

Indications for Consideration of Chorionic Villus Sampling –

- Women who have previously had a child with chromosomal abnormalities
- Women who have a family history of inherited genetic diseases
- Women who have a high risk of a fetus with a diagnosable defect

- Women who return an abnormal 'serum screen' blood test or ultrasound examination result

Before CVS is performed, women and their partner/families require counselling from a genetics counsellor or doctor on the risks and benefits of the procedure, the possible implications of the results of the procedure and the couple's response to an abnormal result. This discussion ideally should be held prior to the day of the procedure to allow for an informed decision. Women considering this procedure should be provided with access to reputable resources explaining the procedure, risks and benefits.

The results of the test are generally available within 10-14 days of the procedure, however women can opt to have a Fluorescent in situ hybridisation (FISH) analysis performed on the sample obtained during the CVS and receive a preliminary result within 48-72 hours assessing the number of chromosomes present specifically looking at chromosomes 21, 18, 13 and x/or y.

Amniocentesis:

An amniocentesis can be performed through Eastern Health at Box Hill Hospital. At Eastern Health, an Amniocentesis can only be performed after 16 weeks gestation. An amniocentesis carries a risk of 1 in 1000 of causing a miscarriage

Indications for Consideration of an Amniocentesis –

- Women who have previously had a child with chromosomal abnormalities
- Women who have a family history of inherited genetic diseases
- Women who have a high risk of a fetus with a diagnosable defect
- Women who return an abnormal 'serum screen' blood test or ultrasound examination result

Prior to amniocentesis is performed, women and their partner/families require counselling from a genetics counsellor or doctor on the risks and benefits of the procedure, the possible implications of the results of the procedure and the couple's response to an abnormal result. This discussion ideally should be held prior to the day of the procedure to allow for an informed decision. Women considering this procedure should be provided with access to reputable resources explaining the procedure, risks and benefits.

The results of the test are generally available within 10-14 days of the procedure, however women can opt to have a Fluorescent in situ hybridisation (FISH) analysis performed on the sample obtained during the CVS and receive a preliminary result within 48-72 hours assessing the number of chromosomes present specifically looking at chromosomes 21, 18, 13 and x/or y.

**Fax ALL abnormal results to Maternity Bookings and/or call Fetal Diagnostic Service -
Screening enquiries – see p6 for contact details**

5.4 Second Trimester Screening

2nd Trimester Fetal Morphology Ultrasound – Recommended to be performed between 19-22 weeks.

All women should be offered a fetal morphology ultrasound between 19+0 weeks and 22+0 weeks. The ideal window for this scan is between 21+0 and 22+0.

This ultrasound can be used to detect some structural fetal abnormalities such as neural tube defects, cardiac and gastrointestinal abnormalities and limb defects. This scan will also locate placental position, assess cervical length, identify uterine or ovarian abnormalities and confirms the accuracy of estimated due dates.

This morphology scan can be ordered by the GP or by the doctors at the hospital during a woman's first antenatal appointment. Imaging requests should include the woman's estimated due date, Parity, BMI and any other relevant factors (such as abnormalities identified in earlier investigations).

The scan can be performed at either Eastern Health medical imaging departments or external providers. It is the ordering doctor's responsibility to follow up ultrasound results.

Women who have fetal abnormalities identified in their scan that require follow up should be referred to the Eastern Health genetics services (see p8 for contact details) for obstetric maternal ultrasound concerns (for example placenta praevia) please refer women back the obstetric team at Eastern health for review. (For non-urgent referrals – this can be addressed at the woman's 28 week appointment at the hospital) For urgent concerns, contact the Obstetric registrar on call at the relevant EH site on 1300 EH CARE.

Women who have a low-lying placenta identified at the 20-week ultrasound will require an additional scan at 32-34 weeks. (*See section 6.7 for additional information on this*).

Oral Glucose tolerance test (OGTT) – Recommended to be performed between 26-28 weeks

It is recommended that all women are screened ideally at 26-28 weeks pregnancy for gestational diabetes (GDM). Women who were previously screened earlier in their pregnancy for GDM and tested negative should still be retested at 26-28 weeks. The 75g Oral Glucose Tolerance Test (OGTT) is a 2 hour fasting test and is considered the current Gold standard for diagnosis. Women should be instructed to fast for 12 hours prior to the test. Fasting plasma glucose is measured, before women are required to drink a 75gram glucose drink, and have their plasma glucose levels rechecked 1 hour and 2 hours post consumption.

Diagnosis of Gestational diabetes at Eastern Health is made if **one or more** of the following glucose levels are elevated;

Fasting glucose ≥ 5.1 mmol/L

1-hr glucose ≥ 10.0 mmol/L

2-hr glucose ≥ 8.5 mmol/L

****For an extensive breakdown of risk factors for gestational diabetes and the recommended testing schedule and management see section 7 of this guide – Gestational diabetes****

Full Blood Examination (FBE) – Recommended to be performed between 26-28 weeks

A general screen for anaemia, thrombocytopenia, iron deficiency, recommended to allow identification of significant drops in levels during pregnancy.

Iron Studies – Recommended to be performed at initial appointment and between 26-28 weeks, repeated if required at 32-34 weeks

Iron studies should be performed for all women to determine presence of iron deficiency/anaemia. In pregnancy it is recommended that ferritin levels are maintained greater than 30. It is very common for ferritin levels to drop significantly between early pregnancy and third trimester even with low dose iron

supplementation such as found in most pregnancy multivitamin preparations. For additional information and recommendations see Section 7.

Blood group and Antibody screen - Recommended to be performed between 26-28 weeks

Regardless of Rhesus status, it is recommended that every woman should have a repeat antibody screen at 26-28 weeks as antibodies can change over time. For Rhesus Negative women, a repeat Antibody screen is required at 26-28 weeks gestation, prior to the administration of prophylactic Anti D Immunoglobulin at 28 weeks. For additional information and guidance on Anti D immunoglobulin protocol at Eastern Health see section 7.

5.5 Third Trimester Screening**Repeat Full Blood Examination (FBE) – To be considered at 32- 34 weeks**

A general screen if previously diagnosed with iron deficiency and /or anaemia or if presenting with new symptoms

Repeat Iron Studies – To be considered at 32-34 weeks

Testing should be considered for any woman that is reporting to be symptomatic of low iron (for example: fatigue, dyspnoea, dizziness) or for Women what have previously tested low in this pregnancy and under undergoing supplementation to assess treatment efficacy. In pregnancy it is recommended that ferritin levels are greater than 30. For additional information and recommendations see Section 7.3 p46.

Group B Streptococcus (GBS) Recommended to be performed at 36 weeks

Eastern health recommends that all women are screened for Group B Streptococcus (GBS) at 36 weeks gestation. GBS is present in 30% of the female population. Whilst harmless to the woman, GBS can be transferred to the baby during the birthing process and cause a harmful infection. The recommendation is that all women have a perineal-vaginal swab at 36 weeks. Whilst the bacteria are transient, the result obtained at 36 weeks will determine if antibiotics will be used for labour and birth. Women need to be counselled prior to the GBS test being performed as to the implications of testing positive in regards to antibiotic treatment in labour and augmentation of labour if spontaneous rupture of membranes occurs.

The GBS swab can be performed by the woman following instruction, and given to the health care provider at the 36–37-week appointment.

More details and an information sheet for women can be found here:

<https://www.bettersafecare.vic.gov.au/resources/clinical-guidance/maternity-ehandbook/group-b-streptococcus-gbs-screening-and-management#goto-downloads>

5.6 Section 5 References and resources

- ASHA (2018) Australian STI Management Guidelines for Use in Primary Care. Australasian Sexual Health Alliance.

<http://www.sti.guidelines.org.au/populations-and-situations/pregnant-women>

- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health.
<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-d-clinical-assessments/gestational-age>
- Department of Health (2020) Pregnancy Birth and Baby. Canberra: Australian Government Department of Health.
<https://www.pregnancybirthbaby.org.au/due-date-calculator>
- Cancer Council Australia (2019) National Cervical Screening Program: Guidelines for the management of screen-detected abnormalities, screening in specific populations and investigation of abnormal vaginal bleeding. Sydney: Cancer Council Australia.
https://wiki.cancer.org.au/australia/Clinical_question:Screening_in_pregnancy
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health.
<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-d-clinical-assessments/gestational-age>
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health.
<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-f-routine-maternal-health-tests>
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health.
<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-g-targeted-maternal-health-tests>
- Department of Health and Human Services (2020) Congenital Syphilis in Victoria. Melbourne: State Government of Victoria. <https://www2.health.vic.gov.au/about/news-and-events/healthalerts/congenital-syphilis>
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health.
<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-h-fetal-chromosomal-anomalies>
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health.
<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-d-clinical-assessments/fetal-development-and-anatomy>
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health.

<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-f-routine-maternal-health-tests>

- EH Policy 2217 – Amniocentesis Guideline (2020)
- EH Policy 2218 – Chorionic Villus Sampling (CVS) Practice Guideline (2020)
- EH Policy 3391 – Iron deficiency and Anaemia in Pregnancy Guideline (2019)
- EH Policy 1020 – Diagnosis and Management of Gestational Diabetes Mellitus (2020)
- EH Policy 2398 - Maternal Group B Streptococcus in Pregnancy: Screening and Management Guideline (2019)
- Royal Australian and New Zealand College of Obstetricians and Gynecologists (2016) Prenatal screening and diagnostic testing for fetal chromosomal and genetic conditions https://ranzcoq.edu.au/RANZCOG_SITE/media/RANZCOGMEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Prenatal-screening_1.pdf?ext=.pdf
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2019) Routine antenatal assessment in the absence of pregnancy complications. - [https://ranzcoq.edu.au/RANZCOG_SITE/media/RANZCOGMEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Routine-antenatal-assessment-in-the-absence-of-pregnancy-complications-\(C-Obs-3b\)_2.pdf?ext=.pdf](https://ranzcoq.edu.au/RANZCOG_SITE/media/RANZCOGMEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Routine-antenatal-assessment-in-the-absence-of-pregnancy-complications-(C-Obs-3b)_2.pdf?ext=.pdf)
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2019) Routine antenatal assessment in the absence of pregnancy complications. [https://ranzcoq.edu.au/RANZCOG_SITE/media/RANZCOGMEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Routine-antenatal-assessment-in-the-absence-of-pregnancy-complications-\(C-Obs-3b\)_2.pdf?ext=.pdf](https://ranzcoq.edu.au/RANZCOG_SITE/media/RANZCOGMEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Routine-antenatal-assessment-in-the-absence-of-pregnancy-complications-(C-Obs-3b)_2.pdf?ext=.pdf)
- Department of Health (2020k) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health. <https://www.health.gov.au/resources/pregnancy-care-guidelines/part-f-routine-maternal-health-tests>
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2019) Maternal Group B Streptococcus in Pregnancy: Screening and Management: [https://ranzcoq.edu.au/RANZCOG_SITE/media/RANZCOGMEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Maternal-Group-B-Streptococcus-in-pregnancy-screening-and-management-\(C-Obs-19\).pdf?ext=.pdf](https://ranzcoq.edu.au/RANZCOG_SITE/media/RANZCOGMEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Maternal-Group-B-Streptococcus-in-pregnancy-screening-and-management-(C-Obs-19).pdf?ext=.pdf)
- (Stagnaro-Green A, Abalovich M, Alexander E, et al. Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease during Pregnancy and Postpartum. Thyroid 2011;21:1–46)

- Victorian Clinical Genetic Services: <https://www.vcgs.org.au/tests>

6. Management and referral of abnormal findings

6.1 Bleeding in the 1st trimester

Any bleeding in pregnancy is considered abnormal and should be investigated. However, the majority of presentations of pain and/or bleeding in early pregnancy occur in the presence of an on-going viable pregnancy. Management of first trimester bleeding can occur within the community setting where appropriate. However, for women requiring additional investigations and support, a referral to either the closest Emergency Department or Early Pregnancy Assessment Service (EPAS) is recommended.

EPAS referral is completed using the GP E-referral form - https://au.healthlink.net/au_registration/ and selecting EPAS. Complete as directed

6.2 Bleeding in the 2nd and 3rd trimester – Antepartum Haemorrhage

All women with vaginal bleeding in pregnancy \geq 12 weeks gestation should be referred to the hospital for review. However; after 37 weeks gestation it is important to distinguish between a 'show' in association with normal labour and APH. A small amount of bleeding mixed with mucus in a patient who is contracting is probably a normal show and does not require intervention

Antepartum Haemorrhage (APH) – an APH is defined as vaginal bleeding in pregnancy after viability, usually taken as 24 weeks gestation.

Causes of APH:

- Placental Causes: Abruption, Placenta praevia, Marginal bleeding from the placental edge
- Vasa praevia

- Local cervical and vaginal causes: Cervicitis, cervical polyp, ectropion, cervical carcinoma and more

Women with an APH should be immediately transferred to hospital for review.

If required, aim for in-utero transfer if safe to do so.

*Within Victoria, seek assistance from Paediatric Infant and Perinatal Referral service (PIPER):
1300 137 650 or Ambulance Victoria on 000*

6.3 Suspected FGR/SGA Small for Gestational Age (SGA) and Fetal Growth Restriction (FGR)

Eastern Health practices as per recommendations from Stillbirth Centre of Research Excellence as supported by Safer Care Victoria within their “Fetal growth restriction education program”.

Background

Poor neonatal outcomes can sometimes be attributed to undetected Fetal Growth Restriction (FGR) at term, where there were missed opportunities to detect, and then appropriately monitor and manage FGR.

The National Health and Medical Research Council (NHMRC) Centre for Research and Excellence has released the Safer Baby Bundle of care to improve mother and baby outcomes <https://www.stillbirthcre.org.au/safer-baby-bundle/>.

The Safer Baby Bundle consists of five elements which Eastern Health has implemented:

1. Supporting women to stop smoking in pregnancy
2. Improving detection and management of fetal growth restriction
3. Raising awareness and improving care for women with decreased fetal movement (DFM)
4. Improving awareness of safe going to sleep position in late pregnancy
5. Improving the decision making about the timing of birth for women with risk factors for still birth

Causes of FGR

Fetal growth restriction can be the result of maternal, fetal, placental, genetic causes or a combination of either, although the underlying cause of fetal growth restriction in most cases is placental.

Fetal growth restriction is strongly associated with;

- Stillbirth
- Neonatal death
- Perinatal morbidity
- Longer term adverse outcomes such as impaired neurological and cognitive development, cardiovascular and endocrine diseases in adult hood.

Defining FGR

There is no universally agreed definition of fetal growth restriction (FGR); however, the Perinatal Society of Australia and New Zealand (PSANZ) and Stillbirth Centre of Research Excellence (Stillbirth CRE) define it as: ***'A Fetus that has not reached its growth potential'***.

It is important to note the difference between Fetal Growth Restriction (FGR) and Small for Gestational Age (SGA). Definitions also vary for SGA though most agree, that it is;

- an estimated fetal weight (EFW) less than the 10th centile or
- birth weight as less than the 10th centile

Small for gestation age (SGA) of less than the 10th centile is often used as a surrogate or proxy for FGR however, between 50-70% of fetuses are constitutionally small, with growth appropriate for maternal size and ethnicity, and therefore:

- Not all SGA fetuses are growth restricted and,
- Some growth restricted fetuses are not SGA

(PSANZ and Stillbirth CRE, 2018)

Table 1: Definition of FGR, SGA and Severe FGR (PSANZ and Stillbirth CRE, 2018)

Fetal Growth Restriction (FGR)	A fetus that has not reached its growth potential. In practice, small for gestational age (SGA) is used as a proxy for FGR
Small for gestational age (SGA)	Estimated fetal weight/birthweight <10th centile.
Severe FGR	In practice, SGA <3rd centile is used as a proxy for severe FGR

Source: (PSANZ and Stillbirth CRE, 2018)

Table 2: Early vs late FGR

Early FGR	Late FGR
-----------	----------

Gestation	< 32 weeks	≥ 32 weeks
Prevalence	0.5 - 1%	5 - 10%
Pre-eclampsia	Strong association	Weak association
Placental pathology	Strong association	Weak association
Relation to SGA	Always SGA <10 th centile	Not always SGA
Umbilical artery Dopplers	Abnormal	Normal or mildly abnormal
Detection	Readily detectable	Challenging to detect
Clinical consequences	Risks of prematurity, high mortality and morbidity	Low mortality and morbidity

Source: (PSANZ and Stillbirth CRE, 2018)

Risk assessment for SGA and FGR

All women will undergo a risk assessment for SGA and FGR at the initial 'booking' appointment with the midwife. Any woman that is deemed high risk (level 3) will automatically be allocated a RED pathway as per Eastern Health Maternity Planning and Consultation guidelines and therefore NOT appropriate for GP shared care.

Women who are identified at booking with a level 2 risks may remain in GPSC if deemed "Green pathway however, are **NOT** eligible for GPSC in the following circumstances as per risk management algorithm:

- Risk Factors for FGR identified
- Unsuitable for SFH measurements
- Women who develop a level 2 risk as per risk management algorithm - refer to FGR risk factors and risk management algorithm:

https://resources.stillbirthcre.org.au/elearn/resources/FGR%20Management%20Pathway_V4.pdf

Women who are allocated a **GREEN** pathway and eligible for GP shared care must undergo risk assessment with each ante-natal appointment.

Some women who are **GREEN** pathway may have an **AMBER** alert applied and require planned growth scans at 28-30 weeks and 34-36 weeks. **All** women requiring growth scans based on level 2.

Risk **MUST** be reviewed by an obstetrician and book an appointment at Eastern Health 3-7 days following scan with a level 2/3 Obstetrician to determine ongoing management plan and suitability for GP shared care. These appointments should be made in advance once date of scan is known.

Symphyseal Fundal Height (SFH)

Symphyseal fundal height (SFH) refers to the distance measured in centimetres on the longitudinal axis of the abdomen from the top of the fundus to the top of the symphysis pubis (Perinatal Institute (2015)).

Serial measurement of SFH is recommended at each antenatal appointment starting from **24 weeks** (Australian Government Department of Health, 2018), to assist with overall assessment of fetal growth.

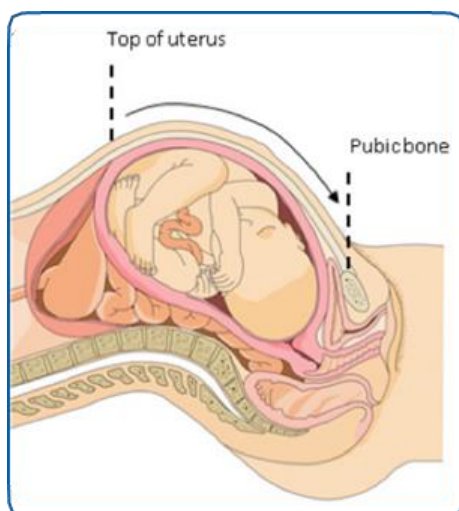


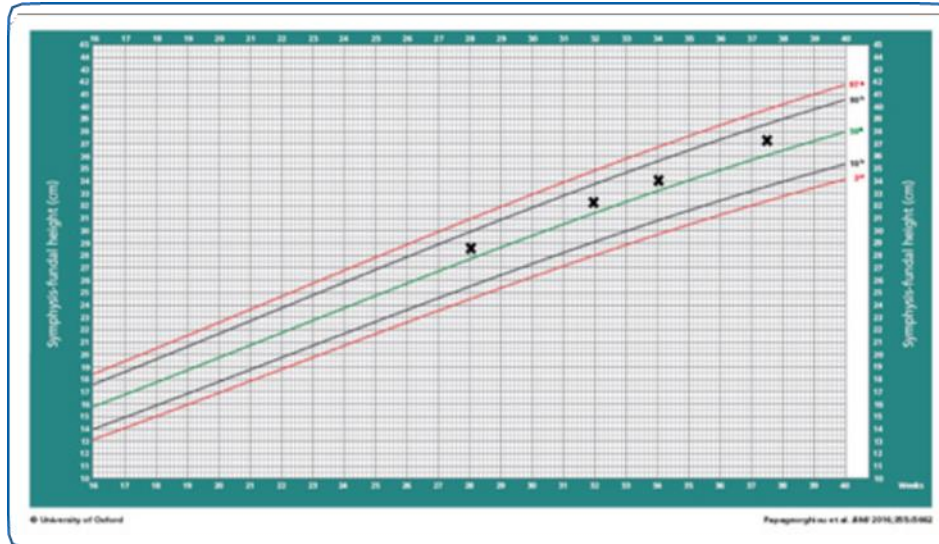
Table 3: SFH positives and negatives

Positives	Negatives
Simple, easy to teach	Low detection rates
Inexpensive	High false positive rates
Used in all settings	High false negative rates
	Clinician bias
	Non-standardized
	Intra- and inter observer error

Symphyseal fundal height measurements should be serially plotted on a growth chart so that any changes over time can be appreciated.

There are many different growth charts available, for example, population and customised, though there is no international consensus on which chart to use. At Eastern Health we use Intergrowth 21 International SFH Standards Chart, which can be found in the Eastern Health Maternity Hand Held Record given to women at Booking or **Error! Hyperlink reference not valid.**

Normal growth trajectory



Growth chart utilisation

Abdominal palpation alone should not be used for assessment of fetal size and/or growth (Australian Government Department of Health, 2018) and therefore ultrasound assessment of fetal growth should be considered if:

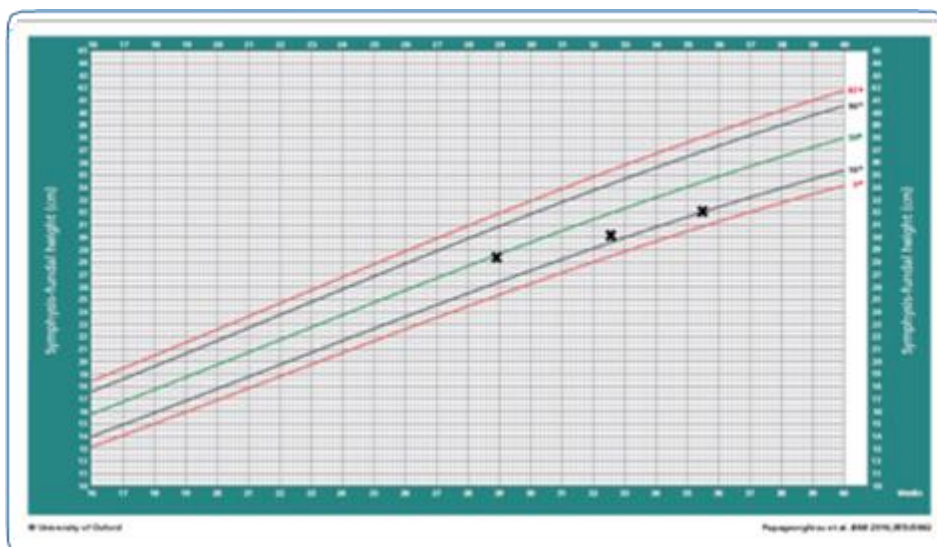
- SFH <10th centile
- Static growth
- Slow growth

There is no set parameters/rule to define what slow growth is. It is important to be on the lookout for a trend that is static or headed down.

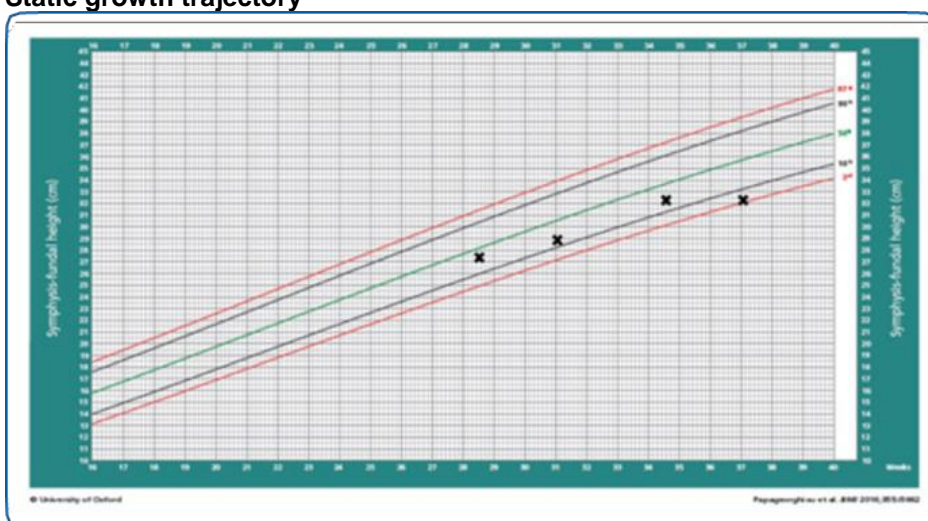
NB: In women with a BMI >35 or uterine fibroids SFH can still be undertaken however, fetal growth should also be assessed by ultrasound as per EH guidelines and is the preferred method of assessing fetal growth.

Women with a high BMI >40 and large uterine fibroids should be a RED pathway and are therefore NOT suitable for GP shared care

Slow growth trajectory



Static growth trajectory



Suspected SGA and/or FGR

Frequency and type of fetal surveillance required for suspected FGR should be based on the FGR risk as per the algorithm:

https://resources.stillbirthcare.org.au/elearn/resources/FGR%20Management%20Pathway_V4.pdf

Table 4: Common investigations for diagnosis and management of FGR

Investigation	Description	Suggestive of FGR
Fetal biometry by ultrasound	Abdominal circumference (AC) Head circumference (HC) Biparietal diameter (BPD)	EFW or AC <10 th centile (Severe FGR <3 rd centile)

	Femur length (FL) Estimated fetal weight (EFW)	
Amniotic fluid index	Measured by the single deepest pool (DVP) of amniotic fluid	DVP <2cm
Umbilical artery Doppler (UAD)	Measures resistance to blood flow in the umbilical artery and placenta	UA PI >95 th centile, absent or reverse end diastolic flow (AREDF)
Cardiotocograph	Continuous recording of fetal heart rate and uterine activity	Non-reassuring or pathological CTG trace
Enquiry about fetal movements	Ask each woman to identify her baby's normal pattern of movements	Maternal concern about strength or frequency of fetal movement. This overrides any definition of DFM

Source: (Gardener et al 2018)

Any suspicion regarding fetal growth, **two** ultrasound assessments should be arranged by the GP with a minimum of two weeks between scans. Follow up with an obstetrician to be booked once date of 2nd scan confirmed.

A single scan is NOT recommended as this cannot determine growth velocity.

Ultrasound assessment request should include:

- Fetal biometry
- Amniotic fluid index (AFI)
- Doppler of umbilical artery (UA) +/- middle cerebral artery (MCA)

NB: Enquiry regarding fetal movements is vital to assessment. DFM MUST be referred to birth suite

Both scan dates must be confirmed ASAP and follow up appointment at Eastern Health with a level 2/3 obstetric clinician to be arranged within 72hrs of second scan date. Obstetric review will determine ongoing management plan and suitability for GP shared care – copy of result to be brought to appointment.

Recommend GP to review woman with scan result within 48 hours of first scan. If major concerns identified following first scan (<3rd centile) GP **MUST** arrange follow up with a level 2/3 obstetrician at Eastern Health ASAP, preferably within one week to determine ongoing management plan and suitability for GP shared care.

The following should be adhered to:

1. Symphyseal fundal height (SFH) measurements should be recorded at every antenatal encounter from 24 weeks gestation.
2. SFH must be plotted on a non-customised growth chart: (Also provided to women within EHMR)
3. If SFH is below the 10th centile at first measurement or there is either static fundal height between two measurements at a fortnightly interval or slow fundal height growth (falling

centiles) across 2-4 visits the woman should be referred for an antenatal US via Medical Imaging at Eastern Health.

4. Any of the following on the US report require further attention and review by an obstetrician at Eastern Health,
 - An abnormal biophysical profile
 - Eastern Health advises that any baby with abnormal SFH growth profile and EFW < 30th % should be reviewed by an Eastern Health obstetrician
 - A baby with an EFW < 10th % on US
 - A baby with an EFW ≥ 95th % (if LGA suspected confirm GDM status)
 - A baby whose growth pattern is no longer normal – e.g.: significant drop > 30% in growth
 - Any other concerns

For further information see links:

https://resources.stillbirthcre.org.au/elearn/resources/FGR%20Management%20Pathway_V4.pdf

https://resources.stillbirthcre.org.au/elearn/resources/Element%202_Fetal%20Growth%20Restriction%20Position%20Statement.pdf

6.4 Decreased Fetal Movements

Fetal movements are a reliable indicator of fetal well-being, therefore decreased fetal movements (DFM) is associated with various adverse pregnancy outcomes, including stillbirth. All maternity care providers are responsible for providing information to women about fetal movements, including actions to take in the event of decreased or absent fetal movement.

Women should be routinely asked at every presentation and appointment from 24 weeks gestation about fetal movements, and reiterated the importance of contacting their HCP if a change in pattern or a decrease in movements is noticed.

Although many women experience DFM at some point during pregnancy, any maternal reporting of a change in movements should be taken seriously. Women should not be falsely reassured by a specific number of movements or be advised to expect fewer movements towards the end of pregnancy.

ANY reports of decreased fetal movement or change in fetal movement detected during an appointment or by telephone – refer immediately to the allocated birthing hospital for Cardiotocography (CTG) monitoring and review.

Advice such as drink something cold, eat something sugary etc. and wait 1 hour are **not** appropriate and should not be recommended. An extended delay in obtaining review in hospital can be fatal.

**Angliss Birthing Suite: ph 9764 6310
Box Hill Birthing Suite: ph 9975 6364**

Following presentation to the hospital for decreased movements review; all women will receive advice on any ongoing management plans required, these plans will be dependent on gestation, number of presentations and other clinical factors.

Additional Resources – Safer Care Victoria: Decreased Fetal Movements

<https://resources.stillbirthcare.org.au/elearn/resources/DFM%20Management%20Pathway.pdf>

6.5 Breech Presentation:

Beyond 30 weeks gestation, routine abdominal examination at each antenatal appointment should identify lie and presentation of the fetus.

Breech presentation is a normal finding in preterm pregnancies and should not be considered abnormal until after 36 weeks gestation. If presentation is uncertain > 34 weeks, ultrasound should be arranged to confirm presentation.

3-4% of pregnancies present as undiagnosed breech at term in labour. This could potentially be reduced with careful attention to presentation in the late third trimester.

Management of the Breech Presentation:

If abdominal palpation/abdominal ultrasound confirms breech presentation at 34 weeks gestation. Women should be rebooked for their next antenatal appointment (if not already) to see an obstetric consultant or obstetric registrar at their birthing hospital.

(Current schedule of visits recommends 36/40 appointment booked with a consultant in GP SC)

At this next appointment if the baby remains in the breech position; the obstetrician will discuss the management options moving forward. External Cephalic Version, (ECV) Elective Caesarean and Vaginal Breech Birth. These options will vary dependant on a maternal history and fetal wellbeing.

6.6 Low Lying Placenta at 20 weeks gestation:

The Placental location and position should be noted upon reviewing the 20-week ultrasound report. Any woman that has a reported low-lying placenta (< 20mm from the internal OS) at the 20-week scan requires an additional ultrasound at 32-34 weeks gestation to identify a persistently low-lying placenta or placenta praevia. A referral for this ultrasound can be provided by the shared care GP or by Eastern Health.

Following this scan, if the placenta remains low-lying or a placenta praevia/accrete/percreta/increta or vasa praevia is confirmed. The woman is no longer suitable for shared care and requires transfer of care back to the Eastern Health for obstetric led care. (Red Pathway)

Women diagnosed with a low-lying placenta should be advised to promptly present to the hospital emergency department if there is any vaginal bleeding.

6.7 Section 6: References and Resources

- Australian College of Midwives (2013). 'National Midwifery Guidelines for Consultation and Referral.' Australian College of Midwives [online] (3rd Edition, Issue 2). https://1-midwives.cdn.aspedia.net/sites/default/files/uploaded-content/field_f_content_file/with_covers_guidelines_3rd_edition_issue_2_final_2017.pdf
- Boers et al. (2010). Induction versus expectant monitoring for intrauterine growth restriction at term: randomised equivalence trial (DIGITAT). BMJ, 341(dec21 1), pp.c7087-c7087.
- <http://www.bmj.com/content/341/bmj.c7087>
- Chauhan, et al., (2009). Intrauterine growth restriction: comparison of *American College of Obstetricians and Gynecologists* practice bulletin with other national guidelines. American Journal of Obstetrics and Gynecology, [online] 200(4), pp.409.e1-409.e6. Available at: [https://www.ajog.org/article/S0002-9378\(08\)02244-8/pdf](https://www.ajog.org/article/S0002-9378(08)02244-8/pdf)
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health. <https://www.health.gov.au/resources/pregnancy-care-guidelines/part-d-clinical-assessments/fetal-growth-restriction-and-well-being>
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health: <https://www.health.gov.au/resources/pregnancy-care-guidelines/part-j-clinical-assessments-in-late-pregnancy/fetal-presentation#613-breech-presentation>
- Diksha P, Permezel M, Pritchard N. (2018). Why we miss fetal growth restriction: Identification of risk factors for severely growth-restricted fetuses remaining undelivered by 40 weeks gestation. The Australian & New Zealand journal of obstetrics & gynaecology, Apr. 27
- <https://www.ncbi.nlm.nih.gov/pubmed/29700827>
- EH Policy 2100 – Antepartum Haemorrhage (2019)
- EH Policy 1900 – Breech Presentation Practice Guideline
- EH Policy 2690 – Decreased Fetal Movements in Pregnancy (2018)
- EH Policy 2193 EH Policy 1020 – Diagnosis and Management of Gestational Diabetes Mellitus (2020)
- EH Policy 2199 - Eastern Health Expected Pathways of Care for Pregnant Women Guidelines for Consultation and Collaborative Maternity Care Planning (2019)
- EH Policy 2766 – Pain and/or bleeding in the first trimester of pregnancy (2018)
- EH Policy 3290 - Small for Gestational Age (SGA) and Fetal Growth Restriction (FGR) Detection, Investigations and Management (2018)
- Figueras F, Caradeux J, Crispi F, Eixarch E, Peguero A, Gratacos E. (2018). Diagnosis and surveillance of late- onset fetal growth restriction. American journal of obstetrics and gynecology 218(2s): S790-S802.e1.

- Flenady,V., Koopmans,L., Middleton,P., Froen,JF., Smith,G., Gibbons,K., Coory,M., Gordon,A., Ellwood,D., McIntyre,D., Fretts,R.and Ezzati,M. (2011). Major risk factors for stillbirth in high-income countries: a systematic review and meta-analysis. *Lancet* Vol377, pp.1331-1340.
- <https://www.ncbi.nlm.nih.gov/pubmed/21496916>
- Gaccioli, F., Lager, S., Sovio, U., Charnock-Jones, D. and Smith, G. (2017). The pregnancy outcome prediction (POP) study: Investigating the relationship between serial prenatal ultrasonography, biomarkers, placental phenotype and adverse pregnancy outcomes. *Placenta*, 59, pp.S17-S25.
- Gardener G, Daly L, Bowring V, Burton G, Chadha Y, Ellwood D, Frøen F, Gordon A, Heazell A, MacDonald S, Mahomed K, Norman JE, Oats J, Flenady V. Clinical practice guideline for the care of women with decreased fetal movements. Centre of Research Excellence in Stillbirth. Brisbane, Australia, August 2017. [online] Available at: <https://www.stillbirthcre.org.au/assets/Uploads/DFM-Clinical-Practice-Guideline-10- August-2017.pdf>
- Gardener G, Weller M, McDonald S, Wallace E, East C, Oats J, Ellwood D, Kent A, Gordon A, Homer C, Middleton P, Sethna F, Sinclair L, Foord C, Andrews, C, Oro L, Firth T, Flenady V., (2018). Position Statement: Detection and Management of Fetal Growth Restriction in Singleton Pregnancies. Perinatal Society of Australia and New Zealand/Stillbirth Centre of Research Excellence, 2018.
- Gardosi, J. and Francis, A. (2018). Customised Centile Calculator. Gestation Network. <http://www.gestation.net/efw/efw.aspx>
- Gardosi, J., Francis, A., Turner, S. and Williams, M. (2018). Customized growth charts: rationale, validation and clinical benefits. *American Journal of Obstetrics and Gynecology*, [online] 218(2), pp.S609-S618. Available at: [https://www.ajog.org/article/S0002-9378\(17\)32486-9/pdf](https://www.ajog.org/article/S0002-9378(17)32486-9/pdf).
- Gardosi, J., Giddings, S., Clifford, S., Wood, L., Francis. A. (2013). “Association between reduced stillbirth rates in England and regional uptake of accreditation training in customised fetal growth assessment.” *BMJ Open* 3(12)
- Gordijn, S., Beune, I., Thilaganathan, B., Papageorgiou, A., Baschat, A., Baker, P., Silver, R., Wynia, K. and Ganzevoort, W. (2016). Consensus definition of fetal growth restriction: a Delphi procedure. *Ultrasound in Obstetrics & Gynecology*, 48(3), pp.333-339.
- Intergrowth21.tghn.org. (2018). *Symphysis-Fundal Height - INTERGROWTH-21st*. [online] Available at: <https://intergrowth21.tghn.org/symphysis-fundal-height/#sfh1>
- Lausman, A., McCarthy, F., Walker, M. and Kingdom, J. (2012). Screening, Diagnosis, and Management of Intrauterine Growth Restriction. *Journal of Obstetrics and Gynaecology*

Canada, [online] 34(1), pp.17-28. Available at:
<https://www.ncbi.nlm.nih.gov/pubmed/22260759>

- McCowan, L., Figueras, F. and Anderson, N. (2018). Evidence-based national guidelines for the management of suspected fetal growth restriction: comparison, consensus, and controversy. *American Journal of Obstetrics and Gynecology*, 218(2), pp.S855-S868.
[https://www.ajog.org/article/S0002-9378\(17\)32478-X/pdf?code=ymob-site](https://www.ajog.org/article/S0002-9378(17)32478-X/pdf?code=ymob-site)
- National Institute for Healthcare Excellence (NICE) (2018) Available at :
<https://www.nice.org.uk/>
- New Zealand Maternal Fetal Medicine Network (2014). Guideline for the mangment of suspected small for gestational age singleton pregnancies and infants after 34 weeks' gestation. [online] New Zealand Maternal Fetal Medicine Network. Available at:
<http://www.asum.com.au/wp-content/uploads/2015/09/NZMFM-SGA-Guideline-September-2013.pdf>
- Pay ASD, Wiik J, Backe B, Jacobsson B, Strandell A, Klovning A.(2015). Symphysis-fundus height measurement to predict small-for-gestational-age status at birth: a systematic review. *BMC pregnancy and childbirth*; 15(1): 22. Available at:
<https://link.springer.com/content/pdf/10.1186%2Fs12884-015-0461-z.pdf> [Accessed 27 Apr. 2018].
- Perinatal Institute (2015). Standardised Fundal Height Measurement. [video] Available at:
http://www.perinatal.org.uk/FetalGrowth/GAP/fundal_height.aspx [Accessed 26 Feb. 2018].
- Royal College of Obstetricians and Gynecologists (2013). The investigation and management of the small-for-gestational-age fetus. Green-topguideline no. 31. [online] (2nd Editon). Available at: https://www.rcog.org.uk/globalassets/documents/guidelines/gtg_31.pdf
- Perinatal Society of Australia and New Zealand and Centre of Research Excellence Stillbirth. Management Pathway: detection and management of fetal growth restriction in singleton pregnancies. Centre of Research Excellence in Stillbirth. Brisbane, Australia, September 2019
https://resources.stillbirthcre.org.au/elearn/resources/FGR%20Management%20Pathway_V4.pdf
- Perinatal Society of Australia and New Zealand and Centre of Research Excellence Stillbirth. Position statement: detection and management of fetal growth restriction in singleton pregnancies. Centre of Research Excellence in Stillbirth. Brisbane, Australia, September 2019: <https://www.stillbirthcre.org.au/safer-baby-bundle/improving-detection-and-management-of-fetal-growth-restriction/>

- Perinatal Society of Australia and New Zealand and Centre of Research Excellence Stillbirth. Management Pathway: Decreased Fetal Movement Care Pathway for women with singleton pregnancies from 28+0 weeks' gestation. Centre of Research Excellence in Stillbirth. Brisbane, Australia, September 2019.
<https://resources.stillbirthcre.org.au/elearn/resources/DFM%20Management%20Pathway.pdf>
<https://www.stillbirthcre.org.au/safer-baby-bundle/raising-awareness-and-improving-care-for-women-with-decreased-fetal-movements/>
- Safer Care Victoria (2018) Antepartum haemorrhage assessment and management. Victorian Government.
<https://www.bettersafercare.vic.gov.au/resources/clinical-guidance/maternity-ebook/antepartum-haemorrhage-assessment-and-management#goto-references>
- Sharma, D., Shastri, S. and Sharma, P. (2016). Intrauterine Growth Restriction: Antenatal and Post-natal Aspects. Clinical Medicine Insights: Pediatrics, 10, p.CMPed.S40070. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4946587/>

7. Common Pregnancy Conditions - Treatment, Management and Recommendations

7.1 Gestational Diabetes Mellitus (GDM)

Testing for Gestational Diabetes during the Covid 19 pandemic – refer to link

<https://diabetessociety.com.au/downloads/20200404%20COVID-19%20GDM%20Diagnosis%20030420%20ADIPS%20ADS%20ADEA%20DA%20for%20Website%20.pdf>

Pre Covid-19 GDM Management Guidelines

Diabetes Australia states that in Australia, 1 in every 8 women will be diagnosed with gestational diabetes in pregnancy. Gestational diabetes mellitus (GDM) is defined as hyperglycaemia with onset or first recognition during pregnancy. Whilst gestational diabetes normally presents in women between 24-28 weeks of pregnancy, it can be present earlier. Since gestational diabetes can have long-term pathological consequences for both mother and the baby, it is important that it is promptly diagnosed and adequately managed.

Eastern Health's Gestational Diabetes Mellitus screening and management follows the national recommended guidelines as endorsed by RANZCOG, the Australasian Diabetes in Pregnancy Society (ADIPS) and Diabetes Australia. The following recommendations are for women who have not previously been diagnosed as type 1 or type 2 diabetics.

Screening for GDM in the pregnant woman

Universal screening of all women at Eastern Health regardless of calculated risk factors is the recommended best practise. The timing and process of screening for GDM is dependent on the following risk factors. At the initial confirmation of pregnancy appointment with her GP, all women should be assessed for risk factors based on the table below.

Table 1. Risk factor assessment for Gestational Diabetes

High risk factors	Moderate risk factors	Low risk factors
<ul style="list-style-type: none"> History of GDM Previous raised BGL or impaired glucose tolerance. Age (>40 years) Polycystic Ovary Syndrome. Past history of large for dates baby, congenital abnormality or stillbirth. 	<ul style="list-style-type: none"> Ethnicity: <ul style="list-style-type: none"> Asian Indian sub-continent Aboriginal Torres strait Islander, Pacific Islander, Maori Middle Eastern Non-white African 	<ul style="list-style-type: none"> Women lacking any of the high or moderate characteristics

<ul style="list-style-type: none"> BMI > 35 kg/m² at any age First degree family history of diabetes (incl GDM) Medications (corticosteroids and antipsychotics) 	<ul style="list-style-type: none"> BMI: 25-34.9 kg/m² 	
One risk factor = HIGH risk	<ul style="list-style-type: none"> One moderate risk factor = MODERATE RISK ≥ 2 moderate risk factor = HIGH risk 	LOW risk
See “ Diagnosis and Management of GDM ” below for action to be taken based on risk		

Women at high risk for GDM (One high risk factor or two moderate risk factors)

- OGTT early in pregnancy [ideally organized from 10-12 weeks]. If this test is negative, they will then have a repeat Oral glucose tolerance test (OGTT) at 26-28 weeks.

Women at Moderate risk for GDM (one moderate risk factor only)

- Should have fasting with booking investigations. If fasting BGL ≥ 5.1 a diagnosis of GDM has been made.
- If initial OGTT or FBG is negative, this OGTT should still be repeated at 26-28 weeks

Women at low risk for GDM

- It is recommended all women should have a screening OGTT between 26 and 28 weeks gestation.
- Women should be encouraged to maintain their normal diet prior to the test.

Practice Point – It is preferred that women have the OGTT at an Eastern Health Pathology site. Due to diagnostic criteria variability between services and potential delayed follow up of abnormal results, testing at an Eastern Health site enables prompt follow up by the Endocrine team at Eastern Health. Information available at: <https://www.easternhealth.org.au/services/pathology/medical-professionals>

Glycosuria – Any woman presenting with persistent glycosuria prior to 24 weeks should be sent for an earlier OGTT.

Diagnosis of Gestational Diabetes:

All 75 g OGTT results, regardless of gestation, will be judged by the following criteria:
A diagnosis of GDM is made if **one or more** of the following glucose levels are elevated

Fasting glucose	≥ 5.1 mmol/L
1-hr glucose	≥ 10.0 mmol/L
2-hr glucose	≥ 8.5 mmol/L

The responsibility is with the clinician ordering bloods to follow up results and provide a copy of results to Eastern Health. It is imperative that routine pathology is obtained prior to scheduled hospital appointment with a midwife at 28 weeks and referral to Eastern Health diabetes educator completed.

GP's who wish to refer women identified as GDM after 28 weeks must call the ante-natal clinic and discuss referral details with a the AMUM of the relevant hospital.

Management of GDM:

Following a positive result of GDM and referral to the diabetes educators, women will be contacted within 1 week by Eastern Health to organize attendance to a GDM information session.

In this session, women will receive education on GDM, the risks of poorly controlled GDM, the implications post pregnancy, and are given culturally appropriate advice in regards to maintaining a balanced healthy diet and exercise regime. Women will also receive the education and equipment required for at home blood glucose monitoring.

Women are instructed to test their blood sugars daily, fasted and then 2 hours post prandial.

Target blood glucose levels are:

- Fasting BG level $\leq 5.0\text{mmol/L}$ and
- Two hours postprandial $\leq 6.7\text{ mmol/L}$.

Women are advised to phone the diabetes educator if 2 results are elevated within a 7-day period. The diabetes education team contact women weekly via the phone for review of sugar levels.

Women whose GDM is well controlled by dietary means only (not requiring insulin) are still considered suitable for GP shared care

If two results are above the target levels, including post-prandial $\geq 6.8\text{ mmol/L}$ or fasting blood glucose $\geq 5.1\text{ mmol/L}$ within a seven-day period, and there is no scope for further lifestyle modifications, the women will be referred to an Endocrinologist for consideration of insulin therapy. Women who are commenced on insulin therapy in pregnancy will require hospital managed obstetric led care for the remainder of their pregnancy.

Pregnancy Management and Birth Planning –

Women with well controlled GDM (diet) should be monitored closely for signs of irregular fetal growth and pregnancy related hypertension.

Additional ultrasound (US) examinations should be considered if there is any clinical suspicion that the baby is large for gestational age (LGA) or small for gestational age (SGA). This should be specifically considered at 28-30 weeks and at 34-36 weeks. Further US monitoring will be required if LGA or SGA is present.

Regular CTG monitoring is **not** routinely required for well controlled GDM prior to 40 weeks. Women with well controlled GDM (diet controlled only) that have no other clinical risk factors or co-morbidities do not require early induction of labour on the basis of GDM. These women should follow the normal expected management for labour and pregnancy.

7.2 RhD Alloimmunization in Pregnancy

Eastern Health follows the clinical guidelines recommended by RANZCOG and the National Blood Authority in regard to Anti D administration in pregnancy. The following is the Eastern Health guidelines for Rhesus Negative women in pregnancy and the immediate postpartum period.

First Antenatal attendance with their GP

All women require an updated blood group and antibody screen with initial booking bloods in early pregnancy to establish blood group and Rhesus status.

Any woman who has Rhesus positive antibodies present requires obstetric led care at Eastern Health and is considered a red pathway, therefore not suitable for GP shared care. Where possible initial booking appointment should be arranged prior to 12 weeks gestation

Other antibodies requiring review include Group 1 antibody: (-D, -c, -E, -e, -C, -Fya, -K, -k)
OR Group 2 antibody: (-Cw, -Fyb, -Jka, -Jkb, -Jk3, -S, -s, -M, -Gea) OR Previous history of infant affected by haemolytic disease of the newborn. Refer to MFM consultant for advice/ pregnancy management

Group 3 antibodies (-P1, -N, -H, -Lea, -Leb, -Lea+b, -Sda, -HLA)

Patient will require early group and screen when they present in labour but these antibodies do not affect the fetus.

Ongoing Routine Management for all Rhesus (D) negative women with no preformed Anti D-antibodies:

22 weeks Pregnancy appointment:

At this appointment, please provide all Rhesus negative women a pathology request for a blood group and antibody screen. Please advise the woman to have this blood test done at an Eastern Health pathology site if possible. This test is to be done at 26-28 weeks gestation.

NB: All routine pregnancy screening is usually collected @ this time

All women participating in the GP shared care model require their 28-week appointment to be a hospital-based appointment.

28 week pregnancy appointment:

The 28 week pregnancy appointment occurs at an Eastern Health facility.

Following this appointment all women will attend FMAC for routine administration of 625 IU of Anti D immunoglobulin. The recommended group and antibody screen is required prior to Anti D administration. If testing has occurred at an Eastern Health location, results will be available within the Electronic Medical Records, alternatively if testing performed outside Eastern Health please provide results to avoid undue delay in the administration process.

34-week pregnancy appointment:

The 34-week pregnancy appointment occurs at the GP's surgery. Women should be reminded at this appointment to contact the relevant Eastern Health ante-natal clinic to organize an appointment in FMAC for a second administration of Anti D. If there have been no sensitizing events between 28 weeks and 34 weeks, and the initial prophylactic dose of Anti D immunoglobulin was administered, women do not require an additional group and antibody screen prior to the 34 appointment. Women receive a 2nd dose of 625 IU of Anti D immunoglobulin at the prearranged FMAC appointment.

Post-Partum:

Post birth cord blood will be tested. If the baby is Rhesus negative, no further action will be required. If the baby is a Rhesus positive blood group, an additional blood group screen and Kleihaur will be collected from the mother and the appropriate dosage of Anti D immunoglobulin calculated and administered prophylactically within the first 72 hours post-partum.

Anti D for sensitizing events:

A sensitizing event in pregnancy is defined as any event that can cause the possibility of fetal red blood cells crossing into the mother's circulation. Sensitizing events include;

- Miscarriage
- Ectopic pregnancy
- Termination of pregnancy (medical or surgical)
- Invasive prenatal investigations (for example: amniocentesis or chorionic villus sampling)
- Antepartum haemorrhage
- Any major abdominal trauma with enough force to cause feto-maternal haemorrhage (for example: car accident, large fall, contact sports)
- External Cephalic Version (regardless of success)

It is vital that GPs send any Rhesus negative women presenting to them following a possible sensitizing event to the hospital emergency department for review and Anti D administration. The dosage of Anti D immunoglobulin will vary between 250 IU and 625 IU based on a woman's gestation, number of pregnancies and kleihaur analysis.

Useful Links:

RANZCOG – Anti D administration guidelines:

[https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Use-of-Rh\(D\)-Isoimmunization-\(C-Obs-6\).pdf?ext=.pdf](https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Use-of-Rh(D)-Isoimmunization-(C-Obs-6).pdf?ext=.pdf)

National Blood Authority:

Anti D Guidelines:

<https://www.blood.gov.au/document/guidelines-prophylatic-use-rh-d-immunoglobulin-anti-d-obstetrics-pdf>

Frequently Asked Questions – Anti D

[https://www.nslhd.health.nsw.gov.au/Services/Directory/Documents/FAQs%20Use%20of%20Rh%20\(D\)%20Immunoglobulin.pdf](https://www.nslhd.health.nsw.gov.au/Services/Directory/Documents/FAQs%20Use%20of%20Rh%20(D)%20Immunoglobulin.pdf)

7.3 Anaemia in pregnancy

To ensure the best physiological, cognitive and developmental outcomes for mother and baby, Hb, iron, B12 and folate need to be optimised throughout pregnancy, delivery and breastfeeding. The following is the Eastern Health recommendation for screening and management of iron deficiency and iron deficiency anaemia in pregnancy.

Anaemia occurs when there is a lower than normal concentration of haemoglobin in the body. In pregnancy the World Health Organization state that the minimum haemoglobin levels acceptable for pregnancy are 110 mg/dL in the first half of pregnancy and 105 mg/dL in the second half. There are four main causes of anaemia associated with pregnancy, Iron deficiency, folate deficiency, Vitamin B 12 deficiency and haemoglobinopathies. Out of the four causes, Iron deficiency is the most common cause of anaemia in pregnancy.

7.4 Iron Deficiency

Assessment:

1. **All** women should be offered routine FBE and iron studies with their initial early pregnancy screening bloods.
2. Women who are iron deficient in early pregnancy, have pre-existing iron deficiency a cause should be sought and found. They should also be screened for coeliac disease.
3. Women should have a repeat FBE and iron studies at 26 - 28 weeks gestation to identify a drop in HB/ferritin as pregnancy demands increase.
4. At any time in the pregnancy if Hb is <110mg/dL first trimester or <105mg/dL second trimester and /or ferritin levels < 30 supplementation is recommended.
5. If ferritin 30-70 mg/dL at any time consider risk assessment for developing anaemia and risk of PPH and consider supplementation.

Treatment:

Oral iron supplementation should be commenced once a woman has been diagnosed as Iron deficient.

- Supplementation on alternative days is appropriate. Daily supplementation may not increase absorption and may contribute to side effects
- 60 - 100mg is the recommended minimum amount of elemental iron in a supplement to be taken on alternate days.
- Absorption is aided by Vitamin C and limited caffeine.
- Iron polymaltose (Maltofer) has a lower risk of gastrointestinal side effects and can be used as an alternative to regular iron supplements where iron salts are not tolerated.
- Eastern health supports increasing iron to 200mg alternate days depending on compliance and/or response prior to consideration of iron infusion. Refer to 'Haemoglobin Assessment and Optimisation in Maternity: A guide for health professionals involved in antenatal care' see link - <https://transfusion.com.au/node/2234>

Response to Treatment:

- 4 weeks after commencing Iron supplementation, women require a repeat FBE and iron studies to assess compliance, correct administration and response to treatment.
- If a significant improvement in ferritin levels is noted then the woman should be encouraged to persist with Iron supplementation where tolerated.
- If improvement is slow or patient increasingly symptomatic increase supplement to 200mg on alternate days, repeat bloods 2 weeks later.
- An IV iron infusion should be considered where:
 - Oral iron is not tolerated or not effective in improving iron deficiency and/or anaemia following an adequate trial of therapy at any gestation beyond the first trimester
 - Iron deficiency and/or anaemia is severe and/or symptomatic to a degree that precludes a trial of oral iron
 - Oral iron is contra-indicated at any gestation beyond first trimester due to malabsorption
 - The woman is significantly iron deficient and/or anaemic at an advanced gestation and iron status must be optimised urgently for fetal benefit and delivery planning

Intravenous Iron infusions are contraindicated in the first trimester

To refer a woman in your care for an iron infusion:

Please **FAX** the woman's name, Hospital UR, contact number and most recent pathology results (Hb and Ferritin levels) to the appropriate site below. The woman will be contacted by her birthing hospital to organize an appointment for an infusion.

Booked to birth at Angliss Hospital	9764 6193
Booked to Birth at Box Hill Hospital	9975 6663

Intravenous Iron Infusions

- Women will be contacted, and an IV infusion performed at Box Hill or Angliss Hospitals.
- The procedure does not require overnight admission and will be performed within the maternity unit setting.
- Women will be consented by the prescribing physician on the day
- At Eastern Health, pregnant women requiring an iron infusion will receive Ferric Carboxymaltose (Ferrinject) unless contraindications are present. A 1000mg dose of Ferric Carboxymaltose will be administered during the procedure.
- Oral Iron supplementation should be ceased following iron infusion
- 6-8 weeks post infusion, a repeat FBE and serum ferritin should be collected to assess response to treatment. Further oral supplementation or IV infusion may be required to replenish iron stores and fulfil the increased demands of pregnancy.

7.5 Folate Deficiency

Folate deficiency is rarely seen in women that have resided in Australia for the majority of their life. This fact is due to the addition of supplementary folate to a large variety of every day foods produced within the country. Pregnancy and lactation are both associated with increased folate demands on the woman, and preferential delivery of folate to the fetus may result in severe maternal deficiency in the presence of normal folate status in the baby.

RANZCOG recommends a minimum of 0.4mg daily of folate supplementation 1-month pre pregnancy and at least the first 3 months of pregnancy. For women that have a high risk of neural tube defects in pregnancy, increased BMI > 30, haemolysis (eg haemoglobinopathy); or those women who take folate depleting medications or have a diagnosed folate deficiency, 5mg daily of Folate supplementation is recommended.

All women with folate deficiency should be referred to be reviewed by haematology/obstetric medicine.

7.6 Vitamin B12 deficiency

Vitamin B12 is essential for infant neurological development. The fetus requires adequate hepatic maternal B12 stores for appropriate neurological development and if born deficient will fail to reach neurological milestones.

Women who are most at risk for B12 deficiency include

- Vegetarians
- Vegans
- Women with gastrointestinal conditions such as hypochlorhydria or coeliac disease
- Women who have undergone bariatric surgery (gastric bypass)
- Women with Crohn's disease
- Women with a history of prolonged hyperemesis gravidum in this pregnancy

Screening for B12 deficiency:

Women at risk of B12 deficiency would benefit from having their holotranscobalamin (Active B12) checked with their initial antenatal pregnancy bloods and then again at 26-28 weeks.

Practise Point: It is important to correct any underlying iron deficiency, as treatment with B12 can cause rapid cell production and associated iron depletion. Thus, it is important to assess ferritin levels when requesting B12 testing and treat iron deficiency accordingly.

If Holotranscobalamin is <37 pmol/L then Vitamin B12 replacement should be commenced.

Any woman that is B12 deficient requires Obstetric Medical input. The women should be referred to Obstetric Medicine at Eastern Health. See Section 4.5 for contact details.

Treatment:

Treatment will vary based on the cause of the deficiency; Nutritional versus Malabsorption; and whether the woman is anaemic or not.

Causes of Vitamin B12 deficiency	Treatment Asymptomatic (Not Anaemic)	Treatment Symptomatic (Anaemic)
Nutritional	<p>Cyanocobalamin 250–500 micrograms orally daily, given between meals.</p> <p>OR</p> <p>Hydroxocobalamin 1000 micrograms by intramuscular injection every 2–3 months.</p> <p>This should be continued for the duration of the pregnancy and during breastfeeding.</p>	<p><u>Treatment:</u> Hydroxycobalamin 1000 micrograms by intramuscular injection twice weekly for 3 weeks (or until improvement occurs).</p> <p><u>Maintenance:</u> Cyanocobalamin 1000–2000 micrograms orally daily, given between meals.</p> <p>This maintenance dose should be continued for the duration of the pregnancy and during breastfeeding.</p>
Malabsorption	<p>Hydroxocobalamin 1000 micrograms by intramuscular injection every 2–3 months.</p> <p>This should be continued for the duration of the pregnancy and during breastfeeding.</p>	<p><u>Treatment:</u> hydroxycobalamin 1000 micrograms by intramuscular injection twice weekly for 3 weeks (or until improvement occurs).</p> <p><u>Maintenance:</u> hydroxocobalamin 1000 micrograms by intramuscular injection every 2–3 months.</p>

One month post the commencement of B12 therapy, repeat bloods should be taken to assess efficacy. However, once Vitamin B12 deficiency has been diagnosed, it is important that treatment is continued throughout the duration of the pregnancy and during lactation.

Infants of woman with B12 deficiency in pregnancy will require paediatric follow up and ongoing review post birth. This should occur in the immediate post-partum period within the hospital.

7.7 Haemoglobinopathies

Comprising the thalassaemia's and the production of genetically abnormal haemoglobin, these are hereditary disorders, which affect the balance of globin chain synthesis and/or the structure of

haemoglobin. They are characterised by structural variations of the haemoglobin molecule, such as HbS (sickle), HbE etc.

Thalassaemia- is an inherited condition that affects the production of haemoglobin, which carries oxygen in our blood. It appears in the following forms⁵:

Thalassaemia minor	Carrier form – one member of the gene pair is not working properly	No effects on health
Beta thalassaemia major	Both members of the beta gene are not working	Offer CVS and discuss possible TOP Patients are transfusion dependent.
Alpha thalassaemia major	Both members of the alpha gene pairs are not working	Barts Hydrops

Sickle Cell Disease

Sickle cell disease occurs when the structure of the beta globin chain is abnormal.^{25, 26} Defective genes produce abnormal haemoglobin beta chains resulting in Hb called HbS. Sickle cell disease occurs when the abnormal genes are inherited from both parents. Sickle cells have increased fragility and a shortened life span of 17 days causing chronic haemolytic anaemia which leads to episodes of ischaemia and pain known as sickle cell crises. Maternal effects may include pain, infections, pulmonary complications, anaemia, pre-eclampsia and caesarean section. The fetus is at risk for spontaneous abortion, pre-term birth, intra-uterine growth restriction and perinatal death. It appears in the following forms:

Sickle cell trait	One normal β gene in one chromosome and one abnormal S (β gene mutation) in the other chromosome e.g. β/β^S	Asymptomatic normally, normal RBC indices. Sickle cell formation can occur in during high fever and significant hypoxia
Sickle cell disease/anaemia	Two abnormal S (β gene mutations), one in each chromosome BS/β^S	Mild to moderate chronic haemolytic anaemia, vaso-occlusion - brain, chest, bones, kidneys, spleen and placenta. Increased maternal and perinatal mortality

The clinical significance of these conditions is quite variable. For carriers of thalassaemia / haemoglobinopathy, generally, there are no clinical consequences. However, pregnancy increases demand on red cell production and this may worsen maternal anaemia and influence fetal growth.

Patients with sickle cell disease, (depending on the inherited disorder); do have significant clinical requirements, including regular blood transfusions and drug therapy.

Investigations

RANZCOG⁵ recommends that Full Blood Examination (FBE) is a minimum requirement to screen women, as this will provide Mean Corpuscular Volume (MCV) and Mean Corpuscular Haemoglobin (MCH) red cell indices. Reviewing MCV and MCH will identify some but not all carriers of alpha and beta globin gene changes. Also, note that some beta globin changes (sickle cell) result in normal red cell indices and relies on haemoglobin electrophoresis (HbEPG). Therefore EH recommends that “high risk” populations should be fully screened at the initial antenatal visit.

Haemoglobinopathy screening requires:

- FBE
- Serum ferritin
- Haemoglobin electrophoresis – if suggestive of alpha thalassaemia, DNA analysis indicated (**pathology automatically screens**)

Populations at risk of Haemoglobinopathies	
Thalassaemia	Sickle Cell disease
<ul style="list-style-type: none"> ▪ African ▪ American/British/Caribbean African ▪ Middle Eastern ▪ Pacific Islanders ▪ New Zealand Maori ▪ Southern Europe- Mediterranean ▪ Indian subcontinent ▪ North West & Northern Territory Australian Indigenous communities 	<ul style="list-style-type: none"> ▪ African ▪ American/British/Caribbean African ▪ Middle Eastern Health ▪ Southern Europe- Mediterranean ▪ Indian subcontinent ▪ South American

If a woman is diagnosed iron deficient, as previously mentioned screening should be repeated after iron stores are replaced as iron deficiency may result in an abnormal HbA2 in mild forms of beta thalassaemia.

Follow up

Couples with positive results require haematological review and referral to Eastern Health Genetics clinical midwife consultant, who will arrange further fetal diagnostic screening via Monash Maternal Fetal Medicine

7.8 Hypertensive disorders of pregnancy (HDP)

Definitions:

Normal pregnancy is characterized by a fall in blood pressure, detectable in the first trimester and usually reaching a nadir in the second trimester. Blood pressure rises to preconception levels towards the end of the third trimester.

Hypertension in pregnancy: BP > 140 mmHg/ 90 mmHg (Korotkoff 5) on at least two occasions over several hours in the clinic, or >135/85 at home.

Severe hypertension: Blood pressure systolic = ≥ 160 and/or diastolic = ≥ 110 mmHg

Gestational Hypertension - new onset raised blood pressure after 20 weeks' gestation, without maternal or fetal signs or symptoms of pre-eclampsia; ongoing monitoring for the development of pre-eclampsia is required.

Lifetime risk of chronic HT is increased in women who have had HDP.

Preeclampsia: A multi-system disorder arising after 20 weeks gestation. The usual clinical manifestations are hypertension and one/more organ systems involvement, proteinuria is not mandatory in order to confirm the diagnosis. PET may be accompanied by haematological, neurological, hepatic or renal impairment. ISSHP 2018 guidelines recommend against grading PET as severe or mild because it is a rapidly evolving and unpredictable condition, moreover some women develop end organ dysfunction at relatively mild levels of HT. Maternal and fetal parameters in pre-eclampsia do not always follow each hence both mother and baby need to be monitored individually.

Chronic Hypertension – (Essential or Secondary)

This is pre-existing hypertension not caused by the pregnancy but commonly more severe after 22 weeks' gestation.

Systolic > 140 mmHg and/or diastolic > 90 mmHg in clinic; or >135/85 average HBP or >130/80 daytime ABPM confirmed before 20 weeks gestation.

White Coat Hypertension: hypertension detected in a clinical setting with normal blood pressure assessed by 24 hour ambulatory blood pressure monitoring or home blood pressure monitoring (HBPM) using an appropriately validated device. It is associated with increased risk of pre-eclampsia and Gestational HT so HBPM should be instituted for the remainder of the pregnancy with ongoing surveillance for pre-eclampsia.

Masked Hypertension: detected on home monitoring or ABPM when clinic BP measurements are normal.

Treatment of Hypertension

Blood pressure (BP) $\geq 160/110$ mmHg in pregnancy increases the risk of stroke and is associated with adverse fetal and maternal outcomes. It requires urgent treatment and close monitoring.

Antihypertensive drug therapy for HT below this threshold was considered optional until the publications of the CHIPS trial which recruited women with chronic and gestational HT (many of whom developed pre-eclampsia and remained in the trial) and documented less severe HT and less maternal complications without fetal harm in women treated to a target of DBP < 85. ISSHP 2018 guidelines recommended instituting or increasing treatment for BP consistently > 140/90 (or 135/85 on home readings) and aiming for 110-140/80-85. Treatment should be reduced or ceased if DBP is consistently less than 80 mmHg

In women with hypertension in pregnancy, control of blood pressure is essential to reduce the risk of maternal complications and prolong the pregnancy for fetal benefit, where possible. Where BP is persistently >150/100, in-patient management is recommended

These targets still apply in the first 6 weeks post-partum, of which especially the first 2 weeks are a danger period for cerebral complications of poorly controlled HT because BP control is often difficult at this time and may require in-patient management (especially if >150/100)

Instructions to women for HBPM:

Take your BP

1. Prior to taking your medications, exercising, eating or having caffeine
2. While sitting down, not talking, legs uncrossed, arm resting at heart level
3. Use an upper arm monitor with appropriate cuff size (please discuss with your doctor/midwife – bring your machine and cuff to your appointment if unsure)
4. Do not routinely take BP when stressed, uncomfortable or in pain

Pre-eclampsia symptoms, reduced fetal movements, or BP over 150/100 which has not settled upon a 15-30 min rest should be urgently reported to Birth Suite at chosen hospital.

If your BP is persistently less than 120/80 or you feel lightheaded after taking your medications, please reduce your medications as follows (see antihypertensive medications below) and report the change to your treating doctor/midwife.

If your BP is persistently 135-150/85-100, please report this to your treating doctor/midwife.

At EH, patients email the Obstetric Medicine clinic with their home readings. Patients undertaking HBPM should be given contact details for reporting concerns and BP readings outside parameters.

Antihypertensive medications:

The most appropriate treatment for hypertension in first trimester is methyldopa or labetalol. Other medications should be ceased prior to 6/40. BP may require less treatment towards 22/40 and down-titration may be required. Women should be asked to home monitor with an upper arm appropriately sized cuff and monitor validated for pregnancy (HBPM).

If treated with methyldopa monotherapy, once the total divided daily dose is 1g, labetalol should be introduced. If needed, methyldopa can later be increased up to 1.5-2.0g/d in divided doses. Later, labetalol can be maximized to 400mg QID, or up to 600mg QID absolute maximum.

If a third agent is being added (usually nifedipine SR dosed bd) to maximal doses of labetalol and methyldopa, delivery will often be planned.

Post-partum, the choice of first line agents includes labetalol (or metoprolol) dosed at 200-400mg (25-50mg) bd-qid, nifedipine SR dosed bd, enalapril 5-20mg dosed bd (used with care in breastfeeding mothers of premature infants due to ongoing renal development). Methyldopa should be ceased post-partum due to propensity to side effects including depression.

Women requiring medication for hypertension in pregnancy are **NOT** suitable for GPSC and should be referred to obstetric medicine and obstetric care at Eastern Health RED pathway

Early Onset-Pre-Eclampsia screening: (EO-PE)

VCGS and Monash ultrasound for women currently offer early onset pre-eclampsia screening with a recommendation for aspirin (150mg nocte) prophylaxis in high risk women. This is based on maternal risk factors, BP, PAPP-A and umbilical artery dopplers. For women with known hypertension, the screen will be positive regardless of the other results therefore, EO-PE screening is not recommended.

Aspirin and calcium:

Women at risk of pre-eclampsia should be advised to take aspirin 100mg tablets from 11 weeks and prior to 16 weeks until 36 weeks gestation, in absence of contraindications such as allergy or severe uncontrolled hyperemesis. Some studies have suggested 150mg however in view of the emerging evidence of a small risk of PPH following NVD in cohorts of women on aspirin, this dose is reserved for women who have screened high risk on EO-PE screening (see above). If 150mg is chosen, women take ½ a 300mg tablet and discard the other half which is not stable out of the blister pack. The dose is taken in the evening.

Women on low calcium diets are at increased risk of pre-eclampsia so unless the diet can be changed, calcium is supplemented at a dose of 1000mg elemental calcium a day taken AWAY from meals to facilitate absorption.

CV risk and BP follow up:

Women, who have had pre-eclampsia (especially those with recurrent PET) or gestational HT, are at increased risk of chronic HT and vascular disease later in life. BP, urine PCR and CV risk factors should be checked at least annually and optimised lifelong. This includes healthy potassium rich diet (fruit and vegetables), exercise and a healthy BMI range.

7.9 Section 7 References and Resources

- Australasian diabetes in pregnancy society (2012): <https://www.adips.org/resources-pregnancy-and-diabetes.asp>
- Department of Health (2020) Clinical Practice Guidelines: Pregnancy Care. Canberra: Australian Government Department of Health: <https://www.health.gov.au/resources/pregnancy-care-guidelines/part-f-routine-maternal-health-tests/hyperglycaemia>
- Diabetes Australia (2020) Gestational Diabetes: <https://www.diabetesaustralia.com.au/gestational-diabetes>
- Diabetes Australia (2020) COVID 19 GDM recommendations: <https://www.diabetesaustralia.com.au/covid-19-updates-for-health-professionals>
- EH Policy 1020 – Diagnosis and Management of Gestational Diabetes

- EH Policy 3391 – Iron deficiency and Anaemia in Pregnancy Guideline (2019)
- EH Policy 114 – Guideline for the prescribing and administration of parenteral iron in adults (2019)
- EH Policy 2388 - Prevention and Management of RhD Alloimmunization in Pregnancy (2019)
- The National Blood Authority (2003) Guidelines on the prophylactic use of Rh D immunoglobulin (Anti- D) in obstetrics: <https://www.blood.gov.au/document/guidelines-prophylactic-use-rh-d-immunoglobulin-anti-d-obstetrics-pdf>
- The National Blood Authority (2015) Frequently asked questions about the use of Rh (d) Immunoglobulin
- NHS Screening Programmes. Sickle Cell and Thalassaemia Handbook for Laboratories. London; NHS:2012
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2017) Diagnosis of Gestational diabetes mellitus guidelines: [https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Diagnosis-of-GDM-\(C-Obs-7\)-review-July-2017.pdf?ext=.pdf](https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Diagnosis-of-GDM-(C-Obs-7)-review-July-2017.pdf?ext=.pdf)
- The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (2019). Guidelines for the use of Rh (D) Immunoglobulin (Anti -D) in obstetrics. [https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Use-of-Rh\(D\)-Isoimmunization-\(C-Obs-6\).pdf?ext=.pdf](https://ranzcof.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Use-of-Rh(D)-Isoimmunization-(C-Obs-6).pdf?ext=.pdf)
- The Royal Women's Hospital (RWH). Thalassaemia and Abnormal Haemoglobins in Pregnancy Available from URL: https://thewomens.r.worldssl.net/images/uploads/downloadable-records/clinical-guidelines/thalassaemia-and-abnormal-haemoglobins-in-pregnancy-guideline_280720.pdf
- Weatherall D J. The thalassaemia's: disorders of globin synthesis. In: Kaushansky K et al, Editors. Williams Haematology. 8th ed. China: McGraw Hill; 2010. p 675 – 707.
- WHO (2011) Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity; Vitamin and Mineral Nutrition Information System. Geneva, World Health Organization. <http://www.who.int/vmnis/indicators/haemoglobin.pdf>

8. Mental Health in Pregnancy

The perinatal period is associated with significantly increased risk for onset and relapse of mental illness – higher than at any other time in a woman's life. If not identified or treated early, these bring significant cost to the women themselves, their families and the wider Australian community.

The Perinatal Mental Health Service (PEHS) is a multidisciplinary team of mental health clinicians and operates as part of the CHYMHS (Child/Youth Mental Health service) program. We focus on improving the identification, referral process and support of women in the perinatal period, living in the Eastern Health catchment area and experiencing the following:

- substantial mental health difficulties as manifested by high levels of emotional, psychiatric or behavioural symptoms
- impairment and concerns around the growing development of attachment to baby
- experiencing high levels of distress in relation to specific perinatal related psychological issues including pregnancy/fetal loss, birth trauma, infertility or difficult infant temperament

The Edinburgh Postnatal Depression Scale (EPDS) is a questionnaire originally developed to assist in identifying possible symptoms of depression in the postnatal period. It also has adequate sensitivity and specificity to identify depressive symptoms in the antenatal period and is useful in identifying symptoms of anxiety. (COPE) All women should complete the EPDS at least once, preferably twice, in both the antenatal period and the postnatal period (ideally 6–12 weeks after the birth).

The non-diagnostic nature of the EPDS, its purpose and the fact that it relates to the previous seven days (not just that day), should be clearly explained. A Copy of the EPDS can be found at COPE.org.au

Some helpful link include:

<https://www.cope.org.au/health-professionals/health-professionals-3/calculating-score-epds/>
<https://panda.org.au/>
<https://www.beyondblue.org.au/>
<https://forwhenhelpline.org.au/>

9. Post Natal Care

Post birth at Eastern Health, several routine examinations is performed on the newborn baby. Prior to discharge from the EH service, all neonates will be offered the following injections and examinations.

- Full Newborn Examination check & Oxygen Saturation Assessment
- Vitamin K supplementation
 - Vitamin K Resources for Clinicians
<https://www.nhmrc.gov.au/about-us/publications/vitamin-k-administration-newborns-joint-statement>
 - Vitamin K Fact Sheet for Parents
<https://www.nhmrc.gov.au/about-us/resources/vitamin-k-newborn-babies-information-parents>

- Hepatitis B vaccination
 - Hepatitis B Resources for Clinicians
<https://immunizationhandbook.health.gov.au/vaccine-preventable-diseases/hepatitis-b>
 - Hepatitis B Fact sheet for Parents
- Hepatitis B immunoglobulin (where indicated)
 - Hepatitis B Immunoglobulin Recommendations for Clinicians
<https://immunizationhandbook.health.gov.au/recommendations/infants-born-to-mothers-who-are-hepatitis-b-surface-antigen-positive-are-recommended>
- Hearing Screen - Performed by the Victorian Infant Hearing Screen Program clinicians
 - VIHSP information for Clinicians
https://www.rch.org.au/vihsp/general_information/
 - VIHSP information for Parents
<https://www.rch.org.au/vihsp/resources/Brochures/>
- Newborn bloodspot Screening test (NST) - screening is performed in collaboration with the Victorian Clinical Genetic Services
 - NST resources for clinicians
<https://www.vcgs.org.au/tests/newborn-bloodspot-screening>
 - NST resources for parents
<https://www.vcgs.org.au/sites/default/files/NewbornBrochure.pdf>
- Jaundice screening and diagnostic testing where indicated
 - Jaundice Resources for Clinicians
<https://www.bettersafecare.vic.gov.au/resources/clinical-guidance/maternity-and-newborn/jaundice-in-neonates>

These procedures and assessments will be performed prior to discharge from the Eastern Health service. As some of the examinations are time sensitive, some examinations will be performed within the home setting by the home visiting extended post-partum care midwife. Education and information brochures are provided to all parents about Vitamin K & hepatitis B injections, the newborn hearing screen test and the newborn bloodspot screening test. These brochures are available in a wide range of languages, and parental consent is required before any of these procedures can be performed.

9.1 Anomalies in Newborn Screening Examinations

Newborn Screening Bloodspot Test -

If there are any collection or sample quality issues with the original test, the birth Hospital will be notified and a midwife will contact the family and organize a retest to be collected. This can be a result of an insufficient sample; the test being taken at an inappropriate time or prematurity of the baby. If an abnormal result is returned, then the Victorian College of Genetic Specialists will contact the family directly and invite them for additional screening. Parents will not receive any contact at all if the results are normal.

VCGS Contact Details:

Victorian Clinical Genetics Service

Flemington Road, Parkville VIC 3052
P 1300 118 247
W vcgs.org.au

Newborn Hearing Screen -

It is not uncommon for babies to not pass their first screening test. Babies that are unsettled at the time of screening, or have a temporary blockage in the ears (for example fluid) may not receive a passing result from their first examination. Parents should be reassured this is not a sign for concern at this point, and that their baby will be rescreened in a few days' time. A baby is discharged home from the hospital prior to a re-screen or without screening at all, VIHSP will contact the family to organize a time for the baby to be brought back to the hospital to be screened.

If no contact has occurred from the VIHSP – parents are invited to contact VIHSP on ph: (03) 9345 4941 to organize an appointment.

If an anomaly in hearing is noticed, parents will be advised by the VIHSP clinicians of the ongoing process and provide them with referrals for additional testing and the appropriate audiology services if required.

VIHSP Contact Details

Centre for Community Child Health
The Royal Children's Hospital
Flemington Road
Parkville, Victoria 3052

Ph: (03) 9345 4941
Fax: (03) 9345 5049

Email: email.vihsp@rch.org.au OR https://www.rch.org.au/vihsp/contact_us/

9.2 Extended Post-natal Care in the Community

Following discharge home from the hospital, all women will be offered at least one home visit from the Eastern Health extended Post-natal care (EPC) midwives within the first few days post discharge.

Additional visits will be provided if deemed necessary by the EPC midwife. Eastern Health will also notify the local Maternal Child Health service at the time of discharge. The local maternal child health nurse will then undertake a home visit, and offer additional maternal health care support and services.

Angliss Hospital Birth Suite:

Ph: 9764 6310

Angliss Special Care Nursery:

Ph: 9764 6307

Angliss Extended Post Natal Care:

Hours: 0730-1630

Monday through Sunday

Ph: 9764 6322

Box Hill Hospital Birth Suite:

Ph: 9975 6364

Box Hill Special Care Nursery:

Ph: 9975 6347

Box Hill Extended Post Natal Care:

Business Hours: 0730 - 1630

Monday through Sunday

Ph: 8396 8347

Mobile: 0439 327 718

Mobile: 0467 722 677

GPs referring women and babies back to Eastern Health in the Immediate Post-Partum Period

Following consultation with stakeholders Eastern Health can now offer direct readmission to maternity services provided care is still being given by Extended Post-natal Care services

If they require urgent review, please call the Birthing Suite of their birthing hospital or Special Care Nursery as appropriate and the women / baby will be seen through those units.

Any woman or baby that requires review post discharge from Extended Post-natal Care service should be referred to the Hospital Emergency department where the appropriate triage will occur. Please call Ambulance Victoria on 000 if concern or immediate review is required.

9.3 Lactation Services at Eastern Health

Lactation consultants are available to all women that birth at Eastern Health. Eastern Health maternity services are committed to promoting, protecting and supporting breastfeeding. Lactation consultants at Eastern Health are all accredited members of the International Board of Lactation Consultants and are available for referral in the antenatal and early post-natal period.

Ante-Nataly any woman that wishes extra support can be referred to the LSU service, if they have had a previous poor breastfeeding history, previous breast surgery or are gestational diabetics. These women can benefit greatly from meeting with the lactation consultants prior to birth to establish individualised plans, education and support from the lactation consultants.

Women who are gestational diabetics are encouraged to see the lactation consultants at 36 weeks for advice and information on antenatal expressing of colostrum to assist with their baby's blood sugar levels post birth.

Whilst inpatients women have access to the lactation consultants on weekdays to assist with breastfeeding support, education and advice.

Post-Nataly any woman that wishes extra support can be referred to the LSU. Common referrals are to assist with attachment and latching, Breast milk supply, engorgement, and mastitis concerns. The Lactation service at Eastern Health is happy to accept referrals from women up to 3 weeks post-partum, or 3 weeks post discharge of their baby home, whichever the latter is.

Self-referrals can be made by contacting the following:

	Address	Phone	Appointment Days
Angliss Lactation Support Unit	Room 2, Ward 3 East, Angliss Hospital, Albert St, Upper Ferntree Gully	9764 6309 0466793431	Monday Tuesday Thursday
Box Hill Lactation Support Unit	Room 3, Ward 3.1 Box Hill Hospital	8396 8385	Monday Tuesday

	8 Arnold St, Box Hill	0400 262 695	Wednesday Thursday
Yarra Ranges Health Support Unit	25 Market st, Lilydale	8706 9601	Wednesdays & alternate Fridays

After the initial 3-week period, Lactation services that can be referred to include;
Maternal Child Health Nurse - Most municipalities offer a free lactation service to women residing in that area. Women are encouraged to speak to their MCHN or to contact their council to obtain specific contact details.

Australian Breastfeeding association (ABA) – support line 1800 686 268

<https://www.breastfeeding.asn.au/>

Lactation Consultants Australia and New Zealand – Private lactation consultants

<https://www.lcanz.org/>

9.4 Perineal Clinic Services at Eastern Health

Eastern Health provides a perineal clinic service which is located at Box Hill Hospital for women in the post-partum period who have severe perineal trauma post-partum and for prenatal and antenatal women who have had previous severe trauma and require investigations and counselling in regards to subsequent pregnancy and birth options.

The perineal clinic is a multidisciplinary clinic with an integrative approach to care with senior Obstetric and Colorectal Doctors, women's health physios and midwives.

Hospital Based Management and Follow up of Third & Fourth Degree tears occurring at Eastern Health

Any woman that sustains a third or fourth degree tear as a result of birth at Eastern Health is referred to the perineal clinic prior to discharge. These women will be invited to attend an appointment at Box Hill Hospital approximately 6-12 weeks post birth. Within this appointment women will see the women's health physiotherapist who will assess pelvic floor integrity, urinary incontinence and prescribe ongoing management plans. The women also see a senior obstetric registrar or consultant who will assess the healing of the perineal tissue, provide/prescribe additional medical treatment if required and debrief the birth experience. Following this initial appointment if women require additional review, this will be organized with the clinicians. The women are also placed on a waitlist for the option to be seen 6-12 months post-partum by the Colorectal team who will assess sphincter integrity, scar tissue and healing through endoanal ultrasounds and manometry testing.

Perineal Clinic

In the Antenatal period referral can be made by contacting the perineal clinic;
Specialist Clinics, Level 3, Building-A
Box Hill Hospital
8 Arnold St, Box Hill.

Alternate Mondays
0900hrs – 1300hrs

The following form can be downloaded and completed for referral to the Perineal Clinic:

Referral Form: https://www.easternhealth.org.au/images/services/obstet_and_mat_isobar.pdf

Completed forms can be sent via

Fax – (03) 9895 4644

In the antenatal period; any woman that has had severe previous perineal trauma (3rd or 4th degrees) regardless of previous birth location should be referred to the perineal clinic. This appointment allows counselling to occur in regards to birthing options, and women have the option of seeing the colorectal doctors for an Endoanal ultrasound to assist in the decision-making process.

- Any woman that has female genital mutilation should be referred to the perineal clinic for review and counselling by an obstetric consultant.
- Any multiparous woman that is suffering from flatal or faecal incontinence that has resulted from her previous birth

In the Immediate Post Natal Period –

Any woman that is within the initial 6-8 weeks post-partum period following a birth at Eastern Health can be referred to the clinic when further review or assistance is required in the management of perineal trauma.

- Wound dehiscence or breakdown (if there is imminent concern, these women should be referred to the Birthing Suite or Emergency Department as the clinic is not suitable for acute patients).
- Dyspareunia
- Faecal or Flatal incontinence

9.5 6-week Post Natal Check for Mother and Baby

Following birth, all women are encouraged by Eastern Health upon discharge to book an appointment with their own GP for a 6-week post birth review for themselves and their baby.

The women are provided with a copy of their birthing summary to bring along to this GP appointment to be added to their own personal medical history.

This appointment is an opportunity for GPs to perform a physical and emotional wellbeing check on mothers, address any concerns following on from pregnancy and birth and perform a physical wellbeing check on the baby assessing weight gain, developmental concerns and discuss immunizations as recommend by the national immunization schedule.

Physical assessment of the mother

- Assess wounds and healing (perineal or abdominal stitches)
- Ask about urinary and faecal incontinence – consider women's health physio referral or perineal clinic referral if ongoing concerns
- Ask about perineal symptoms – Dyspareunia and PV loss
- Blood pressure – following up pregnancy complications (hypertension, pre-eclampsia).

Investigations to consider for the mother

- Full Blood Examination – an assessment of haemoglobin levels if the woman was anaemic in pregnancy or had a post-partum haemorrhage
- Iron Studies – recommended for any woman that was iron deficient in pregnancy or who suffered a post-partum haemorrhage

- Oral Glucose Tolerance Test – Eastern Health diabetic educators mail out pathology slips to women that were gestational diabetics following birth. If your patient has not received this slip by your review appointment it is recommended you order this test to be performed. Women should be monitored for the development of diabetes annually as there is a significant risk to women who had gestational diabetes to later develop diabetes in the following 15 years.
- Consider Cervical Screening Test – for any woman that is due/never been screened before.

Immunizations to Consider for the mother

- Measles Mumps and Rubella (MMR) – This is often given post-natally at the hospital if ante-natal rubella titre is low.
- Varicella Immunization if non-immune
- Pertussis immunization - this is encouraged ante-natally to the mother and any close care givers to the baby. Immunization should be encouraged if not undertaken antenatally already.

Education & Discussion for the mother

- Contraception – options for contraception should be discussed and prescribed as required. Additional information can be found at Family Planning Victoria <https://www.fpv.org.au/>
- Birth Debrief – women can suffer both mental and physical trauma within the birthing process. An opportunity should be provided to discuss the birth and events and debrief if necessary.
- Post-natal depression and anxiety – according to PANDA, 1 in 7 women and up to 1 in 10 men suffer from post-natal anxiety and or depression. Assessing mental health is encouraged at every encounter with the GP as post-natal depression can occur at any time during the first 12 months post-partum. The PANDA website has resources for women, partners and health professionals in regards to ongoing support, referral services and education. <https://www.panda.org.au/>
Community resources to support mothers and babies can be found on Health Pathways Melbourne – *Mothers and Babies Community Support*
- Return to exercise – The 6-week check is a good opportunity to assess Pelvic floor issues and diastasis rectus abdominal muscles (DRAM). Referrals to women's health physios can be beneficial for women experiencing ongoing issues at the 6-week mark.
- Alcohol, smoking and drug usage. Women should be encouraged to refrain from alcohol and drug usage whilst breastfeeding, and SIDs recommendations reiterated in regards to safer smoking practices if a woman or her partner chooses to smoke.
- Domestic and partner violence, relationship and parenting supports advertised to women.

Physical Assessment of the Baby

- General physical examination of the newborn – assessment of head shape, fontanelles, muscle tone, genitalia, (testes descent in males), hips, skin, heart and chest, eyes and reflexes.
- Growth assessment – the Victorian child health record should be used to assess previous weights and growths. Discussion should occur in regards to appropriate feeding and growth.
- Follow up of any identified abnormalities from birth or the initial newborn examination as documented in the green child health record book

Investigations

- Hip ultrasounds followed up or ordered for any babies identified as at risk for hip dysplasia

- Follow up of abnormal clinical findings – such as prolonged jaundice or heart murmurs.
- Identification of the newborn at risk of vitamin D deficiency - any infant whose mother was vitamin d deficient in pregnancy should receive initial supplementation whilst an inpatient and be encouraged to supplement their baby from four months old with Vitamin D drops (400 units) for the first 12 months

Management of neonate of a mother with Vitamin D Deficiency		
Preterm neonate	Discuss with paediatric consultant	Initial treatment as per paediatric consultant Maintenance is Multivitamin drops 0.45 ml/day (ie. Pentavite Multivitamin oral liquid, 0-3 years)
Term neonate & maternal antenatal Vitamin D level is 26-49nmols/L	Breast feeding	Colecalciferol (cholecalciferol) 400 us daily (eg Ostevit D 2 drops) from day 2 of life until ≥ 12 months old
	Artificial Feeding	Colecalciferol (cholecalciferol) 400us daily (eg Ostevit D 2 drops) daily from day 2 of life until drinking 1000mls/day of vitamin fortified formula (to obtain recommended daily requirements of 400 units of Vitamin D)
Term neonate & Maternal antenatal Vitamin D level is <25nmols/L		Colecalciferol (cholecalciferol) 50,000 units orally at birth then Colecalciferol (cholecalciferol) 400 us daily (eg Ostevit D 2 drops) from day 2 of life until ≥ 12 months old
Neonate where Maternal Vitamin D status is unknown	All breastfed neonates of veiled or dark-skinned mothers	Colecalciferol (cholecalciferol) drops 400 us (eg Ostevit D 2 drops) from day 2 of life until ≥ 12 months old

There is no need to supplement the newborn with vitamin D if :

- the mother is breast feeding and her pregnancy results were ≥ 50 nmol/L
- the mother is breastfeeding and she had no risk factors (not tested)
- the mother is breastfeeding and has taken adequate vitamin D supplementation throughout pregnancy / third trimester.
- the baby is exclusively formula feeding (with a vitamin fortified formula).

Immunizations

- Parents/Guardians should be encouraged to follow the recommended schedule of infant and childhood immunizations as per the National Health and Medical Research council guidelines.

Useful Post-partum Resources for GP and Women:

Women's continence after pregnancy - Continence Foundation of Australia (2020)
<https://www.continence.org.au/who-it-affects/women/pregnancy-and-childbirth>

Dyspareunia causes and management - Jean Hailes foundation
<https://www.jeanhailes.org.au/health-a-z/sex-sexual-health/painful-sex-dyspareunia>

Cervical Screening information – National Cervical Screening program

<http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/cervical-screening-1>

Perinatal Anxiety and Depression Australia

<https://www.panda.org.au/>

Beyond Blue – Pregnancy and new parents

<https://healthyfamilies.beyondblue.org.au/pregnancy-and-new-parents>

National Immunization Program Schedule

<https://www.health.gov.au/health-topics/immunization>

Safe Sleeping and Safe home environment for infants

<https://rednose.org.au/>

Domestic Violence and Partner Violence supports

<https://www.1800respect.org.au/>

<https://www.safesteps.org.au/>

10. Family violence

Family violence is described by the Family Court of Australia as: "Violent, threatening or other behaviour by a person that coerces or controls a member of the person's family or causes the family member to be fearful." Violence can be physical, sexual, financial, social or emotional.

Pregnancy and the immediate post-natal period is a time when family violence can commence or worsen. Younger women and those with an unplanned pregnancy are at a higher risk of domestic violence. It can be associated with harm to both mother and baby and can lead to: lower birth weight, miscarriage, premature labour and mental health disorders including depression and anxiety.

General Practitioners have an important role in:

- Identifying women at risk
- Identifying early signs and symptoms
- Assessing for violence and safety in families
- Referring to appropriate local resources
- Managing short and longer term consequences of any violence

Additional information is available from:

- Abuse and Violence – Working with our patients in General Practice - RACGP
- **National Sexual Assault, Domestic Family Violence Counselling Service on 1800 RESPECT or 1800 737 732**
- Pregnancy, Birth and Baby on 1800 882 436
- Safe Steps Family Violence Response Centre on 1800 015 188 (24 hours a day, 7 days a week)