Metro South Health

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Metro South Health and Hospital Service

GP Maternity Share Care Education Alignment Maternity 2

In partnership with Mater Mothers' Hospital

ICARE² values

Queensland Government

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Metro South Health and Hospital Service Maternity Shared Care AM2

Saturday 15th July 2023

ICARE² values

INTEGRITY COMPASSION ACCOUNTABILITY RESPECT ENGAGEMENT EXCELLENCE

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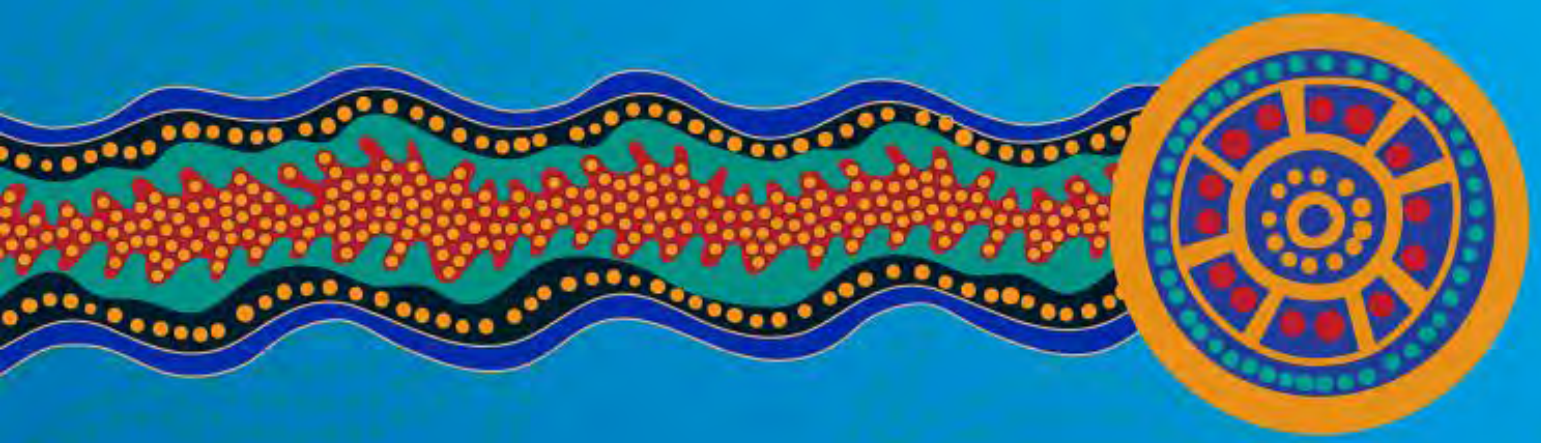

We acknowledge the Traditional Custodians of the land on which we live and work, and of the many different nations across the wider Brisbane south region.

We pay our respects to the Elders, past, present and emerging, as the holders of the memories, the traditions, the culture and the spiritual wellbeing of the Aboriginal and Torres Strait Islander peoples across the nation. We acknowledge any Sorry Business that may be affecting the communities as a whole.

In the spirit of reconciliation, partnership and mutual respect, we will continue to work together with Aboriginal and Torres Strait Islander peoples to shape a health system which responds to the needs and aspirations of the community.

ICARE² values

INTEGRITY COMPASSION ACCOUNTABILITY RESPECT ENGAGEMENT EXCELLENCE

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In our education today, we will use the terms women, people, patients or individuals, when referring to those who are pregnant or planning to become pregnant. We also use the term mother, especially in the case of "mother-to-infant transmission". We respectfully acknowledge that some pregnant people or those planning pregnancy may not identify as 'female' or as having a lived experience of 'womanhood' or 'motherhood'.

Acknowledgments

- Metro South Health and Hospital Service
- Maternity Services at Logan/Beaudesert/Redland Hospitals for their clinical input and support
- The Alignment team at MMH
- The > 1800+ GPs who've been through MMH or our Alignment process and given us their feedback
- Dr Wendy Burton
- Brisbane South PHN
- Yourselves

Metro South Health | Queensland Government

House keeping

- **Raise your hand** if you want to contribute to the discussion or to ask any questions.
- **Phones on silent please**.

Session 1

Time	Session name	Presenter	Delivery
8:00 am	Welcome, Housekeeping, learning objectives.	Dr Kim Nolan	GP Facilitator
8:10 am – 8:40 am	Task 1 Breakout groups – Case Discussion	Breakout	Facilitated groups
8:40 am	Preconception Consult 1 – Case Discussion	Group Spokesperson Dr Kim Nolan	Facilitated groups Power Point Presentation & Forum Discussion
9:20am	Preconception Consult 2 – Case Discussion	Group Spokesperson Dr Kate Hawk	Facilitated groups Power Point Presentation & Forum Discussion
9:50 am	Preconception Consult 3 – Case Discussion	Group Spokesperson Dr Sanja Savic	Facilitated groups Power Point Presentation & Forum Discussion
10:30 am	Morning Tea	ALL	ALL

Session 2

Time	Session name	Presenter	Delivery
10:50 am	Preconception Consult 4 – Case Discussion	Group Spokesperson Dr Kim Nolan	Facilitated groups Power Point Presentation & Forum Discussion
11:20 am	Preconception Consult 5 – Case Discussion	Group Spokesperson Dr Kim Nolan	Facilitated groups Power Point Presentation & Forum Discussion
11: 50 pm	Preconception Consult 6 – Case Discussion	Group Spokesperson A/Prof Greg Duncombe	Facilitated groups Power Point Presentation & Forum Discussion
12:30 pm	Reproductive Carrier Screening What's New in the Care of the Pregnancy with Maternal/Fetal Complexities in MSHHS	A/Prof Greg Duncombe	
1:00 pm	Lunch	ALL	ALL

Session 3

Time	Session name	Presenter	Delivery
1:45 pm	Task 2 Breakout groups – Case Discussion	Breakout	Facilitated groups
2:00 pm	Postnatal Consult 1 – Case Discussion Heavy or Prolonged Bleeding	Group Spokesperson Dr Kim Nolan Dr Sanja Savic	Facilitated groups Power Point Presentation & Forum Discussion
2:15 pm	Postnatal Consult 2 – Case Discussion Breastfeeding Issues	Deb Rankmore (Lactation Consultant) Lisa Miller	Facilitated groups Power Point Presentation & Forum Discussion
2.55 pm	Neonatal Examination		Video – Dr David Cartwright
3:05 pm	Preconception Consult 3 – Case Discussion Common Neonatal Concerns	Dr Ryan Mills	Facilitated groups Power Point Presentation & Forum Discussion

Learning Objectives:

1. Increase GP awareness of the benefits to maternal and infant health that the preconception consult can identify and thereby modify (biomedical, behavioural and social factors).
2. Discuss practical means of incorporating these into everyday care of women and men of reproductive age.
3. Improve assessment of the subfertile couple and those who have experienced recurrent miscarriage.
4. Improve GP understanding of reproductive carrier screening and become aware of the expanding capacity within MSHHS to manage complex Materno-Fetal issues.
5. Improve GP management of the family postnatally, including updates to assist GPs in supporting the breastfeeding mother, and managing common neonatal health concerns.

Today's aim

- Educate
- Update
- Equip
- Empower

How are we going to achieve this?

- By utilising the existing skill base within General Practice and the Maternity Team
- Highlighting the existing resources at Queensland Health, RANZCOG and SpotOnHealth Pathways (soon to be renamed Brisbane South HealthPathways)
- Improving communication channels between primary, secondary and tertiary level care
- Managing expectations!

And ultimately…..

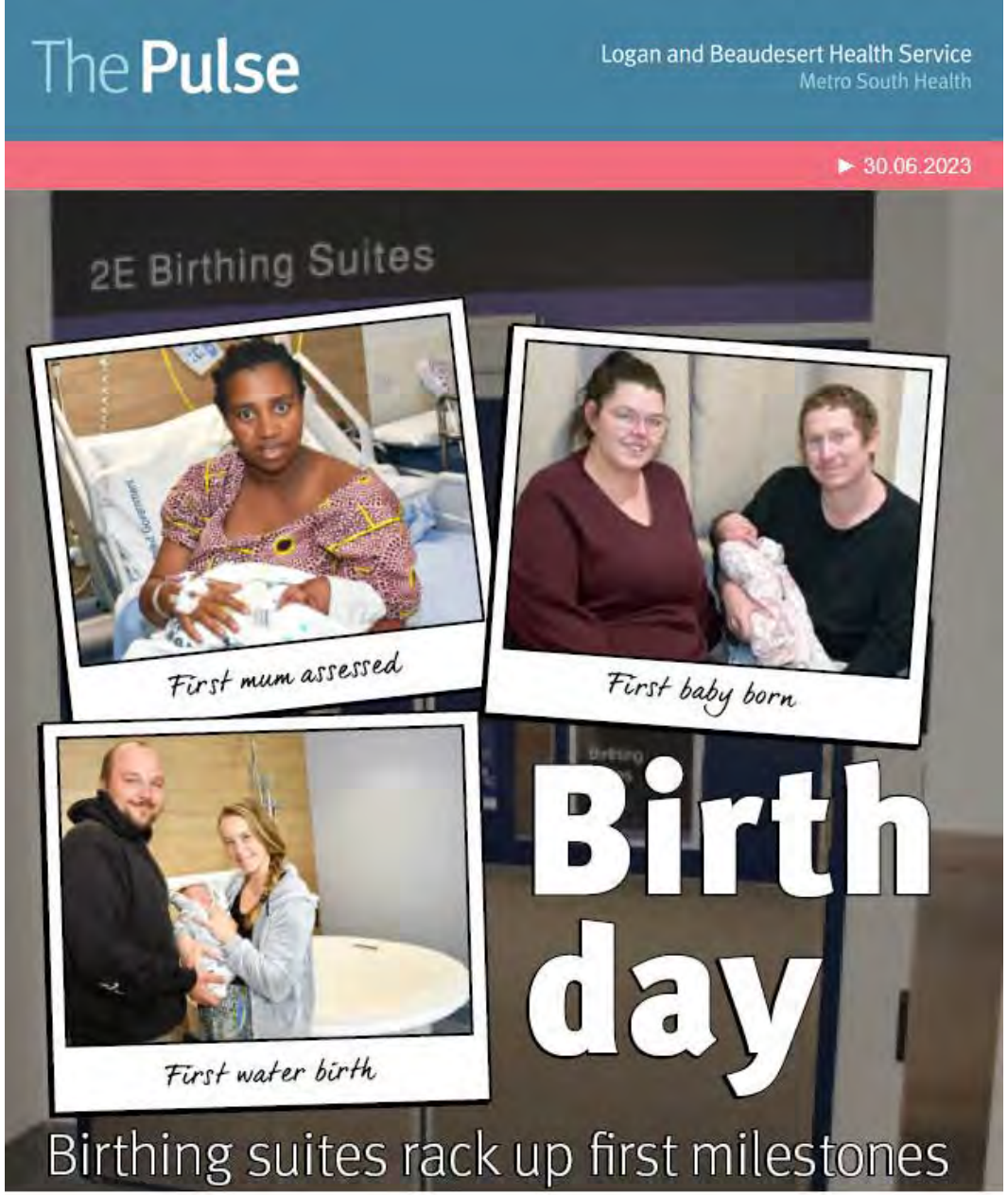
Improve the health outcomes for women, their babies and their children

Logan Maternity Service Expansion.

The new Maternity Inpatient Ward has recently celebrated its first birthday, and the brand-new birth suite opened on 20th June, with birth pools in every spacious room.

More women will be able to go home from birth-suite if they choose.

There will also be a birth pool at Beaudesert Hospital and they welcome referrals for women in the Logan/Beaudesert catchment.



Introducing today's team …..

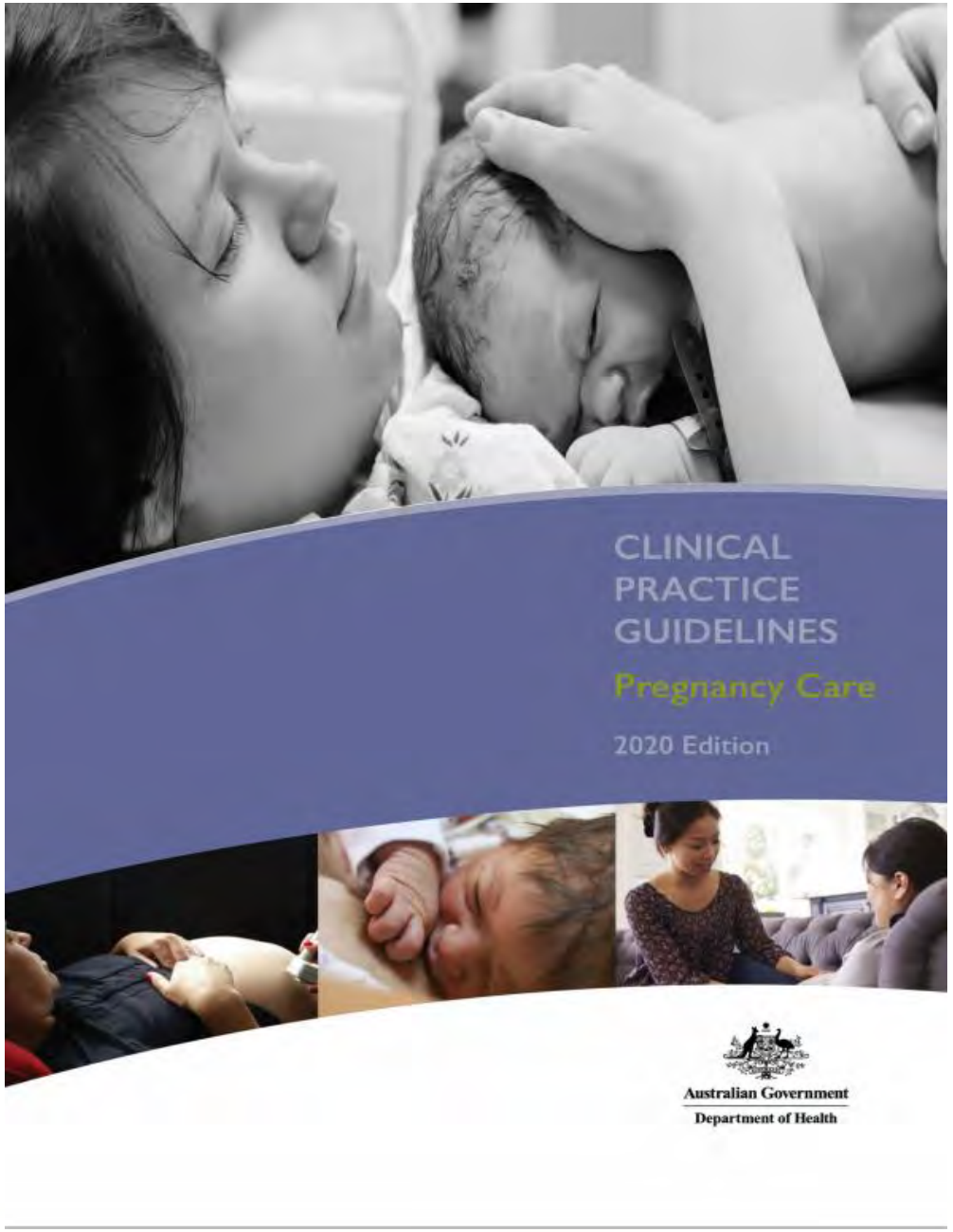
- Facilitator: Dr Kim Nolan , GP - GPLO Maternity Share Care
- Lisa Miller, GPLO Midwife Manager

From Logan, Beaudesert and Redland Hospital Teams

- A/Prof Greg Duncombe
- Dr Sanja Savic
- Dr Kate Hawke
- Dr Ryan Mills
- Deb Rankmore
- Jane Rundle, Clinical Midwife, ANC - Redland Hospital

Pregnancy Care Guidelines 2020

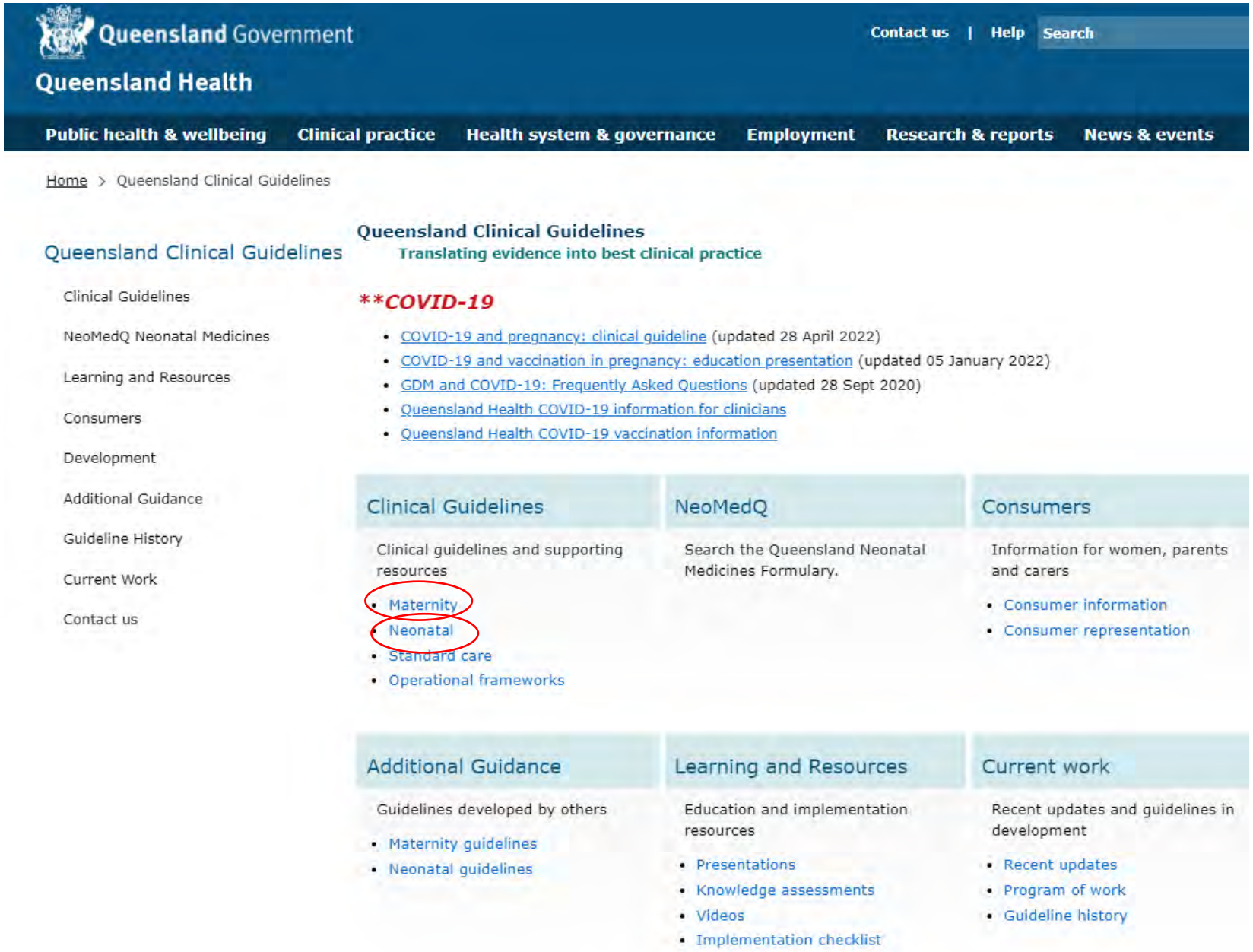
https://www.health.gov.au/resources/publications/pregnancy-care-guidelines

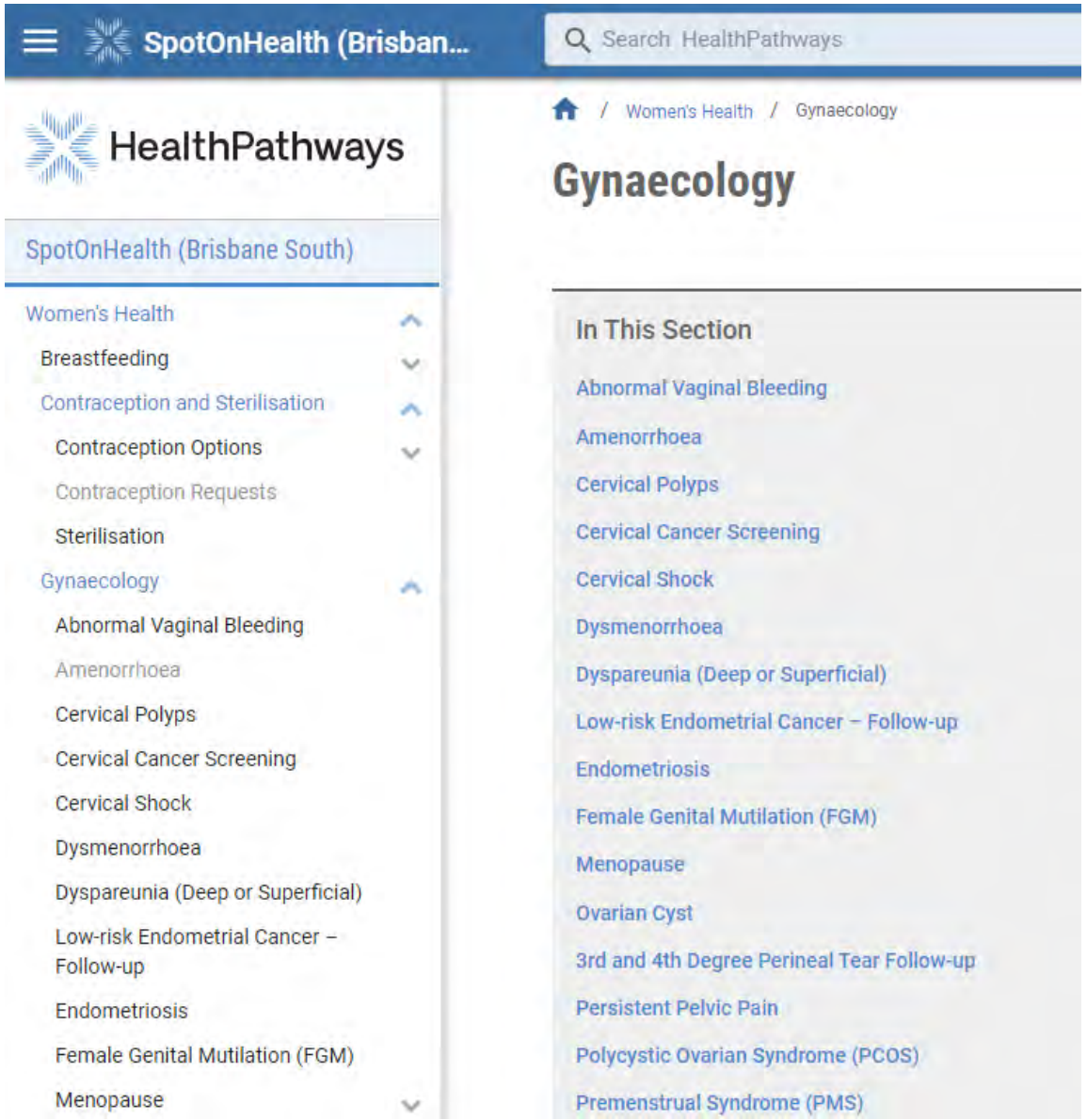


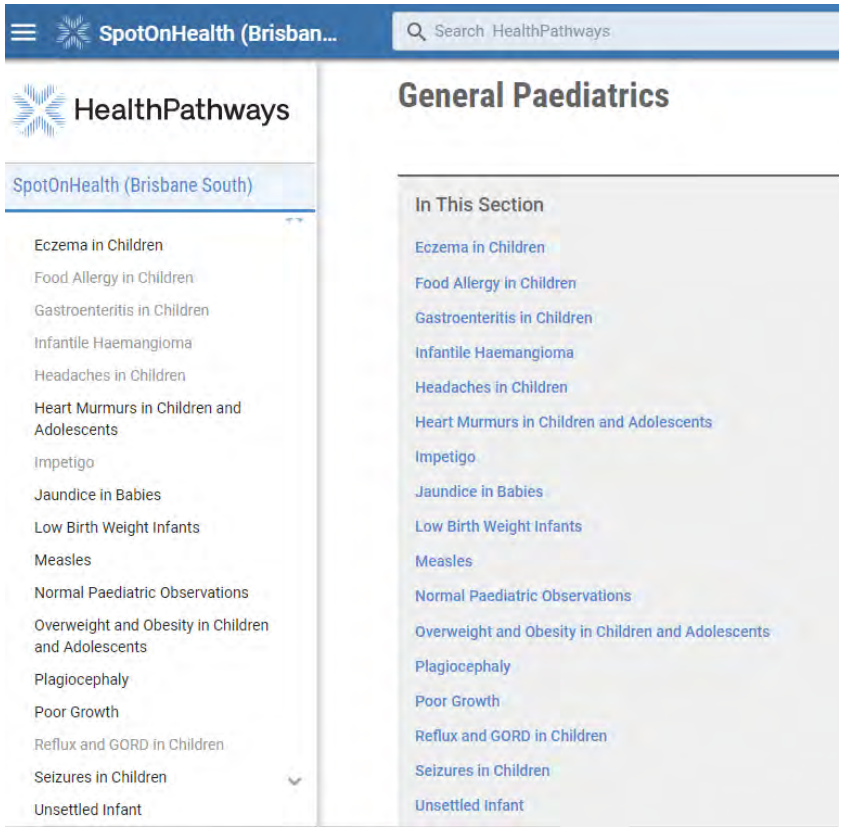
Queensland Health Clinical Guidelines

QHealth Maternity Guidelines has evidence-based guidelines, consumer and education resources

https://www.health.qld.gov.au/qcg







Community HealthPathways “SpotOnHealth Pathways” - soon to be Brisbane South Health Pathways

Online resources

- Metro South Health GP Maternity Share Care Clinical Guidelines – in Draft
- Clinical Practice Guidelines – Pregnancy Care (Australian Govt)
- Queensland Clinical Guidelines - Maternity
- Metro South Health Refer Your Patient
- Mater Mothers' Hospital GP Maternity Shared Care Guidelines – 2023 version
- RANZCOG education resources
- Australian Society of Infectious Diseases – Management of Perinatal Infections - 2022
- Australasian Diabetes in Pregnancy Society
- Spot on Health Pathways - Women's Health & Paediatrics
- King Edward Memorial Hospital - Obstetrics and Gynaecology Guidelines (health.wa.gov.au)
- Safer Baby Bundle Online education and resources
- Australian STI Management Guidelines
- Syphilis in Pregnancy Clinical Guidelines and resources
- COPE: Centre of Perinatal Excellence

AM2 Case Discussion – Blue Group

- Tiffany is a 25-year-old childcare worker who presents for her first cervical screening test and a pill script.
- She tells you she has just met the “man of her dreams”
- You know that her sister has coeliac disease and suffered a severe perinatal depressive episode a few years ago
- What can you undertake opportunistically in this consultation and ongoing, knowing that she wishes to have a family in the future?

She has a 20 min appointment - Outline your approach

Summarise also what you will do when she returns in 8 months wanting to try for a baby.

Contraceptive Options:

Following information should be provided about each contraceptive method:

- relative effectiveness
- correct usage
- mechanism of action
- common side-effects
- health risks and benefits
- signs and symptoms that would necessitate a return for review
- time to return to fertility after discontinuation
- Emergency contraception if suspected failure of method
- sexually transmitted infection (STI) protection

Using contraception can help you prevent becoming pregnant. Different methods may suit you at different times in your life.

In a multicultural society like Australia, information should be presented using language and formats that can be easily understood by the patient.

1. https://www.kemh.health.wa.gov.au/~/media/HSPs/NMHS/Hospitals/WNHS/Documents/Clinical-guidelines/Obs-Gyn-Guidelines/Contraception.pdf?thn=0
2. https://www.fpnsw.org.au/health-information/individuals/non-english-speaking/fact-sheets-community-languages
3. https://www.true.org.au/shop#!/Contraception-choices-available-in-6-languages/p/62799438/category=18320160

Contraception – delay in return to fertility after use of contraceptive methods

Evidence regarding resumption of pregnancy after contraceptive discontinuation are currently inconclusive.

Delay of fertility after ceasing contraception remains a big concern for women who are using contraception.

Essentially, **no delay in return of fertility** following:

- Discontinuation of the progestogen-only pill or CHC, or "morning after pill"
  - Can occur very quickly – days or weeks.
  - 79% - 96% of women can fall pregnant within 12/12 of ceasing pill. (C)
  - Incidence of post pill amenorrhoea (1 year post cessation) – 1-3%
- Discontinuation of progestogen-only implant. (B) – fertility returns in 1-2 weeks in most, no long-term infertility risk
- Discontinuation of hormone intrauterine contraception (B)
  - Quick return to fertility in uncomplicated use; PID and infection risk is very low
  - Infection can occur in the weeks following insertion but is usually mild and can be treated with oral antibiotics.
- Individuals should be advised that there can be a delay of up to 1-1.5 year in the return of fertility after discontinuation of DMPA (C) – i.e., back to pregnancy rate as seen in general population. Ten months is the median time it takes to return to fertility.

A. Evidence based on randomised controlled trials

B. Evidence based on other robust experimental or observational studies

C. Evidence is limited but advice relies on expert opinion and has endorsement of respected authorities

References:

1. Return of fertility after discontinuation of contraception a systematic review and meta-analysis, Contraception and Reproductive Medicine (2018) 3:9 https://contraceptionmedicine.biomedcentral.com/articles/10.1186/s40834-018-0064-y
2. The effects of contraception on future fertility, O & G (accessed 23.06.2023) https://www.oandg.com.au/blog/contraception-and-fertility
3. https://www.fsrh.org/standards-and-guidance/documents/cec-ceu-guidance-young-people-mar-2010/ (Amended May 2019) - Faculty of Sexual & Reproductive Healthcare Clinical Guidance

APPENDIX 5: FAILURE RATES OF CONTRACEPTIVE METHODS

Percentage of women experiencing an unintended pregnancy within the first year of use with typical use and perfect use (modified from Trussell)[34]

Method	Typical use (%) (estimated)	Perfect use (%)
No method	85	85
Fertility awareness-based methods	24	0.4–5
Female diaphragm	12	6
Male condom	18	2
Combined hormonal contraception*	9	0.3
Progestogen-only pill	9	0.3
Progestogen-only injectable	6	0.2
Copper intrauterine device	**0.8**	**0.6**
Levonorgestrel intrauterine system	**0.2**	**0.2**
Progestogen-only implant	**0.05**	**0.05**
Female sterilisation	**0.5**	**0.5**
Vasectomy	0.15	0.1

Long-acting reversible contraception/contraceptive methods in bold type.
*Includes combined oral contraception, transdermal patch and vaginal ring.

https://www.fsrh.org/standards-and-guidance/documents/cec-ceu-guidance-young-people-mar-2010

(Amended May 2019) - Faculty of Sexual & Reproductive Healthcare Clinical Guidance

One Key Question: routinely ask women of reproductive age, "Would you like to become pregnant in the next year?"

- Parenthood is a life goal for most people
- Parents want and expect a healthy baby, but few even think about their "reproductive health plan"
- 35% (- 50%) pregnancies are unplanned (Hewitt et al 2010)
- Preconception Consult recommended – for fertile men and women **at any time** during the reproductive period (and for those planning ART – includes months leading up to treatment)
- Opportunistic at reproductive health consultations e.g., Contraceptive, Cervical screening, STI checks, time of vaccinations or other preventative health checks
- Barriers
  - Provider
  - Client
  - System – organisational and societal level

From Jean Hailes Preconception presentation

https://www.jeanhailes.org.au/health-professionals/webinars/preconception-care-in-general-practice

Australian Women's Health Preconception

412 women completed questionnaire in early pregnancy

- 56% took folic acid
- 53% had preconception health check
- 30% overweight or obese pre pregnancy
- 45% of overweight/obese women lost weight before pregnancy
- 16% of obese women categorised themselves as obese

Barriers to addressing overweight and obesity before conception – MJA (2009)
Leonie K Callaway MB BS(Hons), FRACP, PhD, Michael J O'Callaghan FRACP, H David McIntyre FRACP - https://doi.org/10.5694/j.1326-5377.2009.tb02876.x

RACGP Red Book (Guidelines for preventive activities in general practice)

Grades of recommendations	
Grade	**Explanation**
A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
D	Body of evidence is weak and recommendation must be applied with caution

Consider every woman (and man) of reproductive age for preconception care (C).

Preconception care should include

- reproductive planning and the effective use of contraception to prevent unplanned pregnancy (A)
- smoking cessation (A) and advice to consider abstinence from alcohol (especially if planning a pregnancy, or if the woman could become pregnant or is in the early stages of pregnancy),
- folic acid and iodine supplementation (A),
- nutrition and weight assessment,
- review of immunisation status (C) and medications (B), oral health, and chronic medical conditions, especially glucose control in patients with diabetes (B).
- There is evidence to demonstrate improved birth outcomes with preconception healthcare in women with diabetes, phenylketonuria and nutritional deficiency, as well as benefit from the use of folate supplementation and a reduction in maternal anxiety.

https://www.racgp.org.au/getattachment/1ad1a26f-9c8b-4e3c-b45b-3237272b3a04/Guidelines-for-preventive-activities-in-general-practice.aspx

Identifying this woman's issues

- Age –
- Ethnicity/Indigenous Status –
- BMI –
- BP –
- Obstetric History –
- PHX – Medical and Surgical HX –
- Medications, including OTC/supplements –
- Allergies –
- FHX –
- Social History – including supports/DV
- Occupation –
- Smoking/Alcohol/ Other Substances –
- Healthy diet and exercise –
- Vaccinations (+ Travel) -

- Clinical Assessment –
- Investigations –
- Management Plan –

Opportunistic Preconception Consult

- CST if due +/- STI Screening
- Reproductive Life Plan
  - ? Want children, number/spacing/timing
  - Fertility awareness, Fertility reduction with age, Chance of conception
  - Risk of infertility and fetal abnormality,
  - Avoiding unplanned pregnancy, contraceptive options, emergency contraception
- BMI/BP
- Past History – Medical/Surgical incl Gynae, Medications and Allergies
- Family History
- Social History including Relationship History and Occupation
- Smoking/vaping/alcohol/other substances
- Healthy diet and exercise
- Vaccinations/Travel
- Invite her back pre planning to start trying to conceive

Routine Preconception Consultation in couples planning pregnancy

- Personal Obstetric/Reproductive History

ASK ABOUT EVERY PREGNANCY AND THE OUTCOME

including Fetal loss (miscarriage/ectopic/TOP), Stillbirth or NND, Birth defects (esp. Neural Tube Defect), LBW, Pre-term birth, GDM, PET

- Medical History - diabetes, hypertension, epilepsy, thrombophilia, autoimmune disorders, psychiatric disorder, obesity, STIs etc.

Optimisation of these conditions BEFORE pregnancy for benefits on early embryogenesis and on risk reduction in pregnancy

- Surgical History - especially Gynaecological/Cervical surgery, and bariatric surgery within the last 2 years
- Medication use – including OTC meds and vitamins/supplements
- Allergies
- Substance Use
- Ethnicity including First Nations Status
- Consanguinity ?
- Vaccinations + Travel Plans

https://www.jeanhailes.org.au/health-professionals/webinars/preconception-care-in-general-practice

Routine Preconception Consultation in couples planning pregnancy

- Family History – Intellectual disability, Multiple pregnancy losses/SB/NND, children with congenital anomalies, medical conditions e.g., sister/mother with GDM, or PET
- Occupation and Healthy environments: Repeated exposure to hazardous toxins (e.g., paint strippers) in the household and workplace environment can affect fertility and increase the risk of miscarriage and birth defects; Some workplaces increase risk of TORCH infections e.g., childcare work.
- Recommend regular, moderate-intensity exercise (150 mins/week). Undertake Nutritional assessment and discuss Folate/Iodine +/- Vitamin D to be taken at least 4 weeks preconception, and until 12 weeks' gestation.
- Psychosocial health including anxiety and depression, pre-existing mental health conditions, DV, psychological or psychiatric assessment and treatment, medication use , and the risk of exacerbation of mood disorders in pregnancy and postpartum, social supports and family supports.
- Consider and counsel re Genetic Carrier Screening (and Haemoglobinopathy Screening if indicated)

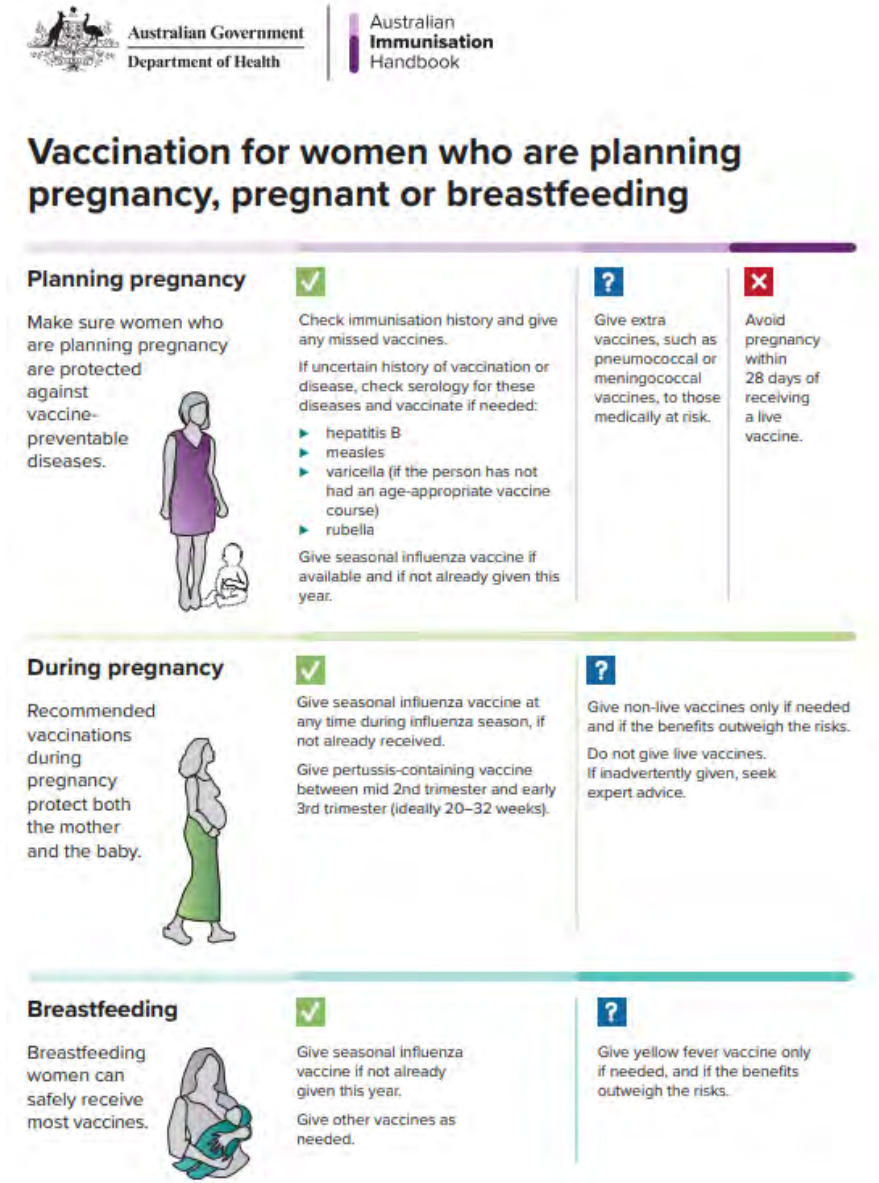
https://www.jeanhailes.org.au/health-professionals/webinars/preconception-care-in-general-practice

Routine Preconception Consultation in couples planning pregnancy

EXAMINATION

- BMI /General appearance (Discuss weight optimisation and caution against being overweight or underweight)
- Observations especially BP
- Heart/Chest/ Thyroid/Breasts
- Abdomen/ Scars – Observation/Palp
- CST up to date + STI screen if applicable
- Dental check

- + EXAMINATION of Male Partner



[Infographic. Vaccination for women who are planning pregnancy, pregnant or breastfeeding | The Australian Immunisation Handbook (health.gov.au)]

Important to ask women of child-bearing age who present for vaccination about the possibility of pregnancy as part of routine pre-vaccination screening, so that they are not given any vaccines that are not recommended in pregnancy.

Advise women who receive live vaccines to avoid pregnancy within 28 days of vaccination.

[Vaccination for women who are planning pregnancy, pregnant or breastfeeding | The Australian Immunisation Handbook (health.gov.au)]

Vaccines that are contraindicated in pregnancy: live attenuated vaccines	Vaccines that are not routinely recommended in pregnancy: inactivated viral vaccines	Vaccines that are not recommended in pregnancy	Vaccines that are not routinely recommended in pregnancy: inactivated bacterial vaccines
BCG	Hepatitis A	HPV (inactivated viral vaccine)	Diphtheria-Tetanus (dT)
Oral Typhoid	Hepatitis B	Yellow Fever (live attenuated)	Cholera (oral)
Japanese Encephalitis (Imojev)	Japanese Encephalitis (JEspect – Inactivated)		Haemophilus (Hib)
MMR	IPV – inactivated poliovirus		Meningococcal B or Men ACWY
Rotavirus	Rabies		Pneumococcal Conjugate Vaccine
Varicella	Zoster (recombinant)		Q Fever
Zoster (live)			Typhoid Vi Polysaccharide

Inadvertently giving a live attenuated viral vaccine during pregnancy or shortly before pregnancy:
Women need counselling about the potential (but very unlikely) risk of adverse effects on the fetus if:

- they are pregnant and were inadvertently given a live attenuated viral vaccine
- they become pregnant within 28 days of receiving a live attenuated viral vaccine

Woman does not need to consider terminating the pregnancy if a live attenuated vaccine was inadvertently given. Report to TGA.

Vaccination for women who are planning pregnancy, pregnant or breastfeeding | The Australian Immunisation Handbook (health.gov.au)

Zika Risk – Consider if travel to countries with Aedes infected mosquito species (Zika Travel Information | Travelers' Health | CDC) – Map and recommendations

- For women planning pregnancy - Talk to a health care provider about potential risks. If travel is to continue, prevent mosquito bites and sexual exposure to Zika during and after travel. If traveling without male partner, wait 2 months after return before becoming pregnant.
- Men with a pregnant partner - Prevent mosquito bites during and after travel. Use condoms or do not have sex for the rest of the pregnancy.
- Men with a partner planning pregnancy - Prevent mosquito bites during and after travel. Use condoms or do not have sex for at least 3 months after return.

Timeframes that males and females should consider waiting are different because Zika can be found in semen longer than in other body fluids.

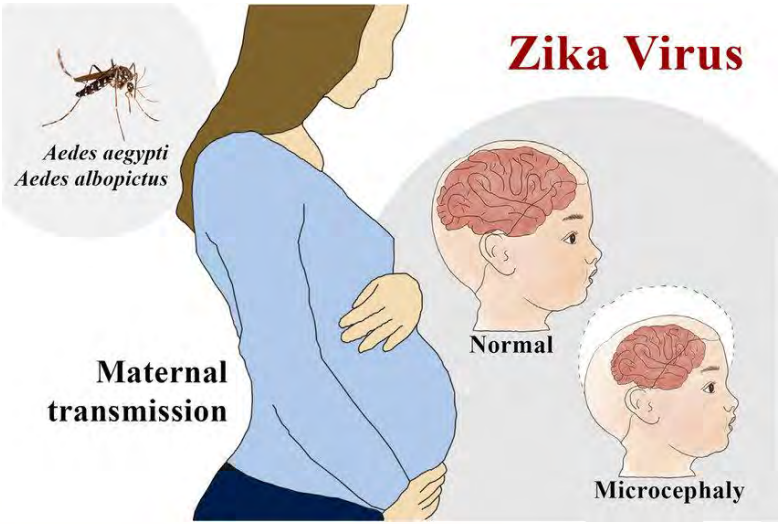


Table 3. Exercise advice for women in the preconception and pregnancy period			
Type	**Duration/frequency**	**Intensity**	**Other information**
Aerobic	150–300 minutes of moderate intensity physical activity per week OR 75–150 minutes of vigorous activity per week OR A combination of the two	This is dependent on baseline level of fitness OR Assess via target heart rate: Age <20 years: 140–155 beats per minute Age 20–29 years: 135–150 beats per minute Age 30–39 years: 130–145 beats per minute Age >40 years: 125–140 beats per minute	Women should aim to be active on most days of the week Aim for exercise sessions to be no longer than 60 minutes Ensure adequate nutrition and hydration
Strength	Aim for two strength sessions per week on non-consecutive days	One to two sets of 12–15 repetitions of each muscle group	Can use light weights, resistance bands or body weights
Contact	Avoid contact sports, sports with a risk of falling and scuba diving		

Table outlines exercise advice of the RCOG and RANZCOG for women in the preconception and pregnancy period.

https://www1.racgp.org.au/ajgp/2018/july/preconception-care

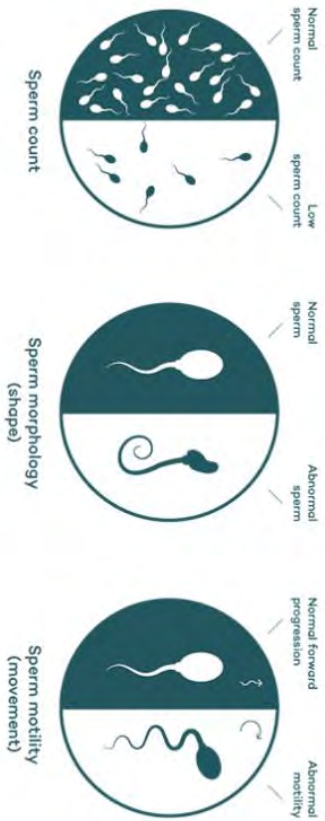
Male factor infertility is on the rise over time

- Men > 40 years have reduced chance of fathering a child (with & without ART) & miscarriage is more common if male partner is >45yrs
- Overweight men are 11% more likely than normal-weight peers to have low sperm numbers & 39% more likely to be azospermic.. Obese men are 42% more likely to have low sperm count and 81% more likely to produce no sperm. Weight optimisation is proven to improve sperm counts.
- Reduced sperm quality (count, volume and movement) exacerbated by smoking, and less convincingly by alcohol use. Heavy drinking impacts sex drive and performance. Smoking at the time of conception can increase the risk of leukaemia for the child.
- Gene expression is sensitive to environment/workplace/social factors and thus parent health affects epigenetics. Avoid exposure to harmful chemicals including pesticides, herbicides, heavy metals, and household chemicals e.g., lead, paint strippers and other solvents.
- Anabolic steroids use lowers fertility, with long term effects on sperm count/quality. Recreational drugs known to adversely affect fertility.
- Prescribed medicines can also lower fertility and sexual function – opiates, depression and anxiety medicines, chemotherapy and radiotherapy.

Patient Resource – Sperm Health - https://www.healthymale.org.au/mens-health/sperm-health
Preconception health checklist for men https://www.healthymale.org.au/news/preconception-health-checklist-men
https://www1.racgp.org.au/ajgp/2018/july/preconception-care - Preconception Care AJGP Vol 47 (7) – July 2018

Male factor infertility is on the rise over time

- Assess for STIs – untreated chlamydia or gonorrhoea can damage the reproductive organs and cause infertility, and can be asymptomatic
- Ask re PHX Scrotal or testicular surgery or injury, Retroperitoneal/abdominal/prostate or bladder surgery, Past mumps infection/other causes of orchitis,
- In some cultures, Schistosomiasis-induced male infertility, can be due to hormonal imbalance, testicular tissue damage and genital ductal system obstruction
- Supplements for men – best to identify dietary nutrient gaps and take targeted supplementation if needed. Still poor evidence for benefits of male fertility supplements (no large well-designed trials), but possible benefit, and likely no harm from omega 3 fatty acids, antioxidants, zinc, selenium, arginine, and folic acid.
- Psychosocial supports for potential fathers also, and appropriately manage depression and anxiety. Keep DFV and coercive control in mind when discussing pregnancy with couples.



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Preconception health checklist for men https://www.healthymale.org.au/news/preconception-health-checklist-men
References/Further Reading:
https://www1.racgp.org.au/ajgp/2018/july/preconception-care - Preconception Care AJGP Vol 47 (7) – July 2018
https://www.racgp.org.au/afp/2017/september/male-infertility - Male infertility – The other side of the equation AFP Vol 46 (9) – Sept 2017

Preconception care in general practice – Investigations

- FBC
- Ferritin
- Thalassaemia Screen (consider ethnic risk, family history, but also MCV)
- TSH and Vit D screen if risk factors, Vitamin B12 in vegans and vegetarians

<u>Serology</u>

- Rubella
- Hepatitis B (consider Hep C/HIV if risk factors)
- STI Screen (especially if < 30 yrs.) – swabs give better yield
- Syphilis Serology – now universal antenatally, so consider in all preconception
- Varicella (Routine serological testing for varicella does not provide a reliable measure of vaccine induced immunity; however, it can indicate whether natural immunity has occurred due to prior infection)
- ? Parvovirus

<u>Vaccinations</u>

- MMR - avoid pregnancy for 28 days
- Consider Hepatitis B and Gardasil if missed
- Varicella (if required) – avoid pregnancy for 28 days
- Influenza
- COVID-19
- Pertussis

Discuss the avoidance of TORCH infections and other toxins:

TORCH infections: Toxoplasmosis, Other (e.g., Syphilis, Varicella, Mumps, Parvovirus and HIV, Listeriosis), Rubella, Cytomegalovirus and Herpes simplex

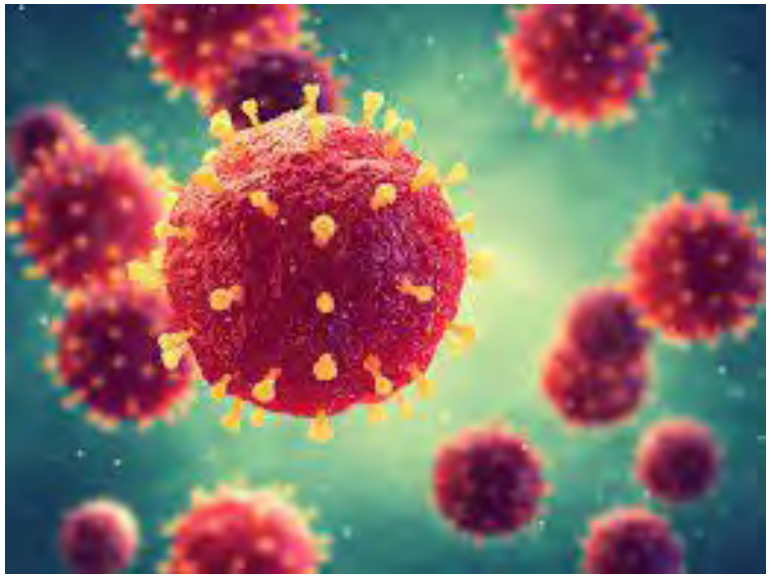
- Toxoplasmosis: Avoid cat litter, garden soil, raw/undercooked meat and unpasteurised milk products; wash all fruit and vegetables.
- Cytomegalovirus, parvovirus B19 (fifth disease): Discuss the importance of frequent handwashing. Those who work with children or in the healthcare sector and parents of young children can further reduce risk by using gloves when changing nappies.
- Discuss avoidance of children with rashes …….
  - Rubella – immunise if not immune (avoid pregnancy for 28 days)
  - Varicella – worth discussing as can immunise but serology will not help in an immunised woman
  - Parvovirus (Slapped face/Fifth disease) – increase awareness
- Listeriosis: Avoid pâte, soft cheeses (e.g., feta, brie, blue vein), pre-packaged salads, deli meats and chilled/smoked seafood. Wash all fruit and vegetables before eating. Refer to Food Standards Australia New Zealand (https://www.foodstandards.gov.au/consumer/generalissues/pregnancy/Pages/default.aspx) regarding folate, listeria and mercury.
- Fish: Limit fish containing high levels of mercury (http://www.betterhealth.vic.gov.au/health/healthyliving/mercury-in-fish)
- STI screen in those considered high risk (including < 30-year-old) or ? universally now that Syphilis is more prevalent.

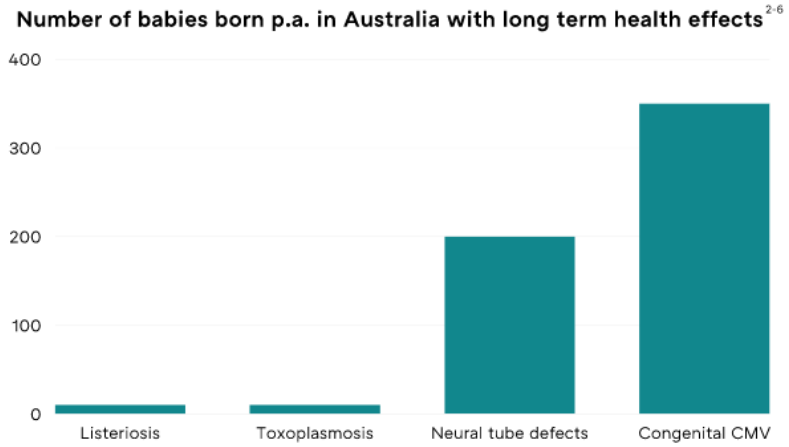
Management of Perinatal Infections 2022 – Australian Society for Infectious Diseases: https://asid.net.au/publications

Parvovirus B19 Infection – Child Care Workers should know if they are immune (preferably pre –pregnancy)

- Over 60% of women of childbearing age are immune to parvovirus.
- Women at increased risk of parvovirus infection include mothers of pre-school and school aged children, childcare workers and school teachers. Even if a woman is susceptible and gets infected with parvovirus B19, she usually experiences only a mild illness.
- **Not practicable to prevent exposure at home**. Exclusion from work of pregnant school teachers or childcare workers is not recommended during a parvovirus epidemic (nor is exclusion of infected children) but whether to stay away from a workplace where there are cases of fifth disease is a personal decision for a woman to make, after discussions with her family, doctor, and employer.
- Communicability is greatest (from about 1/52 after exposure) and **before onset of rash**. Parvovirus infection is probably not communicable after onset of the rash
- **Usual hygiene measures, especially frequent hand washing, is probably the most effective method to reduce the spread.**
- Risk of fetal hydrops appears to be greater when infection occurs earlier in pregnancy. Overall rate of hydrops to be 3.9% - 5.6% if maternal infection occurs between 9 - 20 weeks but discuss with the woman that **most infections in pregnancy are benign**. There is no proven risk of parvovirus-induced congenital anomalies, but there is a **small risk of fetal loss/ hydrops/ anaemia**.
- Spontaneous loss rate of fetuses affected with parvovirus B19 before 20 weeks' gestation is 13% and after 20 weeks' gestation is 0.5%. The reason for this difference is uncertain, ? may be related to multisystem organ damage, which is possible even without anaemia or hydrops
- IgM is detectable within 1-3 weeks of exposure and usually remains detectable for 2-3 months, but sometimes longer. Absence of IgM does not exclude recent infection. PCR for parvovirus can be performed on plasma but is generally unlikely to be positive after onset of rash (myalgias, fever and malaise coincide with peak viraemia).

1. South Australian Perinatal Practice Guideline - Parvovirus in Pregnancy
2. Parvovirus B19 screening and management in pregnancy (nsw.gov.au)
3. Parvovirus B19 infection and its significance in pregnancy





Cytomegalovirus

- Second most common cause of congenital malformation in Australia – neurodevelopmental disability and hearing loss
- Approx. 400 children/year born with or develop CMV due to primary or non-primary maternal infection – from Dept Health and Aged Care[1] (Overall birth prevalence 0.65% [2])
- Approx. half considered preventable, but only 1/6 pregnant women aware of CMV danger in pregnancy [3] and < 20% GPs feel confident speaking with pregnant women re same. [4]
- New consensus recommendations state all pregnant women and health-care providers should be educated about congenital CMV infection and preventive measures. [5,6]

1. https://www.health.gov.au/resources/pregnancy-care-guidelines/part-g-targeted-maternal-health-tests/cytomegalovirus
2. "Management of Perinatal infections" – ASID https://asid.net.au/publications CMV pages 10-14
3. https://pubmed.ncbi.nlm.nih.gov/31025720/ Aust N Z J Obstet Gynaecology 2019 Dec;59(6):843-849.
4. Infections in Pregnancy – What's new in congenital CMV and Syphilis https://app.praxhub.com/education (requires registration)
5. https://pubmed.ncbi.nlm.nih.gov/28693346/ J Maternal Fetal Neonatal Med 2018 Oct;31(19):2515-2520
6. Prevention of congenital cytomegalovirus (CMV) infection (C-Obs 64) – RANZCOG Statement (2019)

Primary CMV during pregnancy has highest risk of transmission (~30%), but periconception CMV also increases risk

- Peri-conceptional primary CMV (acquired around the time of conception) carries a small increment in risk of 5 –16%, with risks decreasing with time.
- Pooled study data reports materno-fetal transmission rates of:
  - 5.5 % with maternal infection in the "preconception" period (3/12 before LNMP)
  - 21% in the "periconception" period (4/52 before & 6/52 after LNMP)
  - 36.5% in 1st TM, 40.3% in 2nd TM and 66% in 3rd TM
- Optimal interval between infection and conception remains to be defined, with **12/12 after primary infection** suggested as the **highest 'risk' period**.
- (? Awaiting a decline in CMV IgM to an undetectable level with a concurrent increase in CMV IgG avidity to a high level is likely to represent a low risk of vertical CMV transmission in future pregnancies)
- It is important to note that 'reactivation' of CMV occurs, meaning there is **never a zero risk** of in-utero transmission, no matter how long from primary CMV infection.

Transmission of CMV occurs across TMs

- Severe adverse neurological outcome risk more likely with primary infection in the first trimester
- A fetus infected late in pregnancy is unlikely to have significant neurological sequelae

Updated "Management of Perinatal infections" 2022 – Australasian Society for Infectious Diseases https://asid.net.au/publications

Who to test for CMV?

Most CMV infections are asymptomatic.

Testing preconception or during pregnancy is not of value routinely.

Features associated with congenital CMV infection (cCMV) include:	
Microcephaly	Amniotic fluid abnormalities (oligohydramnios or polyhydramnios)
Cerebral ventriculomegaly	Hydrops fetalis
Intrauterine growth restriction (IUGR)	Hepatomegaly/Ascites
Abdominal calcification/Hyperechoic bowel	Pseudomeconium ileus
Intracranial calcification	Pleural or pericardial effusions

Possible indications for antenatal or preconception testing:

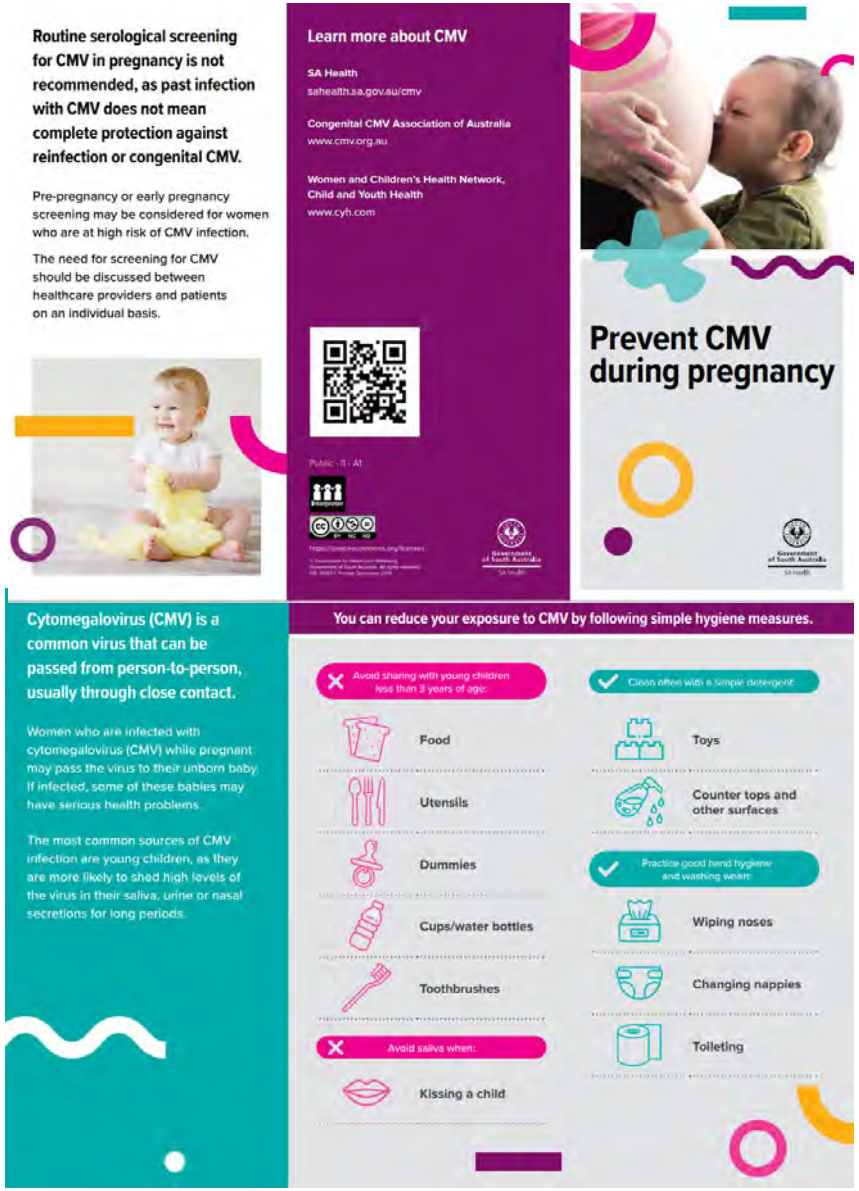
- History suggestive of CMV illness
- Exposure to known CMV infected individual e.g., partner or child with acute CMV infection
- Abnormalities on routine antenatal ultrasound
- ? Consider in women at high risk of infection (childcare workers or young children at home) as studies suggest woman known to be of increased susceptibility (seronegative) are more diligent with hygiene measures.

Prevention of congenital CMV

Education about preventing CMV infection, including hygiene measures to minimise CMV acquisition should be provided to all pregnant women antenatally and preconception.

- Behavioural interventions - providing CMV information, CMV awareness and counselling, infection prevention & control measures (as below) **are effective** in preventing primary maternal infection.
- Major risk factor is frequent, prolonged contact with young children, especially children suspected of shedding CMV.
- **Recommendations for pregnant women, and those parents planning a pregnancy**
  - Do not share food, drinks, or utensils used by young children (less than 3 years of age)
  - Do not put a child's dummy in your mouth
  - Avoid contact with saliva when kissing a child "kiss on the forehead"
  - Careful hand hygiene, when changing nappies or when in contact with urine. Thorough hand washing, or use of gloves especially when changing nappies/feeding young child, wiping a young child's nose or saliva
  - Clean toys, countertops, and other surfaces that come into contact with children's urine or saliva. Do not share a toothbrush with a young child

1. "Management of Perinatal infections" – ASID https://asid.net.au/publications CMV pages 10-14
2. Prevention of congenital cytomegalovirus (CMV) infection (C-Obs 64) – RANZCOG Statement (2019)



"Prevent CMV during pregnancy"
[Prevent CMV during pregnancy brochure (SA Health)]

[Aboriginal-and-Torres-Strait-Islander_CMV-Information-Pamphlet_2020.pdf (cerebralpalsy.org.au)]

Higher Risk Parents:

- Groups at higher risk of primary CMV and annual seroconversion rates are
  - Childcare workers (pooled incidence of 7.4 per 100 person-years)
  - Parents with child in day care (2% p.a. for non-CMV shedding children, 24% p.a. for CMV shedding children)
  - Health care workers seroconvert at a rate comparable to the general population i.e., 2-3% p.a.
- Women working in early childhood education and care services who are pregnant, or expect to become pregnant, should discuss CMV with their doctor, and inform their employer so that their individual risk can be assessed and managed. This includes relocating workers who are pregnant, or who expect to become pregnant, to care for children aged over two to reduce contact with urine and saliva. Cytomegalovirus (CMV) in early childhood education and care services | WorkSafe.qld.gov.au

  (In a landmark NSW decision, a childcare worker and her severely disabled son were awarded $4.65 million. A Court of Appeal ruled that the child's disabilities resulted from the woman being infected with cytomegalovirus (CMV) at work (Hughes v SDN Children's Services 2002)

- Not routinely tested , but if have a result with Anti CMV IgM positivity - caution is needed in interpretation, as CMV IgM can persist for months after primary infection or reappear with reactivation or reinfection.
  - False positives occur with cross reactivity with other herpes viruses or autoimmune disorders.
  - Primary CMV infection is eventually diagnosed in a minority of women with positive CMV IgM (20–25%)

Outcomes of Congenital CMV infection

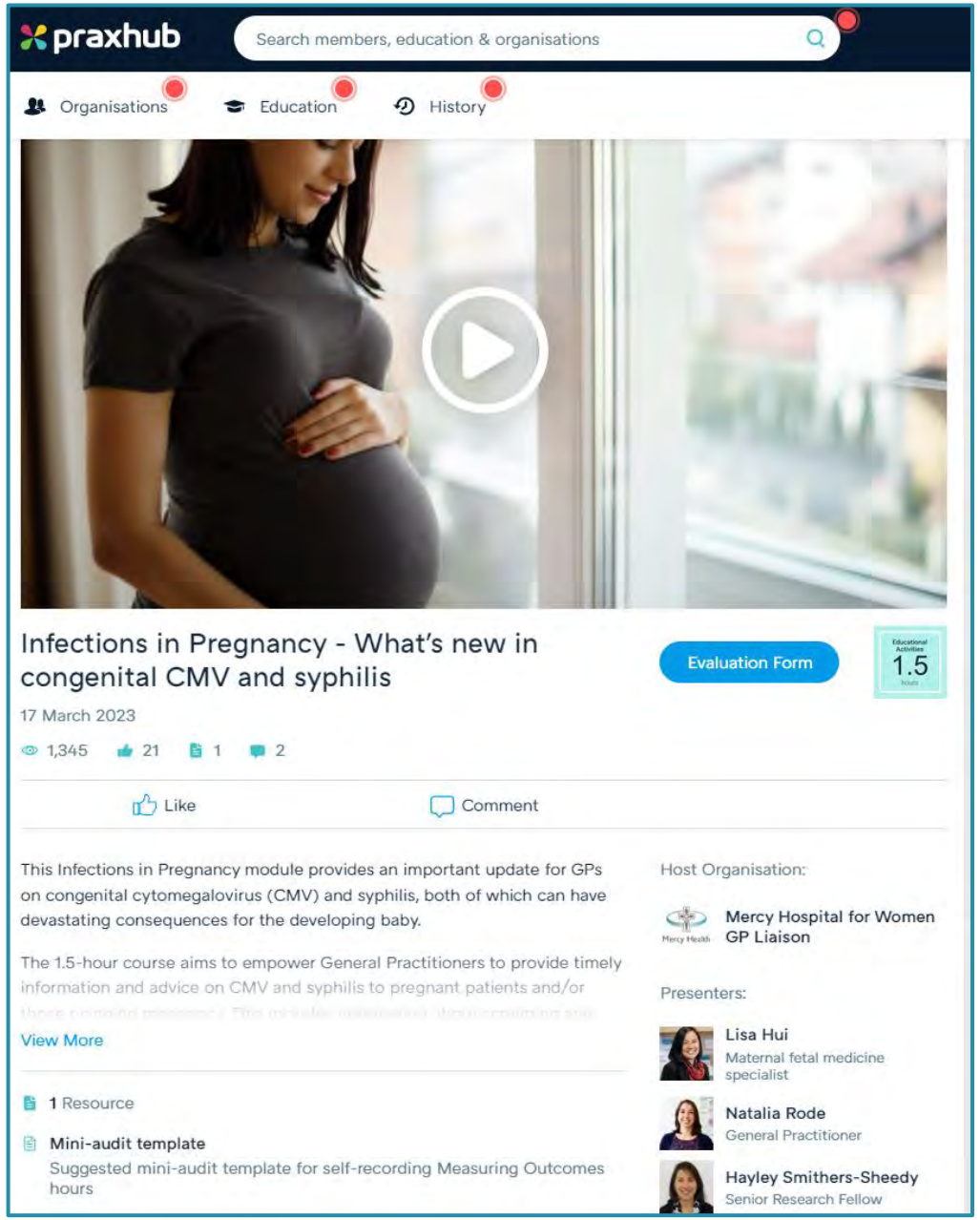
Symptomatic congenital CMV infection

- early mortality (first 3 months) rate between rate 5-10%
- neurological sequelae of microcephaly (35–50%), seizures (10%), chorioretinitis (10–20%), developmental delay (70%)
- Sensorineural hearing loss (SNHL, 25–50%), with **progression expected in about half** (mainly in the first 2 years of life)

Even with asymptomatic congenital CMV -

- Sensory neural hearing loss (SNHL): **~10% of asymptomatic babies will have SNHL at birth**, with **cumulative incidence of late onset hearing loss is 7 -10%**
- Neurodevelopmental: Reported later onset neurodevelopmental concerns in case series, not identified in case control studies vs healthy infants
- Chorioretinitis: 2%

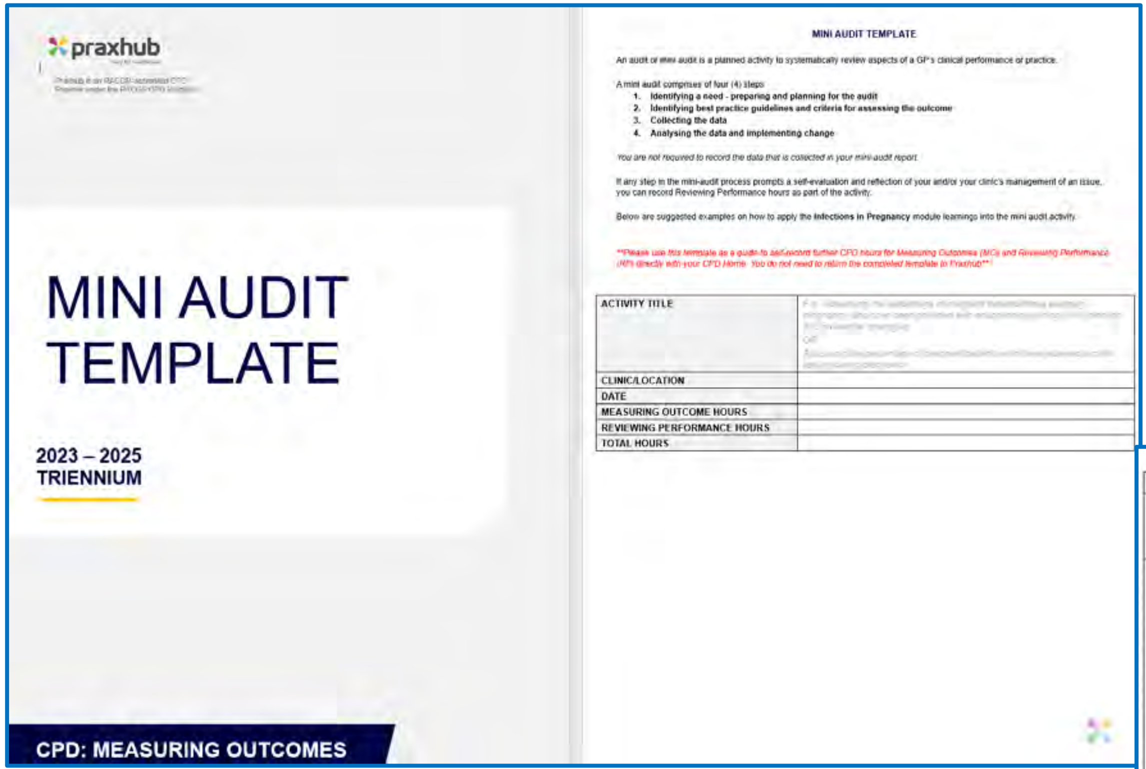
Normal development by 12 months is associated with higher likelihood of normal development long term, and progression after the second year of life is uncommon.



Infections in Pregnancy - What's new in congenital CMV and syphilis

RACGP/ACRRM accredited – 1.5 Educational Activity CPD points
(plus, complete survey questions for Reviewing Performance hours and choose to do a mini-audit (suggested template as below) for Measuring Outcomes hours.

Quality CPD Medical Education | Praxhub
https://praxhub.com/



praxhub

MINI AUDIT TEMPLATE

2023 – 2025 TRIENNIUM

CPD: MEASURING OUTCOMES

MINI AUDIT TEMPLATE

An audit or mini audit is a planned activity to systematically review aspects of a GP's clinical performance or practice.

A mini audit comprises of four (4) steps:

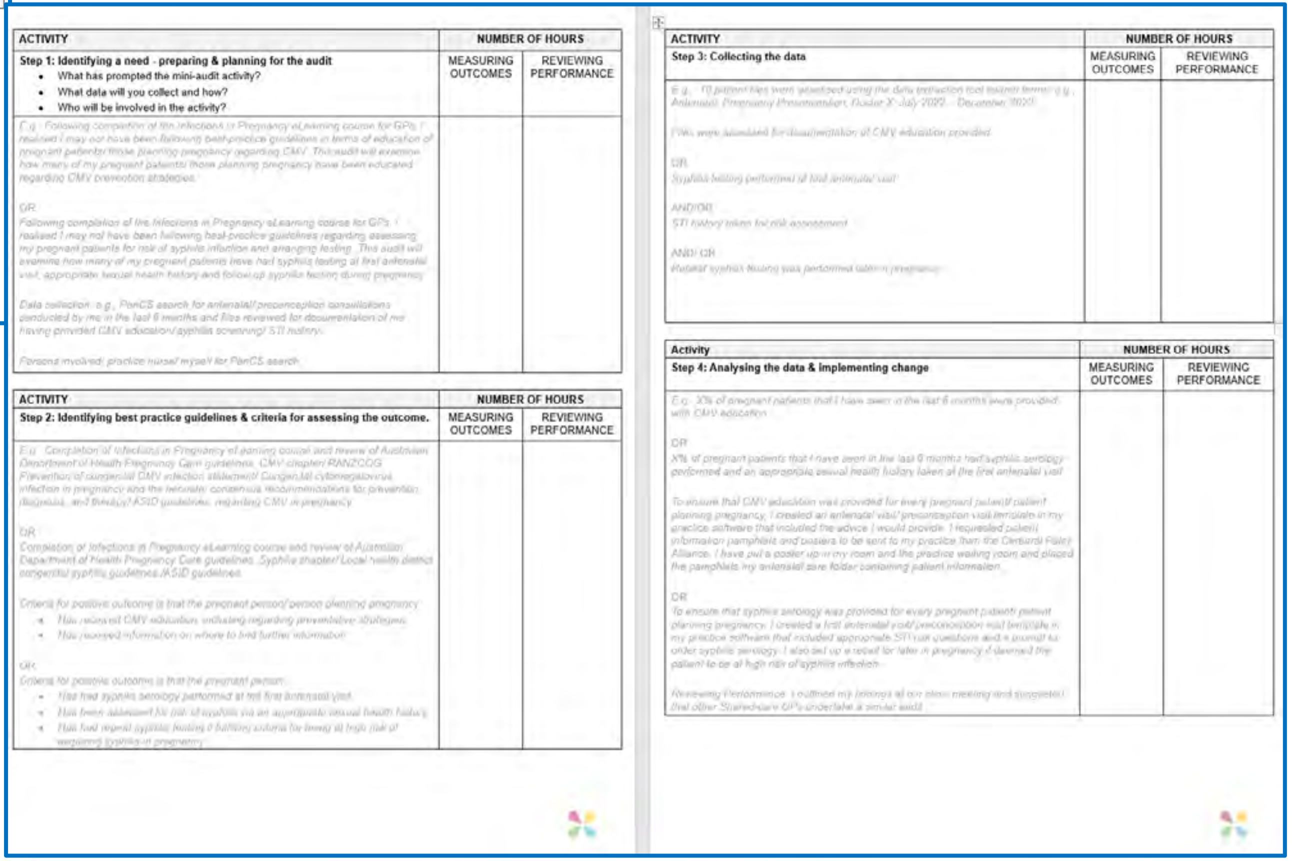
1. Identifying a need - preparing and planning for the audit
2. Identifying best practice guidelines and criteria for assessing the outcome
3. Collecting the data
4. Analysing the data and implementing change

You are not required to record the data that is collected in your mini-audit report.

If any step in the mini-audit process prompts a self-evaluation and reflection of your and/or your clinic's management of an issue, you can record Reviewing Performance hours as part of the activity.

Below are suggested examples on how to apply the **Infections in Pregnancy** module learnings into the mini audit activity.

ACTIVITY TITLE	
CLINIC/LOCATION	
DATE	
MEASURING OUTCOME HOURS	
REVIEWING PERFORMANCE HOURS	
TOTAL HOURS	



ACTIVITY	NUMBER OF HOURS	
Step 1: Identifying a need - preparing & planning for the audit • What has prompted the mini-audit activity? • What data will you collect and how? • Who will be involved in the activity?	MEASURING OUTCOMES	REVIEWING PERFORMANCE

ACTIVITY	NUMBER OF HOURS	
Step 2: Identifying best practice guidelines & criteria for assessing the outcome.	MEASURING OUTCOMES	REVIEWING PERFORMANCE

ACTIVITY	NUMBER OF HOURS	
Step 3: Collecting the data	MEASURING OUTCOMES	REVIEWING PERFORMANCE

Activity	NUMBER OF HOURS	
Step 4: Analysing the data & implementing change	MEASURING OUTCOMES	REVIEWING PERFORMANCE

[Downloadable Mini-audit Template]()

AM2 Case Discussion – Green Group

- Kelsey is a 27-year-old married woman, presenting with her husband Jack
- Hoping to plan for their first pregnancy in next 12 months.
- Kelsey has always had irregular periods – went for 7 months last year without a period, and often cycles 6-8/52 apart.
- BMI 43.2
- FHX T2DM in father.

She has a 15 min appointment - Outline your approach

If she presents having undertaken bariatric surgery about 5 months ago, what else do we need to advise before she tries to start a family?

Identifying this woman's issues

- Age –
- Ethnicity/Indigenous Status –
- BMI –
- BP –
- Obstetric History –
- PHX – Medical and Surgical HX –
- Medications, including OTC/supplements –
- Allergies –
- FHX –
- Social History – including supports/DV
- Occupation –
- Smoking/Alcohol/ Other Substances –
- Healthy diet and exercise –
- Vaccinations (+ Travel) -

- Clinical Assessment –
- Investigations –
- Management Plan –

PCOS

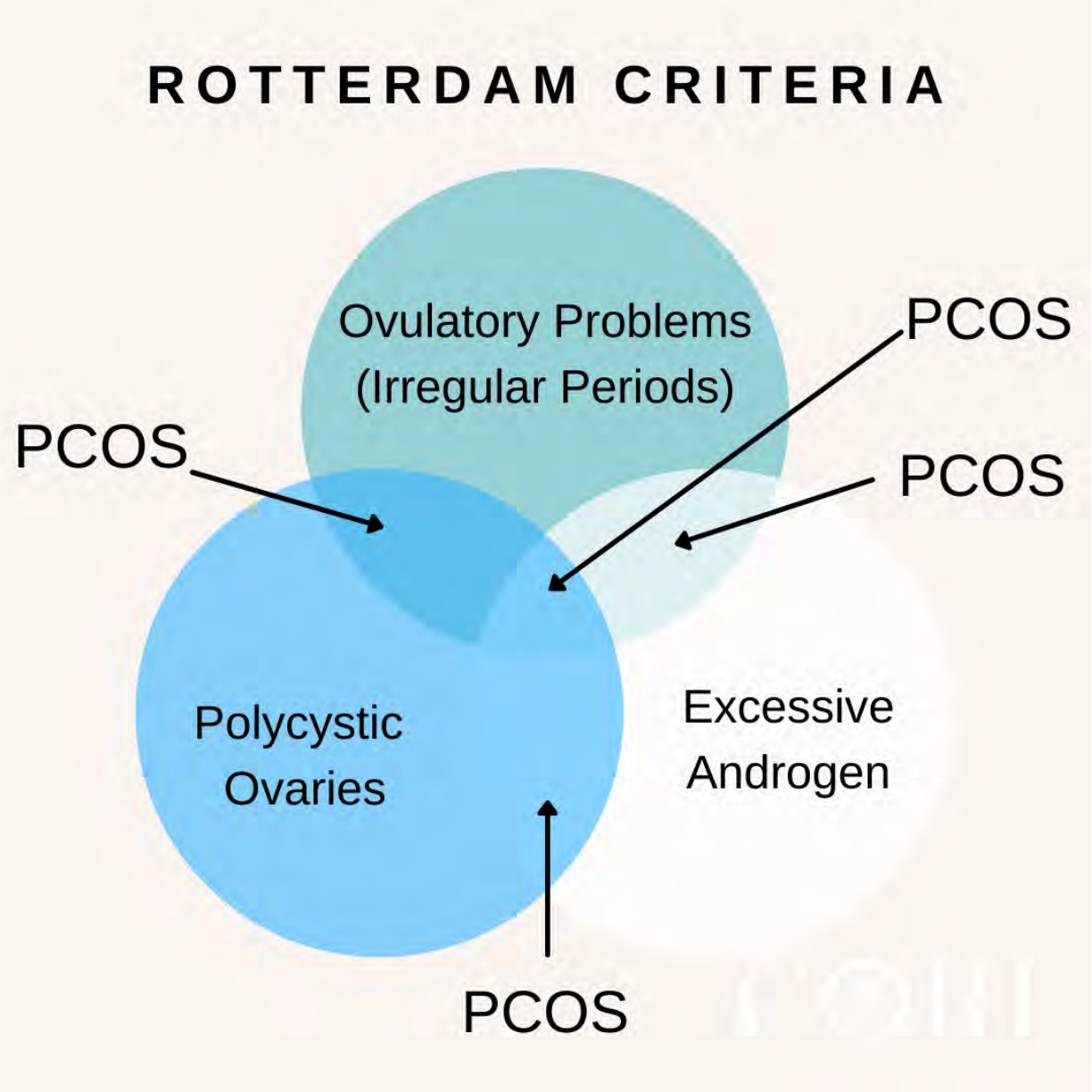
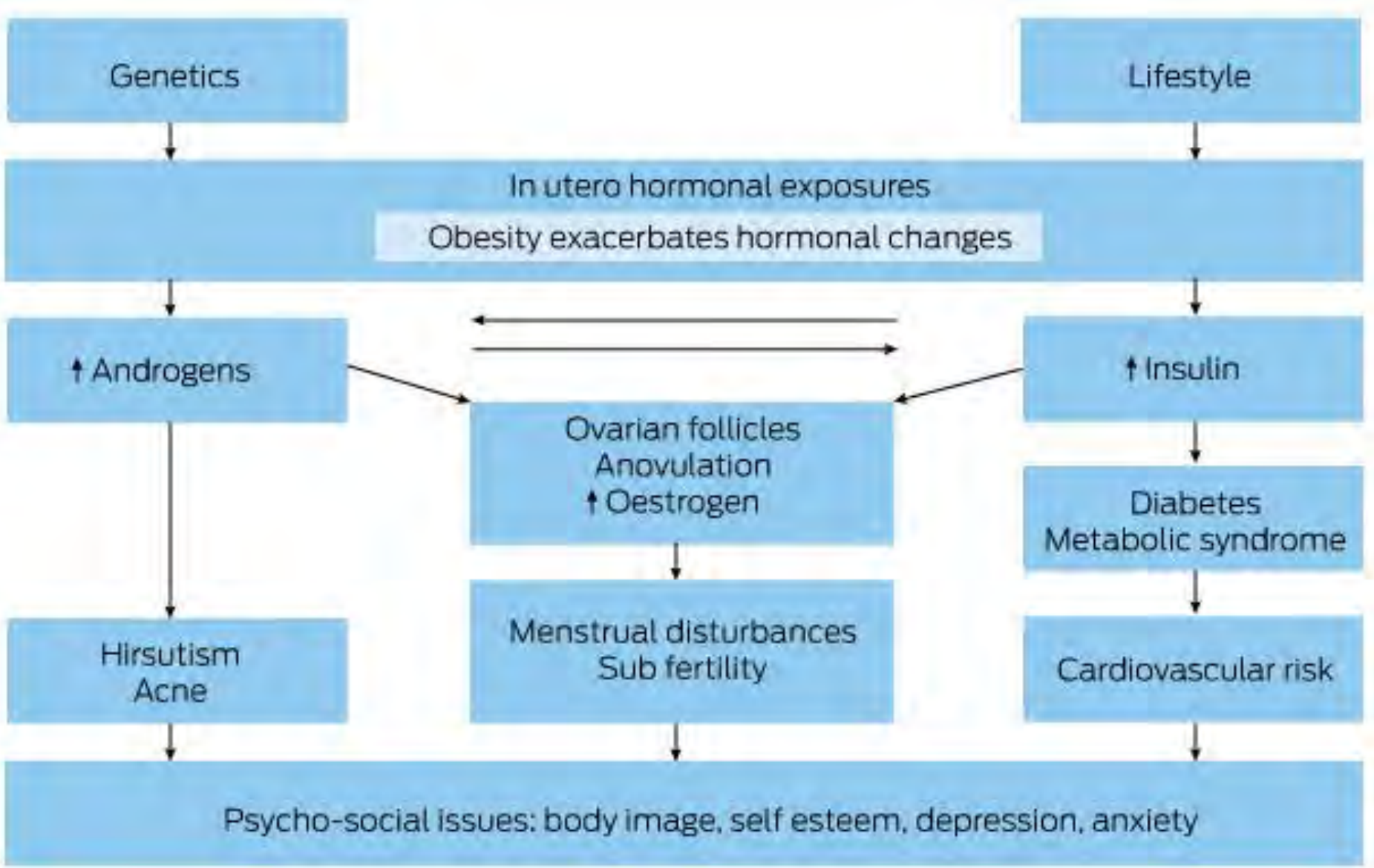


Image: CORE clinic: https://www.corephilippines.com/polycystic-ovarian-syndrome-and-the-rotterdam-criteria/

PCOS


Genetics
Lifestyle
In utero hormonal exposures
Obesity exacerbates hormonal changes
↑ Androgens
↑ Insulin
Ovarian follicles
Anovulation
↑ Oestrogen
Diabetes
Metabolic syndrome
Hirsutism
Acne
Menstrual disturbances
Sub fertility
Cardiovascular risk
Psycho-social issues: body image, self esteem, depression, anxiety

PCOS diagnosis

Step 1: Irregular cycles + clinical hyperandrogenism

(exclude other causes)* = diagnosis

↓

Step 2: If no clinical hyperandrogenism

Test for biochemical hyperandrogenism (exclude other causes)* = diagnosis

↓

Step 3: If ONLY irregular cycles OR hyperandrogenism

Adolescents ultrasound is not indicated = consider at risk of PCOS and reassess later

Adults - request ultrasound for PCOM, if positive (exclude other causes)* = diagnosis

*** Exclusion of other causes requires TSH, Prolactin levels, FSH and if clinical status indicates other causes need to be excluded**

(e.g. CAH, Cushings, adrenal tumours etc)

PCOS guideline

https://www.monash.edu/__data/assets/pdf_file/0018/1411641/Algorithm-1-20180618.pdf

PCOS diagnostic assessment/risk assessment

Cardiovascular disease risk and weight management

All with PCOS should be offered regular monitoring for weight change and excess weight, in consultation with and where acceptable to the individual. Monitoring could be at each visit or at a minimum 6-12 monthly, with frequency planned and agreed between the health professional and the individual.

All with PCOS should be assessed for individual cardiovascular risk factors and global CVD risk.

If screening reveals CVD risk factors including obesity, cigarette smoking, dyslipidemia, hypertension, impaired glucose tolerance and lack of physical activity, women with PCOS should be considered at increased risk of CVD.

Overweight and obese women with PCOS, regardless of age, should have a fasting lipid profile (total cholesterol, low density lipoprotein cholesterol, high density lipoprotein cholesterol and triglyceride level at diagnosis). Thereafter, measurement should be guided by the results and the global CVD risk.

All women with PCOS should have blood pressure measured annually.

PCOS guideline
https://www.monash.edu/__data/assets/pdf_file/0018/1411641/Algorithm-1-20180618.pdf

PCOS diagnostic assessment/risk assessment

Gestational diabetes, impaired glucose tolerance and type 2 diabetes
Regardless of age, gestational diabetes, impaired glucose tolerance and type 2 diabetes (5 fold in Asia, 4 fold in the Americas and 3 fold in Europe) are increased in PCOS, with risk independent of, yet exacerbated by obesity.
Glycaemic status should be assessed at baseline in all with PCOS and thereafter, every one to three years, based on presence of other diabetes risk factors.
In high risk women with PCOS (including a BMI > 25kg/m^2 or in Asians > 23kg/m^2, history of abnormal glucose tolerance or family history of diabetes, hypertension or high risk ethnicity) an oral glucose tolerance test (OGTT) is recommended. Otherwise a fasting glucose or HbA1c should be performed.
An OGTT should be offered in all with PCOS when planning pregnancy or seeking fertility treatment, given increased hyperglycaemia and comorbidities in pregnancy.
If not performed preconception, an OGTT should be offered at < 20 weeks gestation, and all women with PCOS should be offered the test at 24-28 weeks gestation

PCOS guideline

https://www.monash.edu/__data/assets/pdf_file/0018/1411641/Algorithm-1-20180618.pdf

PCOS management

PCOS management

Weight, insulin resistance	Fertility / anovulation
Healthy lifestyle behaviours	
Target 5-10% loss of body weight in 6 months	Letrozole Clomiphene
Metformin	
Weight loss pharmacotherapy / surgery*	Gonadotrophins

PCOS management

Weight, insulin resistance	Fertility / anovulation	Menstrual regulation / endometrial protection
Healthy lifestyle behaviours		
Target 5-10% loss of body weight in 6 months	Letrozole Clomiphene	cOCP Use lowest effective estrogen dose (20-30 micrograms ethinyl oestradiol or equivalent)
Metformin		
Weight loss pharmacotherapy / surgery*	Gonadotrophins	Mirena / PoP

PCOS management

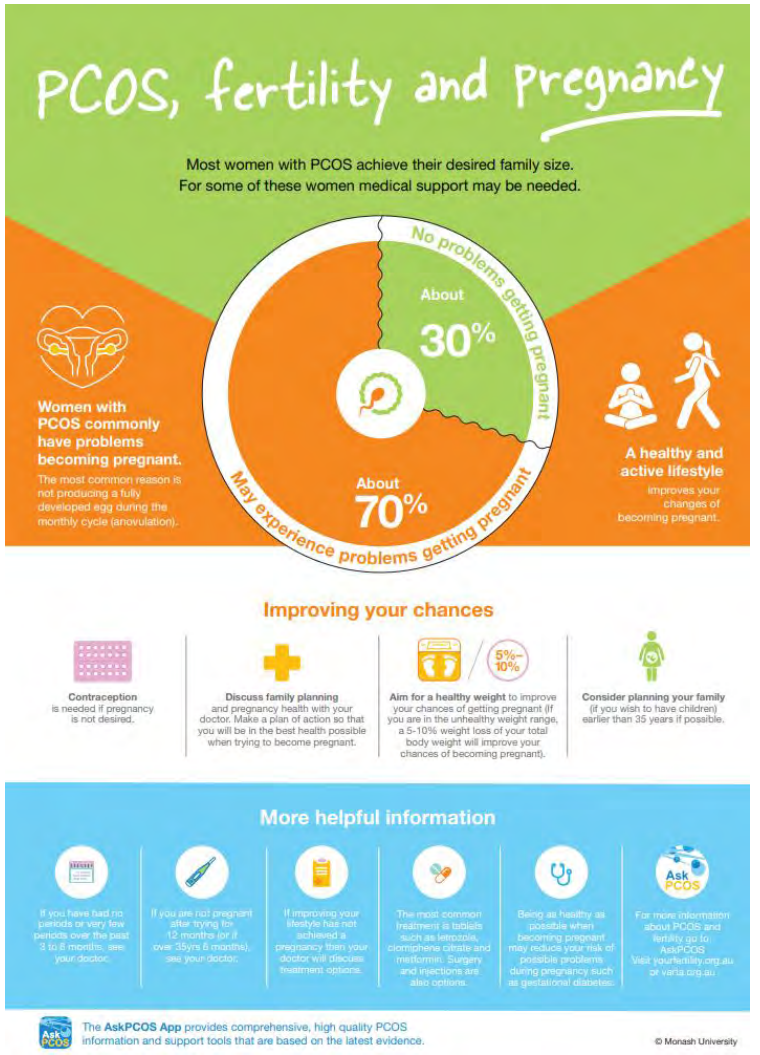
Weight, insulin resistance	Fertility / anovulation	Menstrual regulation / endometrial protection	Hirsutism
Healthy lifestyle behaviours			
Target 5-10% loss of body weight in 6 months	Letrozole Clomiphene	cOCP Use lowest effective estrogen dose (20-30 micrograms ethinyl oestradiol or equivalent)	
Metformin			Cosmetic therapies
Weight loss pharmacotherapy / surgery*	Gonadotrophins	Mirena / PoP	Anti-androgen therapy (must use contraception)

PCOS management

Weight, insulin resistance	Fertility / anovulation	Menstrual regulation / endometrial protection	Hirsutism	Psychological factors
Healthy lifestyle behaviours				
Target 5-10% loss of body weight in 6 months	Letrozole Clomiphene	cOCP Use lowest effective estrogen dose (20-30 micrograms ethinyl oestradiol or equivalent)		Treatment of anxiety & depression
Metformin			Cosmetic therapies	Address body image concerns
Weight loss pharmacotherapy / surgery*	Gonadotrophins	Mirena / PoP	Anti-androgen therapy (must use contraception)	Address disordered eating

Practice Tools for Health Practitioners - Monash Centre for Health Research and Implementation (MCHRI)

- PCOS GP Tool
- PCOS and Diabetes – New management Guidelines
- Downloadable Care Plan (For women with PCOS)
- Resources for Women with PCOS
- ASK PCOS App - https://www.monash.edu/medicine/sphpm/mchri/pcos/resources/askpcos-app



Diabetes pre-conception care

- Adverse pregnancy outcomes are more common among those with pre-existing diabetes, including greater likelihood of:
  - Maternal intensive care unit admission (9.1-fold)
  - Neonatal intensive care unit admission (5.5-fold)
  - Major infant morbidity or mortality (5.0-fold)
- Pre-pregnancy care for women with DM reduces adverse maternal and fetal outcomes in pregnancy
- Most women have neither achieved optimal glycaemia, nor commenced folic acid therapy by the time of conception
- Women should be offered appropriate contraception if time is required to optimise diabetes management and control.

ADIPS 2020 guideline for pre-existing diabetes and pregnancy

Diabetes pre-conception care

Provide advice and education:

- healthy eating / glycaemic index / carbohydrate content (refer: APD)
- individualised weight management recommendation and healthy pre-pregnancy weight
- folic acid 2.5–5 mg daily in total, taking multivitamin supplementation in… commenced ideally 3 months prior to conceptio… gestation
- physical activity
- self-monitoring of blood glucose (SMB…
- HbA1c target ≤6.5% (48 mmol/m…
- continuous glucose monitori…
  - range: 3.5–7.8 mmol/L
  - time in range: >70% (ie >16…
  - time below range: <4% (1 h/d… <3.0 mmol/L
  - glycaemic variability (%CV): a…
- sick day management / ketone testing
- hypoglycaemia management
- driving advice
- contraception until glycaemia optimised
- advise improved maternal and neonatal outcomes with optimal glycaemia
- routine preconception care, as applies to all women planning a pregnancy
- routine vaccination advice

Refer early for pre-conception care
(and early pregnancy care)

Review medications:

- review insulin doses and use of non-insulin glucose-lowering agents
- record preconception insulin requirements
- review and cease or replace medications not advised during pregnancy
- …lications and manage / refer as appropriate:

…ulating hormone (TSH) and thyroid peroxidase (TPO) autoantibodies (for … diabetes)
coeliac autoantibodies (for type 1 diabetes)
B12 (for type 1 diabetes, metformin use, vegetarian or vegan diet, bowel disorders, bariatric surgery, megaloblastic anaemia) and red blood cell folate
serum creatinine and estimated glomerular filtration rate (eGFR)
spot urine albumin : creatinine ratio (ACR)
routine pre-pregnancy investigations, as for all women planning a pregnancy
Refer to appropriate specialist(s) / centre.

ADIPS 2020 guideline for pre-existing diabetes and pregnancy

Community Diabetes Chronic Disease Dietitian

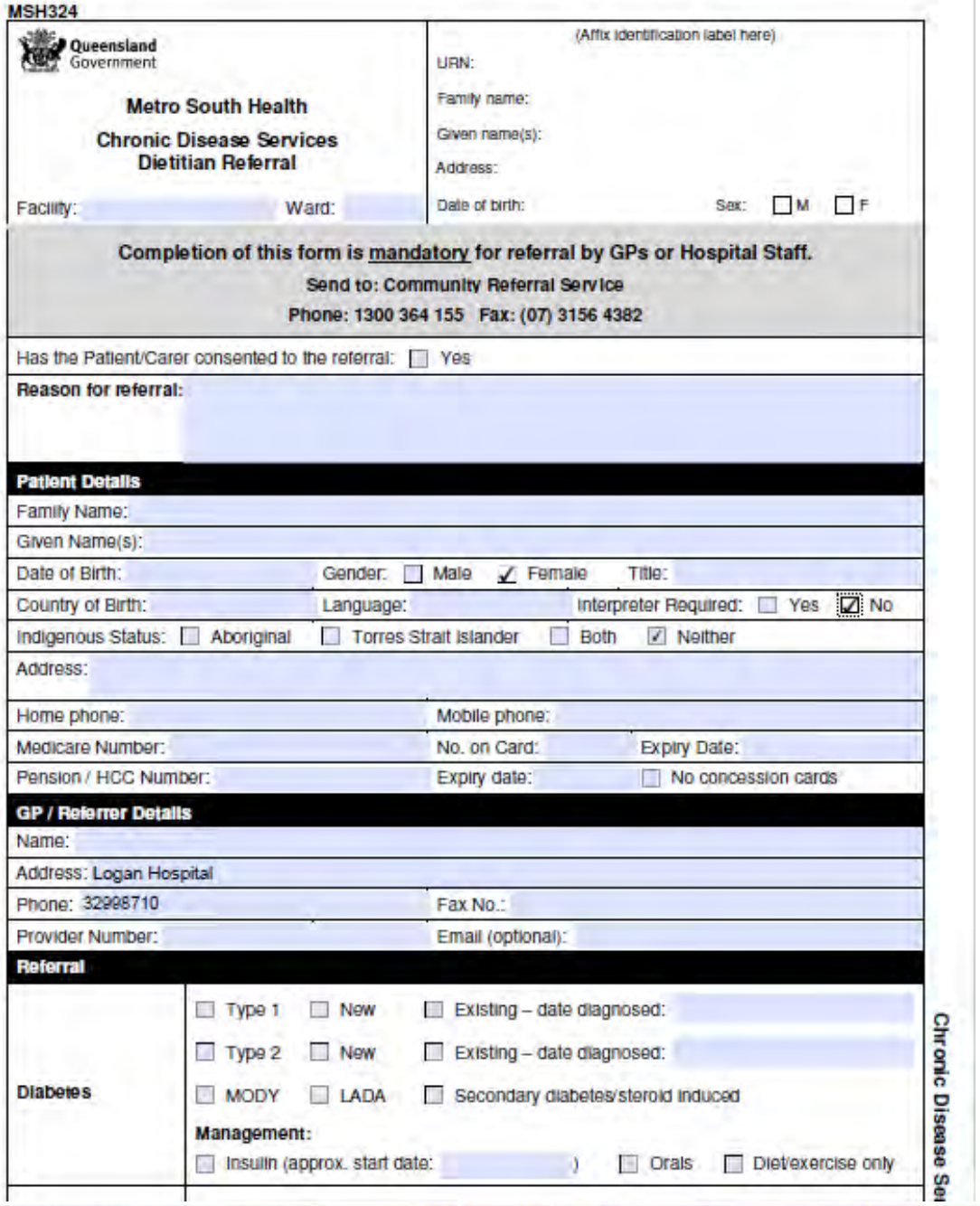
MSHHS

Minimum referral criteria Does your patient meet the minimum referral critiera?

Does your patient meet the minimum referral criteria?

Category 1 (appointment within 30 calendar days)	▸ Condition will require more complex or emergent care if assessment is delayed **AND**
	  ▸ the patient is at increased risk of requiring hospitalisation if assessment is delayed; **AND/OR**
	  ▸ condition will have significant impact on quality of life if care is delayed beyond 14 days
	▸ Newly diagnosed type 1 diabetes (already seen in hospital and requiring follow up care in community).
	▸ Unsatisfactorily controlled long standing diabetes with recent deterioration despite escalation of therapy (HbA1c >86mmol/L or >10%)
	▸ Type 1 or type 2 diabetes with regular episodes (>/= 2 per week) of hypoglycaemia
	▸ Type 1 or 2 diabetes with poor wound healing
	▸ BMI <18.5kg/m2 and/or MST >3 and/or significant unintentional weight loss

Category 2 (appointment within 90 calendar days)	▸ Condition has the potential to require more complex care if assessment is delayed; **AND** ▸ condition has the potential to have some impact on quality of life if care is delayed beyond 30 days ▸ Poorly controlled type 1 or type 2 diabetes (HbA1c >64 – 86 mmol/L or >8 - 10%) ▸ Type 2 diabetes commencing on insulin therapy or change in insulin regimen ▸ Type 1 diabetes requiring 1:1 carbohydrate counting education (refer to DAFNE program at PAH) ▸ Symptomatic Type 1 or Type 2 diabetes with secondary complications (retinopathy, neuropathy etc.)



MSH324

Queensland Government

Metro South Health

Chronic Disease Services
Dietitian Referral

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Facility: Ward: Date of birth: Sex: ☐ M ☐ F

Completion of this form is mandatory for referral by GPs or Hospital Staff.

Send to: Community Referral Service

Phone: 1300 364 155 Fax: (07) 3156 4382

Has the Patient/Carer consented to the referral: ☐ Yes

Reason for referral:

Patient Details

Family Name:

Given Name(s):

Date of Birth: Gender: ☐ Male ☑ Female Title:

Country of Birth: Language: Interpreter Required: ☐ Yes ☑ No

Indigenous Status: ☐ Aboriginal ☐ Torres Strait Islander ☐ Both ☑ Neither

Address:

Home phone: Mobile phone:

Medicare Number: No. on Card: Expiry Date:

Pension / HCC Number: Expiry date: ☐ No concession cards

GP / Referrer Details

Name:

Address: Logan Hospital

Phone: 32998710 Fax No.:

Provider Number: Email (optional):

Referral

Diabetes

☐ Type 1 ☐ New ☐ Existing – date diagnosed:

☐ Type 2 ☐ New ☐ Existing – date diagnosed:

☐ MODY ☐ LADA ☐ Secondary diabetes/steroid induced

Management:

☐ Insulin (approx. start date:) ☐ Orals ☐ Diet/exercise only

Chronic Disease Se

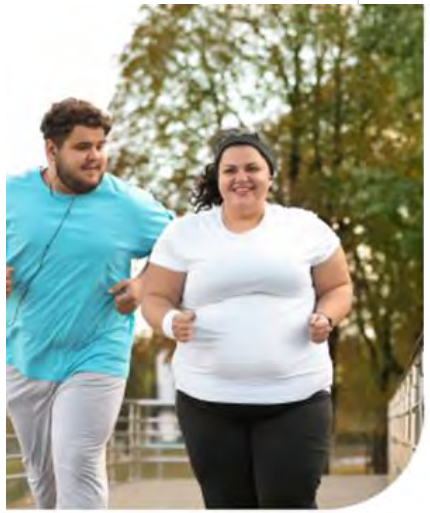
Community Diabetes
Chronic Disease Dietitian
MSHHS

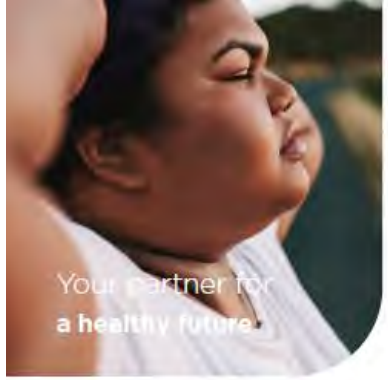
OPEN TO THE PUBLIC

Logan
Healthy Living

Let's do it
differently this time

Practical support to prevent and manage **diabetes, obesity and chronic disease.**





Logan Healthy Living offers practical support for a life not limited by diabetes, obesity and related diagnosis.

We do it differently. Our evidenced-based practice supports you with a team of professionals committed to your success. We tackle the physical, mental, emotional and situational challenges that may hold you back.

Bringing together exercise physiology, physiotherapy, dietetics, psychology and social work, you've never been better supported to change your life.

Our clients help guide their care plan and are inspired to take charge of their journey; we call this 'client centred care'.

Delivered via eight week programs, with post program support, you can transform your life. We're ready, if you are.

Get started

GP Referrals

Your GP will provide a 'Referral Form for group allied health services under Medicare for patients with Type2 diabetes'.

Intake Assessment

To begin your journey with us you will undergo an intake assessment to ensure that you can participate in the program safely and successfully.

Different this time

- Backed by research
- Highly supported activity
- Goal setting & guidance
- Diabetes experts
- Realistic dietary advice
- Discover how your body can help you
- Psychology & social work strategies
- Social connection & peer support
- No cost to participant
- Simple, smart tech
- During and after program support

8 week programs

- Group education
- Group movement sessions
- One to one consults
- Home activity plans with telehealth support

Find us at the Logan Health Care Centre

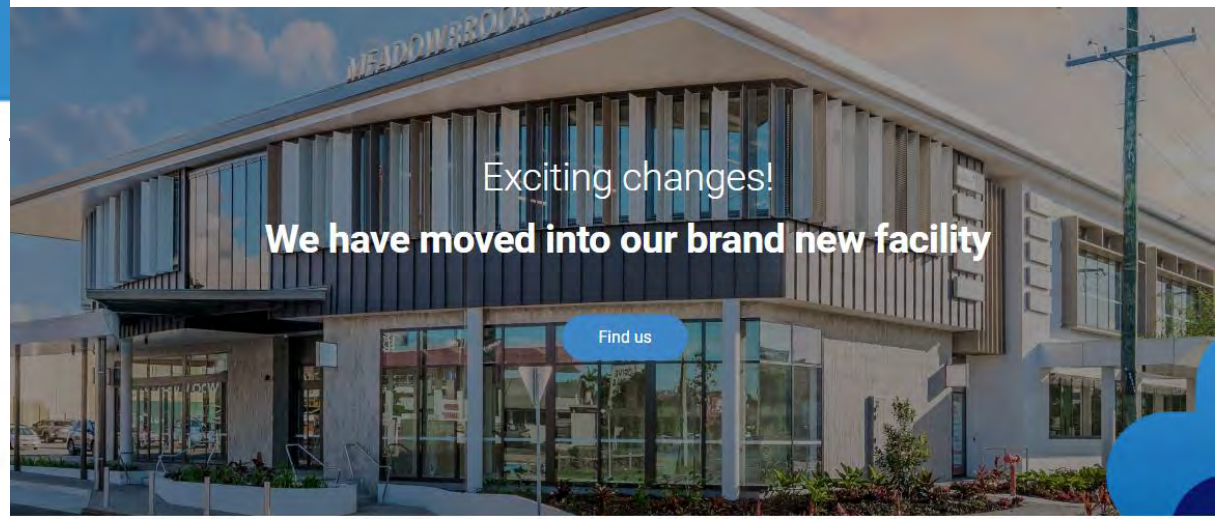
A Logan Healthy Living, Logan Health Care Centre, 68 University Drive, Meadowbrook QLD 4131

P 07 3365 1057

E lhl@uqhealthcare.org.au

Discover more
lhl.org.au

Logan Healthy Living



LEADS
Logan Endocrinology And Diabetes Service

- Endocrinologists
- Diabetes educators / nurse practitioners
- Diabetes dieticians
- Podiatrists
- Psychologists
- Diabetes nurse navigator
- Social worker

When referring, please note pre-conception status and patient's wishes for conception timeframe

In the months before pregnancy ……

- Folate (Vitamin B9) – low dose or higher dose ?

  Those at increased risk of NTD
  - patients taking anticonvulsant medication
  - pre-pregnancy diabetes mellitus
  - previous child or family history of NTD
  - 5-methyltetrahydrofolate deficiency (MTFHR deficiency)
  - BMI >30 kg/m2

  or a risk of malabsorption, a 5 mg daily dose is recommended.

- Iodine - Increases iodine requirements (by 50-100%) in pregnancy
  - WHO recommends 250 micrograms of iodine daily preconception, during pregnancy and lactation.
  - Supplementation with Iodine of a dose of 150mcg per day is recommended at least one month prior to pregnancy, during pregnancy, and while breastfeeding.
  - **Caution** in women with known thyrotoxicosis, have Grave's disease or a multinodular goitre

- Assess risk of nutritional deficiencies (e.g., vegan diet, lactose intolerance, and calcium, iron or vitamin D deficiency due to lack of sun exposure).

Early GDM Screening indications

If high risk, please request HBA1C if <12 weeks (first trimester), or arrange early OGTT

Risk factors for GDM are:

- BMI >30 (pre-pregnancy or on entry to care)
- Ethnicity (Aboriginal and Torres Strait Islander, Pacific or South Sea Islander, Indian subcontinent,
  South-East Asia, Middle Eastern or African)
- Previous GDM
- Previous elevated BGL
- Maternal age > 40 years
- Family history DM (1st degree relative or sister with GDM)
- Previous macrosomia (birth weight >4500g or > 90th percentile)
- Previous perinatal loss
- Polycystic ovarian syndrome
- Medications (corticosteroids, antipsychotics)
- Multiple pregnancy
- Post Bariatric Surgery (No GTT – HbA1c/fasting BSL in 1st TM)

Queensland Clinical Guideline: Gestational Diabetes Mellitus, February 2021

Queensland Clinical Guidelines

Obesity and pregnancy (including post bariatric surgery) - Queensland Clinical Guidelines" (August 2021) https://www.health.qld.gov.au/__data/assets/pdf_file/0019/142309/g-obesity.pdf

MSHHS maternity population

- 68% of people in Logan area are obese, ? 40-50% in Redland
- Around 22% of women who are pregnant are obese (across Qld) & 24% overweight
- 31% of pregnant Aboriginal/Torres Strait Islander women have a BMI 30 kg/m2 or above, versus 21% of non-Aboriginal/Torres Strait Islander women
- Past bariatric surgery numbers – approx. 5-7/month at Logan Hospital, but growing incidence over few years (0.5% in Qld 2014 - 2019 - from QCG)
- “Pre-pregnancy BMI greater than 25 kg/m^2 and excessive Gestational Weight Gain (GWG) are both implicated in up to 30% of pregnancy complications”

From: Obesity and pregnancy (including post bariatric surgery) - Queensland Clinical Guidelines” (August 2021) https://www.health.qld.gov.au/__data/assets/pdf_file/0019/142309/g-obesity.pdf

and "Queensland Mothers and Babies 2018–2019" - Report of the Queensland Maternal and Perinatal Quality Council 2021 – available at Queensland Maternal and Perinatal Quality Council | Clinical Excellence Queensland | Queensland Health (published Sept 2022)

Post Bariatric Surgery - Follow Up

- Recommend delaying conception to stabilise weight loss, achieve a varied nutritious diet and reduce associated health impacts
  - Limited evidence on short- and long-term effects of rapid weight loss and changes in micronutrient absorption
  - Fertility may increase as weight is lost and hormonal imbalances resolve, and unplanned pregnancy may occur
- Recommend contraception to avoid unplanned pregnancy (long-acting reversible contraception more effective than oral contraception)
- Evidence limited for optimal surgery to conception interval
  - Recommend minimum of 12-18 months before pregnancy
  - Consider personal health and individual needs rather than adherence to arbitrary timeframe
- Prior to a planned pregnancy, consult with specialist in the management of pregnancy after BS
  - Dietitian for preconception, pregnancy and postnatal nutritional support
  - Specialist referral (bariatric surgeon, obstetric medicine) for all pregnant women post BS
- If acute abdominal pain, persistent nausea and vomiting, inability to eat, symptoms of malabsorption (e.g., steatorrhoea),or 'dumping syndrome' (postprandial syndrome) occur, refer to specialist

10.2 Bariatric procedures

Table 25. Bariatric procedures

Aspect	Consideration
Context	• In Queensland between 2014–2019, 0.5% (n=1472) of women birthing babies had pre-pregnancy BS[155] • Bariatric procedures are not recommended when imminently planning pregnancy[156]

Types of bariatric surgery	• There is no clear evidence to guide the most appropriate type of surgery for women of childbearing age[157]
	• The most common types are sleeve gastrectomy (46%) and Roux en Y gastric bypass (38.2%); Australian cases mostly sleeve gastrectomies[158]
	  ○ Clinical outcomes at one year post sleeve gastrectomy/Roux en Y surgery demonstrate an average weight loss of 30% total body weight
	  ○ Less common procedures include gastric banding
	• Newer endoscopic techniques (e.g. endoscopic intragastric balloon) are emerging[156,159]
	  ○ Risk profiles are potentially lower with a less invasive approach
	  ○ Less expensive compared to BS
	  ○ Evidence based outcomes of these procedures are limited

Surgery to pregnancy interval	• Recommend delaying conception to stabilise weight loss, achieve a varied nutritious diet[156] and reduce associated health impacts[160,161]
	  ○ Limited evidence on short and long term effects of rapid weight loss and changes in micronutrient absorption[162]
	  ○ Fertility may increase as weight is lost and hormonal imbalances resolve and unplanned pregnancy may occur[162]
	• Recommend contraception to avoid unplanned pregnancy (long acting reversible contraception more effective than oral contraception)[94,157,162]
	• Evidence limited for optimal surgery to conception interval[34,152,162]
	  ○ Recommend minimum of one year before pregnancy[157] with a broad guide of 12–18 months[156]
	  ○ Consider personal health and individual needs rather than adherence to arbitrary timeframe[34]

Recommendation for referral	• Prior to a planned pregnancy, consult with a specialist in the management of pregnancy after BS[157] • Dietitian for preconception, pregnancy and postnatal nutritional support[152] • Specialist referral (bariatric surgeon, obstetric medicine) for all pregnant women post BS[34,162] • If acute abdominal pain, persistent nausea and vomiting, inability to eat, symptoms of malabsorption (e.g. steatorrhoea),or 'dumping syndrome' (postprandial syndrome) occur, refer to specialist[159,162] • If concern for fetal development because of other risk factors (e.g. unplanned pregnancy during rapid weight loss) consider specialist referral • If pregnancy occurs whilst receiving pharmacological management for mental illness consider medication review

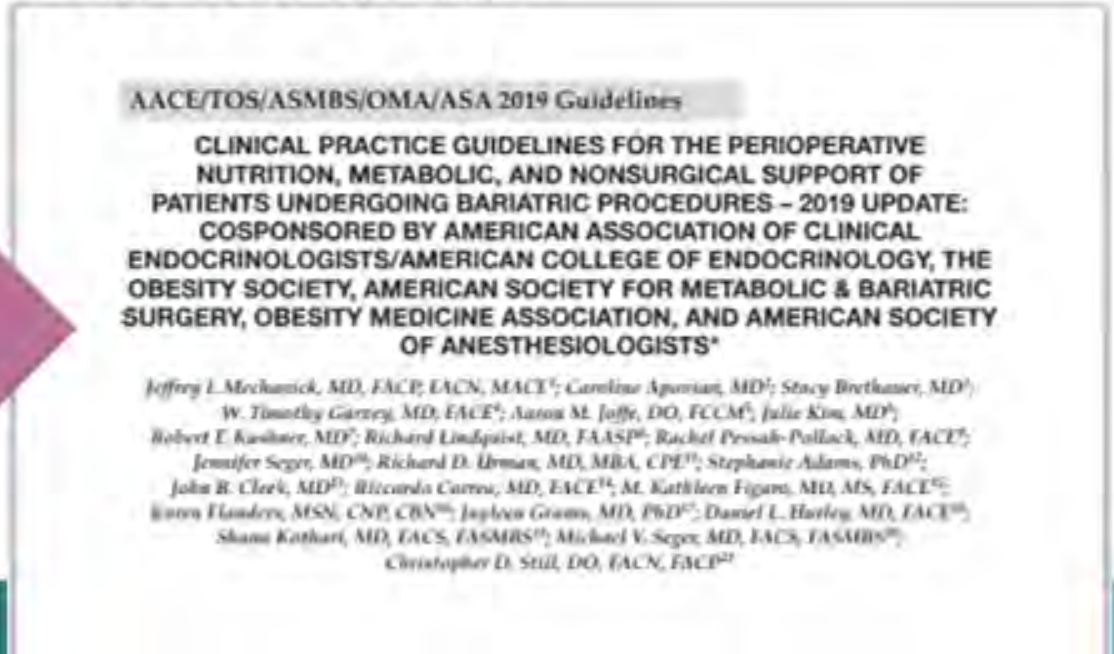
Obesity and pregnancy (including post bariatric surgery) - Queensland Clinical Guidelines" (August 2021) https://www.health.qld.gov.au/__data/assets/pdf_file/0019/142309/g-obesity.pdf

Pregnancy after bariatric surgery

- 80% of bariatric surgery recipients are women of childbearing age

- Lifelong micronutrient supplementation & monitoring is recommended for all surgery recipients to prevent deficiency.
  - 1-2 multivitamins (iron, folate, thiamine)
  - Calcium supplementation dependant on oral intake
  - Vitamin D titrated to serum levels

Summary on Table 9[1]



AACE/TOS/ASMBS/OMA/ASA 2019 Guidelines

CLINICAL PRACTICE GUIDELINES FOR THE PERIOPERATIVE NUTRITION, METABOLIC, AND NONSURGICAL SUPPORT OF PATIENTS UNDERGOING BARIATRIC PROCEDURES – 2019 UPDATE: COSPONSORED BY AMERICAN ASSOCIATION OF CLINICAL ENDOCRINOLOGISTS/AMERICAN COLLEGE OF ENDOCRINOLOGY, THE OBESITY SOCIETY, AMERICAN SOCIETY FOR METABOLIC & BARIATRIC SURGERY, OBESITY MEDICINE ASSOCIATION, AND AMERICAN SOCIETY OF ANESTHESIOLOGISTS*

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Pregnancy after bariatric surgery

In pregnancy, literature has significant gaps:

- ☒ Analysing different surgery types
- ☒ Correctly reporting biochemistry & potential confounders
- ☒ Considering oral intake, supplement use & compliance

Currently, literature suggests increased risk of:

- ➢ SGA, IUGR & pre-term birth[2]
- ➢ Vitamin A, B12, D, calcium & iron deficiency
  - ➢ Up to 90% of pregnancies[3]

??? role of dietary intake & healthy gestational weight gain

Appendix C: Suggested pregnancy nutrient and biochemical screening post bariatric surgery

Laboratory test		Pre conception	First trimester	2nd and 3rd trimester	Lactation (3 monthly)	Additional measurements/notes
Full blood count		✓	✓	✓	✓	
CHEM20*	Electrolytes Sodium, Potassium, Chloride, Creatinine, Chem Panel	✓	✓	✓		Order individual tests or if all required complete as part of a *CHEM20
	Albumin	✓	✓	✓	✓	
	Calcium	✓	✓	✓	✓	
	Magnesium	✓	✓	✓	✓	
	Phosphate	✓	✓	✓	✓	
	Liver function tests	✓	✓	✓	✓	
	Renal Panel	✓	✓	✓	✓	
Thyroid function—thyroid stimulating hormone (TSH)		✓	✓			At physicians' discretion Add on free thyroxine (FT4) if TSH abnormal
C Reactive Protein		✓	✓		✓	Baseline screen, then at physician's discretion. If systemic inflammation, risk of inaccurate plasma nutrient levels (e.g. vitamins A, B^6, C, D, selenium, zinc). Repeat after resolves
Iron studies		✓	✓	✓	✓	Includes ferritin and transferrin saturation
Vitamin D—25 OH		✓	✓	✓	✓	
Vitamin B_{12} (Cobalamin)		✓	✓	✓	✓	Folic acid supplementation may mask deficiency
Methylmalonic acid (MMA)		✓	✓	✓	✓	Sensitive index of vitamin B_{12} status At physicians' discretion
Folate (Serum)		✓	✓	✓	✓	
Zinc protoporphyrin		✓	✓	✓		
Vitamin A		✓	✓	✓	✓	
Retinol Binding Protein		✓	✓	✓	✓	
Vitamin B_1 (Thiamine diphosphate whole blood—THIAM)		✓				If repeated vomiting
Serum copper and ceruloplasmin			✓			Ceruloplasmin: copper carrying protein
Selenium			✓			
Vitamin E—Alpha-tocopherol (VITE)		If symptomatic anaemia or steatorrhea				
Vitamin B_6 (Pyridoxine)		If multiple or severe deficiencies				
Vitamin C		If deficiency suspected				

Source: Shawe J, et al. Pregnancy after bariatric surgery: Consensus recommendations for periconception, antenatal and postnatal care. Obesity Reviews 2019;20(11):1507-22; Ciangura C, et al. Clinical Practice Guidelines for Childbearing Female Candidates for Bariatric Surgery, Pregnancy, and Post-partum Management After Bariatric Surgery. Obesity surgery 2019;29(11):3722-34; Mechanick JI, et al. Clinical Practice Guidelines for the perioperative nutrition, metabolic and nonsurgical support of patients undergoing bariatric procedures – 2019 Update. Endocrine Practice 2019;25(Supplement 2):1-75; Pathology Queensland communique, January 2021. O'Kane M, Parretti HM, Pinkney J, Welbourn R, Hughes CA, Mok J, et al. British Obesity and Metabolic Surgery Society Guidelines on perioperative and postoperative biochemical monitoring and micronutrient replacement for patients undergoing bariatric surgery—2020 update. Obesity Reviews 2020;21(11):e13087.

Appendix D: Recommendations for routine micronutrient supplementation post bariatric surgery

Nutrient	Daily supplements after bariatric surgery		Daily upper limit in pregnancy and lactation		Notes
	Preconception	Pregnancy and lactation	14 to 18 years	19 to 50 years	
Folic acid	5 mg	5 mg	800 micrograms	1,000 micrograms	One month prior to pregnancy and up to 12 weeks gestation
Iodine	150 micrograms	150 micrograms	900 micrograms	1,100 micrograms	
Calcium	1,200–1,500 mg	1,200–1,500 mg	2,500 mg	2,500 mg	Adjusted for dietary calcium intake. May be combined in vitamin D supplement Avoid taking with iron
Iron	45–60 mg	50–80 mg	45 mg	45 mg	Take separate from calcium supplement and acid reducing medications
Vitamin A	5,000 IU	5,000 IU	9,300 IU	10,000 IU	Avoid exceeding an upper limit of 10,000 IU Vitamin A from retinol sources
Vitamin B_1	≥ 12mg	≥ 12mg	Not specified	Not specified	
Vitamin B_{12}	1 mg	1 mg	Not specified	Not specified	Dose dependent on frequency and route of administration
Vitamin D	≥ 1,000 IU	≥ 1,000 IU	3000 IU	3000 IU	Titrate dosage until serum levels of 25-hydroxyvitamin D >50nmol/L (30 ng/mL), accounting for cumulative content within other supplements
Vitamin E	15 mg	15 mg	300 mg/day (α-tocopherol equivs)	300 mg/day (α-tocopherol equivs)	Caution required in pregnancy
Vitamin K	90–120 micrograms	90–120 micrograms	Not specified	Not specified	Caution required in pregnancy
Copper	2 mg	2 mg	8 mg	10 mg	
Zinc	8–15 mg per 1 mg of copper	8–15 mg per 1 mg of copper	35 mg	40 mg	
Selenium	50 micrograms	50 micrograms	400 micrograms	400 micrograms	

Source: Shawe J,et al. Pregnancy after bariatric surgery: Consensus recommendations for periconception, antenatal and postnatal care. Obesity Reviews 2019;20(11):1507-22; Ciangura C, et al. Clinical Practice Guidelines for Childbearing Female Candidates for Bariatric Surgery, Pregnancy, and Post-partum Management After Bariatric Surgery. Obesity surgery 2019;29(11):3722-34; Mechanick JI, et al. Clinical Practice Guidelines for the perioperative nutrition, metabolic and nonsurgical support of patients undergoing bariatric procedures – 2019 Update. Endocrine Practice 2019;25(Supplement 2):1-75; NHMRC. Nutrient Reference Values for Australia and New Zealand. 2006; Australian Government. Clinical Practice Guidelines: Pregnancy Care. 2018.

[Guideline: Obesity and pregnancy (including post bariatric surgery) (health.qld.gov.au)]

Micronutrient monitoring & supplementation

First Trimester [4]	Every Trimester + every 3 months if breastfeeding[1,4]
LEVEL 4 EVIDENCE: Serum vitamin E Serum zinc & copper Selenium	LEVEL 2- EVIDENCE: FBC + Iron studies Serum Folate Serum Vitamin B12 Serum Vitamin A (include CRP) LEVEL 4 EVIDENCE: Serum Vitamin D + Calcium Phosphate Magnesium *+ prothrombin time, PTH, INR, vitamin K1*

BARIATRIC SURGERY/PREGNANCY

WILEY obesityreviews

Pregnancy after bariatric surgery: Consensus recommendations for periconception, antenatal and postnatal care

Jill Shawe[3] | Dries Ceulemans[2,3] | Zainab Akhter[4] | Karl Neff[5] | Kathryn Hart[6] | Nicola Heslehurst[4] | Iztok Stotl[7] | Sanjay Agrawal[8] | Regine Steegers-Theunissen[9] | Shahrad Taheri[10] | Beth Greenslade[11] | Judith Rankin[4] | Bobby Huda[12] | Icy Douek[11] | Sander Galjaard[9] | Orit Blumenfeld[13] | Ann Robinson[14] | Martin Whyte[15] | Elaine Mathews[16] | Roland Devlieger[2,3,17]

TABLE 4 Daily dose recommendations for (pre)pregnancy supplementation

Daily Dose Recommendations for (Pre)pregnancy Supplementation (Level 4)
Thiamine >12 mg
Folic acid 0.4 mg daily, during preconception and first trimester, 4-5 mg if obese or diabetic
Calcium 1200-1500 mg in divided doses (includes dietary intake)
Vitamin D >40 mcg (1000 IU)
Iron 45-60 mg elemental iron (AGB >18 mg)
Copper 2 mg (AGB >1 mg)
Zinc 8-15 mg per 1 mg copper
Vitamin K 90-120 μg
Vitamin E 15 mg
Vitamin A 5000 IU, should be in B carotene form in pregnancy
Selenium 50 μg daily

Abbreviations: IU, international units; AGB, adjustable gastric banding.

1-2 adult multivitamins[5-7]

+ −

Folic acid

Calcium & Vitamin D

References – Bariatric surgery

1 Mechanick, J. I., et al. (2019). "Clinical Practice Guidelines for the Perioperative Nutrition, Metabolic, and Nonsurgical Support of Patients Undergoing Bariatric Procedures - 2019 Update: Cosponsored by American Association of Clinical Endocrinologists/American College of Endocrinology, the Obesity Society, American Society for Metabolic & Bariatric Surgery, Obesity Medicine Association, and American Society of Anesthesiologists - Executive Summary." Endocr Pract **25**(12): 1346-1359.

2 Kwong, W., et al. (2018). "Maternal and neonatal outcomes after bariatric surgery; a systematic review and meta-analysis: do the benefits outweigh the risks?" American Journal of Obstetrics and Gynecology **218**(6): 573-580

3 Rottenstreich, A., et al. (2017). "Maternal nutritional status and related pregnancy outcomes following bariatric surgery: A systematic review." Surgery for obesity and related diseases.

4 Shawe, J., et al. (2019). "Pregnancy after bariatric surgery: Consensus recommendations for periconception, antenatal and postnatal care." Bariatric Surgery / Pregnancy.

5 Rothman, K. J., et al. (1995). "Teratogenicity of high vitamin A intake." Journal of Medicine **333**(21).

6 Azais-Braesco, V. and G. Pascal (2000). "Vitamin A in pregnancy: requirements and safety limits." American Journal of Clinical Nutrition **71**: 1325S-1333S.

7 Dolk, H. M., et al. (1999). "Dietary vitamin A and teratogenic risk: European teratology society discussion paper." European Journal of Obestetrics and Gynaecology **83**: 31-36.

References – PCOS, diabetes, obesity

PCOS guidelines - Jean Hailes, https://www.jeanhailes.org.au/resources/pcos-guideline-algorithm-1-screening-diagnostic-assessment-risk-assessment-and-life-stage

ADIPS 2020 guideline for pre-existing diabetes and pregnancy, https://obgyn.onlinelibrary.wiley.com/doi/full/10.1111/ajo.13265

Gestational Diabetes Mellitus – Queensland Clinical Guidelines (February 2021) https://www.health.qld.gov.au/__data/assets/pdf_file/0022/950503/g-gdm.pdf

Obesity and pregnancy (including post bariatric surgery) - Queensland Clinical Guidelines (August 2021) https://www.health.qld.gov.au/__data/assets/pdf_file/0019/142309/g-obesity.pdf

AM2 Case Discussion – Red Group

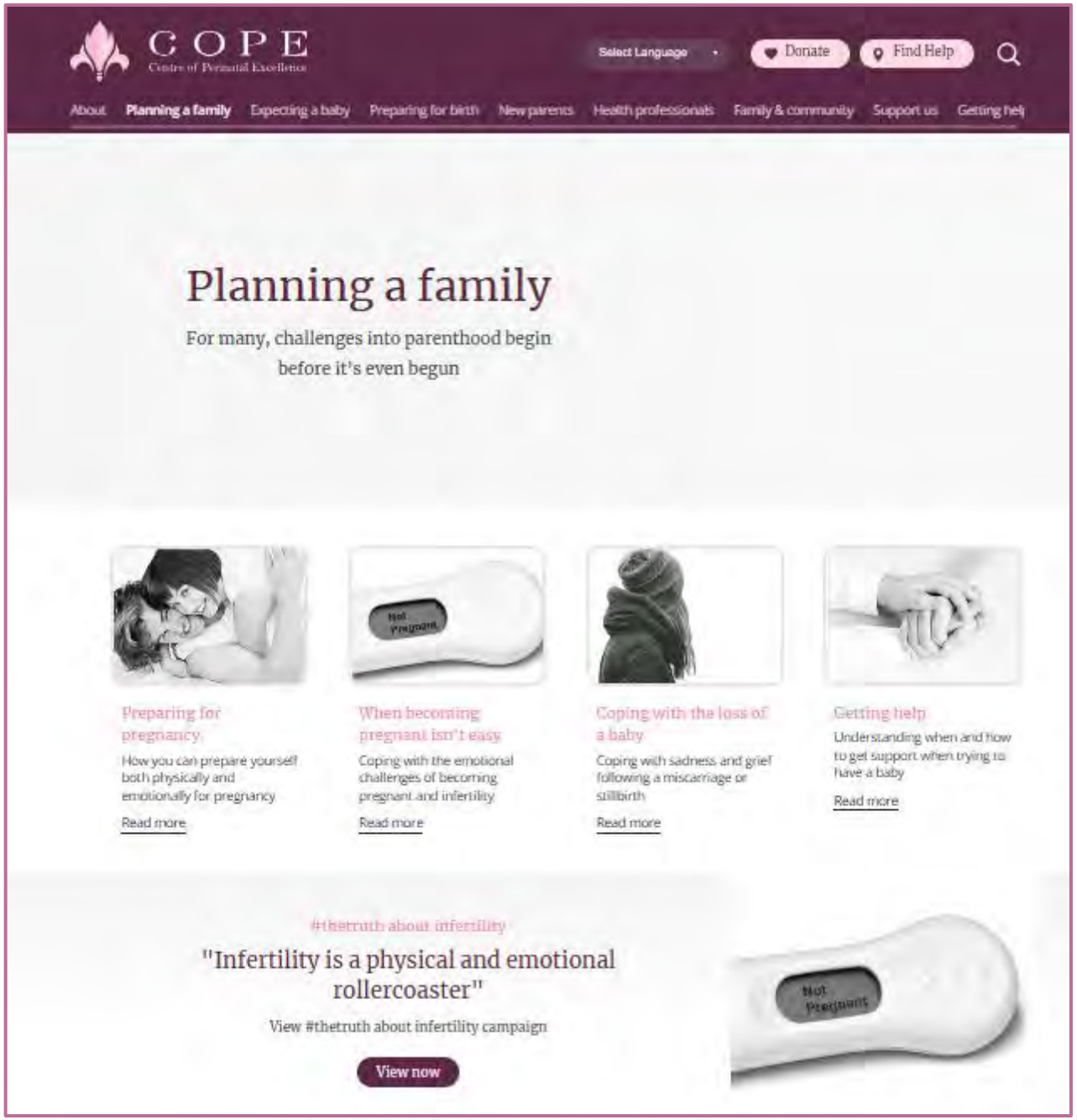
- Zuri is aged 38 years, and she and her current partner have been trying to fall pregnant for the last 3 years.
- She has been tracking her cycles on the “Fertility Friend” App and is wondering if she should purchase on ovulation kit.
- PHX genital HSV but no recurrences for 18 months.
- Her history also includes CIN 3 when in her mid 20’s – she had surgery at that time and attended for follow up for a few years, but then lapsed in going back to the hospital in Sydney.
- Her partner has 2 children from an earlier relationship, but Josie says she has never been a mother.
- Zuri moved to Australia from Kenya at age 14 years.

She has a 15 min appointment - Outline your approach

Identifying this woman's issues

- Age –
- Ethnicity/Indigenous Status –
- BMI –
- BP –
- Obstetric History –
- PHX – Medical and Surgical HX –
- Medications, including OTC/supplements –
- Allergies –
- FHX –
- Social History – including supports/DV
- Occupation –
- Smoking/Alcohol/ Other Substances –
- Healthy diet and exercise –
- Vaccinations (+ Travel) -

- Clinical Assessment –
- Investigations –
- Management Plan –



https://www.cope.org.au/planning-a-family/

Infertility
#thetruth is infertility is an emotional and physical rollercoaster ~ Melinda

1 in 6 people live with infertility. Many are unable to ever have children

Living with infertility Childlessness

The Truth about Infertility - NEW Campaign - COPE

Ask EVERY Woman about EVERY pregnancy

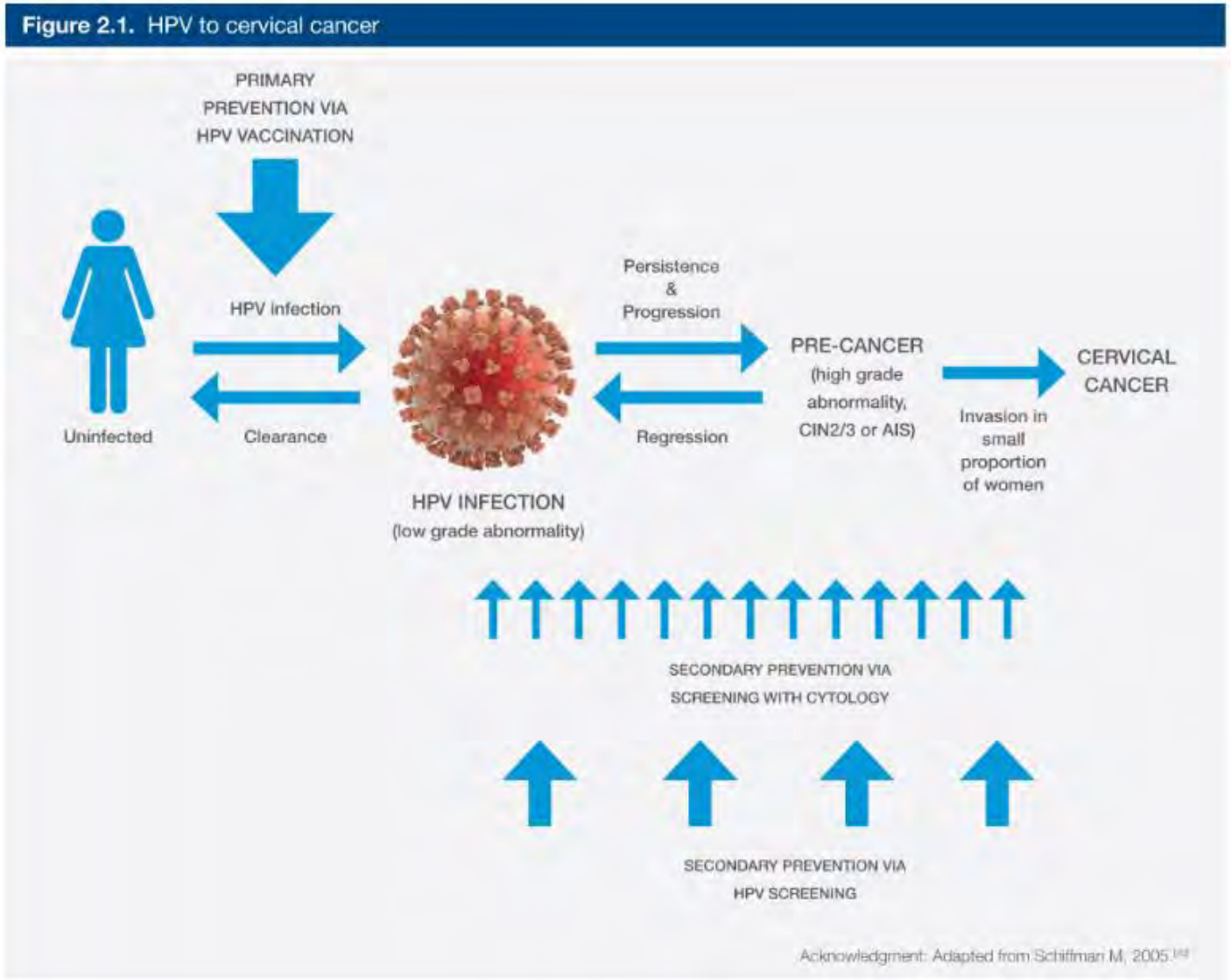
- Always ask the woman in private about previous pregnancies – may not volunteer previous TOPs, ectopics, stillbirths or SUIDs etc in presence of partner/family member.
- FGM needs to be asked about (Female genital mutilation/cutting/circumcision (FGM/C) for Health Professionals - Cultural awareness Fact Sheet from “True – relationships and reproductive health)
- Women from culturally and linguistically diverse (CALD) backgrounds are more likely to experience poorer perinatal outcomes (even in high income countries).

Human Papilloma Virus

https://www.cancer.org.au/clinical-guidelines/cervical-cancer/cervical-cancer-screening/the-rationale-for-primary-hpv-screening

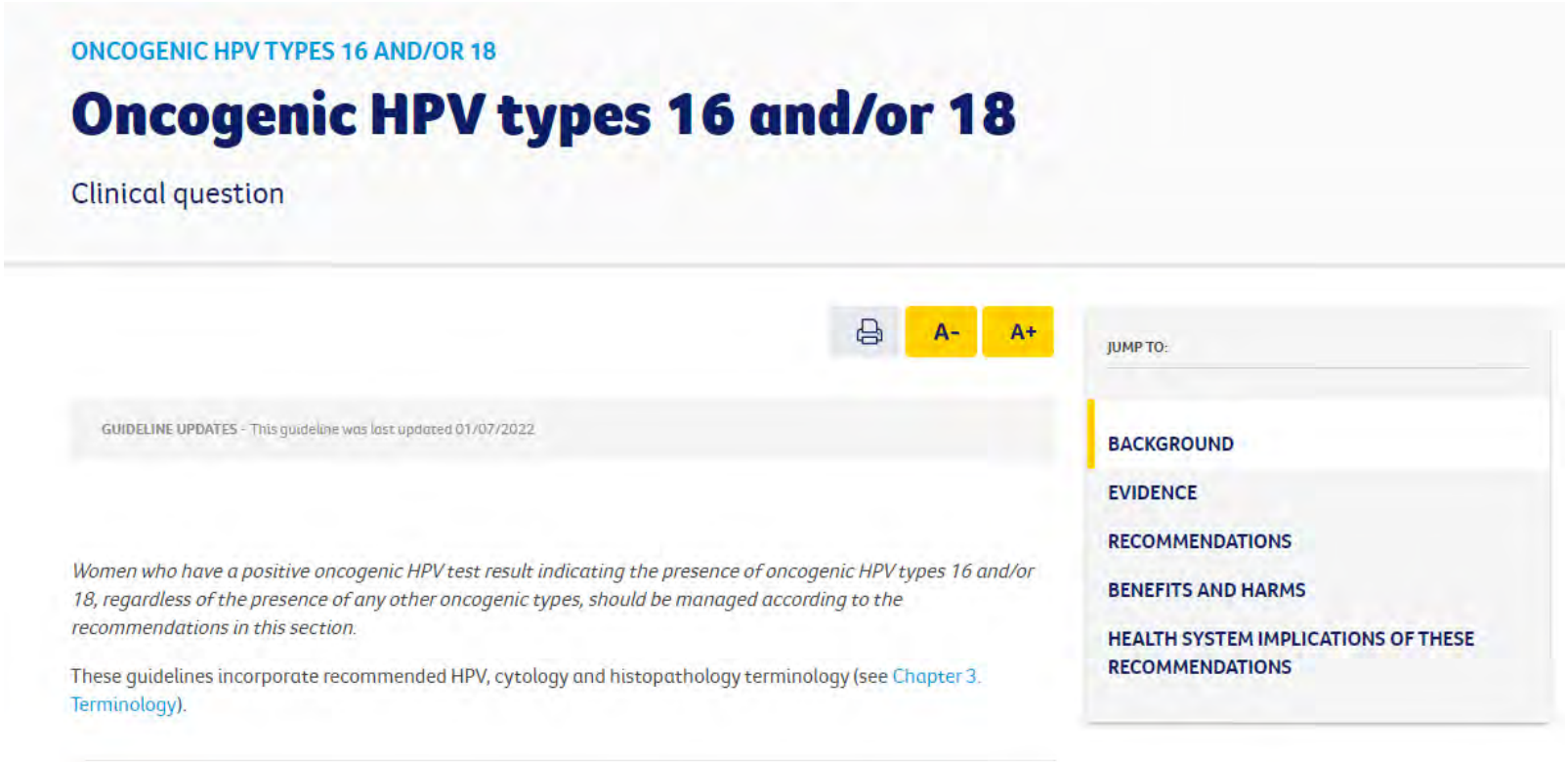
- > 40 anogenital HPV types, 15 of which are classified as ‘high risk’ or oncogenic.
- Persistent infection with oncogenic HPV types is generally subclinical but can result in the development of a range of anogenital tumours including cancers of the cervix, anus, penis, vulva and vagina.
- HPV infection is also associated with squamous cell carcinomas of the head and neck, particularly oropharyngeal cancers

Figure 2.1. HPV to cervical cancer



CLINICAL GUIDELINES SITEMAP

Cancer Council Australia



- Worldwide, oncogenic HPV types 16/18 are detected in approximately 70% of cervical cancers.
- HPV 16 is the most carcinogenic, accounting for about 55–60% of cervical cancers, while HPV 18 accounts for a further 10–15% of cervical cancers.
- Preliminary results from a recent Australian consecutive case series found that HPV types 16 and 18 were detected in 52.3% and 19.4% of cervical cancers, respectively.

https://www.cancer.org.au/clinical-guidelines/cervical-cancer/cervical-cancer-screening/management-of-oncogenic-hpv-test-results/oncogenic-hpv-types-16-and-or-18

GUIDELINE UPDATES - This guideline was last updated 01/07/2022

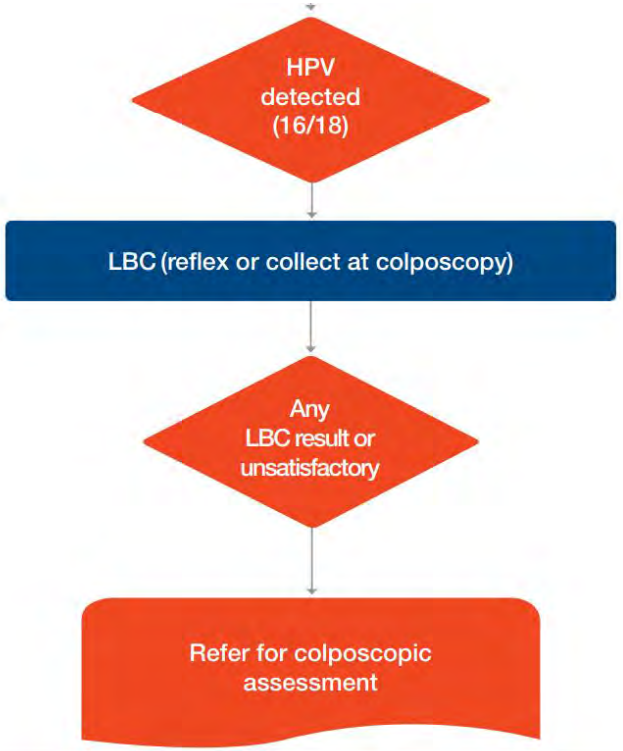
CLINICAL GUIDELINES SITEMAP

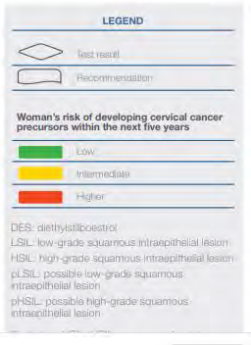
Cancer Council Australia

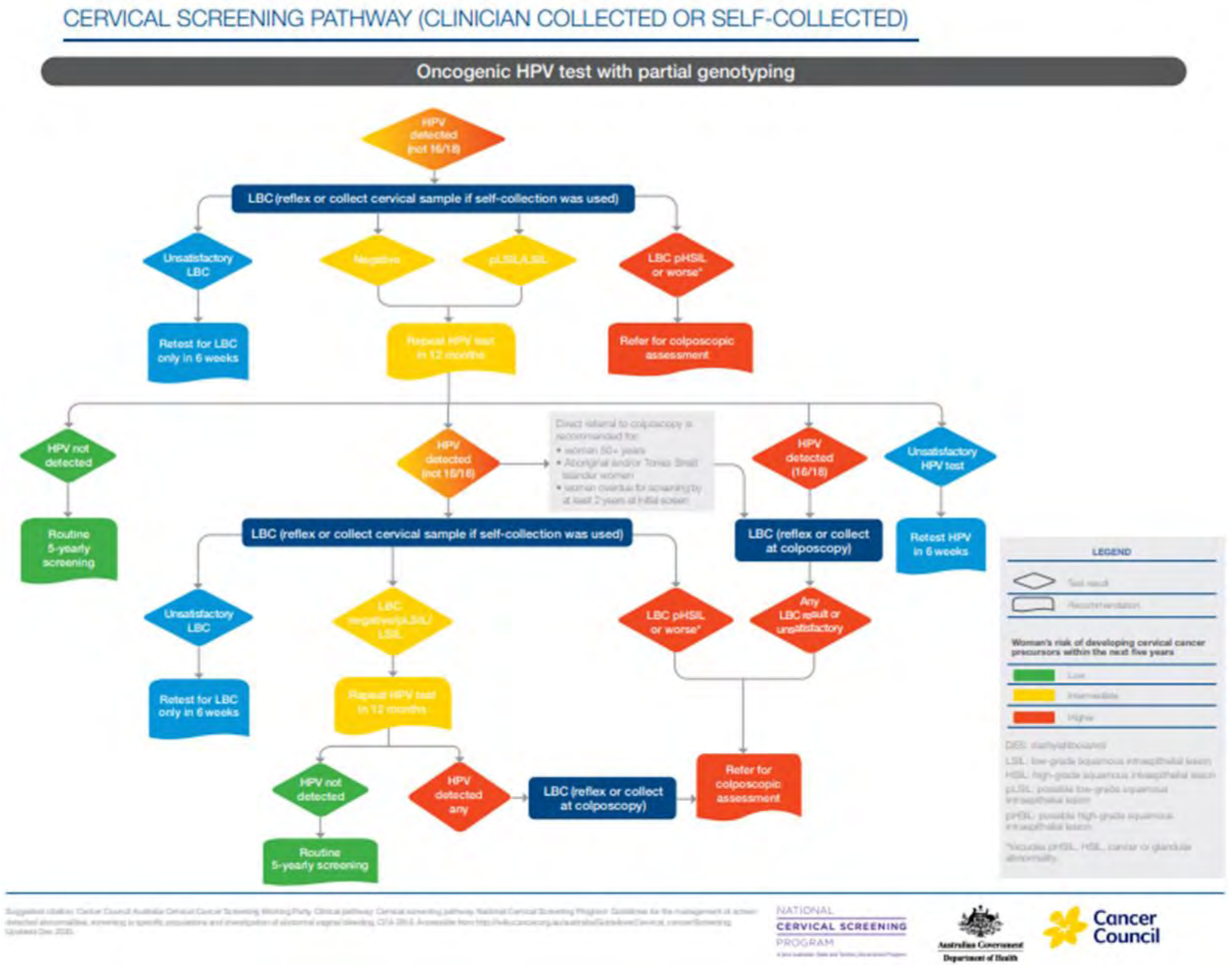
Links to Management of oncogenic HPV test results flowcharts:

- Flowchart 6.1 Cervical screening pathway for primary oncogenic HPV screening (HPV tests on clinician-collected or self-collected samples)
- Flowchart 6.2 Cervical screening pathway for primary oncogenic HPV testing (HPV not detected)
- Flowchart 6.3. Cervical screening pathway for primary oncogenic HPV screening (HPV tests on clinician-collected or self-collected samples): HPV16/18 detected
- Flowchart 6.4 Cervical screening pathway for primary oncogenic HPV screening (HPV tests on clinician-collected or self-collected samples): HPV (not 16/18) detected

https://www.cancer.org.au/clinical-guidelines/cervical-cancer/cervical-cancer-screening/management-of-oncogenic-hpv-test-results/flowcharts







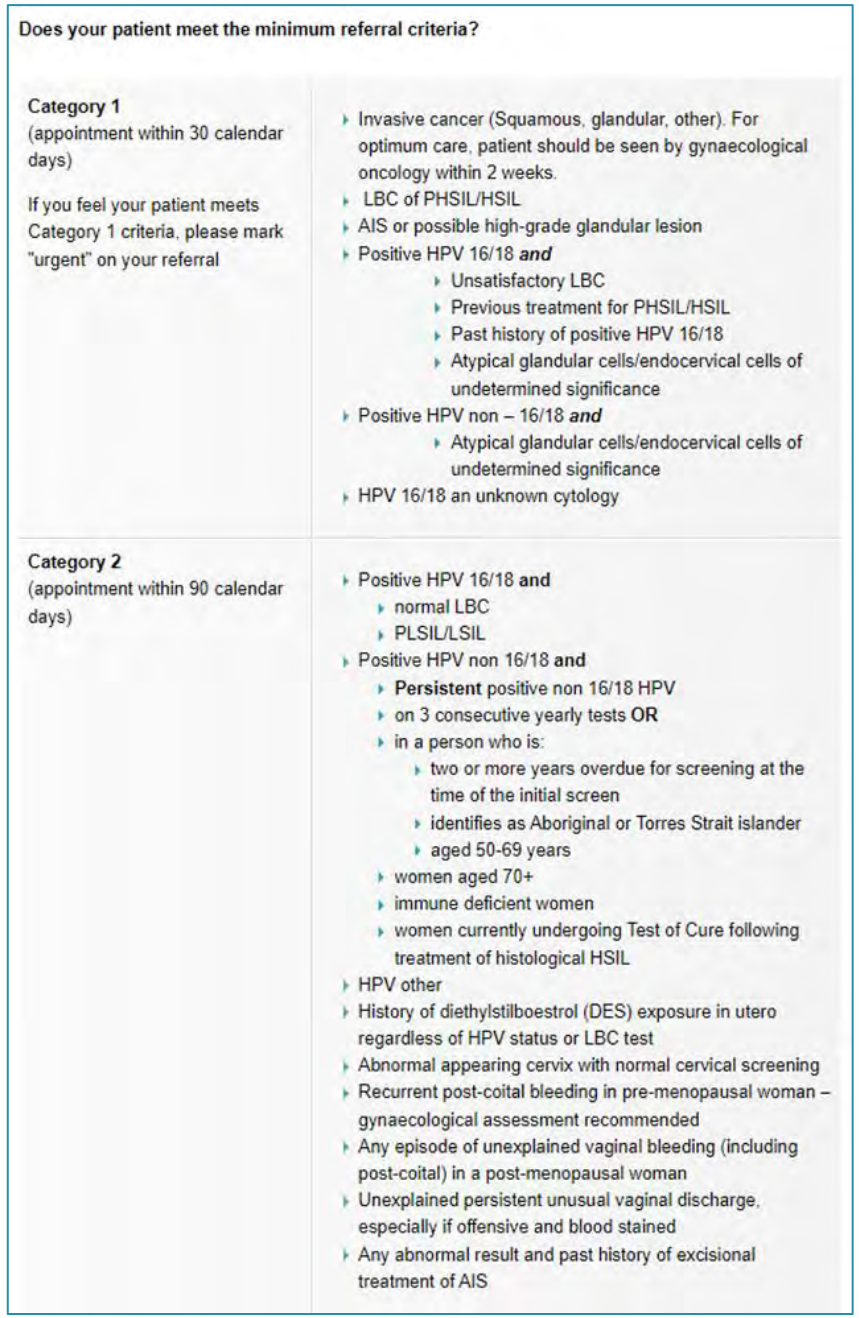
Patients with positive non-16/18 but normal or LSIL on LBC would not need referral unless persistent on 2 further repeat CSTs
(at 12 & 24 months)

Indications for Colposcopy after abnormal CST

- Consider single CST between 20 - 24 years who experienced their first sexual activity at a young age (e.g., <14 years) or if not received HPV vaccine before sexual activity commenced.
- Adolescent patients with abnormal HPV should follow the same pathway as adult patients. Patients < 30 years old should also have screening for STI as they are a high-risk group.
- Consider using oestrogen cream +/- liquid cytology in post-menopausal patients (continue until age 70-74 years with “exit” test)
- Patients with positive non-16/18 but normal or LSIL on LBC would not need referral and only a repeat CST in 12 months. If remains positive non-16/18 but normal or LSIL on LBC, REPEAT again in 12 months (only refer if HPV non-16/18 positive on 3 consecutive tests (or clinical concerns)
- Recall women in 6-12 weeks if they have an unsatisfactory screening report
- Specific efforts should be made to provide screening for Aboriginal and Torres Strait Islander women.
- Women who have been treated for HSIL (CIN2/3) do not need a post-treatment colposcopy. These women should have a co-test (HPV and LBC test) performed at 12/12 after treatment, and annually thereafter, until she has a negative co-test on two consecutive occasions, when she can return to routine 5 yearly screening. This is called ‘test of cure’.
- If, at any time post treatment, there is a positive oncogenic HPV (16/18) result, refer for colposcopic assessment (regardless of the reflex LBC result).
- If, at any time during Test of Cure, the woman has a LBC prediction of pHSIL/HSIL or any glandular abnormality, irrespective of HPV status, she should be referred for colposcopic assessment.

From RYP - https://metrosouth.health.qld.gov.au/referrals/gynaecology/abnormal-pap-smear

Clinical Resources: National Cervical Screening Program: Guidelines for the management of screen-detected abnormalities, screening in specific populations and investigation of abnormal vaginal bleeding.
https://www.cancer.org.au/clinical-guidelines/cervical-cancer/cervical-cancer-screening/management-of-oncogenic-hpv-test-results/oncogenic-hpv-types-16-and-or-18 (



Does your patient meet the minimum referral criteria?

Category 1
(appointment within 30 calendar days)
 	
If you feel your patient meets Category 1 criteria, please mark "urgent" on your referral
	• Invasive cancer (Squamous, glandular, other). For optimum care, patient should be seen by gynaecological oncology within 2 weeks.
	• LBC of PHSIL/HSIL
	• AIS or possible high-grade glandular lesion
	• Positive HPV 16/18 ***and***
	  ◦ Unsatisfactory LBC
	  ◦ Previous treatment for PHSIL/HSIL
	  ◦ Past history of positive HPV 16/18
	  ◦ Atypical glandular cells/endocervical cells of undetermined significance
	• Positive HPV non – 16/18 ***and***
	  ◦ Atypical glandular cells/endocervical cells of undetermined significance
	• HPV 16/18 an unknown cytology

Category 2
(appointment within 90 calendar days)
	• Positive HPV 16/18 **and**
	  ◦ normal LBC
	  ◦ PLSIL/LSIL
	• Positive HPV non 16/18 **and**
	  ◦ **Persistent** positive non 16/18 HPV
	  ◦ on 3 consecutive yearly tests **OR**
	  ◦ in a person who is:
	  ▪ two or more years overdue for screening at the time of the initial screen
	  ▪ identifies as Aboriginal or Torres Strait islander
	  ▪ aged 50-69 years
	  ◦ women aged 70+
	  ◦ immune deficient women
	  ◦ women currently undergoing Test of Cure following treatment of histological HSIL
	• HPV other
	• History of diethylstilboestrol (DES) exposure in utero regardless of HPV status or LBC test
	• Abnormal appearing cervix with normal cervical screening
	• Recurrent post-coital bleeding in pre-menopausal woman – gynaecological assessment recommended
	• Any episode of unexplained vaginal bleeding (including post-coital) in a post-menopausal woman
	• Unexplained persistent unusual vaginal discharge, especially if offensive and blood stained
	• Any abnormal result and past history of excisional treatment of AIS

REFER YOUR PATIENT – METRO SOUTH HHS

Abnormal cervical screening / cervical dysplasia / abnormal cervix

If your patient does not meet the minimum referral criteria

- Assessment and management information can be found on a range of conditions at SpotOnHealth HealthPathways
- If the patient does not meet the criteria for referral but the referring practitioner believes the patient requires specialist review, a clinical override may be requested.
- Please explain why (e.g., warning signs or symptoms, clinical modifiers, uncertain about diagnosis, etc.)
- Please note that your referral may not be accepted or may be redirected to another service.

Cervical Cancer Screening - Community HealthPathways
SpotOnHealth (Brisbane South)

Essential referral information for Abnormal cervical screening / cervical dysplasia / abnormal cervix referrals (Referral will be returned without this)

- **History of**
  - Any abnormal bleeding (i.e., post-coital and intermenstrual)
  - Unexplained persistent deep dyspareunia or unexplained persistent unusual vaginal discharge
  - Previous abnormal cervical screening results and any treatment (results to be included in referral)
  - Immunosuppressive therapy
- Medical management to date
- Most recent and current cervical screening results (LBC should be performed on any sample with positive oncogenic HPV)

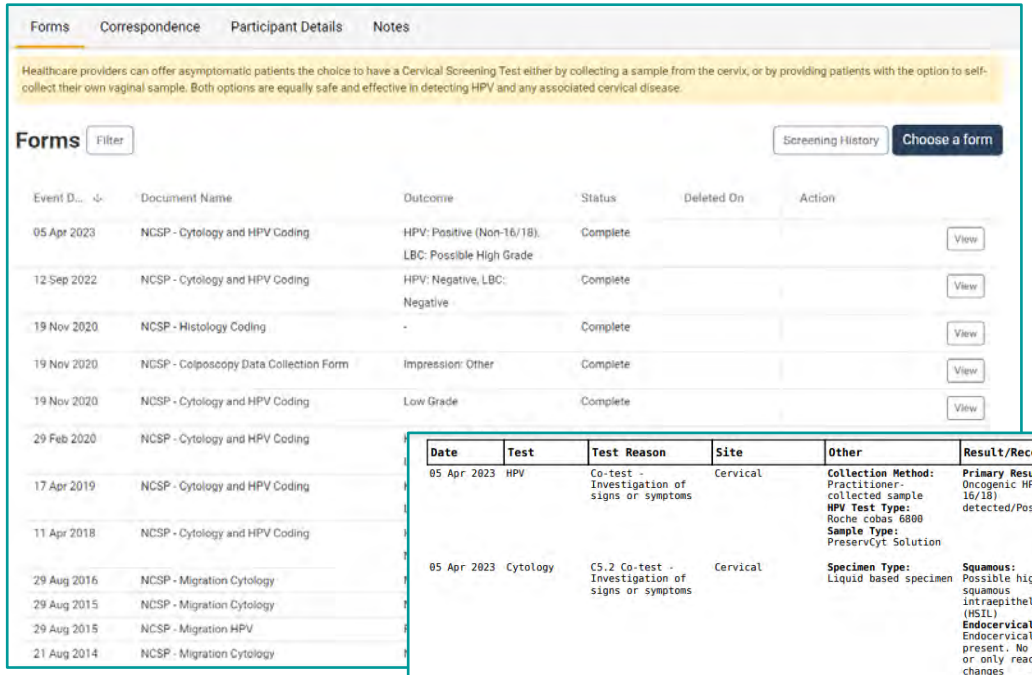
If a specific test result is unable to be obtained due to access, financial, religious, cultural or consent reasons a Clinical Override may be requested. This reason must be clearly articulated in the body of the referral.

Additional referral information for Abnormal cervical screening / cervical dysplasia / abnormal cervix referrals

- BMI
- HPV Vaccination history
- STI screen result, endocervical swab or first catch urine for chlamydia +/- gonorrhoea NAA
- History of smoking

Abnormal cervical screening / cervical dysplasia / abnormal cervix | Referrals to Gynaecology | Metro South Health

Checking prior CST/PAP smear results on PRODA



Forms | Correspondence | Participant Details | Notes

Healthcare providers can offer asymptomatic patients the choice to have a Cervical Screening Test either by collecting a sample from the cervix, or by providing patients with the option to self-collect their own vaginal sample. Both options are equally safe and effective in detecting HPV and any associated cervical disease.

Forms Filter — Screening History — Choose a form

Event D...	Document Name	Outcome	Status	Deleted On	Action
05 Apr 2023	NCSP - Cytology and HPV Coding	HPV: Positive (Non-16/18), LBC: Possible High Grade	Complete		View
12 Sep 2022	NCSP - Cytology and HPV Coding	HPV: Negative, LBC: Negative	Complete		View
19 Nov 2020	NCSP - Histology Coding	-	Complete		View
19 Nov 2020	NCSP - Colposcopy Data Collection Form	Impression: Other	Complete		View
19 Nov 2020	NCSP - Cytology and HPV Coding	Low Grade	Complete		View
29 Feb 2020	NCSP - Cytology and HPV Coding				
17 Apr 2019	NCSP - Cytology and HPV Coding				
11 Apr 2018	NCSP - Cytology and HPV Coding				
29 Aug 2016	NCSP - Migration Cytology				
29 Aug 2015	NCSP - Migration Cytology				
29 Aug 2015	NCSP - Migration HPV				
21 Aug 2014	NCSP - Migration Cytology				

Date	Test	Test Reason	Site	Other	Result/Recommendation
05 Apr 2023	HPV	Co-test - Investigation of signs or symptoms	Cervical	**Collection Method:** Practitioner-collected sample **HPV Test Type:** Roche cobas 6800 **Sample Type:** PreservCyt Solution	**Primary Result:** Oncogenic HPV (not 16/18) detected/Positive NOS
05 Apr 2023	Cytology	C5.2 Co-test - Investigation of signs or symptoms	Cervical	**Specimen Type:** Liquid based specimen	**Squamous:** Possible high-grade squamous intraepithelial lesion (HSIL) **Endocervical:** Endocervical component present. No abnormality or only reactive changes **Other/non-cervical:** No other abnormal cells **Recommendation:** Refer for colposcopic assessment
12 Sep 2022	HPV	Co-test - Test Of Cure	Cervical	**Collection Method:** Practitioner-collected sample **HPV Test Type:** Roche cobas 6800 **Sample Type:** PreservCyt Solution	**Primary Result:** Oncogenic HPV not detected
12 Sep 2022	Cytology	C5.1 Co-test - Test of cure	Cervical	**Specimen Type:** Liquid based specimen	**Squamous:** Cell numbers and preservation satisfactory. No abnormality or only reactive changes **Endocervical:** Endocervical component present. No abnormality

(a) AIHW codes are used for cytology & HPV results.
(b) SNOMED CT codes are used for histology results for the renewed cervical program.
(c) Colposcopy data dated before 1/12/2017 may not indicate glandular abnormality separately, and has been mapped to High Grade or Cancer.
(d) NCSR alerts are flags set in NCSR to indicate clinical circumstances that require special management and alternative pathways may apply. Refer to the *National Cervical Screening Program: Guidelines for the management of screen-detected abnormalities, screening in specific populations and investigation of abnormal vaginal bleeding* for further information about pathways and the NCSR Healthcare Provider Portal User Guide or Clinical Information System Integration guides for further information about alerts.
(e) Dual stain results are included in screening histories where this information is available for participants who were on the Compass Trial. Dual stain results were used by the Compass Trial but are not yet part of the NCSP, and are not used in NCSR cervical pathways.

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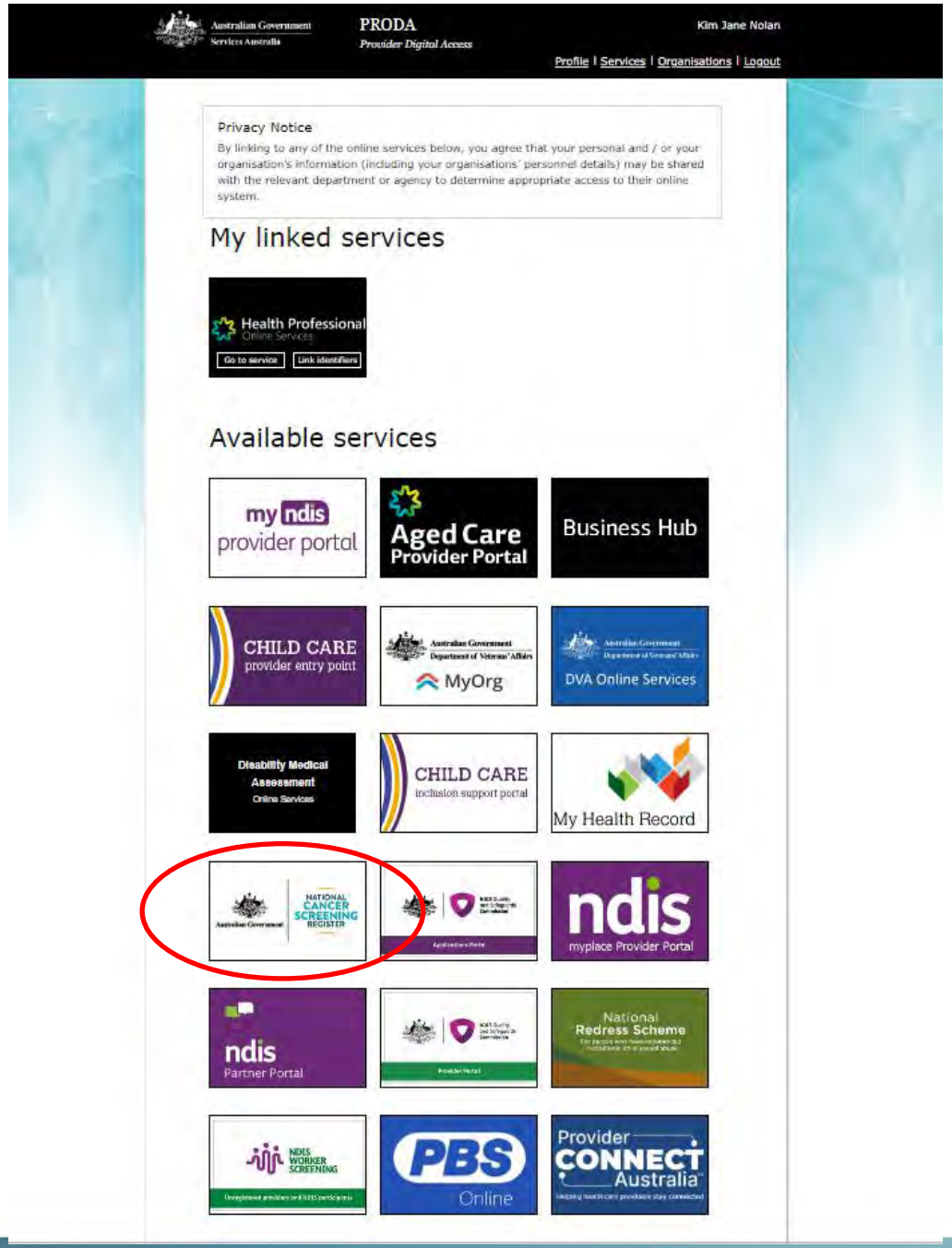
Sender: NCSR 1800 627 701

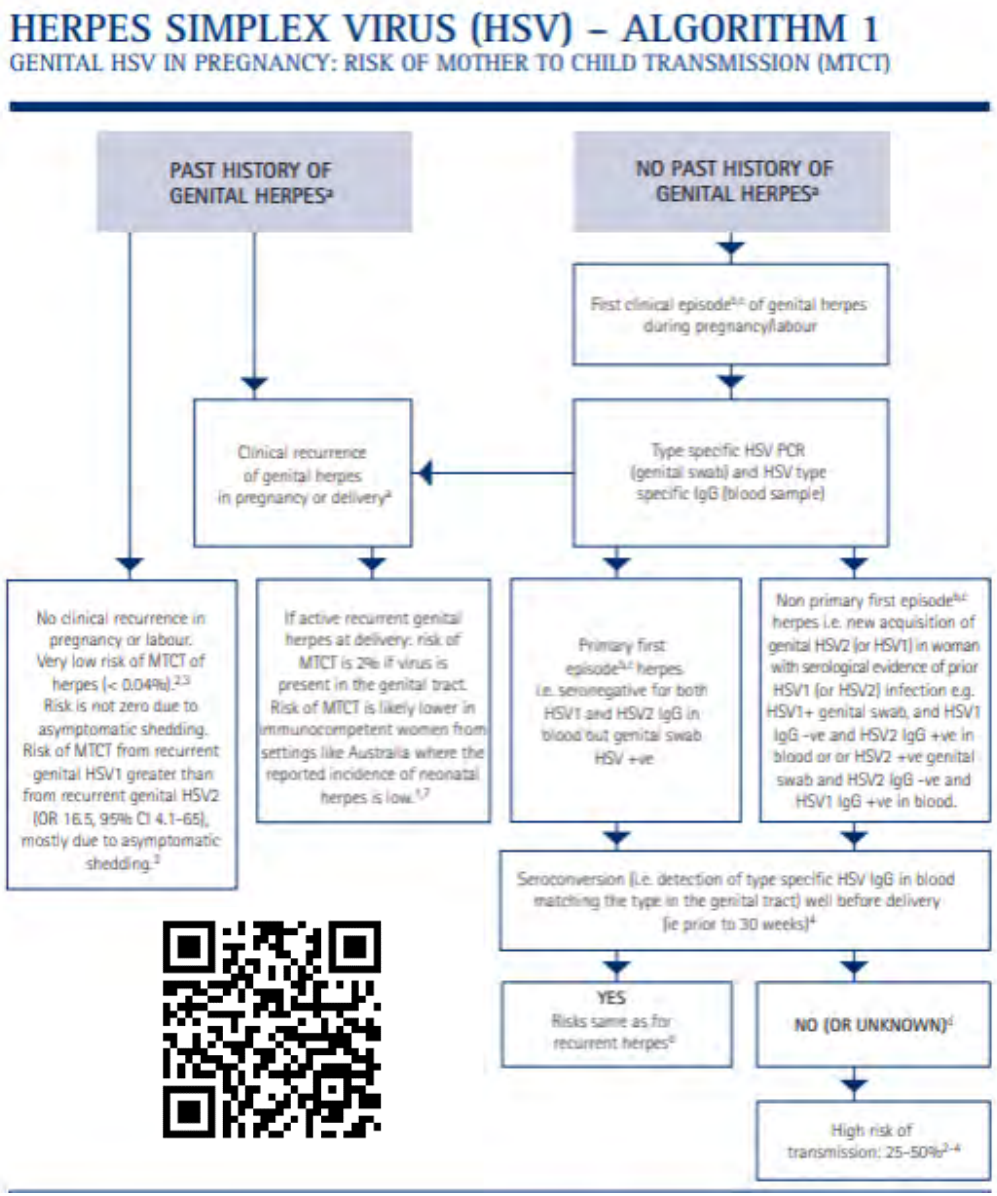


Pregnant Woman with HSV- Risk of Mother to Child Transmission (MTCT)

- If primary first episode and seroconverts with matching type specific IgG before 30 weeks – risk is same as with recurrent HSV
- If non-primary first episode (new acquisition of genital HSV2 (or 1) in woman with serological evidence of prior HSV1 (2) infection e.g.
  - HSV1+ swab, but HSV1 IgG -ve and HSV2 IgG +ve OR
  - HSV2 +ve swab & HSV2 IgG -ve and HSV1 IgG +ve

  and seroconverts with matching type specific IgG before 30/40 risk is same as with recurrent HSV

- If no clinical recurrence in pregnancy or labour - very low risk of MTCT (< 0.04%). Risk not zero due to asymptomatic shedding.
- Risk of MTCT from recurrent genital HSV1 greater than recurrent genital HSV2 (OR 16.5, 95% CI 4.1-65), mostly due to asymptomatic shedding.
- If active recurrent HSV at delivery: risk of MTCT is 2% if virus is present in the genital tract.
- Risk likely lower in immunocompetent women from settings like Australia where the reported incidence of neonatal herpes is low (approx. 3 per 100,000 live births).
- Postnatal infection in approx. 10% of cases from infected care giver.
- Breast milk transmission has not been reported, but neonatal disease after contact with maternal breast herpes lesions has been reported



Updated "Management of Perinatal infections" 2022 – Australasian Society for Infectious Diseases https://asid.net.au/publications

Herpes in Pregnancy (health.wa.gov.au) - King Edward Memorial Hospital Obstetrics & Gynaecology - Herpes simplex in pregnancy – Clinical Practice Guideline

Recurrent Herpes simplex in pregnancy

Low risk women with history of recurrent HSV infections should be referred to obstetric team at approximately 34/40 to discuss the option of prophylactic acyclovir, and birth management.

- Recurrences of HSV can be treated with episodic therapy which should be started concurrently with onset of prodromal symptoms or with lesion onset
  - Acyclovir 400mg orally, 8 hourly for 5 days
  - Or valaciclovir 500mg orally 12 hourly for 3 days

- Prophylactic suppressive acyclovir 400 mg tds or valaciclovir 500mg bd should be considered in all women from 36/40 in women with multiple recurrent overt lesions or prior to 36/40 if frequent symptomatic recurrences until delivery. Higher suppressive dose is recommended due to the greater volume of distribution and the altered metabolism of the drug in pregnancy.

- Suppressive oral acyclovir or valaciclovir reduces clinical recurrences, asymptomatic shedding, rate of caesarean section and virus in genital tract. Use must be balanced with risks of medication to newborn. Clinical trials underpowered to evaluate efficacy of preventing transmission to the newborn and neonatal disease has been reported after maternal suppression.

- Most women are unaware of genital herpes (recurrent or acute). RANZCOG recommend careful examination for genital herpes for all women when admitted in labour

REFERENCES:

- Updated “Management of Perinatal infections” 2022 – Australasian Society for Infectious Diseases https://asid.net.au/publications
- Herpes in Pregnancy (health.wa.gov.au) - King Edward Memorial Hospital O & G - Herpes simplex in pregnancy – Clinical Practice Guideline
- Management of Genital Herpes (joint guideline with the British Association for Sexual Health and HIV (BASHH) - updates existing RCOG guidance

Infertility - Female History

[Assessment of Female Fertility in General Practice Setting – AJGP June 2020 Vol 49(6)]

Box 1. Systematic approach to female reproductive history

Duration of infertility

- Frequency and timing of intercourse
- Sexual dysfunction

Gynaecological and obstetric past history

- Cervical screening results, previous treatments
- Previous pregnancies: time to conceive, management of early pregnancy loss and termination, mode and timing of delivery and antenatal, intrapartum or post-partum complications
- Pelvic infection
- Menstrual history: cycle interval, duration of bleeding and associated abnormal uterine bleeding and dysmenorrhoea
- Dyspareunia

Previous medical history

- Medical comorbidities: management and stability
- Previous surgery

Medications, including any allergies

- Past and present medication use
- Previous contraceptive use
- Vaccination history: rubella, varicella, hepatitis B, influenza
- Folic acid and iodine supplementation

Family history

- Heritable conditions
- Premature ovarian insufficiency

Social history

- Smoking, alcohol and recreational drug use

Essential Referral Information

- History: of previous pregnancies, STIs and PID, surgery, endometriosis, other medical conditions
- Include the following partner information - age and health, reproductive history, testicular conditions, semen analysis, BMI
- Weight/ BMI
- STI screen result – endocervical swab or first catch urine for chlamydia +/- gonorrhoea NAA
- FBC group and antibodies rubella IgG varicella IgG, syphilis serology, HBV/HCV/HIV serology results
- FSH, LH (Day 2-5), Oestradiol, Prolactin, TSH if cycle prolonged and/or irregular (not if on contraception)
- Coeliac Serology (rates of about 4% in women with otherwise unexplained infertility)
- Day 21 serum progesterone level (7 days before the next expected period)
- Pelvic USS (TVS preferable) – for pelvic anatomy, antral follicle count, and features of deep infiltrating endometriosis
- If PCOS is suspected include the following:
  - Free androgen index (FAI) or Free Testosterone, Consider DHEAS/androstenedione if free testosterone normal, 17 OH progesterone, sHBG
  - Fasting blood glucose result
  - Lipids, TSH results
- Consider Genetic carrier screening if desired: thalassaemia, triple screen (fragile X syndrome, cystic fibrosis, spinal muscular atrophy), extended carrier screen
- Consider Anti-Mullerian hormone (AMH) ?

Subfertility/Infertility Assessment

Infertility Definition – failure to achieve pregnancy within 12 months of regular unprotected intercourse in a woman aged <35 years or within six months in a woman aged >35 years.

- Treatment is as a couple and requires a partner referral
- IVF not available in public hospitals
- To assess tubal patency, consider Hysterosalpingography (HSG) or saline infusion USS (sonohysterography) if history suggestive of blocked fallopian tubes
- Seminal analysis of partner (≥4 days of abstinence). Repeat in 4-6 weeks if abnormal
- Lifestyle modification (increased activity, dietary, weight, smoking, alcohol)
- Simple moderate physical activity including structured exercise (at least 30 minutes/day) and optimising incidental exercise assists with weight loss and weight maintenance.
- Achieve optimal weight BMI 20 – 30
- Referral to dietitian
- Infertility: Folic acid 0.5mg/day

https://www1.racgp.org.au/ajgp/2020/june/female-fertility-in-general-practice-setting

? “Egg timer” blood test - anti-Mullerian hormone (AMH)

- AMH - not Medicare funded ($80-100)
- Online companies are also selling the home test directly to consumers, promoting the test as a way for women to decide when to have a baby.
- Can’t reliably predict the likelihood of pregnancy or how long it would take to get pregnant.
- AMH level indicates the number of eggs in the ovaries, or ovarian reserve. Often used in IVF treatment (suggests how many eggs woman may get with ovarian stimulation with fertility drugs)
- Can’t tell you anything about egg quality - women with low AMH levels have the same chance of conceiving as women with normal AMH levels
- Woman’s age is greatest predictor of chance of pregnancy

Previous Premature Delivery

- If later Zuri disclosed had a premature baby when living in rural NSW when aged 27 years
- Infant died on day of birth at 23 weeks – 480grams
- Has not disclosed that pregnancy to partner or family – was in an abusive relationship that is trying to forget

Is there anything further you would advise pre-conception or in an early pregnancy in the future?

Definitions - Prematurity

Preterm is commonly defined as gestational age less than 37+0 completed weeks with subcategories of PTB based on weeks of gestational age:

- Late preterm (34+0–36+6 weeks)
- Moderately preterm (32+0 to 33+6 weeks)
- Very preterm (28+0 to 31+6 weeks)
- Extremely preterm (less than 27+6 weeks)

Most important historical risk factor is prior spontaneous PTB.

Guideline: Preterm labour and birth (health.qld.gov.au) - https://www.health.qld.gov.au/__data/assets/pdf_file/0019/140149/g-ptl.pdf

Risk Factors for PTB

- Age < 20 yrs or > 40 yrs
- Smoking
- Residing in rural and remote areas
- Ethnic variations – increased in East African women, African American women, ATSI identifying women
- Multiple pregnancy
- Short cervical length
- Previous cervical surgery
- Previous PTB – risk relates to gestational age of prior PTB
- Genital Tract Infection – Bacterial vaginosis
- UTI
- Premature Preterm ROM
- Vaginal bleeding
- Assisted Reproduction – doubles risk PTB
- Uterine anomalies
- Polyhydramnios/Oligohydramnios
- Chronic medical conditions and acute medical conditions e.g., Preeclampsia, APH

Risk Reduction – PTB

- Smoking cessation interventions reduce PTB rate by 18% (RR 0.86, 95% CI 0.74–0.98)
- Optimisation of control of underlying chronic diseases reduces risk
- Lifestyle (e.g., balanced diet, activity limitations, stress management)
- Perform a psychosocial assessment and refer as appropriate for support (e.g., social work or mental health services, health worker, peer support)
- Bacterial vaginosis (BV) has been associated with increased risk of PTB - doubled
  - Women with previous PTB may benefit from routine screening and treatment of BV but routine screening and treatment for asymptomatic BV, in women with low-risk pregnancies, is of minimal benefit
  - In women with abnormal vaginal flora, treatment with antibiotics may reduce the risk of PTB
- Asymptomatic bacteriuria has been associated with risk of PTB
  - Urinary tract infection is associated with threatened preterm labour
  - Screen and recommend treatment for urinary tract infections (asymptomatic bacteriuria, cystitis, pyelonephritis) with antibiotics
- Cervical Length Measurement

Did you know?

- Testing for bacterial vaginosis as part of a preconception screen is encouraged for all women who have sex with women.
- Prevalence of bacterial vaginosis estimates are significantly higher for women who have sex with women (20-50%) than exclusively heterosexual women.

Women who have sex with women - STI Guidelines Australia - https://sti.guidelines.org.au/populations-and-situations/women-who-have-sex-with-women/

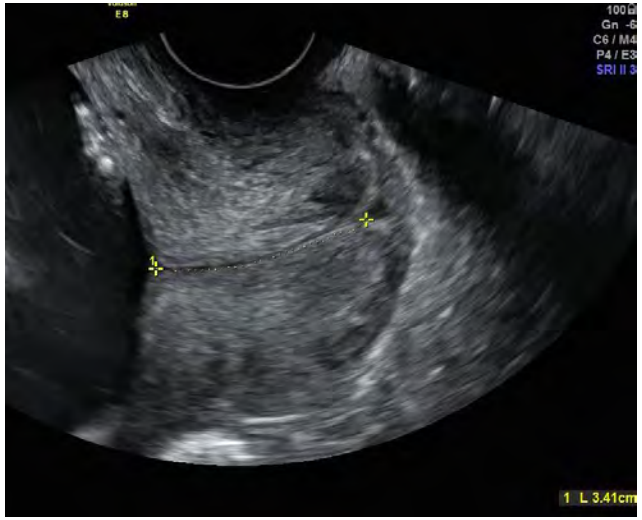
Mid-Pregnancy Cervical Length

- Measurement of cervix length to be included in all mid-pregnancy scans, conducted routinely at 18-20 weeks' gestation, as well as for any other scan between 16 and 24 weeks.
  - Closed length from internal to external os
  - TA: >35mm is considered adequate
  - TV: <25mm is considered short
- TA-USS the cervix is stretched by the full bladder, therefore a ***true length*** of the cervix is performed with an empty bladder via TV-USS.
- Universal screening is cost-effective
  - Easy to perform
  - Prescribing progesterone cheaper than cost of PTB

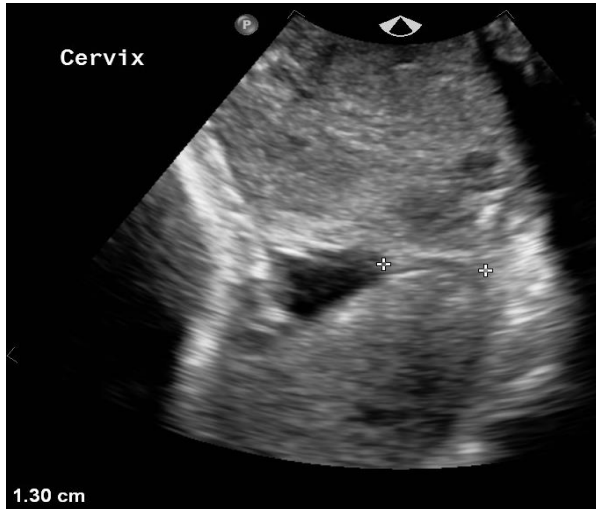
Measurement of the length of the cervix at all mid-pregnancy scans.

Recommendation: With morphology scan request, include on same form “progression to TV-USS if cervical length is < 35 mm” (usually provided at no extra cost to patient)
If TV-USS < 25mm - urgent referral and commence natural vaginal Progesterone pessaries (200 mg nocte) the same day

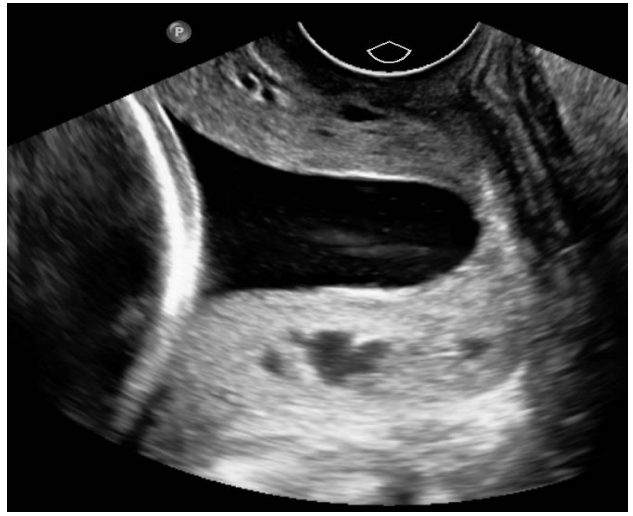
The short cervix on trans-vaginal scan 16 – 24 weeks



Normal
(34 mm)



Short with open cervix
(13 mm)



Open cervix

Natural vaginal progesterone pessaries will halve the risk of preterm birth in women with a short cervix in mid-pregnancy

Australian Preterm Birth Alliance

Point 5: Consider prophylactic progesterone therapy from 16–24 weeks gestation in women with a singleton pregnancy and prior spontaneous PTB (RR 0.66 - from 27.5% to 18.1%)

- If indicated, recommend vaginal progesterone suppository 200 mg daily until at least 34 weeks' gestation, or rupture of membranes or birth, whichever occurs first

Point 3: Recommend immediate progesterone therapy for asymptomatic women with an incidentally diagnosed short cervix on TVCL assessment in the second trimester, and contact booking hospital obstetrician

Preterm births: leading cause of death in children < 5yrs, with one in 11 babies born prematurely in Australia.
Earlier baby is born, more likely to experience neonatal death or complicated medical problems/ extended NICU admission, and increased risk of ongoing lung disease, disability (blindness/deafness/cerebral palsy) and ongoing intellectual and developmental delay.

Morning Tea

Session 2

Time	Session name	Presenter	Delivery
10:50 am	Preconception Consult 4 – Case Discussion	Group Spokesperson Dr Kim Nolan	Facilitated groups Power Point Presentation & Forum Discussion
11:20 am	Preconception Consult 5 – Case Discussion	Group Spokesperson Dr Kim Nolan	Facilitated groups Power Point Presentation & Forum Discussion
11: 50 pm	Preconception Consult 6 – Case Discussion	Group Spokesperson A/Prof Greg Duncombe	Facilitated groups Power Point Presentation & Forum Discussion
12:30 pm	Reproductive Carrier Screening What's New in the Care of the Pregnancy with Maternal/Fetal Complexities in MSHHS	A/Prof Greg Duncombe	
1:00 pm	Lunch	ALL	ALL

AM2 Case Discussion – Pink Group

- Naomi, a young Aboriginal woman, presents thinking she may have contracted chlamydia again.
- You have seen her about a year ago at age 16 years with her first episode, and at that time you arranged treatment and encouraged her to return to discuss contraception, but she has not followed up with any doctors.
- She admits to high alcohol intake at weekends, and sometimes can't recall her sexual partners as she is so intoxicated.
- She is carrying a vaping device and admits to using other substances when socializing.
- Naomi eats mainly a vegetarian diet and has a BMI of 17.2

She has a 15 min appointment - Outline your approach to best management at this appointment and in maintaining her sexual and reproductive health in the longer term.

Identifying this woman's issues

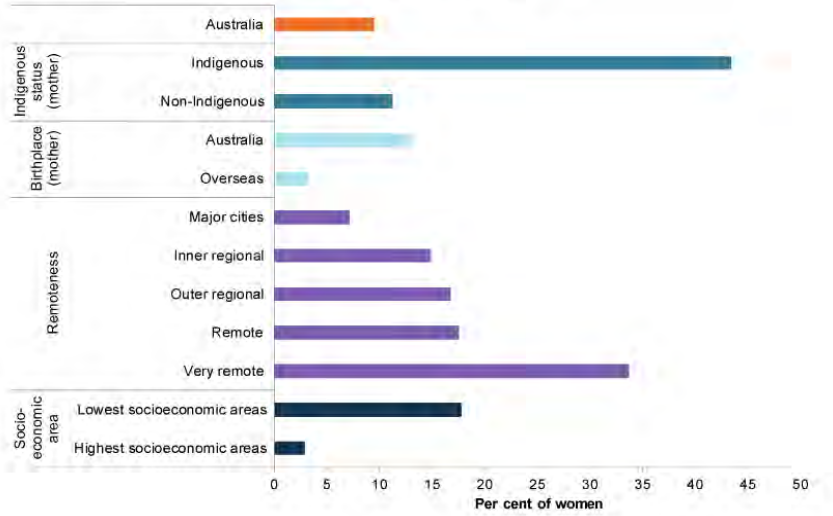
- Age –
- Ethnicity/Indigenous Status –
- BMI –
- BP –
- Obstetric History –
- PHX – Medical and Surgical HX –
- Medications, including OTC/supplements –
- Allergies –
- FHX –
- Social History – including supports/DV
- Occupation –
- Smoking/Alcohol/ Other Substances –
- Healthy diet and exercise –
- Vaccinations (+ Travel) -

- Clinical Assessment –
- Investigations –
- Management Plan –

Preconception care for the very young and disadvantaged patient

- Preconception care - especially important to adolescents and young women in vulnerable populations.
- Adolescent parenthood is more common in low socioeconomic groups and Aboriginal and Torres Strait Islander communities and is associated with poor birth outcomes and adverse health effects, including mental health issues and substance misuse
- Aboriginal and Torres Strait Islander infants are more likely to be premature or with low birth weight.
- Decreased folate supplementation is associated with being a woman from a lower socioeconomic group, being an Aboriginal and Torres Strait Islander person, or being younger or from a rural area. Awareness of folic acid related to income, educational level & younger age. Other dietary supplements may follow similar gradients.
- Smoking and alcohol use in pregnancy show socioeconomic gradients. More likely to smoke during pregnancy if young, on low income and of low socioeconomic status, Aboriginal and Torres Strait Islander, single mothers & women experiencing addiction, violence and mental health issues.
- Women from CALD backgrounds are more likely to experience poorer perinatal outcomes.

Figure 3: Smoking in pregnancy by selected population groups, 2017



https://www.aihw.gov.au/reports/children-youth/australias-children/contents/health/smoking-drinking-pregnancy (last updated Feb 2022)

Guidelines-for-preventive-activities-in-general-practice (RACGP) https://www.racgp.org.au/getattachment/1ad1a26f-9c8b-4e3c-b45b-3237272b3a04/Guidelines-for-preventive-activities-in-general-practice.aspxentive activities prior to pregnancy)

What can GPs do?

[Adolescent Health GP Resource Kit, 2nd edition]

- Provide youth-friendly care to adolescent parents through non-judgemental, competent, considerate and respectful advice and services
- Offer women culturally appropriate resources, including in the mother's own language, about health issues and the health system, and consider the use of interpreters
- Link women into English language and perinatal education courses, and offer cultural brokerage through maternity liaison officers or bilingual health workers wherever possible
- Refer to the general principles of providing patient education and supporting health literacy in disadvantaged groups

Guidelines-for-preventive-activities-in-general-practice (RACGP) https://www.racgp.org.au/getattachment/1ad1a26f-9c8b-4e3c-b45b-3237272b3a04/Guidelines-for-preventive-activities-in-general-practice.aspxentive activities prior to pregnancy)

	Logan area demographics	Beaudesert demographics	Redland LGA demographics
Born Overseas	34%	18.9%	26.5%
Household Main Language Other than English	21.1%	-	9.8%
Identify as Aboriginal &Torres strait Islander	4.2%	8.1%	2.9%
Notes	Brisbane South - area of highest refugee settlement in Qld 		Bay Island residents ranked in most disadvantaged Quintiles, but overall Redland City LGA population in higher Quintiles

Australian Bureau of Statistics – Census Data 2021 - https://abs.gov.au/census/find-census-data/quickstats/2021/UCL314003

Chlamydia

- Urethra First Pass Urine - NAAT (Nucleic acid amplification test) - Less sensitive than self-collected vaginal swab
- Clinician collected endocervical swab – still best test
- Anorectal swab – in patients with anorectal symptoms

Not only the most common bacterial STI in Queensland – it's the most common in the world.
Nearly 80% of people who are diagnosed aged 15-29 & most asymptomatic.

Chlamydia management advice has changed

- Doxycycline (in non pregnant) is the recommended treatment for *trachomatis* in all anatomical sites.
- To improve antibiotic stewardship, immediate treatment is not recommended for all sexual contacts of chlamydia – instead, offer testing of exposed anatomical sites and await results.
- If a patient has an IUD, leave it in place and treat as recommended. Seek specialist advice as needed.
- Advise no sexual contact for 7 days after treatment is administered.
- Advise no sex with partners from the last 6 months until the partners have been tested and treated if necessary. All partners should be traced back for 6 months and the diagnosing doctor is responsible for initiating and documenting a discussion about contact tracing.
- Consider presumptive treatment if there has been sexual contact within the past 2 weeks or when the person's individual circumstances mean later treatment may not occur.
- Test of cure 4-6/52 later - ? Swab or urine

Chlamydia - STI Guidelines Australia: https://sti.guidelines.org.au/sexually-transmissible-infections/chlamydia/

Full STD screen – including SYPHILIS

Notifications of bloodborne viruses and sexually transmissible infections (BBVSTIs) in Queensland: 1 January–31 December 2022

compared with the previous 5-year YTD average

- Gonorrhoea notifications increased by 11%
- Hepatitis B and Chlamydia notifications - comparable, Hepatitis C notifications dropped by 14% and new HIV diagnoses decreased by 32%
- 10% increase in infectious syphilis notifications in women of reproductive age compared with the previous 5-year average.

- Of 261 female cases, 236 (90%) in women of reproductive age, 35 of whom were pregnant.
- Rate of infectious syphilis notifications reported among pregnant women was almost 3 x the Queensland rate (60 vs. 21 per 100,000 population), with notifications in First Nations Queenslanders accounted for 24 per cent of the total.
- Rate of syphilis notifications reported among First Nations Queenslanders was 6.5 x higher than in other Queenslanders.
- Infectious syphilis cases were notified across all age groups with 66% of notifications in people aged 20 to 39 years

Reducing the burden of chlamydia in Australia

What are the gaps?

- *Improve chlamydia retesting* - reinfection rates are high with about 20% young women reinfected after treatment. Retesting is recommended at 3 months after treatment to identify possible reinfection ? Should it be done earlier
- *Improve PID diagnosis* - 20-30% of PID in community due to chlamydia. Untreated, around 17% of will progress to PID, with the risk of PID increasing by 20% with each repeat chlamydia infection
- *Move away from asymptomatic screening* - *?* possible harms from asymptomatic screening, including increased potential for antimicrobial resistance (inappropriate antibiotic use and overuse), psychological distress associated with false positive diagnoses, and adverse impacts on microbiota
- *Enhance partner notification and management* - Notifying, testing and treating sexual partners from previous 6/12 helping to interrupt ongoing transmission & reduce risk of reinfection and complications. Patient-delivered partner therapy can be an effective way to both treat the partners and reduce reinfection in the index case*. Australian study – 75 % sexual partners also test positive*
- *Embrace new testing approaches* – increased telehealth, increasing home sampling kits for posting back to lab, e-prescriptions, and trials of online sexual health hubs might help to overcome identified barriers to accessing traditional sexual health service delivery, including concerns about privacy, confidentiality, and perceived stigma

Med J Aust 2022; 217 (10): 499-501; doi: 10.5694/mja2.51749 - https://www.mja.com.au/journal/2022/217/10/chlamydia-prevention-and-management-australia-reducing-burden-disease (November 2022)

Preventing PID

- RACGP Guidelines for Preventative Activities in General Practice recommend opportunistic screening for *C. trachomatis* in sexually active persons 15–19 years due to prevalence and risk of complications in this cohort.
- Chlamydia trachomatis and Neisseria gonorrhoea are commonly isolated during the diagnostic evaluation of approximately one-third to one-half of women presenting with PID
- In approximately 20–30% of cases of clinically evident PID, no causative organism will be isolated; therefore, initiation of empirical therapy is warranted on clinical grounds alone, after clinical assessment and swab collection. Clinicians should have low threshold for diagnosing PID in sexually active young women with pelvic or lower abdominal pain. Early and effective antibiotic treatment reduces the long-term morbidity of PID.
- If an IUD is in place, it can be left in situ unless no improvement seen in 48-72 hours and if removed, an IUD can be replaced after treatment completed. (Risk PID post IUD high for 20/7 post insertion only, then back to baseline)
- Despite good clinical response to antibiotics, approximately 18% of women will report infertility, 0.6–2.0% go on to have ectopic pregnancy and 30% chronic pelvic pain at three years after treatment
- Recurrent infections associated with a marked increase in the risk of infertility - risk of tubal infertility increases with recurrent PID and, after 3 episodes, > 50% of women will have tubal dysfunction.

1. Pelvic inflammatory disease and infertility, AJGP Vol 52(4), April 2023 – Sarah Hunt and Beverley Vollenhoven, Monash University & Monash IVF
2. New best practice guidance for GPs to reduce chlamydia associated reproductive complications in women, AGJP Vol 50(1), Jan-Feb 2021

“Let Them Know”

Helpful websites for anonymous notification:

- letthemknow.org.au (for people diagnosed with an STI)
- thedramadownunder.info (for men who have sex with men)
- bettertoknow.org.au (for Aboriginal and Torres Strait Islander people)

OR with GP help: “Let Them Know” - https://letthemknow.org.au/DocInfo.html

"Don't fool around with syphilis" - Australian Govt campaign

Campaign webpage - includes downloadable resources (Fact Sheets for priority populations and health professionals, & posters) - https://www.health.gov.au/campaigns/dont-fool-around-with-syphilis

Syphilis during pregnancy

Untreated syphilis during pregnancy can lead to the mother passing the infection to their baby before birth.

This can cause miscarriage, stillbirth, premature births, low birth weight and death of the baby shortly after birth.

A baby with congenital syphilis can experience serious health issues that affect their growth and development, such as permanent organ and brain damage.

Some babies affected by congenital syphilis won't show symptoms until they grow older, which can lead to a delay in diagnosis.

Get regular syphilis tests

Regular testing for syphilis is important, even if you don't have symptoms. If detected, it can be treated early and prevent serious health complications.

Pregnant women should also be tested at their first antenatal visit to prevent congenital syphilis.

Pregnant women with a high risk of infection or reinfection should get tested regularly at:

- the first antenatal visit
- 28 and 36 weeks
- the time of birth
- 6 weeks after the birth.

See your local doctor to assess your risk of contracting syphilis and get tested.

Syphilis screening in Metro South Health

- In last 3-5 years steady increase of Qld notifications including in SEQ including several cases of congenital syphilis, affecting both **indigenous** and **non-indigenous** women.
- 15 new Qld cases (2018-2022) includes 9 in SEQ - recent demographic change of pregnant women infected with syphilis.

- 8 of 15 acquired syphilis after 12/40 bloods, of which 5 had further antenatal care, so congenital syphilis may have been prevented with inclusion of routine 28-week syphilis screening.
  NOW RECOMMENDED AS ROUTINE - 28/40 SYPHILIS SCREEN IN ALL PREGNANT WOMEN
- Women considered to be of HIGH Risk may be screened repeatedly throughout pregnancy as per the Syphilis in pregnancy: Antenatal care (Flowchart) - Soon to be routine for all at 34-36/40 also
- Testing/treating during first two TMs results in 2.2 X more chance of a healthy baby than 3rd TM treatment. 81% of women giving birth to infant with congenital syphilis diagnosed LATE pregnancy
- If Pregnant , refer back as **URGENT** to AN clinic with the test results if positive and liaise with Obstetrician re commencing treatment ASAP.
- QSSS Phone: 1800 032 238 / Email: South Queensland - QLD-Syphilis-Surveillance-Service@health.qld.gov.au

Queensland Clinical Guidelines – Syphilis https://www.health.qld.gov.au/__data/assets/pdf_file/0035/736883/g-sip.pdf

Syphilis in pregnancy – Clinical Guidelines

Risk assess all women

Universal risk
- All pregnant women

High risk
- Sexual contact with infectious syphilis case
- Woman or partner identify as Aboriginal and/or Torres Strait Islander AND reside in an outbreak declared area
- Substance use – particularly methamphetamine ('ice')
- Woman's partner is MSM
- Late, limited or no antenatal care
- Engages in high risk sexual activity

Antenatal screening

All pregnant women
- Serology at first antenatal visit (preferably < 10 weeks gestation)
- Repeat serology at 26–28 weeks gestation
- Dry swab (PCR) if lesions/chancre present
- Repeat if change in risk status

If high risk
- Serology at first antenatal visit (preferably < 10 weeks gestation)
- Around 20 weeks gestation (opportunistically between 16–24 weeks)
- 26–28 weeks gestation
- 34–36 weeks gestation

Test at birth if (any of the following)
- Syphilis treated during pregnancy
- Woman is *high risk*
- If no serology after 26–28 weeks AND
  - Woman or her partner identify as Aboriginal and/or Torres Strait Islander
  - Adolescent pregnancy
  - STI in current pregnancy/last 12 months
  - Ongoing sexual links in high prevalence countries (woman or partner)
  - Preterm birth with most recent serology > 4 weeks before birth
- Indicated following risk assessment

https://www.health.qld.gov.au/__data/assets/pdf_file/0035/736883/g-sip.pdf - Queensland Clinical Guidelines – Syphilis

https://www.health.gov.au/resources/pregnancy-care-guidelines/part-f-routine-maternal-health-tests/syphilis – Australian Guidelines

Long-term side effects of STIs

The long term effects of STIs are no laughing matter.

- Pelvic Inflammatory Disease
- Chronic Pelvic Pain
- Higher risk Ectopic Pregnancy
- Infertility
- Neonatal infection – Chlamydial or Gonorrhoeal Conjunctivitis, Pneumonia, Congenital Syphilis
- Cervical Cancer (HPV)
- Secondary Syphilis – rash/flulike illness/fatigue/joint pain
- Tertiary Syphilis - heart disease, mental illness, blindness, deafness, dementia & neurological problems, death

[The long-term effects of STIs: why you should get checked now | Stop the rise (initiatives.qld.gov.au)]

Three types of Emergency Contraception

- Levonorgestrel emergency contraceptive pill
  - available without a prescription (many brand names)
  - taken within 72 hours after unprotected sex - might still have some effect up to 96 hours
  - can be used more than once in a cycle, but not used in same cycle as Ulipristal
- Ulipristal acetate emergency contraceptive pill (selective progesterone receptor modulator)
  - available without a prescription (EllaOne)
  - taken within 120 hours (5 days) after unprotected sex

If vomiting within 2 hours of taking the levonorgestrel emergency contraceptive pill or 3 hours of the ulipristal acetate pill it might not work, so taking another one is recommended.

- Copper intrauterine device (IUD) - inserted within 5 days of unprotected sex by a trained doctor or nurse

Emergency Contraception

- Most common side effects of both oral ECP - nausea, headache & dysmenorrhoea, may be intermenstrual bleeding and next period may be earlier or later than expected.

- Ulipristal acetate is more effective than levonorgestrel, but efficacy of both depends on how soon used, and when in cycle (less effective if ovulation has already occurred).

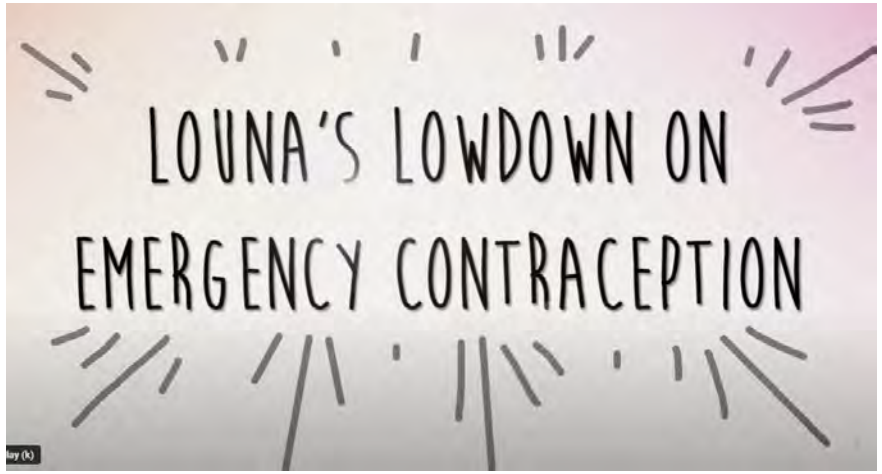
- Ulipristal acetate x 2 as effective if used within 72/24 or within 5/7 of unprotected sex. When taken within the first 24/24, reduces unplanned pregnancies by 2/3 compared with levonorgestrel.

- Ongoing contraception essential:
  - After Levonorgestrel – "Quick-start" by recommencing OCP immediately or insert contraceptive implant ASAP
  - After Ulipristal (selective progesterone receptor modulator, so are concerns that:
    - its effect in delaying ovulation might be reduced by quick-starting progestogen-containing contraceptive
    - the effectiveness of progestogen-containing contraceptive might be compromised because of competition at the progesterone receptor site)
  - use barrier method/abstain until effective contraceptive cover in place,
  - and if wants to restart OCP, do not start for 5/7, & start with active hormone tablet no matter if spotting or not
  - OR make an appointment in5/7 for contraceptive implant insertion

Double-blind trial compared ulipristal and levonorgestrel in women presenting within 72 hours of unprotected intercourse in 775 women
https://www.nps.org.au/australian-prescriber/articles/ulipristal-acetate-for-emergency-contraception

Table - Efficacy of ulipristal and levonorgestrel for emergency contraception

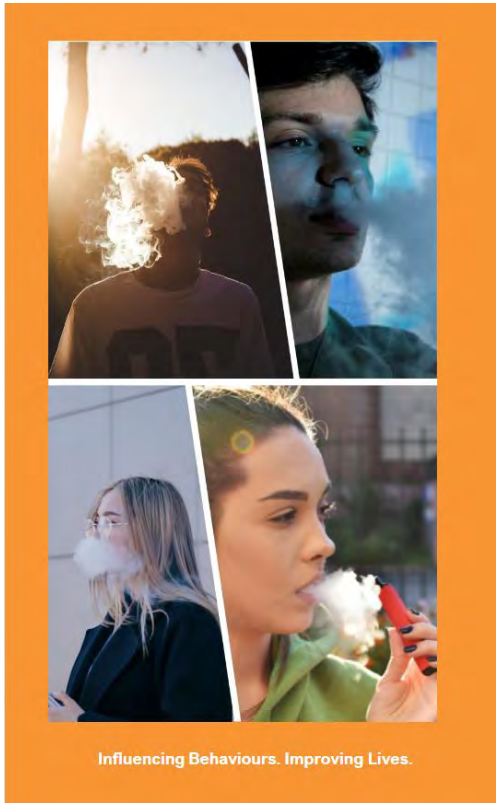
Time after unprotected sex	Pregnancies per patient population	
	Ulipristal	Levonorgestrel
0–24 hours	5/584 (0.9%)	15/600 (2.5%)
0–72 hours	22/1617 (1.4%)	35/1625 (2.2%)
0–120 hours	22/1714 (1.3%)	38/1731 (2.2%)



This short video explains everything you need to know about emergency contraception, like the morning after pill, that is available over the counter from a pharmacist.
The video was made by the Royal Women's Hospital with Louna Maroun to inform teenagers about this safe, effective form of contraception to prevent an unplanned pregnancy

The Royal Women's Hospital: Louna's Lowdown on Emergency Contraception

https://www.youtube.com/watch?v=N5yNDIrq1Rk



Vaping: results are in

Published Saturday, 27 May, 2023 at 07:45 AM

JOINT STATEMENT

Premier and Minister for the Olympic and Paralympic Games
The Honourable Annastacia Palaszczuk

Minister for Health, Mental Health and Ambulance Services and Minister for Women
The Honourable Shannon Fentiman

Tests on popular vapes have revealed staggering amounts of nicotine plus chemicals including arsenic and formaldehyde.

Premier Annastacia Palaszczuk asked parliament's Health and Environment Committee to perform the tests amid concerns consumers were unaware what the vapes contain.

The Committee continues to evaluate their availability and use among children.

The Committee analysed the chemical composition of 17 e-liquid samples currently available of the Queensland vape market.

Lab tests were performed for the presence of nicotine plus other substances including carbonyl compounds, volatile organic compounds, pesticides, fungicides and herbicides and heavy metals.

Key findings include:

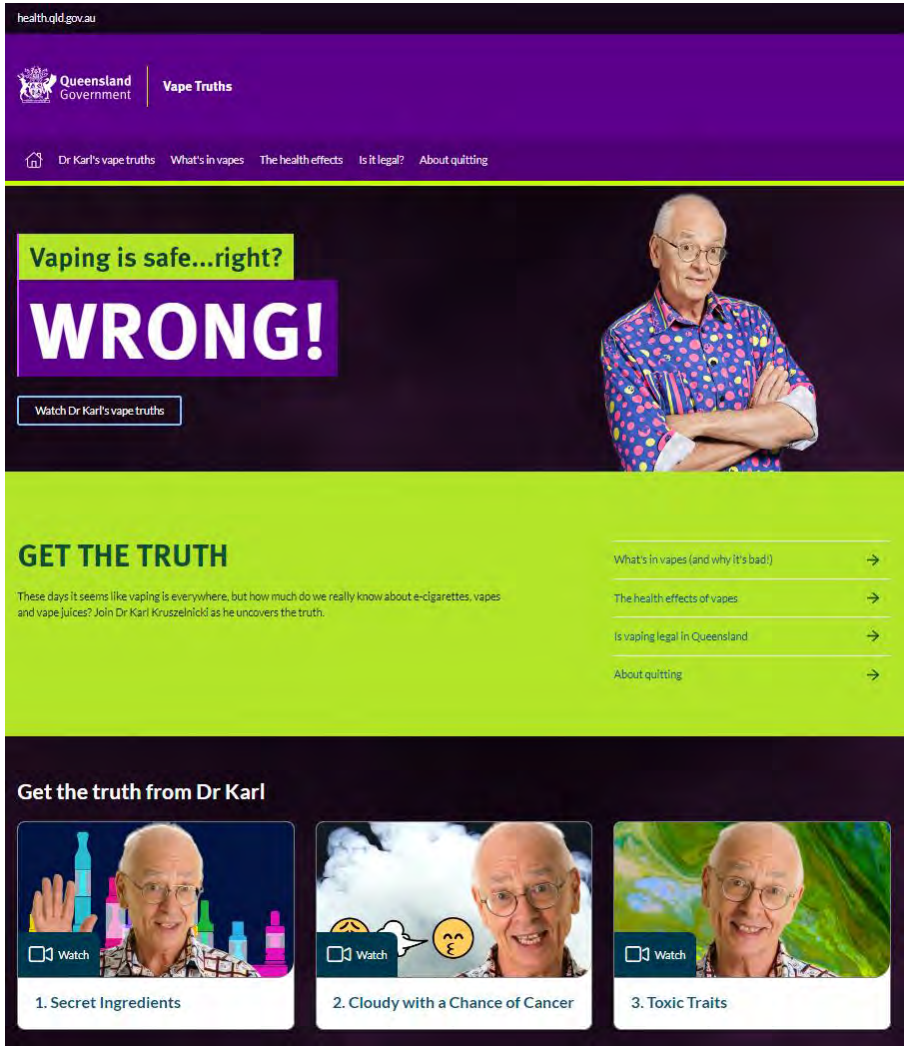
- All samples tested positive for nicotine.
- The nicotine content ranged from trace levels (less than 200 mg/kg) to 47,000 mg/kg. All samples contained at least two carbonyl compounds: formaldehyde and acetaldehyde. Formaldehyde is classified as a group 1 human carcinogen.
- All samples contained Volatile Organic Compounds. VOCs are typically used in the manufacture of paints, pharmaceuticals and refrigerants.
- All samples contained arsenic and zinc. Other toxic heavy metals included lead, mercury, nickel, chromium, antimony, aluminium, iron, nickel, barium, manganese, copper, strontium and vanadium.

Under Queensland law, vaping devices containing nicotine may only be obtained from a pharmacy using a prescription.

Vapes containing nicotine sourced from retailers are illegal.

A number of these heavy metals are known to be carcinogenic, mutagenic, toxic to reproduction and development and cause neurological anomalies.

The federal government has announced a ban on all but vapes prescribed by health professionals.



"Insufficient evidence as to how e-cigarette use relates to pregnancy and foetal outcomes, such as low birth weight, preterm birth, Apgar score and small-for-gestational-age birth, among exclusive e-cigarette users and dual users.

No available evidence as to how use of e-cigarettes affects other reproductive outcomes"
Electronic cigarettes and health outcomes: systematic review of global evidence _ Report for Australian Dept Of Health (April 2022)

Vape Truths - Queensland Govt Education Online

HEALTHY PREGNANCY HEALTHY BABY
Healthy pregnancy weight gain training

Healthy pregnancy weight gain is an important part of any healthy pregnancy to optimise pregnancy and future health outcomes for mothers and their offspring. Monitoring weight during pregnancy, coupled with a conversation between a woman and her health professional about progress, healthy eating and physical activity is a recommended part of routine care for all women.
This Healthy Pregnancy Healthy Baby, pregnancy weight gain training is designed to prepare health professionals to engage in respectful conversations about weight and lifestyle and equip them to deliver best practice care consistent with current evidence.

The content has been developed in consultation with a reference group of Queensland health professionals. The suite of online professional development resources is broken down into **7 short modules** with a total completion time of **90 minutes**. Each module will take around 10-15 minutes to complete including a knowledge check. The training is flexible, allowing learners to do one module and come back later to complete others. A certificate is available on completion of the post–training questionnaire.

This training package is suitable for any member of the multidisciplinary team caring for pregnant women including, midwives, obstetricians, physicians, general practitioners, practice nurses, dietitians, physiotherapists, and other allied health practitioners.

https://metronorth.health.qld.gov.au/health-professionals/healthy-pregnancy-healthy-baby

Dietary needs and special considerations

Module 7

Special considerations

Duration: approximately 16 minutes

By the completion of this module you should be able to:

- Describe an approach to discussing weight monitoring with women who have had, or currently have an eating disorder
- Describe the risks associated with weight loss and inadequate weight gain in women with a pre-pregnancy BMI > 30 kg/m^2
- Understand the weight gain recommendations for pregnant women who have had weight loss surgery.

Webinar 1: Women with a history of an eating disorder.

Watch the video >

Video: Stephanie Heard – approaching the topic of weight monitoring

Watch the video >

Webinar 2: Weight gain below recommendations in women with a pre-pregnancy BMI of 30 kg/m^2 or above and women who have had weight loss surgery.

Watch the video >

Take the Knowledge Check >

Additional Resources:

- National Eating Disorders Collaboration
- Butterfly Foundation
- Claydon et al, 2018. Waking up every day in a body that is not yours: a qualitative research inquiry into the intersection between eating disorders and pregnancy. BMC Pregnancy and Childbirth
- Kimmel et al, 2015. Obstetric and gynaecologic problems associated with eating disorders. International Journal of Eating Disorders
- Watson et al, 2017. Maternal eating disorders and perinatal outcomes: A three- generation study in the Norwegian Mother and Child Cohort Study (PDF)
- Mantel et al, 2019. Associations of maternal eating disorders with pregnancy and neonatal outcomes. JAMA Psychiatry
- Xu et al, 2017. Inadequate weight gain in obese women and the risk for small for gestational age (SGA): a systematic review and meta-

AM2 Case Discussion – Purple Group

- Sarah is a healthy 38-year-old previous athlete - already has 3 children, with her youngest aged 3.5years.
- All pregnancies were uneventful - her two older children are teenagers (previous partner), and she wishes to have another baby with the father of her toddler.
- You cared for her in a shared care capacity with the last pregnancy, but since then she has been seeing another GP, and comes back to see you after 3 first trimester miscarriages in the last year. The last of these was likely an anembryonic pregnancy on the reports you have, with a miscarriage at 8.5 weeks. Viability and a fetal heartbeat had been identified in the other pregnancies, before they "failed" (her words).
- She did have a TOP 20 years ago followed by severe depression, requiring psychologist support and antidepressants for around 2 years. Her mood is generally “chilled”, but she is becoming increasingly worried and anxious with each subsequent pregnancy loss.

Identifying this woman's issues

- Age –
- Ethnicity/Indigenous Status –
- BMI –
- BP –
- Obstetric History –
- PHX – Medical and Surgical HX –
- Medications, including OTC/supplements –
- Allergies –
- FHX –
- Social History – including supports/DV
- Occupation –
- Smoking/Alcohol/ Other Substances –
- Healthy diet and exercise –
- Vaccinations (+ Travel) -

- Clinical Assessment –
- Investigations –
- Management Plan –

Recurrent Pregnancy Loss

- Queensland Health Definition of Miscarriage - Pregnancy loss occurring before 20 completed weeks of gestation or at less than 400 g birth weight.
- Recurrent Pregnancy Loss: Definition ≥ Three (3) CONSECUTIVE miscarriages (excluding chemical miscarriages) as documented by ultrasonography or histopathologic examination.
- Second trimester miscarriages are considered more significant. Two (2) would be an indication for further investigation.
- Recommend specialist gynaecological consultation after three consecutive miscarriages. After two consecutive miscarriages, consider the woman's age in relation to opportunity to achieve a live birth.
- Individualise the investigation of recurrent RPL based on a comprehensive history of both partners and the clinical circumstances

Queensland Clinical Guidelines – Early Pregnancy Loss
https://www.health.qld.gov.au/__data/assets/pdf_file/0033/139947/g-epl.pdf

Risk Factors for recurrent miscarriage

- Very young or older female age
- Older male age
- Very low (BMI < 18.5) or very high body mass index (both partners)
- Black ethnicity
- Previous miscarriages
- Smoking, alcohol, illicit drug use, excess caffeine (> 3 cups/day) – both partners
- Stress levels, night shift working, air pollution and exposure to pesticides
- UNEXPLAINED in ≥ 50% of cases

https://spotonhealth.communityhealthpathways.org/24155.htm
- Recurrent Miscarriage

Consequences of Miscarriage, and especially recurrent miscarriage =

- Sentinel risk marker for obstetric complications, including preterm birth, fetal growth restriction, placental abruption and stillbirth in future pregnancies
- Predictor of longer-term health problems, such as cardiovascular disease (1.4 x risk) and venous thromboembolism (6.1 x risk)
- These women should receive care in pre-conception clinics and ante-natal clinics for high-risk women

Psychological consequences include increases risk of anxiety, depression, PTSD and suicide

- Miscarriages poorly understood by general population + often leave women (and sometimes their partners) feeling at fault and not seeking treatment and support.
- Couples complain of unsympathetic ‘routine’ clinical care by healthcare providers & diverse opinions by health professionals
- Women and partners who suffer miscarriage generally want to understand why the miscarriage occurred, what they can do to prevent miscarriage from happening again, what the chance is of a subsequent pregnancy resulting in a healthy baby and how to deal with their grief surrounding their loss. Management of these couples in an organised multidisciplinary team setting is recommended.

Costs of miscarriage affect individuals, healthcare systems and society at large

Quenby S et al.; Miscarriage matters: the epidemiological, physical, psychological, and economic costs of early pregnancy loss. Lancet. 2021 May 1;397(10285):1658-1667 https://doi.org/10.1016/S0140-6736(21)00682-6
https://www.tommys.org - Miscarriage Matters

Within an elephant community if a mother elephant loses her baby, the other elephants use their trunks to form a physical #circleofsupport around her. Despite 1 in 4 pregnancies ending in loss before 12 weeks, in 2015, there was no support specific to early pregnancy loss or miscarriage available in Australia.

THE Pink elephants SUPPORT NETWORK

NEWS CONTACT

MISCARRIAGE FIND SUPPORT SUPPORT US ABOUT US

Recurrent Pregnancy Loss

The term recurrent pregnancy loss is used when a woman experiences the consecutive loss of two or more clinical pregnancies. It affects approximately 1 in 200 couples and the emotional toll can be huge.

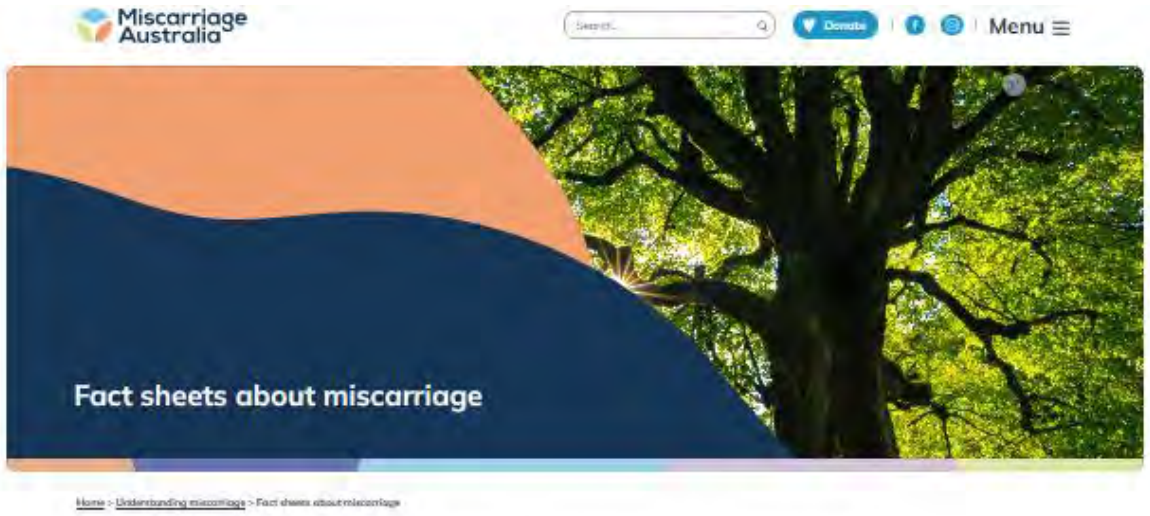
There are many proposed causes, however what can often be most difficult for women emotionally, is that in a number of cases, the cause will remain unknown. Generally, after having experienced several losses in a row, a couple will be referred to a fertility specialist for investigative testing. Some GPs will be able to provide a referral for these tests, but it's more likely that you will see a specialist.

Below is a list of what is generally tested during investigations for recurrent pregnancy loss:

Miscarriage

- WHAT IS MISCARRIAGE?
- RECURRENT PREGNANCY LOSS
- TYPES OF MISCARRIAGE
- CAUSES OF MISCARRIAGE
- MISCARRIAGE TREATMENT & PROCEDURES
- TERMINATION FOR MEDICAL REASONS
- TRYING AGAIN - HEALTH & WELLBEING
- ASSISTED CONCEPTION
- MOVING BEYOND MISCARRIAGE

https://www.pinkelephants.org.au/page/123/recurrent-pregnancy-loss



[Fact sheets about miscarriage - Miscarriage Australia]

Recurrent Miscarriage Investigations

- Consider the individual circumstances of each woman (e.g., age, medical history of both partners, family circumstances etc) when determining when further investigation is warranted after recurrent EPL. [1,2]
- About 70% of women who have experienced 2 recurrent losses will conceive a subsequent pregnancy, with a 70% success rate [1,2]
- Risk of further miscarriage increases after each successive pregnancy loss, reaching about 40% after 3 consecutive pregnancy losses[2]
- Risk of miscarriage was increased if the previous pregnancy ended in a preterm delivery, caesarean section, or if the woman had gestational diabetes [7]
- Women who themselves were born small for gestational age had an increased risk of miscarriages [7]
- A previous live birth does not prevent a woman experiencing recurrent miscarriage, and the prognosis worsens with increasing maternal age [2]
- Remains unexplained in up to 50–75%, with investigation outcomes often disappointing and unanswered questions regarding aetiology, further evaluation and future management. [1]

- Evidence that care in a specialised clinic that provides a supportive environment does decrease the chance of miscarriage and increases live birth.

Age related risk of miscarriage

Role of maternal age and pregnancy history in risk of miscarriage: prospective register-based study BMJ 2019; 364 (20 March 2019) https://doi.org/10.1136/bmj.l869

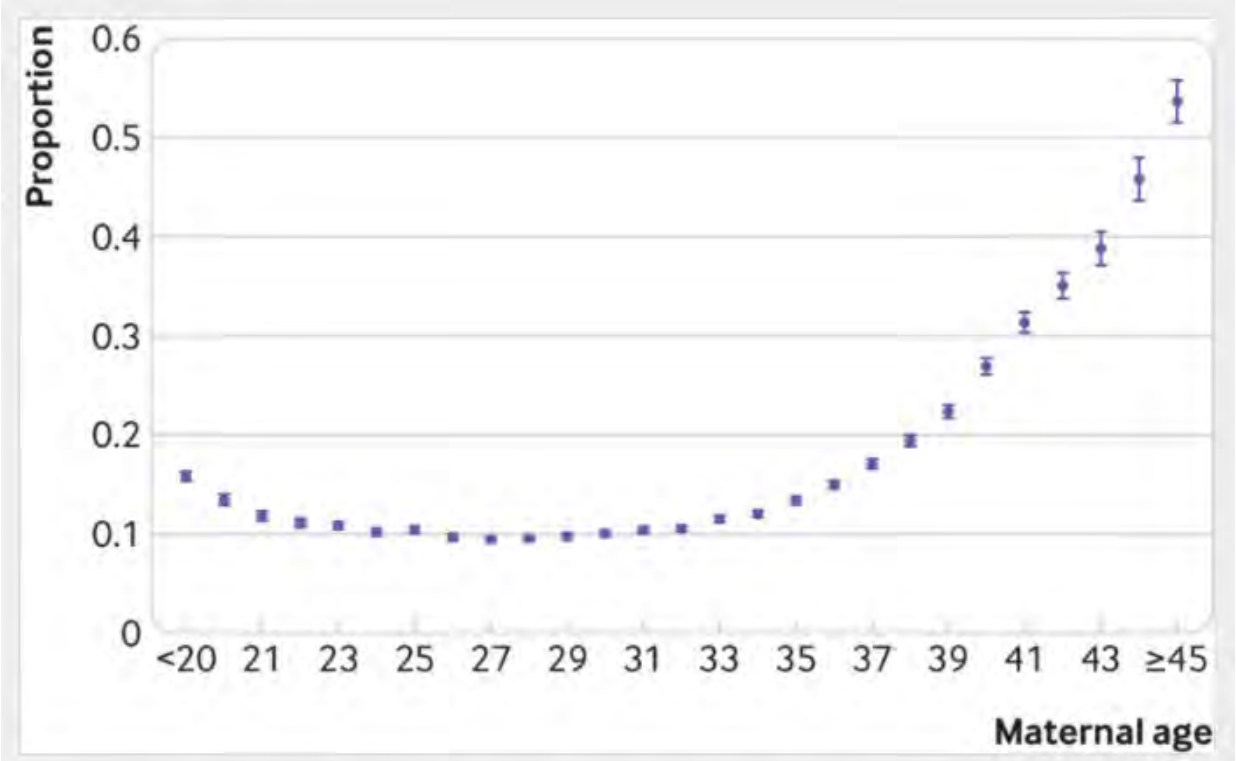


Fig 2
Risk of miscarriage according to maternal age. The bars for each point reflect the 95% confidence intervals

Risk of miscarriage is highest among couples where the woman **is over 35 years of age,** and the man is over 40.

Lowest risk among women aged 25-29 (9.8%), with the absolute lowest risk at age 27 (9.5%), and the highest risk at age 45 and over (53.6%). The youngest mothers (<20 years) had a risk of 15.8%.

Causes of Recurrent Miscarriage

- Uterine anomalies (inclusive of common acquired anomalies, such as fibroids, uterine synechiae and uncommon anatomical defects, such as uterine septae, Müllerian duct anomalies) - none of these cause first TM Miscarriage
- Endocrine disorders (such as thyroid dysfunction, uncontrolled diabetes)
- Autoimmune diseases (such as lupus)

- Acquired (antiphospholipid syndrome) – ask re history of DVT/Pulmonary embolism
- Genetic causes, in particular balanced translocations (one partner affected in 2-5% couples)
- Infections
  - Bacterial – e.g., bacterial vaginosis (in 2nd TM), brucellosis, syphilis, chlamydia
  - Viral – e.g., herpes viruses, rubella, CMV, HIV, dengue
  - Protozoal – e.g., malaria, toxoplasmosis
- Uncontrolled medical illness e.g., chronic hypertension, untreated coeliac disease
- High BMI/PCOS – have possibly increased risk recurrent miscarriage
- Despite normal semen analysis, up to 8% men have high levels of sperm DNA fragmentation, (both reduces the chance of producing a pregnancy & increases chance of miscarriage). Causes of sperm DNA damage include drugs, chemotherapy/radiation therapy, smoking, age, hormonal factors, infrequent ejaculation and testicular hyperthermia.

Examination:

- BMI
- BP
- Endocrinopathy – e.g., hirsutism, goitre, galactorrhoea
- Abdominal examination
- Consider Speculum examination - ? Uterine or cervical anomalies

Investigations

Standard investigations – 6/52 after last miscarriage or when β-HCG negative

- Routine bloods (e.g., FBC, ELFT, fasting blood glucose level (BGL))
- Acquired thrombophilia (APS – test anticardiolipin IgG and IgM, lupus anticoagulant Ab + anti-beta 2 glycoprotein 1 (anti-β_2GP1).) If positive, repeat after 12 weeks for confirmation.

  Testing for congenital thrombophilia is not recommended.
- Thyroid stimulating hormone (TSH) with FT3/4 and antibodies if TSH abnormal
- Coeliac disease testing
- Karyotyping of POC (cytogenetic analysis should be performed on products of conception (POC) in patients with RPL)
- Dedicated pelvic ultrasound scan to exclude structural abnormalities - Two-dimensional/three-dimensional ultrasonography with sonohysterography OR Combination laparoscopy and hysteroscopy.

Investigations

Possible Investigations To Consider

- ? Karyotyping of parents (independent of karyotyping of POC) - balanced chromosomal translocation, seen in 1/400 - ? COST to Patient if POC Karyotype OK
- ? Vaginal swab & Endocervical STI screen - Chlamydia + Gonorrhoea PCR if indicated
- ? ANA/Prolactin
- ? Endometrial biopsy and culture
- ? Semen analysis for abnormality – DNA Fragmentation (sperm chromatin integrity test (SCIT))
- ? Anti-Mullerian hormone (AMH)

Note: Karyotyping of parents is not routinely recommended because ongoing viable pregnancies (over 20/40) with unbalanced translocations in carrier parents are very rare (<1%).

Furthermore, the long-term cumulative live birth rates in carriers of chromosomal abnormalities are good (71% in two years). Additionally, once identified, 15% of carrier couples opt to not try again. Therefore, it is possible that identification of a carrier may have a negative impact on future pregnancy rates, unless pre-implantation genetic diagnosis is more readily available. [4]

Recurrent Pregnancy Loss – RYP Information for Referrals (MSHHS)

First trimester RPL – <u>additional</u> Essential Referral Information

- Thrombophilia screen, antiphospholipid syndrome (APS)
- Autoimmune screen
  - Coeliac serology – serum deamidated gliadin peptide (DGP), tTG Ab
  - Antinuclear antibodies (ANA) only if personal or family history indicates higher risk of autoimmune disease
- Karyotype for both parents

Second trimester RPL – <u>additional</u> Essential Referral Information

- Hysterosalpingogram (HSG) or hystero-sonogram
- US with cervical length

https://metrosouth.health.qld.gov.au/referrals/gynaecology/infertility

Potential Treatments

- For women with unexplained recurrent miscarriages, supplementation with progestogen therapy may reduce the rate of miscarriage in subsequent pregnancy (no RCTs, not included in guidelines, but progesterone supplementation likely causes no harm)[1]
- May improve live birth outcome in women with one or more previous miscarriages and early pregnancy bleeding (Absolute Risk Reduction: 5.72%; 95% CI 1.65 to 9.8) [1]
- There is limited evidence to support an increase in live birth rate (when compared to placebo) of low dose aspirin, enoxaparin or intravenous immunoglobulin. [1]
- Recommend aspirin (75-100mg) and prophylactic unfractionated heparin in the context of antiphospholipid syndrome (APS) and refer to an obstetric physician [1,4] Aspirin alone is ineffective
- Current guidelines suggest treat all women with overt hypothyroidism, and consider treatment of subclinical hypothyroidism (but not treating euthyroid patients with RPL who test positive for thyroid antibodies) [4]
- Male Factors: Lifestyle modification, maintain normal BMI, anti-oxidants, ? IMSI (intracytoplasmic morphologically selected sperm injection) or PICSI (physiological intracytoplasmic sperm injection) [4]

Resources and References

1. https://www.health.qld.gov.au/__data/assets/pdf_file/0033/139947/g-epl.pdf QCG – Early Pregnancy Loss - Section 8: Recurrent early pregnancy loss
2. Hennessy M, Dennehy R, Meaney S, Linehan L, Devane D, Rice R, et al. Clinical practice guidelines for recurrent miscarriage in high-income countries: a systematic review. Reproductive Biomedicine Online 2021;42(6):1146-71. https://www.rbmojournal.com/article/S1472-6483(21)00100-0/fulltext
3. Quenby S, Gallos ID, Dhillon-Smith RK, Podesek M, Stephenson MD, Fisher J, et al. Miscarriage matters: the epidemiological, physical, psychological, and economic costs of early pregnancy loss. The Lancet 2021;397(10285):1658-67 https://ora.ox.ac.uk/objects/uuid:13d1b9ff-56d8-4002-9fd8-4d07685b2427/files/rw0892b27r
4. Hong Li Y, Marren A. Recurrent pregnancy loss: A summary of international evidence-based guidelines and practice. Australian Journal for General Practitioners 2018;47:432-6. https://www1.racgp.org.au/ajgp/2018/july/recurrent-pregnancy-loss
5. Royal College of Obstetricians and Gynaecologists. The Investigation and Treatment of Couples with Recurrent First Trimester and Second Trimester Miscarriage. London: RCOG, 2022. https://ranzcog.edu.au/wp-content/uploads/2022/05/The-Investigation-and-Treatment-of-Couples-with-Recurrent-First-trimester-and-Second-trimester-Miscarriage.pdf
6. https://spotonhealth.communityhealthpathways.org/24155.htm
7. Magnus M et al. Role of maternal age and pregnancy history in risk of miscarriage: prospective register based study *BMJ* 2019; 364 https://doi.org/10.1136/bmj.l869 (Published 20 March 2019)

AM2 Case Discussion – Orange Group

- Kasie, aged 35 years, has attended to plan her next pregnancy.
- She had severe PET with her son born 11 years ago and was told at that time that she needed to be seek advice before or early in any subsequent pregnancy.
- Unfortunately, her weight remains suboptimal (BMI > 36) – but she has been working on her lifestyle measures in the last few weeks as she feels time is running out for her to have another baby.
- She has a new partner – he has not had children before taking on the role of step-dad to Oliver. Kasie knows little of his family history but is aware there was a sibling of his that lived only until early childhood with a genetic disorder ? nature.

Identifying this woman's issues

- Age –
- Ethnicity/Indigenous Status –
- BMI –
- BP –
- Obstetric History –
- PHX – Medical and Surgical HX –
- Medications, including OTC/supplements –
- Allergies –
- FHX –
- Social History – including supports/DV
- Occupation –
- Smoking/Alcohol/ Other Substances –
- Healthy diet and exercise –
- Vaccinations (+ Travel) -

- Clinical Assessment –
- Investigations –
- Management Plan –

Greg’s Slides until LUNCH

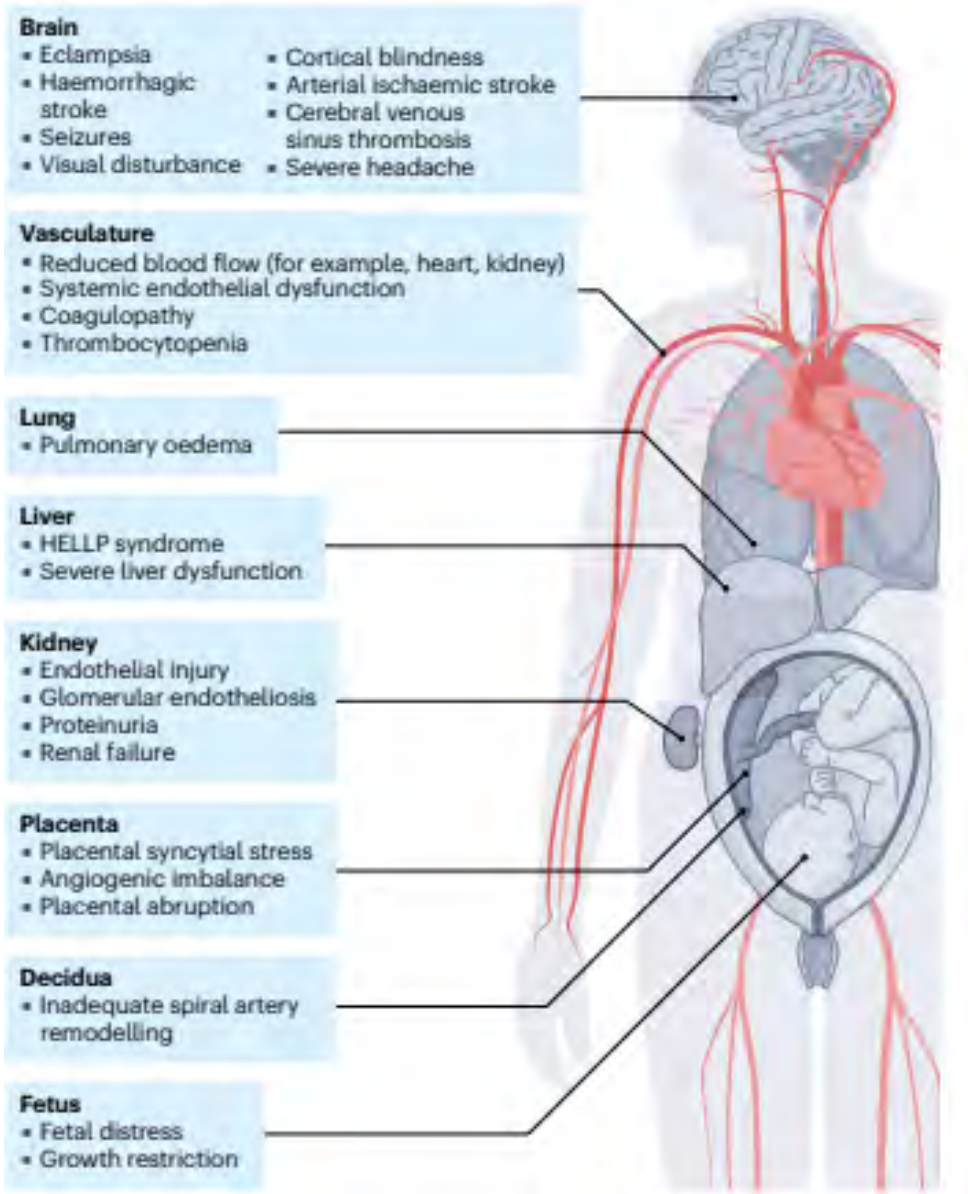
PRE-ECLAMPSIA

Complex multisystem disease, diagnosed by sudden-onset hypertension (>20 weeks') + at least one other associated complication, including:
* proteinuria
* maternal organ dysfunction
* uteroplacental dysfunction

Only found when placenta is or was recently present - classified as preterm <37/40, term (≥37/40) & postpartum

Maternal syndrome of pre-eclampsia is driven by a dysfunctional placenta, which releases factors into maternal blood causing systemic inflammation & widespread maternal endothelial dysfunction

Hypertensive disorders of pregnancy (including pre-eclampsia) are the second most common cause (behind haemorrhage) of maternal deaths worldwide (14%).



https://www.nature.com/articles/s41572-023-00417-6.pdf - https://doi.org/10.1038/s41572-023-00417-6

Queensland Clinical Guidelines

Hypertension in Pregnancy Guidelines – February 2021

Risk factors for pre-eclampsia

- Previous history of pre-eclampsia
- Family history of pre-eclampsia
- Inter-pregnancy interval ≥ 10 years
- Nulliparity and/or multiple pregnancy
- Pre-existing medical conditions
  - Congenital heart defects
  - Pre-existing diabetes
  - Renal disease
  - Chronic hypertension
  - Chronic autoimmune disease
- Age ≥ 40 years
- BMI ≥ 30 kg/m^2
- Maternal depression or anxiety
- Assisted reproductive technology
- Gestational trophoblastic disease
- Fetal triploidy

The presence of multiple risk factors may have additive or synergistic effects, but the combinations with the greatest risk are uncertain.

Table 7. Clinical risk factors for pre-eclampsia

Risk factor	Relative risk [95% CI]
Previous history of pre-eclampsia[20]	8.40 [7.10 to 9.90]
*Adolescent pregnancy (10–19 years)[21]	6.70 [5.80 to 7.60]
Systemic lupus erythematosus[22]	5.50 [4.50 to 6.80]
Chronic hypertension[20]	5.10 [4.00 to 6.50]
Assisted reproductive technology (donor oocytes)[20]	4.34 [3.10 to 6.06]
Pre-existing diabetes[20]	3.70 [3.10 to 4.30]
Family history of pre-eclampsia[23]	2.90 [1.70 to 4.93]
Twin pregnancy (increased risk with multiples)[24]	2.93 [2.04 to 4.21]
Body mass index (BMI) before pregnancy (> 30 kg/m^2)[20]	2.80 [2.60 to 3.60]
Antiphospholipid syndrome[20]	2.80 [1.80 to 4.30]
Nulliparity[20]	2.10 [1.90 to 2.40]
Pre-existing kidney disease[20]	1.80 [1.50 to 2.10]
Assisted reproductive technology (donor sperm)[20]	1.63 [1.36 to 1.95]
Maternal congenital heart defects[25]	1.50 [1.30 to 1.70]
Maternal anxiety or depression[26]	1.27 [1.07 to 1.50]
Inter-pregnancy interval greater than 10 years[20]	1.10 [1.02 to 1.19]
Gestational trophoblastic disease[27]	Unavailable
Fetal triploidy[28]	Unavailable
Fetal aneuploidy[2]	Unavailable

*Limited data (primarily from low resourced countries) may suggest higher incidence in adolescent pregnancies

Other Pre-eclampsia Risk Factors:

Risk factors associated with pre-eclampsia, however, individually, none of these has strong power to predict pre-eclampsia risk and, even in combination, their predictive power is weak

- **Primiparity** x 3 likelihood of PET- ? mechanism - immune maladaptation/maternal alloimmune reaction triggered by rejection of paternal antigens on the fetal allograft (greatest in the first pregnancy), whereas multiparity is protective/reduces PET risk.
- Protective effect lost when subsequent pregnancy involves **new paternally inherited antigens**.
- **Increased risk in adolescents & women ≥35 years** (reported that PET risk increases for every additional year > 32 years)
- **Pre-pregnancy BMI >30 kg/m2** – 2-4 x increased risk of pre-eclampsia with higher prevalence of late-onset pre-eclampsia among obese and overweight women.
- **Untreated overt hypothyroidism and hyperthyroidism** have a higher risk, which may be reduced by treatment with thyroxine replacement or antithyroid drugs, respectively. No increase in risk with subclinical hypo/hyperthyroidism.
- **Previous pregnancies complicated by FGR, placental abruption and stillbirth** increase the risk of pre-eclampsia, especially when associated with early-onset pre-eclampsia or evidence of placental malperfusion.
- Pre-eclampsia is more likely to be associated with **severe COVID-19**, although whether one is causal of the other has not been definitively proven.

Prophylactic Aspirin (LDA) use in pregnancy to reduce Preterm PE and FGR

High Risk Factors - Women with any of the following:	**Moderate Risk Factors -** Women with more than one of the following:
o Hypertension - Chronic o Renal disease o Auto-immune diseases such as SLE, anti-phospholipid syndrome, scleroderma o Diabetes (Type 1 or Type 2) o Past history of pre-eclampsia (20%+ recurrence rate) or HELLP Syndrome o Multiple pregnancy o Age > 40yrs (and consider in adolescent pregnancy)	o Primiparous o BMI > 35 o Family history of pre-eclampsia (mother or sister) o More than 10 years since last pregnancy o Previous low birth weight infant or adverse pregnancy outcome o Low socioeconomic status

150 mg aspirin nocte

BEFORE 16 weeks' gestation

Ideally from 12 weeks until birth

What about calcium? Calcium has been shown to reduce BP, relax smooth muscle, lower resistance in uterine and umbilical arteries. ***If a woman has deficient intake (< 600mg/day), 1.5 g/day is recommended*** *(low-dose calcium supplementation halves the risk of pre-eclampsia (both for early and late onset) in women at high risk of PET, with low dietary calcium intake)*

How does LDA work to prevent PET?

Pathophysiology of pre-eclampsia is not fully understood.

? May be attributed to suboptimal trophoblast invasion during placental formation, which leads to an imbalance of angiogenic and antiangiogenic factors causing endothelial damage and widespread inflammation.

Aspirin primarily acts by inhibiting cyclooxygenase isoenzymes (COX-1 and COX-2) at different dosages. At lower dosages it irreversibly inhibits COX-1, diminishing platelet thromboxane synthesis while maintaining vascular wall prostacyclin synthesis.

Pre-eclampsia prevention may also be partly related to modulation of inflammation, which is exaggerated in patients with preeclampsia.

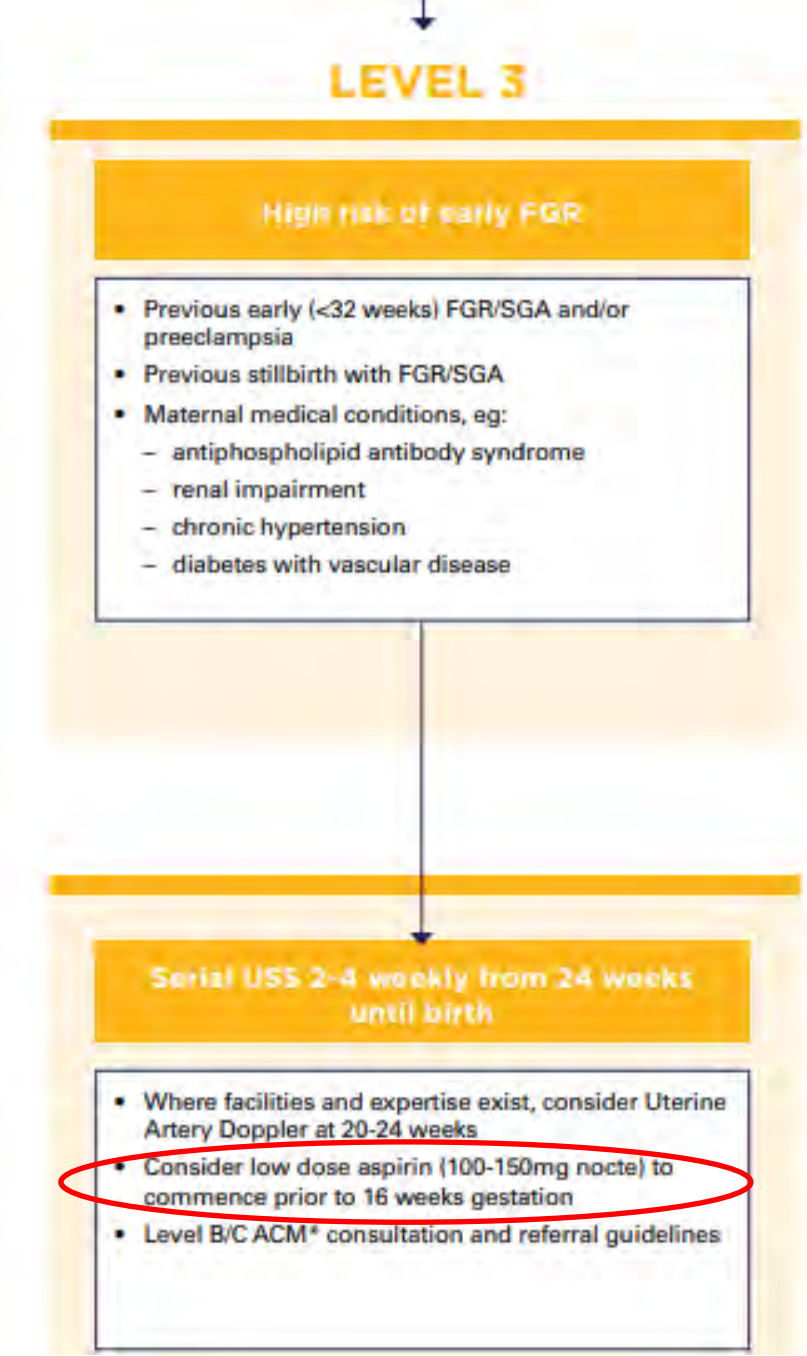
1. RACGP AJGP Vol 51(10), Oct 2022 - Indications for commencing aspirin for prevention of pregnancy-induced hypertension and pre-eclampsia spectrum disorders
2. Aspirin: The Mechanism of Action Revisited in the Context of Pregnancy Complications: Cadavid A.P.; Front Immunol. 2017 Mar 15;8:261. doi: 10.3389/fimmu.2017.00261

High Risk of early Fetal Growth Restriction

- Previous early < 32/40 fetal growth restriction/SGA +/- pre-eclampsia
- Previous stillbirth with FGR/SGA
- Maternal medical conditions e.g.
  - Antiphospholipid syndrome / SLE
  - Renal impairment
  - Chronic hypertension
  - Diabetes with vascular disease
  - Multiple pregnancy

COMMENCE ASPIRIN 100-150mg nocte PRIOR to 16/40

Early referral to hospital ANC



Fetal Growth Restriction (FGR) Care Pathway
for singleton pregnancies

LOW DOSE ASPIRIN in Pre-eclampsia and FGR prevention

In individuals, aspirin provides a statistically significant but clinically modest 10% reduction in pre-eclampsia risk with commencement before 16/40, and ideally before 12/40.
Number needed to treat (NNT) to prevent one diagnosis of preeclampsia is 61 [95% CI 45 – 92]

Further meta-analysis

- suggested aspirin is **reeclampsia** when given to high-risk women from be

Practice Point:

Low dose aspirin reduces early onset PET (<K32) by up to 62%, and PET by K37 by 30%

- Good compliance = 76% reduction

Aspirin for Evidence- ention trial: a multicentre, randomized, double-bl men at high risk identified by means of combined screening with the FMF algorithm further gave convincing evidence that:

Aspirin (150 mg daily) from 11–14/40 until 36/40 (singletons) reduced incidence preterm PE by:

- 62% reduction in the incidence of preterm pre-eclampsia (before 37/40) - (95% CI 20–80%),
- 82% reduction in the incidence of early onset pre-eclampsia (before 34/40)
- No significant reduction in the incidence of pre-eclampsia at term (> 37/40) (detected 44%)

https://doi.org/10.1002/uog.18816 Rolnik DL, Wright D, Poon LC, et al. ASPRE trial: Performance of screening for preterm pre-eclampsia. Ultrasound Obstet Gynecol 2017;50(4):492–95

Pre-eclampsia Screening – on the horizon ……

Fetal Medicine Foundation (FMF) assessed algorithm with 11-13/40 screening, combining:

- maternal history (age, ethnicity, weight & height, medical and obstetric history)
- with mean arterial pressure
- sonographic (uterine artery pulsatility index) and
- biochemical markers (PIGF)

May contribute to early risk reduction interventions to reduce PET, and associated FGR/Preterm birth/Stillbirths by including low dose aspirin use in high-risk women and increased monitoring.

Two approaches to screening were assessed in the UK NHS “Screening Programme for Pre-eclampsia” (SPREE) study involving 16,747 participants.[1]

Detection rate of preterm PET was 41.55% with the risk scoring system recommended by NICE (maternal clinical risk factors alone) compared to 82% when screening was based on the FMF competing-risks model.

FMF screening is particularly effective for **preterm pre-eclampsia** detecting

- ~90% of women who will develop <34 weeks of gestation
- ~80% of women who will develop pre-eclampsia at <37 weeks of gestation
- only 44% of women who will develop pre-eclampsia at ≥37 weeks of gestation

1. Tan, M. Y. et al. Comparison of diagnostic accuracy of early screening for pre-eclampsia by NICE guidelines and a method combining maternal factors and biomarkers: results of SPREE. Ultrasound Obstet. Gynecol. 51, 743–750 (2018) - https://fetalmedicine.org/var/pdf/publications/1115.pdf

Local Research - GCUH MFM - Professor Fabricio da Silva Costa – (A/Director MFM, GCUH & Prof O & G, Griffith University)

Adapting to Australian guidelines an online clinical decision support tool (APP) - UK developed & validated Tommy's Pathway for health professionals + women/pregnant people (Tommy's National Centre for Maternity Improvement – RCOG)

AIMS:

- Assess woman's risk of preterm birth/placental dysfunction and guide care to prevent premature births/stillbirths.
- Limit unnecessary intervention & USS for women incorrectly identified as high risk, and identifying others who may be missed in current risk assessment on history/maternal factors alone (especially primiparous women)
- Provide clinical decision support to healthcare professionals at various stages throughout pregnancy
- Can be used with or without first TM uterine artery doppler studies (inclusion adds approx. 5% extra benefit to calculations)
- Otherwise uses maternal BP, PAPP-A (or PIGF) and maternal factors
- Enables use of low dose Aspirin in those confirmed to be high risk and guides need for growth scans at 26/32/37 weeks.

Tommy's National Centre Study showed significant reduction in adverse outcomes:

- 37% reduction perinatal deaths
- 80% reduction preterm pre-eclampsia
- 40% reduction small for gestational age
- 72% reduction perinatal death with fetal growth restriction/pre-eclampsia
- Reduces total number of growth ultrasounds required (even if first TM doppler not undertaken)

Studied in Australia 30 000 patients – 3 centres [1]

- 30% reduction pre-eclampsia
- 17% reduction preterm birth below 32/40
- 10% reduction SGA/FGR
- > 65% reduction NICU admission for preterm birth

Planning to adapt to Australian Guidelines and clinical settings through pilot study at GCUH in 2023, and then other early adopter sites in phase 2 (MMH and ? regional centres also), with eventual plan to offer across Qld (depends on funding options)

*PIGF – Placental Growth Factor - not Medicare funded in Australia (is UK - NHS funded)

1. Rolnik, D. L. et al. Routine first trimester combined screening for preterm preeclampsia in Australia: a multicenter clinical implementation cohort study. Int. J. Gynaecol. Obstet.(2021) https://doi.org/10.1002/ijgo.14049

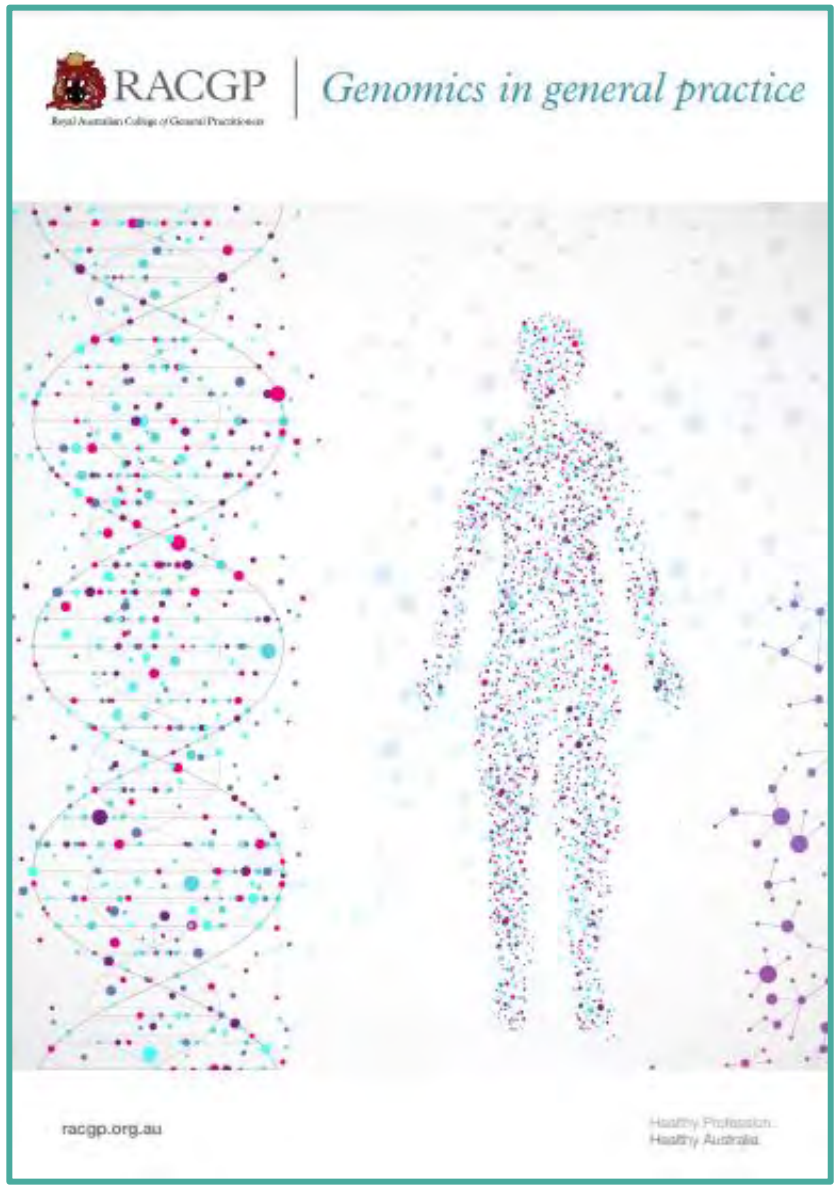
Other preventative strategies ?

- **? Statins** - Trial in 173 women at high risk of developing pre-eclampsia reported that daily pravastatin from the second trimester (14–20/40) until delivery significantly reduced the rate of preterm pre-eclampsia (13.8% versus 26.7% in the control group) and preterm birth. Pravastatin may not be effective at preventing term pre-eclampsia.
- **? Metformin** - in women with BMI >35 kg/m2 given metformin daily from 12–18 /40 until delivery, a significant reduction in pre-eclampsia (OR 0.25, 95% CI 0.1–0.61) & significant reduction in gestational weight gain were reported.
- **? Vitamin D** - daily vitamin D supplementation significantly reduced pre-eclampsia risk (RR 0.29) – meta-analysis 3 RCTs (313 women)

Genetic, Chromosomal or Structural Conditions in the patient/partners history

- Cystic Fibrosis/Spinal Muscular Atrophy /Fragile X Syndrome
- Duchenne muscular dystrophy
- Spina Bifida/Neural Tube Defect
- Thalassaemia/Sickle cell anaemia
- Intellectual impairment/"special schooling" – significant intellectual disability
- Family member who has died as an infant/young child or recurrent fetal losses/stillbirths
- Other Birth Defect e.g., Cleft lip or palate, Skeletal dysplasia
- Metabolic disorder; cardiac or renal congenital condition; haematological disorder e.g., haemophilia; chromosomal disorder incl Tay-Sachs (used to be most common in people of Ashkenazi Jewish descent but many cases now occur in people from other ethnic backgrounds), Inherited immunodeficiency disorders

https://www1.racgp.org.au/ajgp/2019/march/preconception-and-antenatal-carrier-screening-for - Preconception and antenatal carrier screening for genetic conditions: The critical role of general practitioners AJGP Vol 48(3); March 2019



- All women or couples planning a pregnancy, or who are already pregnant, should have a comprehensive family history recorded.
- Women or couples who are **known carriers** of a genetic condition or have a relevant family history should be made aware of the availability of carrier screening and offered referral to specialist services (i.e., genetics or obstetrics).
- **Carrier screening for common recessive (e.g., cystic fibrosis) or X-linked genetic conditions** may be offered to low-risk women or couples (i.e., regardless of family history and ethnicity).
- The decision to undertake carrier screening is a personal choice to be made by the individual or couple. Women or couples should be informed of the benefits, limitations and cost of screening. Ideally, this information is provided pre-pregnancy.

https://www.racgp.org.au/FSDEDEV/media/documents/Clinical%20Resources/Guidelines/Genomics-in-general-practice.pdf

Practice Point:

Most carriers of a genetic condition will not have a known family history

1:20 Australians carrier, 1:240 couples both carriers

Both RANZCOG + RACGP recommend '**information about carrier screening should be offered to all women/couples planning a pregnancy'**

Reproductive Genetic Carrier Screening

Current screening for genetic conditions:

- Newborn 'heelprick'
  - Voluntary, government funded.
  - 26 conditions: PKU, CAH, CF, hypothyroidism, galactosemia, SMA, SCID (newly added)
- Note: Carriers of haemoglobinopathies may be initially identified through a routine full blood examination (FBE) and haemoglobin electrophoresis

- **Prenatal carrier screening**
  - From November 2023 – Federally funded
  - 3 condition test (CF, SMA, Fragile X)
  - Ideally pre-conception (can be in early pregnancy)

How Common Are These Conditions?

These three conditions combined are amongst the most commonly carried mutations in European populations.

	CARRIER FREQUENCY	NUMBER OF LIVE BIRTHS
Cystic Fibrosis	1 in 25	1 in 2,500
Fragile X	1 in 150	1 in 4,000 males (1 in 8,000 females)
Spinal Muscular Atrophy	1 in 40	1 in 6,000 – 10,000

Mode of Inheritance

	MODE OF INHERITANCE
Cystic Fibrosis	Autosomal recessive
Fragile X	X-linked
Spinal Muscular Atrophy	Autosomal recessive

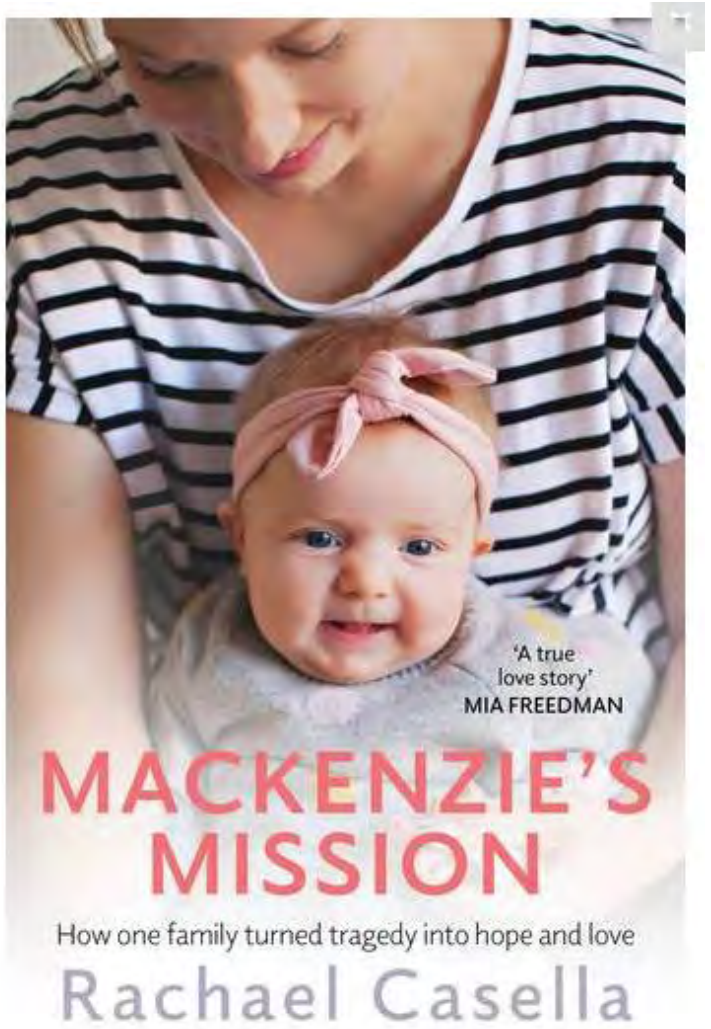
"Mackenzie's Mission" - Australian Reproductive Genetic Carrier Screening Project

https://www.mackenziesmission.org.au/

- Mackenzie diagnosed with SMA at 10 weeks' & died aged 7 months
- Reproductive genetic carrier screening to 10,000 Australian couples (demographically & geographically widespread) planning or in early pregnancy (up to 10/40) - approx. 750 genes tested.
- Included essential genetic counselling and full support for those couples found to have a high-risk result.

Ceased recruitment.

Genetic Carrier Screening will be federally funded from November 2023



Reproductive carrier screening

- Identifies carriers of genetic conditions with an autosomal recessive (or X-linked) inheritance pattern.
- Can be offered to all women or couples during pre-conception and early in pregnancy (i.e.,1st TM) Identifies carrier couples before pregnancy provides greater reproductive options e.g.,
    - in-vitro fertilisation (IVF) with pre-implantation genetic diagnosis
    - use of donor gametes
    - prenatal diagnostic (genetic) testing.
- Traditionally, carrier screening for inherited recessive conditions was offered on basis of ethnicity.
- However, given the multicultural nature of society and marriage between people of different ethnic backgrounds, ethnicity is less strongly predictive of carrier frequency in Australia. Therefore, carrier screening panels increasingly test for multiple conditions, irrespective of ethnicity.
- Examples of autosomal recessive conditions - cystic fibrosis (CF), spinal muscular atrophy (SMA) and Tay-Sachs disease (TSD). Examples of X-linked conditions - fragile X syndrome (FXS), haemophilia A and B, and Duchenne muscular dystrophy.
- Approximately 1–2% of non-consanguineous couples have a one in four chance of having a child with an autosomal recessive or X-linked recessive condition. The risk is considerably higher for consanguineous couples.

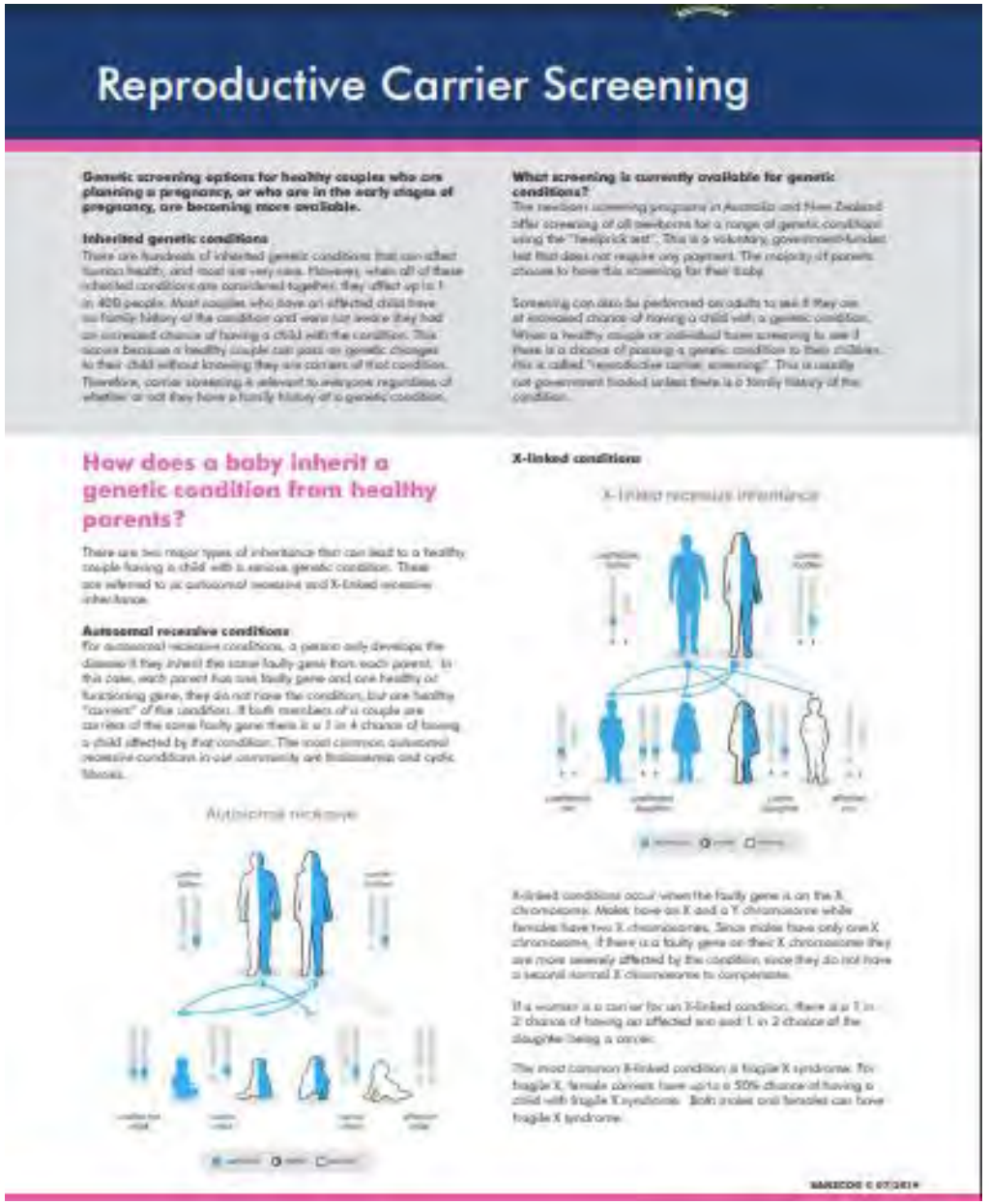
What does carrier screening entail?

Medicare Funded Carrier Screening –

- ? Maternal and paternal serum samples
- Awaiting details re ? collection platforms
  - Likely federal funding for existing carrier screening providers
  - S+N, QML, VCGS
  - 3-4 week wait for results

‘Extended’ carrier screening

- ~400 conditions
- requires detailed pre-screening counselling.
- $600



AUSTRALIAN CLINICAL LABS

- Gene Access Carrier Screen
- Comprehensive Carrier Screening

EUGENE

- Expanded Carrier Screening

GENOMIC DIAGNOSTICS

- Core Genetic Carrier Screen
- Myriad (Counsyl) Foresight Expanded Carrier Screen

GENOMICS FOR LIFE

- Extended Carrier Screening

SONIC GENETICS

- 3-Gene Carrier Screen
- Beacon Expanded Carrier Screen

VICTORIAN CLINICAL GENETICS SERVICES

- Prepair Genetic Carrier Screening
- Expanded Carrier Screening

VIRTUS DIAGNOSTICS

- Genetic Carrier Screen – 3 Gene Panel
- Expanded Carrier Screen

Criteria for Conditions Covered by Carrier Screening

Conditions must be sufficiently severe that they would be expected to impact pregnancy decision making, or for which an early diagnosis would be of benefit in other ways, such as informing management in the neonatal period.

Extended panels offer inclusions beyond those included on the soon to be funded Medicare refundable screening that would identify risk of other severe, early onset AR/XL conditions e.g., Alport Syndrome, Fanconi anaemia, Choroideremia, Emery-Dreifuss Muscular Dystrophy

As up to 24% of adults will test positive for at least one recessive disorder: this should only be offered with appropriate genetic counselling.

Services are mostly offering resources to assist patients and referrers, including:

- Free genetic counselling for high-risk results
- Clinician consultations with Genetics Pathologists
- Online Reproductive Carrier Screening courses for patients

When should I refer?

Couples identified as carriers of a genetic condition should be offered referral to specialist services (i.e., genetics or obstetrics).

Other considerations

Carrier screening needs to occur in a timely manner to provide women or couples with reproductive options.

The testing of biological male partners of pregnant female carriers is of particular importance.

As preconception carrier screening covers the chance of a couple having a child with a serious genetic condition, testing need only be done once, unless either member changes partners, and wishes to have children in a new relationship. The tests would need to be repeated with a new partner.

Genetic Carrier Screening – Carrier parents

- If parents identified to both be carriers:
  - Counselling regarding inheritance chances and pregnancy options
  - Uncertainty as to funding of post-test counselling. ?GHQ/private geneticist

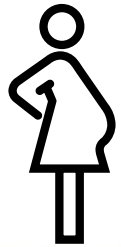
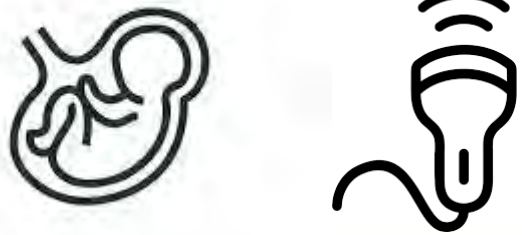
- Pregnancy options:
  - Not have children
  - Early diagnostic testing (CVS) (referral to MFM)
  - IVF + PGT

    (Free rebates for PGT ended with Mackenzie's Mission)
  - Donor egg / sperm / embryo, adoption

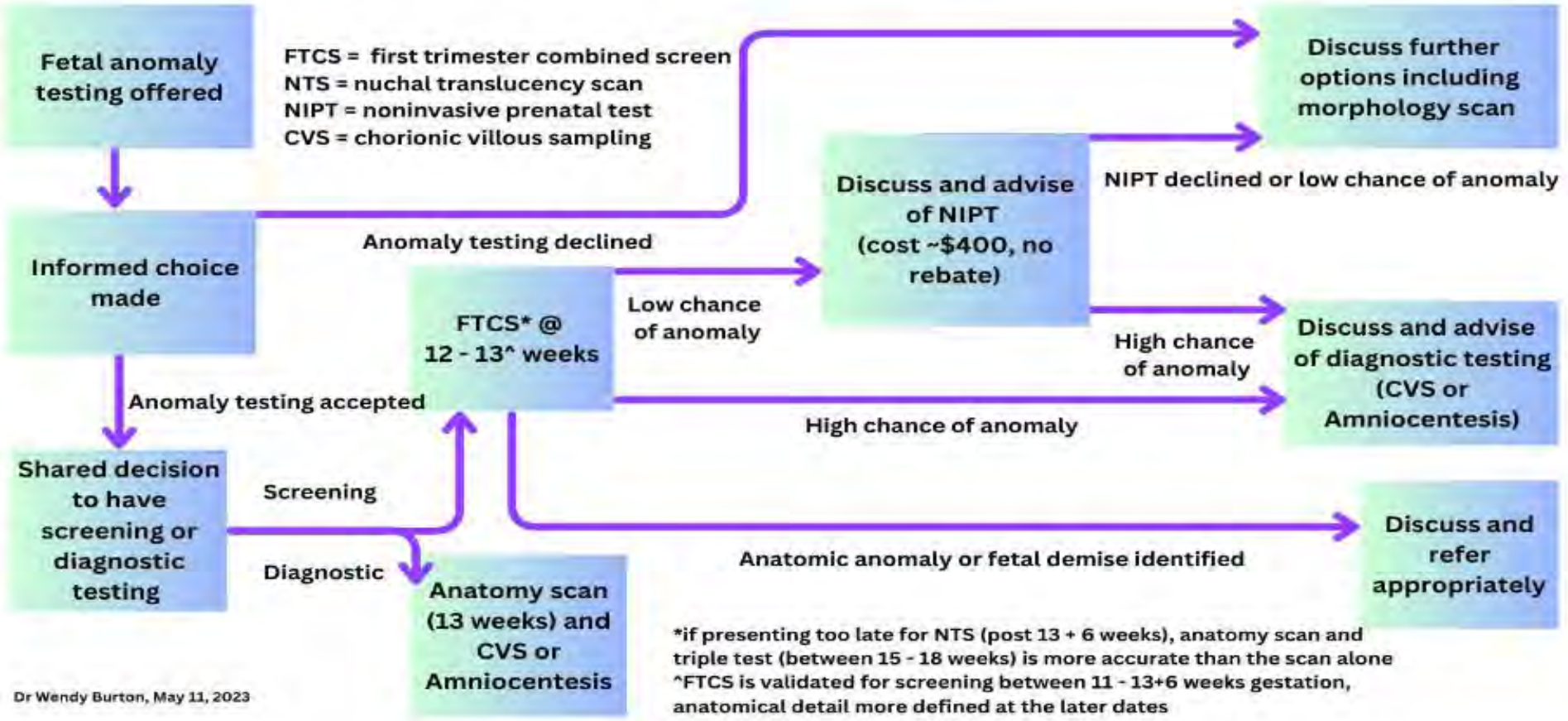
https://metronorth.health.qld.gov.au/rbwh/genetic-health-queensland

Maternal Fetal Medicine

- Who are we (and where are we..)?
- What is our scope?
- When to refer to MFM

Suggested referral pathways 2023, fetal anatomy/anomaly screening and testing



Spot On Health Pages used

- https://spotonhealth.communityhealthpathways.org/20461_1.htm Cervical Screening
- https://spotonhealth.communityhealthpathways.org/24155.htm – Recurrent Miscarriage
- https://spotonhealth.communityhealthpathways.org/15994.htm - Polycystic Ovarian Syndrome (PCOS)
- https://spotonhealth.communityhealthpathways.org/16204.htm - Subfertility
- https://spotonhealth.communityhealthpathways.org/85339.htm - Herpes Simplex Virus

Session 3

Time	Session name	Presenter	Delivery
1:45 pm	Task 2 Breakout groups – Case Discussion	Breakout	Facilitated groups
2:00 pm	Postnatal Consult 1 – Case Discussion Heavy or Prolonged Bleeding	Group Spokesperson Dr Kim Nolan Dr Sanja Savic	Facilitated groups Power Point Presentation & Forum Discussion
2:15 pm	Postnatal Consult 2 – Case Discussion Breastfeeding Issues	Deb Rankmore (Lactation Consultant) Lisa Miller	Facilitated groups Power Point Presentation & Forum Discussion
2.55 pm	Neonatal Examination		Video – Dr David Cartwright
3:05 pm	Preconception Consult 3 – Case Discussion Common Neonatal Concerns	Dr Ryan Mills	Facilitated groups Power Point Presentation & Forum Discussion

Postnatal care

AM2 Postnatal Case Discussion – Blue Group

Reintroducing Tiffany…..

- Tiffany has gone on to have a healthy pregnancy with her partner, with their baby born by Caesarean section at 39 weeks because of a persistent breech presentation.
- Presented today 8 days postpartum for her post-natal check. Her baby is being bottle-fed and has the next appointment.
- What do you do for Tiffany today?

She has a 15 min appointment - Outline your approach

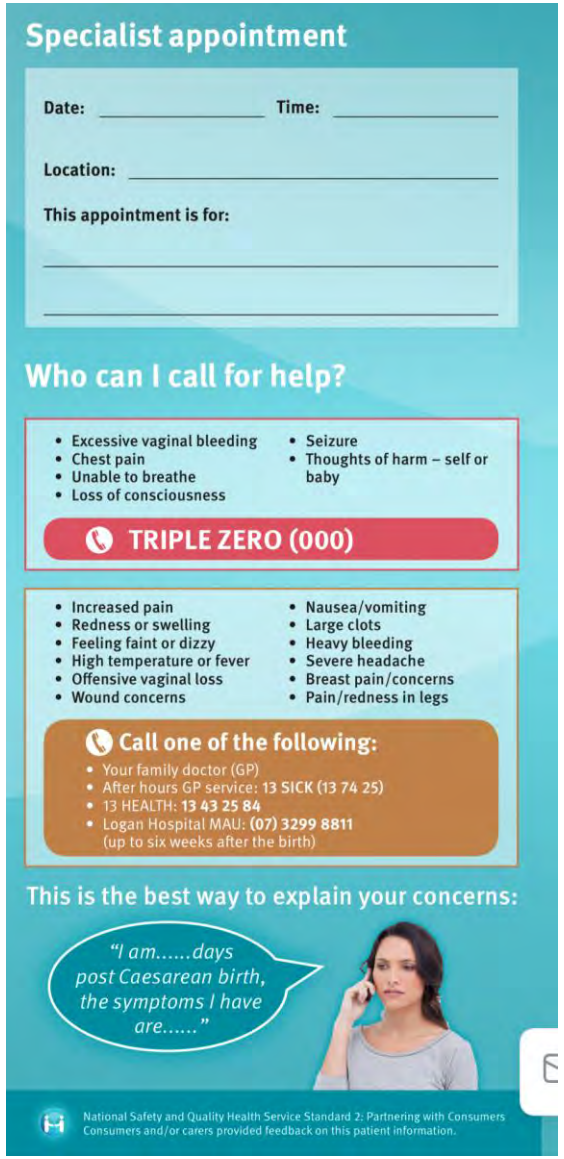
AM2 Postnatal Case Discussion – Green Group

Reintroducing Kelsey…..

- Kelsey has gone on to have a healthy pregnancy and baby born by spontaneous vertex delivery. Placenta and membranes delivered complete with second degree tear repaired according to the discharge summary. She is breast feeding her baby.
- Presented today with sudden increased heavy PV bleeding, clots and low cramping pain. She is apyrexial but reports waking in the night sweating. Her BP is 105/67 and pulse 102. She looks pale and in pain
- What is your assessment and plan for Kelsey?

She has a 15 min appointment - Outline your approach

Postnatal Information Brochure provided to all women at Logan at hospital discharge



Postnatal care by GP- Why is the GP so important?

- A most vulnerable time for women and their families
- The ability to provide regular review and collaborative care with specialist services
- Review at 5-10 days
- An opportunity for the woman and her baby to reconnect with the GP if maternity care has been provided elsewhere
- Ongoing care for medical issues such as hypertension, diabetes and anaemia.

Postnatal care by the GP

- Breastfeeding support and referral to lactation services
- Immunisations
- Well baby checks and 6-week check
- Long term education and care to maximise achievement of long-term health goals
- Contraception and pregnancy spacing
- Pre pregnancy counselling and referral
- Re-engaging those in low socio-economic regions

https://www.racgp.org.au/afp/2012/may/the-6-week-check/

5–7-day check mum and baby check by GP

- Think ahead..... women need to be advised to make a double appointment and register the baby with the Medicare too! They may be shocked to find that as baby has no Medicare yet, they may be privately billed.
- Remind to bring any records and the Child Health (red) book
- When they leave, ask them to book the 6-week check
- See your patients in response to individual need
- Refer to/or provide information about Child Health Services
- MMR required?– if non-immune and missed in hospital
- Pertussis booster required? - if missed during pregnancy

The 6-week postnatal check- not just physicality

- Part of the lifelong journey of health
- Promoting and enhancing the family to GP partnership in health
- Looking at parental strengths to establish any emerging health deficits in the childhood years
- Identifying parental issues that may be of detriment to childhood development
- Understanding the social determinants within the family and the context of their family lives

https://www.racgp.org.au/download/documents/AFP/2012/May/201205fasher.pdf

Systems based approach to Post-Partum Care

Post-Partum check at 6/52

History:

Adacel/Boostrix

Bladder, bowels, breasts

Calves, contraception

Delivery debrief prn

EPDS

Feeding

Gestational Diabetes follow up prn

Hypertension follow up prn

Examination:

Abdomen

Breasts, BP

Consider Cervical Screening Test, inspect perineum if tear/episiotomy

Secondary PPH = excessive bleeding occurring 24/24 postpartum and up to 6/52 postnatal

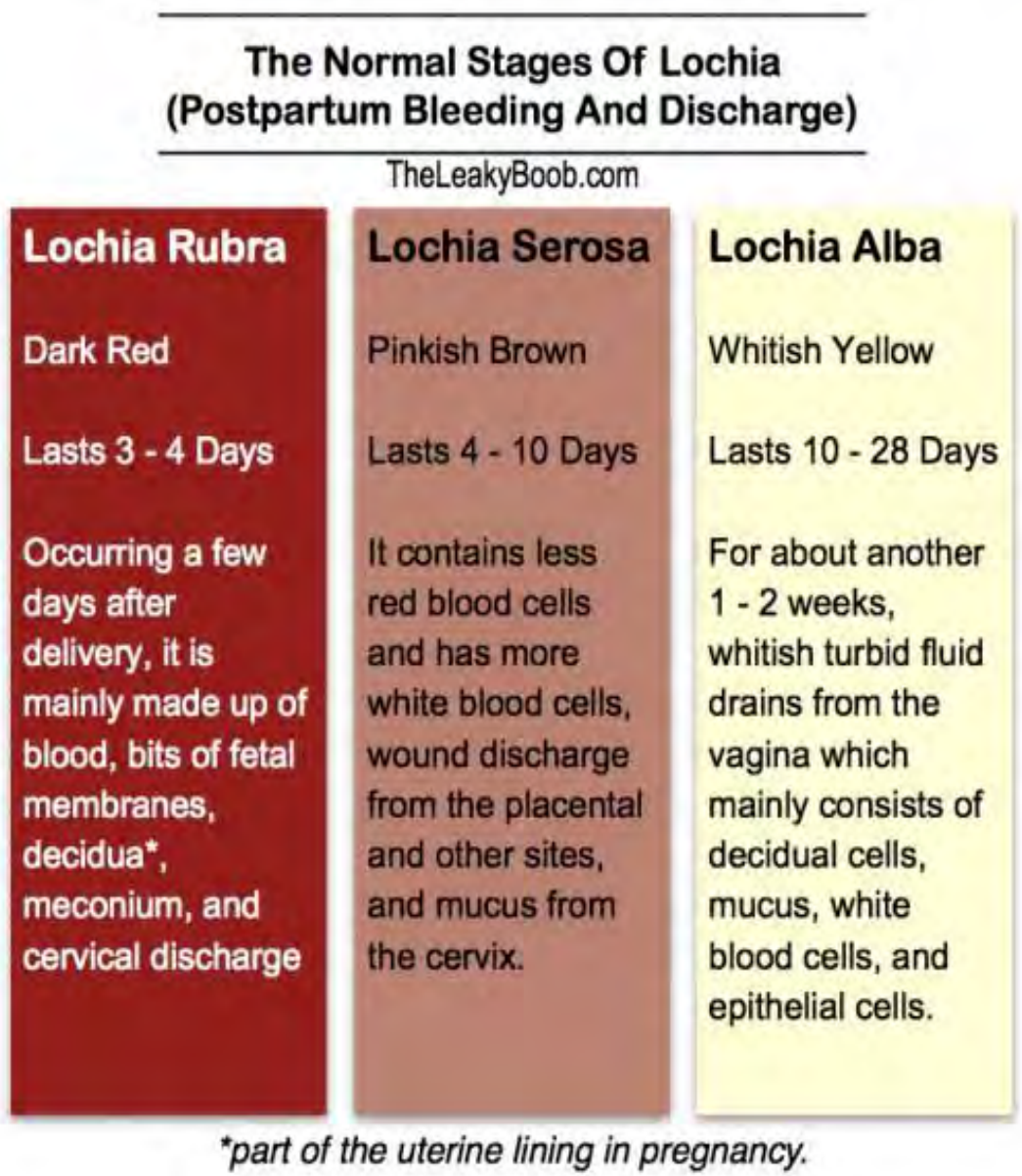
- More than 500mls
- Deterioration in clinical presentation
- Regression to bright red lochia, heavy, clots
- Increase in pain to low abdomen or pelvic region
- May have rigors or pyrexia

In the GP surgery…..a presentation with abnormal bleeding postnatally

- Observations esp. temp, PR, BP (?postural drop)
- Clinical assessment of blood loss, check fundal height ? tenderness
- ? Other discharge ? Malodour, – consider PVE/swabs
- Review birth history
- Consider sepsis ……

Call QAS immediately for clinically instability and/or deteriorating clinical condition.

Postpartum lochia



Conditions that mimic sepsis in pregnancy (and postpartum)

TABLE 4 Non-infectious conditions that can mimic sepsis in pregnancy

Condition	Common maternal clinical features
Acute pulmonary embolism	Hypotension, tachypnoea, tachycardia, low-grade fever
Amniotic fluid embolism	Hypotension, tachycardia, haemorrhage
Acute pancreatitis	Fever, nausea, vomiting, abdominal pain
Acute fatty liver of pregnancy	Fatigue, nausea, vomiting, abdominal pain, jaundice, impaired level of consciousness
Adverse drug reactions, drug fever	Hypotension, relative bradycardia, fever, rash, angio-oedema
Acute liver failure-drug related, viral	Jaundice, nausea, vomiting, abdominal pain impaired level of consciousness
Acute adrenal insufficiency	Weakness, fatigue, nausea, anorexia, weight loss, hypotension, fever
Acute pituitary insufficiency	Failure to lactate, hypotension, relative bradycardia, polyuria, polydipsia
Autoimmune conditions	Low-grade fever, rash (eg malar rash), arthritis, dry eyes or mouth, mouth ulcers, diagnostic serology
Concealed haemorrhage including ectopic pregnancy	Hypotension, tachycardia, low-grade fever
Disseminated malignancy	Low-grade fever, weight loss
Pelvic thrombosis	Pelvic pain, fever
Transfusion reactions	High fever, rigors, dysrhythmia, tachypnoea, hypotension, rash, bleeding, haematuria

SOMANZ guidelines for
the investigation and management sepsis in pregnancy
SOMANZ (Society of Obstetric Medicine Australia and New Zealand)

AM2 Postnatal Case Discussion – Pink Group

- Sally is postnatal day 3 today following a normal vaginal delivery, 1st degree tear not sutured. EBL 150, and Sally was discharged from the hospital after 6 hours.
- Sally had a little boy weighing 3500g, whom she is breastfeeding.
- Sally comes to see you today worried she has mastitis, her breasts are engorged and painful.
- Sally says her sister had mastitis as well and thinks she needs antibiotics.

Outline your assessment – you have 15 mins

AM2 Postnatal Case Discussion – Red Group

Reintroducing Zuri …..

- Zuri has gone on to have an IVF pregnancy, and now has a baby girl, born by Caesarean Section at 36 weeks for suspected FGR.
- Baby Mila, is now aged almost 3 weeks, and today weighs 2800gms. She is breastfed.
- Her mother-in-law is helping now that her partner is back at work and has suggested giving some top up formula feeds so Zuri can get some more rest.
- Zuri is uncertain and has come for your advice - she really wants to successfully breastfeed but is worried her baby not getting enough milk.
- What is your assessment and plan for Zuri?

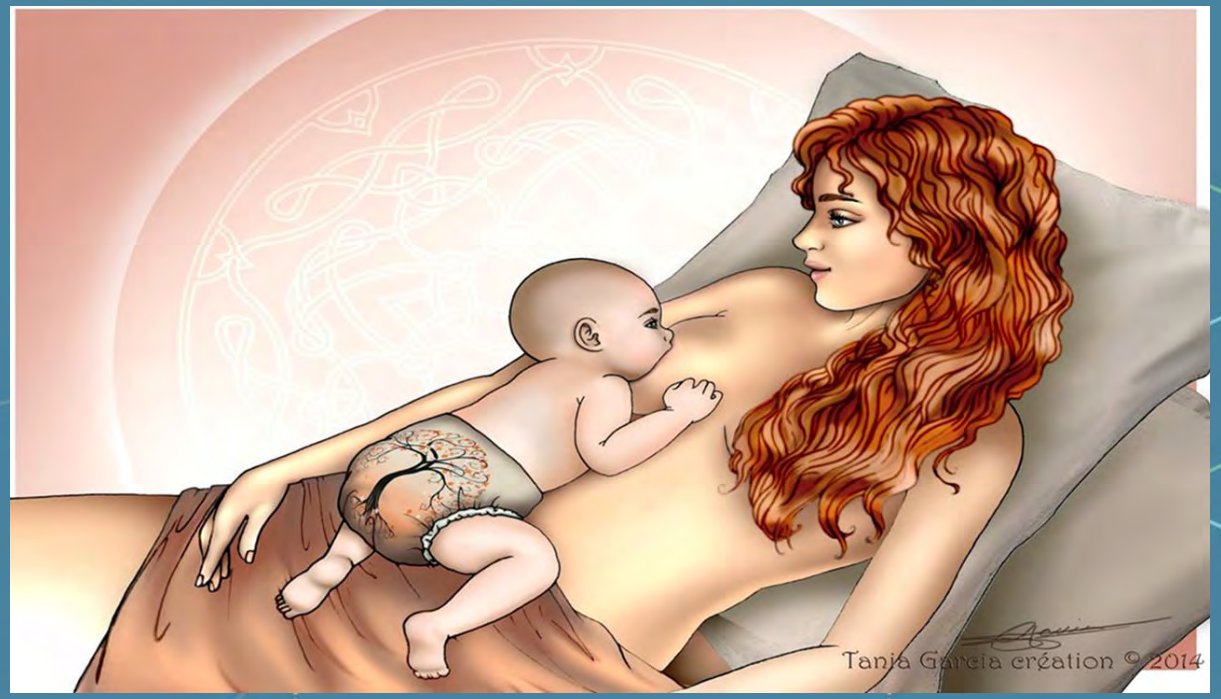
She has a 15 min appointment - Outline your approach

Metro South Health

Quality healthcare every day

AM2

Breastfeeding Essentials



ICARE² values

INTEGRITY COMPASSION ACCOUNTABILITY RESPECT ENGAGEMENT EXCELLENCE

Queensland Government

Benefits of Breastfeeding

WHO Collaborative Group found a substantial increase in mortality in the first few years of life in infants who were not breastfed.

Increasing evidence that early development has a long term impact on health (The first 1000 days of life). Research is showing that breastfeeding has a role to play in this.

The major long-term benefits of breastfeeding listed by WHO

- Higher performance on intelligence tests and cognitive development
- Significantly reduces risk of obesity in childhood & later in adults
- Reduction in risk of type 2 diabetes & type 1 in adolescents & young adults
- Reduces risk of SIDS
- Small protective effects found against elevated systolic BP
- Decreased prevalence of lower respiratory tract infections under 6 months old
- Reduced incidence of NEC with premature infants (exclusive breast milk)
- 19% reduction in incidence of leukemia
- Prevention of helicobacter pylori – gastritis, gastric carcinoma, dental caries and chronic gut inflammation
- Reduction in malocclusion in baby teeth

Benefits for mothers

- Reduced rates of ovarian cancer & premenopausal breast cancer
- Reduced rates of obesity – quicker return to pre-pregnancy weight
- Reduced risk of developing Type 2 diabetes
- GDM – less likely to have Type 2 diabetes 2 years postpartum
- Reduced rates cardiovascular disease, hypertension & hyperlipidaemia
- Reduction in postnatal depression in breastfeeding mothers
- Financial gain $2500-$5000 per annum (cost of infant formula)

Just 1 bottle

- Changes gut biome – can impact Ph levels for a month
- Increases risk of reflux
- Increased risk of developing cow's milk protein intolerance
- Negates the benefits of exclusive breastfeeding
- Significantly less likely to be breastfeeding at 3 months
- Undermines women's confidence in their ability to breastfeed

Breastfeeding In Australia

- Most children (95.9%) ages 0-3 years received breast milk

- At 2 months, 74% were exclusively breastfed, 88% still receiving breast milk
- At 4 months, 66% were exclusively breastfed, 79% still receiving breast milk
- At 6 months, 35% were exclusively breastfed, 73% still receiving breast milk

(Australian Bureau of Statistics 2020-2021)

Normal Feeding Patterns

- First 24 hours baby has instinctual desire to feed up to 3-4 times. If no risk factors this is ok
- Onwards from Day 1 Feeding 8-12 times/24hrs, instead of clock watching (3 hourly)
- Length of feed can vary depending on rate of milk flow & baby's suck patterns (eg: 10-40 minutes)
- Offer both breasts every feed for first 6 weeks to help establish supply
- Observe baby for signals that he/she is getting enough milk

Is the baby getting enough from BF?

Observe breastfeeding

- Is baby attached well
- Rhythmic sucking patterns and swallowing
- Baby is settled after most breastfeeds, although may have periods each day when they will not settle and continue to cue for feeding and comfort

1

Monitor output

- Day 1 – 1 wet nappy. 1-2 black stools
- Day 2 – 2 wet nappies. 1-2 greenish black stools
- Day 3 – 3 wet nappies. 3 greenish stools
- Day 4 – 4 wet nappies. 4 large stools, becoming more yellow
- Day 5 onwards – 5 + wet nappies. 4 large or 10 small yellow seedy stools
- Number of bowel motions of breastfed babies tends to decrease between 6 weeks and 3 months of age

2

Adequate weight gain

- Initial loss of up to 8-10% normal in first few days
- Baby should be back to birth weight by 14 days old
- Average weekly weight gain of 150-200gms to 3 months of age
- Babies usually double their weight by 6 months of age, and triple their birth weight by 12 months of age

3

What is a good breastfeed?

- Deep symmetrical latch with chin and cheeks firmly touching the breast
- Look for nutritive sucking rather than non-nutritive sucking
- Rhythmic sucking pattern, long suck bursts with short breaks at the start of the feed and as baby fills shorter suck bursts with long breaks
- Sucking pattern can be “suck, suck, swallow, breath” initially then towards end more 3-4 sucks before swallow.
- Observe swallowing – may be audible as soft ‘cluck’ or seen by jaw drop.

Nutritive Sucking during Breastfeeding | Active drinking & milk transfer - YouTube

5 DIFFERENT

Breastfeeding Positions

CRADLE USING A NURSING PILLOW FOR SUPPORT

CRADLE POSITION

LAIDBACK POSITION

SIDE-LAYING POSITION

FOOTBALL/CLUTCH POSITION

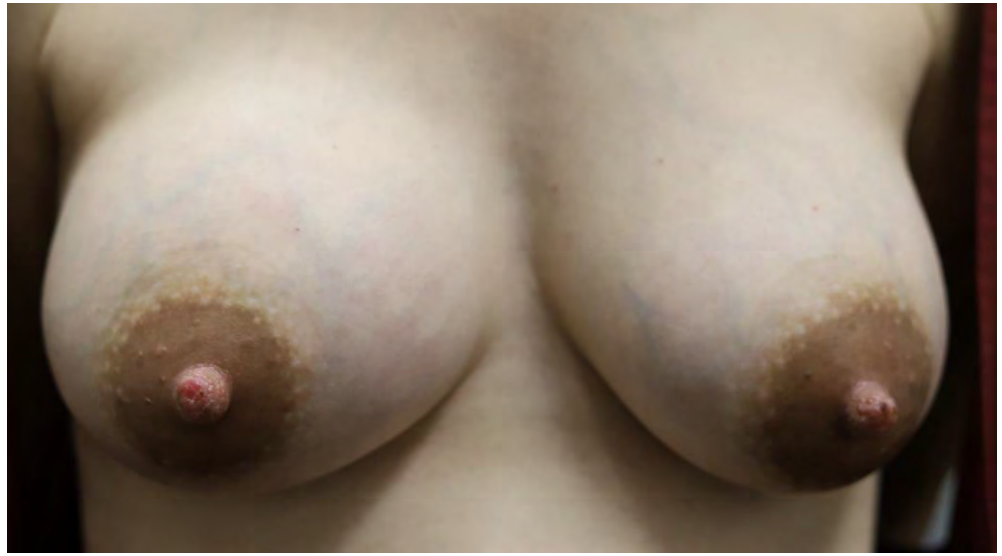
Stages of Lactation

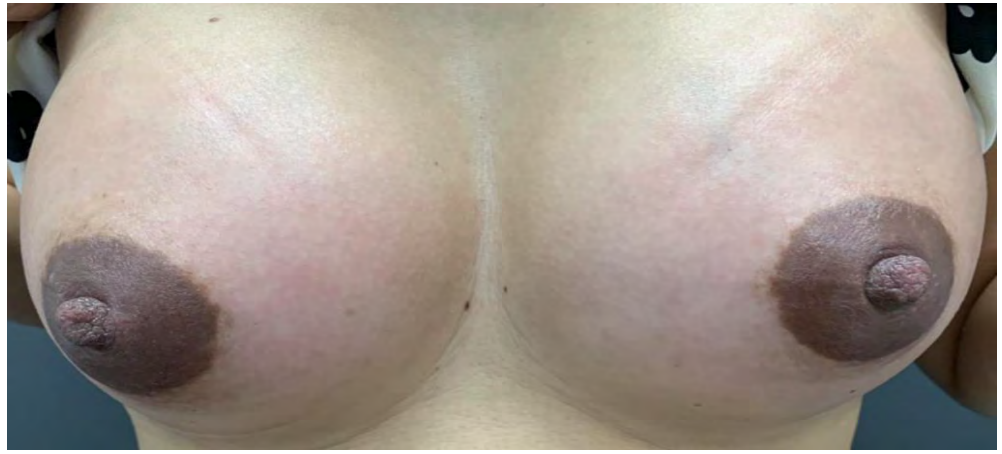
- Lactogenesis 1 – pregnancy (secretory differentiation)
  - Starts around 16 weeks gestation
  - Breasts changes
  - Produces colostrum
- Lactogenesis II – endocrine stage (secretory activation)
  - Triggered by birth of placenta & decline of lactogen, estrogen and progesterone
  - Main hormones involved prolactin, oxytocin, insulin
  - Onset usually 30-72 hours post birth
  - Development of milk supply
- Lactogenesis III – autocrine stage "supply & demand"
  - Empty breast it refills

Common Breastfeeding Challenges

Problems & Solutions

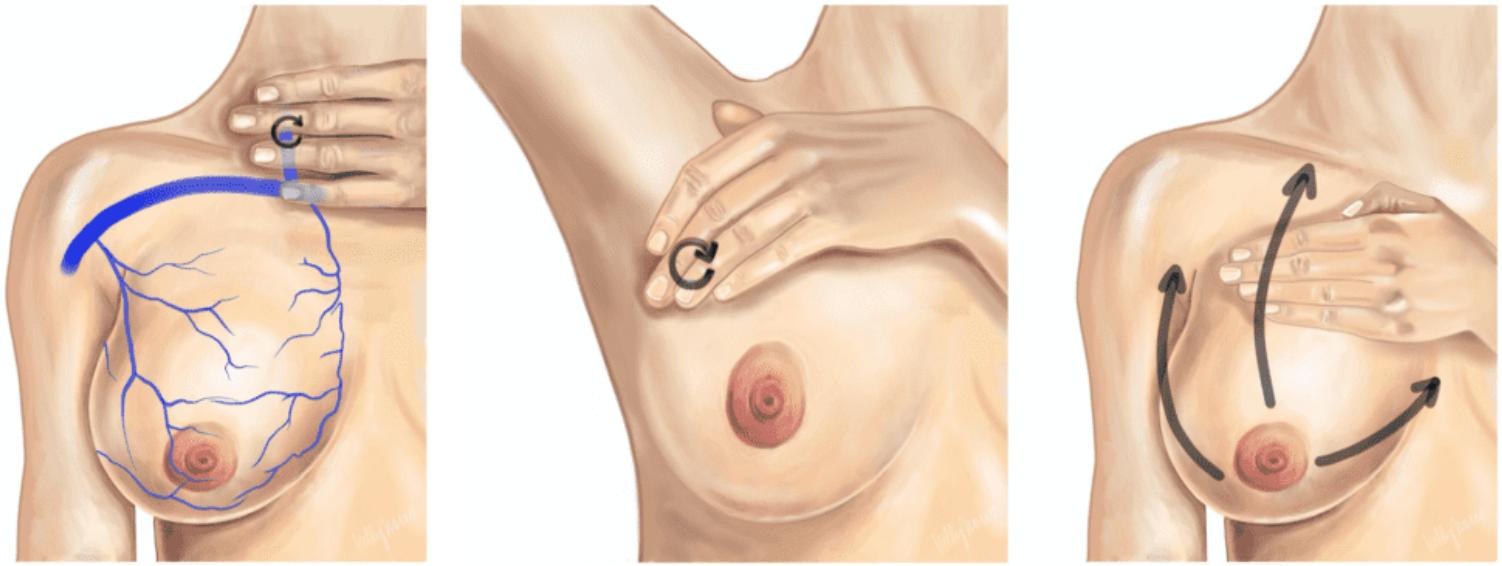
Engorgement





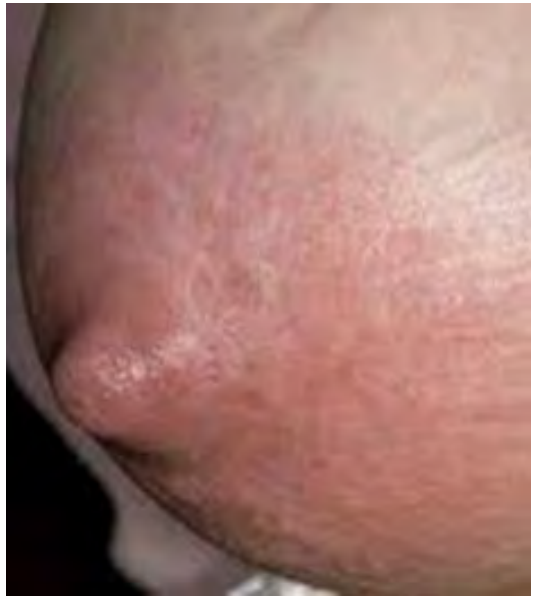
- Normal physiological process
- Focus on physiological nursing
- Educate about positioning and attachment
- Comfortable, supportive bra
- Apply ice
- Paracetamol & Ibuprofen
- Reverse pressure softening
- Lymphatic drainage

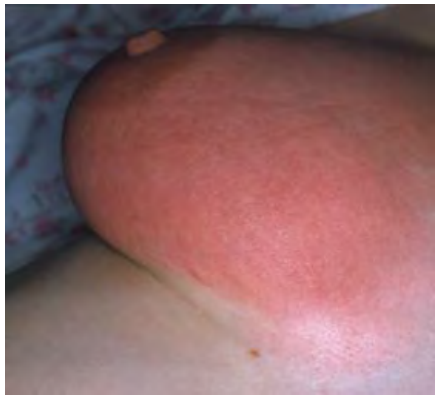
Lymphatic Drainage

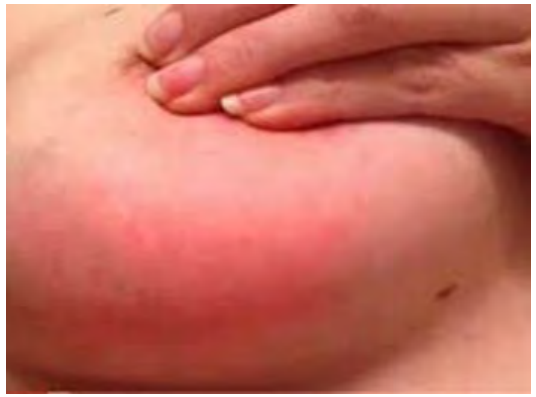


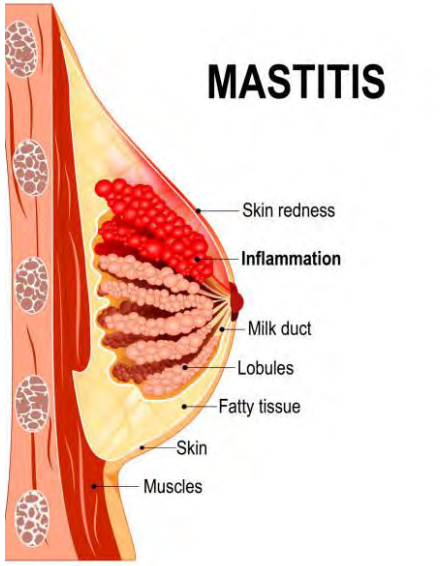
- Reduces swelling by assisting movement of lymph fluid, decreasing edema
- Technique
  - "Very gentle touch/traction of skin - "like petting a cat"
    - The purpose is to lift skin to allow flow of lymphatic drainage and vascular decongestion
  - Ten small circles at junction of internal jugular and subclavian veins
  - Ten small circles in axilla
  - Continue with light touch massage from nipple towards clavicle, axilla
- Start during pregnancy if experiencing painful rapid breast growth, and use as needed postpartum for engorgement

Mastitis









- Inflammatory of breast tissue, milk glands or ducts
- Non-infective or infective inflammation
- Non-infective mastitis can be caused by poor milk drainage, hyperlactation, mammary dysbiosis
- Infection can be bacterial – usually *staphylococcus aureus* but can be other bacteria. Causes same as non-infective mastitis but also may be result of cracked nipples or trauma
- Symptoms can include
    - Erythema – redness of skin
    - Tender or painful breasts
    - Lumps
    - Febrile
    - Headache, body aches & malaise
    - Decreased milk supply

What we previously recommended

- Considered **‘milk stasis’** (accumulation of milk) in the breast as the primary issue
- Encouraged “draining the breast”
- PUMP, PUMP, PUMP
- Hot compresses
- Firm massage towards the nipple
- Focus on “getting the clog out”

Mastitis Treatment

Safe to breastfeed or give baby express breast milk

- Gentle is the key!
- Treat it like a sprained ankle: rest, ice, analgesia
- Physiological nursing
- Gentle lymphatic massage
- Supportive bra
- Sunflower lecithin
- ?Probiotics
- If systemic symptoms last > 24 hours, for medical review

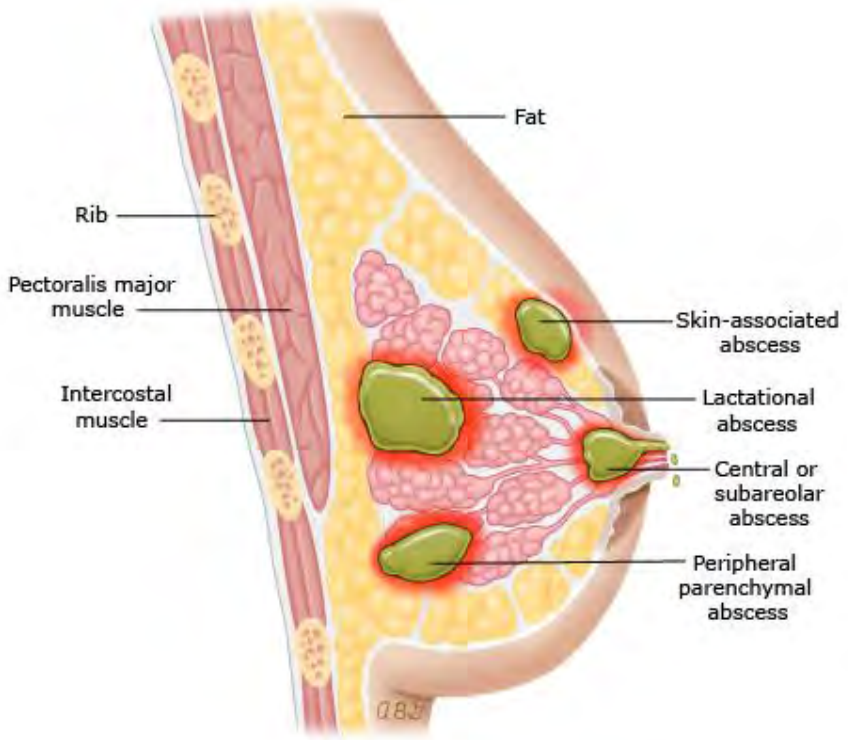
- ***Academy Breastfeeding Medicine Protocol***
- *The Mastitis Spectrum, Revised 2022*
- bfmed.org/assets/ABM Protocol %2336.pdf

Recommended Antibiotics

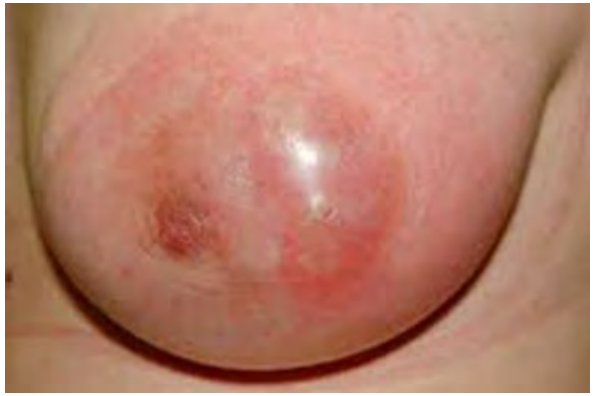
- First line:
- Dicloxacillin or flucloxacillin 500mg QID for 10-14 days
- In penicillin allergy- Cephalexin 500mg QID for 10-14 days

- Second line:
- Clindamycin 300mg four times daily for 14 days
- Trimethoprim-sulfamethoxazole DS BD for 10-14 days

Breast Abscess



- Usually bacterial infection - mastitis
- Treat same as mastitis
- Consider swab for MC&S (may be MRSA if not responding to antibiotics)
- May require drainage
  - Needle aspiration guided by USS
  - Incision & drainage in worst case



Nipple Trauma or Pain

- Cracks and grazes
  - Usually due to poor attachment & nipple compression
  - Multi-mam compresses (alginate dressing) can promote moist healing
  - Refer for BF support
- Thrush
  - Itchy, white spots and redness
  - Treat mother's nipples and baby's mouth and bottom with antifungal creams, gels or drops
- Raynaud's of the nipple & vasospasm
  - Usually result of nipple damage &/or nipple compression
  - Sharp stabbing pain which often radiates towards shoulder blades
  - Vasospasm often triggered by changes in temperature or nipple compression
  - Treatment includes keeping nipples warm & covered, magnesium & fish oil supplements and in worse cases scenario nifedipine may be helpful

Causes of Low Supply

Inadequate drainage of breast – missing feeds, baby not BF well

Hormonal issues

PCOS, diabetes, Thyroid issues

Blood Loss & Birth Trauma

Insufficient breast tissue & Breast surgery

Stress

Mastitis

Sometimes women perceive they have low supply because baby restless & unsettled. Common around times when baby having growth spurt

Increasing breast milk supply natural methods

- Regular complete emptying of both breasts
  - Breastfeeding
  - Expressing for 5-10 minutes after breastfeeding can help increase supply
- Breast massage – Marmet Technique
- Good nutrition and hydration
- Sleep & relaxation
- Natural supplements
  - Fenugreek capsules 6000-9000mg a day (split into 3 doses)
  - Moringa (drumstick plant) – available as tea, powder or capsules
  - Boobie Biscuits – No research that they work – anecdotal- word of mouth between women

GET MORE MILK

Massage Stroke Shake

THE MARMET TECHNIQUE

Massage Breast

Start in armpits and work down. Use two fingers in circular motion working around the breast down toward the nipple

Stroke Breast

With tickle like touch, stroke breast from chest wall toward nipple to aid in milk ejection reflex

Shake Breast

Gently shake breast while leaning forward to encourage drainage.

Lacticups®

Medical Interventions -Domperidone

- Increases the hormone prolactin which is involved in the production of milk making cells (galactagogue)
- Usually takes 5-7 days to notice any difference but 2-4 weeks to get maximum effect
- Most effective during Lactogenesis II (endocrine stage) in building supply
- Can be used to restore supply during Lactogenesis III
- Dosage:
  - 10-20mg TDS for 1-2 weeks
  - then 10-20mg BD for 1 week
  - Last week 10mg in the morning

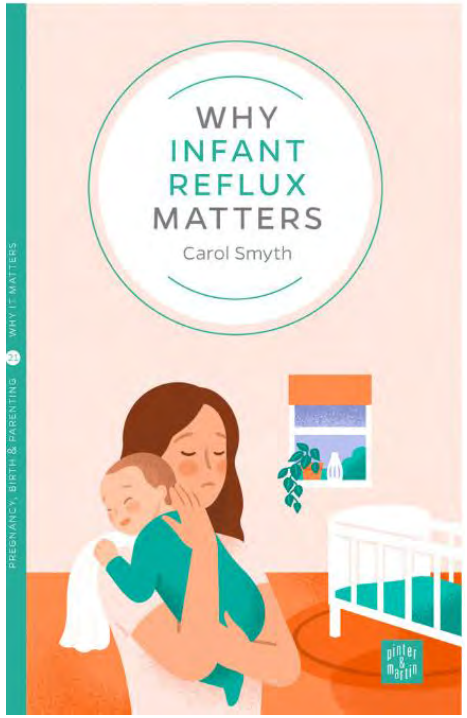
Side effects include;

- Headaches
- Abdominal pain
- Dry mouth
- Rash
- Sleep problems & mood changes
- ECG changes (prolongs QT interval) - probably insignificant (except if on or commence other medications that also prolong QT)

Reflux

Parents will present to GP:

- Excessive crying
- Crying when put down
- Not sleeping well
- Wanting to be held all the time
- Hiccuping
- Back arching when feeding/refusing feeds/constant feeding
- Low weight gain/high weight gain
- Spitting up



- Provide education. Most crying, irritability, and spilling in otherwise healthy infants is **not** caused by GOR
  - Explain mechanism of reflux / spilling / posseting and natural history with more than 50% of babies spilling regularly in the first months of life.
  - Normalise this by using the term "spilling" rather than reflux.
  - Begins usually before 8 weeks, peaks at 4 months and usually stop by 12 months, improving as diet becomes more solid, the baby becomes more upright, and gut function matures

Possible causes of reflux symptoms

Milk Intake:

- Baby with low weight gain. Is it GORD or hunger?
- High weight gain. Is it maternal oversupply and the behaviour is from an over full stomach?

Baby stress:

- Stress in baby impairs the digestive process and loosens lower oesophageal sphincter. Crying increases abdominal pressure and increases vomiting
- Baby wearing and settling techniques

Feeding frequency, volume and rate:

- The greater the interval between feeds, the larger the feed
- Offer smaller, more frequent feeds

Crying during or after feeds:

- Is the baby attached well? Maternal let down and supply? Too low, too fast? Is the feed not finished?

Allergy:

- Normal oesophageal tissue is quite resistant to acid but if tissue is damaged then reflux can enter intercellular space
- Up to 40% babies presenting with symptoms of GORD will have non IgE mediated cow milk protein allergy (CMPA) Symptoms include: mucous/blood, constipation/diarrhoea, rash/eczema, hives, respiratory symptoms

Alternatives to medication:

Assessment of feeds:

- Observation and assessment of feeds by a Lactation Consultant or Maternal Child Health Nurse or GP (if time permits) can be helpful
- Identify overfeeding in formula fed infants. Reducing feed volumes can reduce regurgitation but only consider if excessive for infant's weight. Consider trial of smaller, more frequent feeds in these infants if practical

Discuss position changes in infants

- Upright position after feeding for 20-30 minutes & avoid second-hand smoke.
- Reassure parents that babies have not been shown to aspirate if they spill when lying on their back

Thickened feeds:

- may reduce volume of regurgitation but does not significantly reduce frequency or symptoms of reflux or spilling
- Can use feed thickener in expressed breast milk or in formula or alternatively, it can be mixed and given as a gel during breastfeeding

Resources

Fact Sheet for Parents – CHQ - https://www.childrens.health.qld.gov.au/chq/information-for-families/fact-sheets/

Gastrooesophageal reflux disease in infants - https://www.rch.org.au/clinicalguide/guideline_index/Gastrooesophageal_reflux_disease_in_infants/

Dr Pamela Douglas. Possums' programs. Masterclasses in Neuroprotective Developmental Care. Dr Pam | NDC Masterclasses

Why Reflux Matters. Pinter & Martin (2021)

Medications & Breastfeeding

- Lactation Risk Categories
  - L1 – Compatible
  - L2 – Probably Compatible
  - L3 – Probably Compatible (limited data)
  - L4 – Possibly Hazardous
  - L5 - Hazardous

- Relative Infant Dose (RID)
  - RID is a way to calculate how much of the drug transfers across into the breast milk
  - The RID is calculated by dividing the infant's dose via the milk in mg/kg/day by the maternal dose in mg/kg/day
  - Most research suggests anything less than 10% of the maternal dose is probably safe
- Resources
  - Dr Hales *Medications & Mothers Milk (book or https://www.halesmeds.com)*
  - *Lactmed – app & website*
  - *Pregnancy and Breastfeeding Medicines Guide*

  Medicines | PBMG (thewomenspbmg.org.au)

Recreational drugs and breastfeeding

Queensland Clinical Guidelines: Perinatal substance use: neonatal

See also:
Appendix H: Breastfeeding recommendations by substance

- Opiates
- Benzodiazepines
- Amphetamines
- Cocaine
- Alcohol
- Codeine
- Cannabis
- SSRI/SRNI
- Tobacco

NAS – Neonatal Abstinence Syndrome

4.1.2 Breastfeeding

Table 13. Breastfeeding

Aspect	Consideration

Importance	• Well-known and substantial benefits from breastfeeding/human milk[32,33]
	  ○ Reduces the incidence of NAS and duration of pharmacotherapy[31]
	  ○ Analgesic for babies[66]
	  ○ Beneficial for soothing agitated baby[67]
	  ○ Decreased stress response and increased vagal tone in lactating women[33]
	• Offer information to mothers about the specific benefits of breastfeeding babies at risk of NAS
	• Refer to Queensland Clinical Guideline: *Establishing breastfeeding*[65]

Substances in breast milk	• Most substances can be found in breast milk with varying degrees of bioavailability[32] • Robust pharmacokinetic data on individual substance use and the effect on the baby from breast milk is lacking[32] • There is limited data to establish a 'safe' interval after substance use when breastfeeding can be re-established[32]

Risk minimisation strategies	• Individualise advice according to circumstances
	  ○ Seek expert advice from the multidisciplinary team as required
	  ○ Refer to Appendix H: Breastfeeding recommendations by substance
	• Strategies may include (according to substance and use frequency/dose)
	  ○ Limit/decrease substance use
	  ○ Express breastmilk prior to substance use and store for later feed
	  ○ Express and discard breastmilk after substance use (duration dependent on substance)
	  ○ Offer formula feeds during substance use
	  ○ Smoke substance outside away from baby

Recommendation	• Encourage and support breastfeeding unless the risks clearly outweigh the benefits
	  ○ Consider risks associated with maternal functioning and toxicities associated with the substance(s) used
	  ○ Refer to Appendix H: Breastfeeding recommendations by substance
	• Advise gradual weaning[33] as abrupt cessation of breastfeeding may precipitate NAS[31]

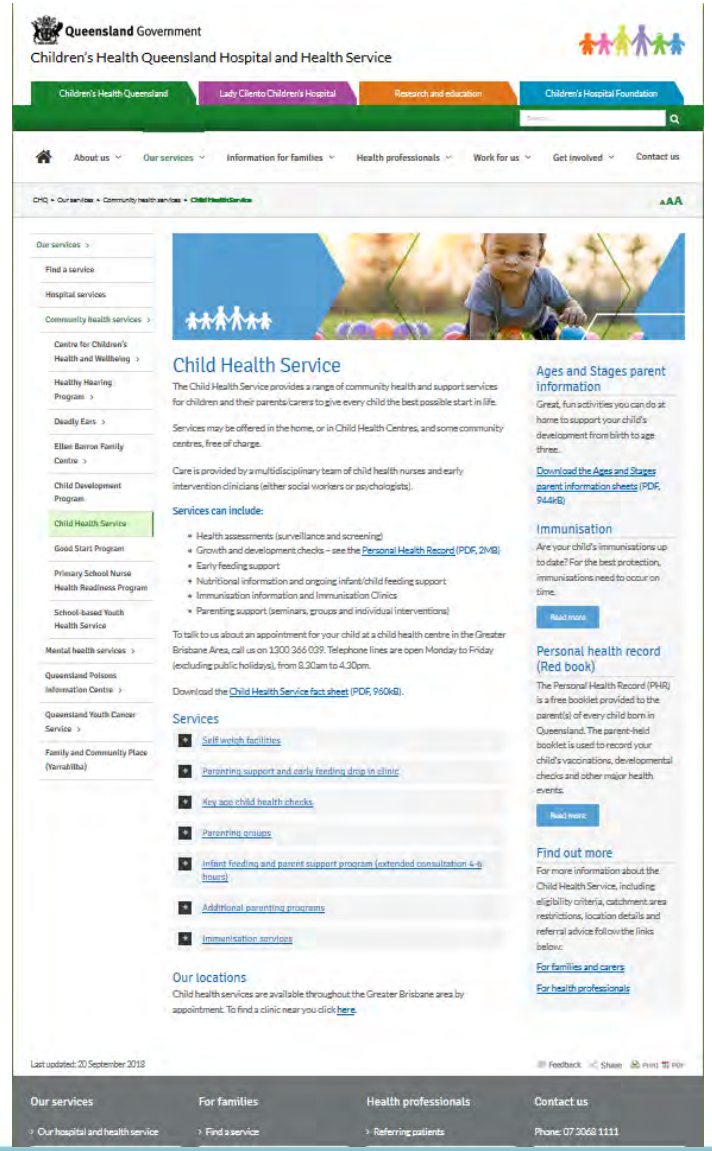
Support for mothers

- Australian Breastfeeding Association –website and phone: *1300MUM2MUM*
- Raising Children's Network website
- Child Health Service
- Lactation Consultants (private & hospital based)
- Mater Mothers Parenting Support Centre

raisingchildren.net.au
the australian parenting website

Australian Breastfeeding Association

Community Child Health Website



http://www.childrens.health.qld.gov.au/community-health/child-health-service/

Birth to 5 years: drop-in clinics (health.qld.gov.au)

Breastfeeding is one of the most effective ways to ensure child health and survival. However, nearly 2 out of 3 infants are not exclusively breastfed for the recommended 6 months—a rate that has not improved in 2 decades.

Breastmilk is the ideal food for infants. It is safe, clean and contains antibodies which help protect against many common childhood illnesses. Breastmilk provides all the energy and nutrients that the infant needs for the first months of life, and it continues to provide up to half or more of a child's nutritional needs during the second half of the first year, and up to one third during the second year of life.

Breastfed children perform better on intelligence tests, are less likely to be overweight or obese and less prone to diabetes later in life. Women who breastfeed also have a reduced risk of breast and ovarian cancers.

Inappropriate marketing of breast-milk substitutes continues to undermine efforts to improve breastfeeding rates and duration worldwide.

References

- The Australian Breastfeeding Association. The home of trusted breastfeeding support, education and advocacy | Australian Breastfeeding Association
- Queensland Clinical Guidelines. Establishing Breastfeeding. Maternity and Neonatal Clinical Guidelines | Queensland Clinical Guidelines | Queensland Health
- World Health Organisation. Breastfeeding (who.int)
- Academy of Breastfeeding Medicine. The Mastitis Spectrum (2022). PROTOCOLS (bfmed.org)
- The Royal Children's Hospital in Melbourne. Clinical Practice Guidelines. Clinical Practice Guidelines : Gastrooesophageal reflux disease in infants (rch.org.au)
- Neuroprotective Developmental Care or the Possums programs. Dr Pam | NDC Masterclasses
- Why infant reflux matters. Carol Smythe. (2021). Home | Carol Smyth IBCLC & CBT
- Children's Health Queensland Hospital and Health Service. Children's health fact sheets | Children's Health Queensland
- Pregnancy and Breastfeeding Medicines Guide. Medicines | PBMG (thewomenspbmg.org.au)

- Video – David Cartwright newborn examination
- baby check & primitive reflexes - David Cartwright.wmv

AM2 Postnatal Case Discussion – Purple Group

- Lily has presented on day four after the birth of her first child at term by a forceps delivery for failure to progress
- He weighed 4.8 kg at birth and was mildly jaundiced at discharge on day two, but this seems to be progressing.
- Lily is breastfeeding every 2-3 hours and settles in between feeds.
- What is your assessment and plan for baby Sam?

She has a 15 min appointment - Outline your approach

AM2 Postnatal Case Discussion – Orange Group

Reintroducing Kasie …..

- Kasie has gone on to have an uncomplicated pregnancy, with her blood pressure remaining stable until she was in labour, at which time a vacuum extraction was performed.
- She has presented today at day 12 because baby Chloe continues to appear very jaundiced. Chloe is breastfeeding every 4-5 hours and appears more lethargic in the last few days.
- What is your assessment and plan for baby Chloe?

She has a 15 min appointment - Outline your approach

Newborn examination – what's new?

Ryan Mills

Deputy Director, Children's and Neonatal Services, Logan Hospital

Associate Professor, Griffith University

Routine newborn baby assessment

Preparation

Family centred care
- Consider cultural needs
- Discuss with parents: purpose, process, timing and limitations of assessments
- Ask about parental concerns
- Encourage participation

Timing
- Initial exam immediately after birth and any resuscitation
- Full and detailed assessment within 48 hours and always prior to discharge
- Follow-up 5–7 days and 6 weeks
- If unwell/premature–stage as clinically indicated

Review history
- Maternal medical/obstetric/social and family
- Current pregnancy
- Labour and birth
- Sex, gestational age, Apgar scores and resuscitation
- Since birth–medications, observations, feeding

Environment–consider:
- Warmth, lighting
- Correct identification
- Infection control precautions
- Privacy

Assessment

General appearance
- Skin colour, integrity, perfusion
- State of alertness
- Activity, range of spontaneous movement
- Posture, muscle tone

Growth status
- Chart head circumference, length, weight on centile charts

Head, face, neck
- Head shape, size
- Scalp, fontanelles, sutures
- Eye size, position structure
- Nose, position, structure
- Ear position, structure
- Mouth, palate, teeth, gums tongue, frenulum
- Jaw size

Shoulders, arms, hands
- Length, proportions, symmetry
- Structure, number of digits

Chest
- Size, shape, symmetry, movement
- Breast tissue, nipples
- Heart sounds, rate, pulses
- Breath sounds, resp rate
- Pulse oximetry

re not exhaustive. Use clinical judgement

Further investigation ☑ Urgent

Growth and appearance
- Dysmorphic features
- Excessive weight loss
- ☑ **Jaundice < 24 hours of age**
- ☑ **Central cyanosis**
- Petechiae new/unrelated to birth
- Pallor, haemangioma

Head and neck
- ☑ **Enlarged/bulging/sunken fontanelle**
- Macro/microcephaly
- ☑ **Subgaleal haemorrhage**
- Caput, cephalhaematoma
- Fused sutures
- Facial palsy/asymmetry on crying
- Hazy, dull cornea; congenital cataract
- Absent red eye reflex
- Pupils unequal/dilated/constricted
- Purulent conjunctivitis/yellow sclera
- ☑ **Nasal obstruction**
- Dacryocyst; cleft lip/palate
- Unresponsive to noise
- Absent ear canal or microtia
- Ear drainage
- Small receding chin/micrognathia
- Neck masses, swelling, webbing
- Swelling over or fractured clavicle

Upper limbs
- Limb hypotonia, contractures, palsy
- Palmar crease pattern

Chest
- ☑ **Respiratory distress**

Equipment–prepare:

- Overhead warmer if required
- Stethoscope
- Ophthalmoscope
- Tongue depressor & glove
- Pencil torch
- Tape measure, infant scales, growth charts
- Pulse oximeter
- Documentation
  - Infant Personal Health Record
  - Medical record
  - Neonatal clinical pathway

Discharge

Review discharge criteria

- Observations, feeding, output
- Vitamin K
- Hepatitis B vaccination

Discuss

- If < 24 hours of age, when to seek urgent medical assistance
- Routine screening (e.g. hearing, NBST, pulse oximetry)
- Childhood immunisation program
- Support agencies
- Newborn care
- Health promotion
- Medications as indicated

Abdomen

- Size, shape, symmetry
- Palpate liver, spleen, kidneys
- Umbilicus

Genitourinary

- Male–penis, foreskin, testes
- Female–clitoris, labia, hymen
- Anal position, patency
- Passage of urine and stool

Hips, legs, feet

- Ortolani and Barlow's manoeuvres
- Leg length, proportions, symmetry and digits

Back

- Spinal column, skin
- Symmetry of scapulae, buttocks

Neurological

- Behaviour, posture
- Muscle tone, spontaneous movements
- Cry
- Reflexes–Moro, suck, grasp

Indications for further investigation and/or urgent follow-up

- ☑ **Apnoeic episodes**
- Abnormal HR, rhythm, regularity
- Heart murmurs
- ☑ **Weak or absent pulses**
- ☑ **Positive pulse oximetry**

Abdomen

- ☑ **Organomegaly**
- ☑ **Gastrochisis/exomphalos**
- ☑ **Bilateral undescended testes**
- ☑ **Bilious vomiting**
- Inguinal hernia
- Signs of umbilical infection

Genitourinary

- ☑ **No urine/meconium in 24 hours**
- ☑ **Ambiguous genitalia**
- ☑ **Testicular torsion**
- Hypospadias, penile chordee micropenis, hydrocele

Hips, legs and feet

- Risk factors for hip dysplasia
- Positive/abnormal Barlow's and/or Ortolani manoeuvres
- Contractures/hypotonia
- Talipes
- Developmental hip dysplasia

Back

- Curvature of spine
- Non-intact spine
- Tufts of hair/dimple along intact spine

Neurological

- Weak/irritable/absent cry

- Medications as indicated
- Personal Health Record (red book)
- Referral and follow-up
  - Routine 5–7 days & 6 weeks

grasp

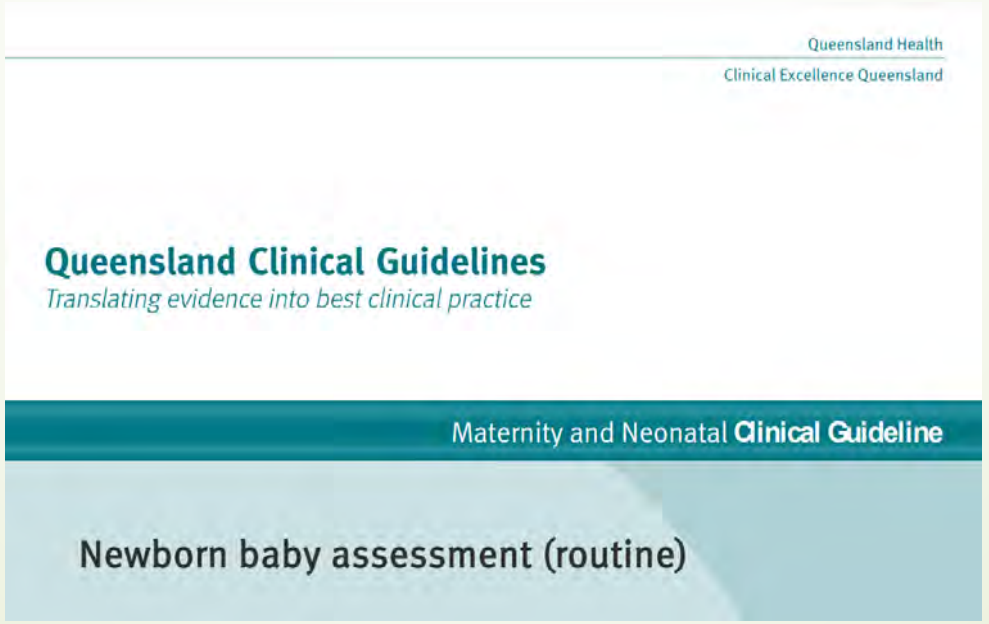
Discuss Document Refer

- Discuss findings with parents
- Document in health record(s)
- Refer as indicated

- Weak/irritable/absent cry
- Absent/exaggerated reflexes
- No response to consoling

☑ Seizures
☑ Altered state of consciousness

☑ Urgent follow-up; **GP:** general practitioner; **HR**: heart rate, **NBST**: newborn screening test, **SUDI**: sudden unexpected death in infancy, **<**: less than



Neonatal heel prick screening

- 48-72 hours of age (relies on adequate enteral intake – may need repeating if NBM/prem)
- New conditions added in May:
  - SCID (severe combined immune deficiency)
    - Usually X-linked, severe/lethal infections in early life
    - Needs bone marrow transplant
    - Heel prick blood screened for T cell receptor excision circles (low in SCID). If abnormal, needs confirmatory testing (FBC – lymphopaenia)
  - Spinal Muscular Atrophy (AR, 1/50 carrier rate)
    - Types 1 (most severe) to 4.
    - PCR-based genetic screen
    - Benefit of early treatment (Nusinersin – intrathecal)

Classic heel prick tests

- Cystic fibrosis (AR, carrier rate approx. 1/30)
  - Immunoreactive trypsinogen
  - Carriers often test positive
  - Initial genetic testing (85% of most common genes) on heel prick
  - Sweat test for confirmation
- Phenylketonuria (AR, carrier rate 1/50)
  - Early treatment important (low phenylalanine diet)
  - Newer therapies
- Galactosaemia (AR, carrier rate 1/100)
  - Symptoms: lethargy, FTT, jaundice (liver failure), sepsis
  - Early treatment (lactose restriction)
- Hypothyroidism (multifactorial)
  - Tests for elevated TSH (i.e., pituitary hypothyroidism not detected)
  - Classically detects aplastic or hypoplastic (e.g., ectopic/lingual) thyroid.

Heel prick testing (cont)

- Congenital adrenal hyperplasia (AR, carrier rate 1/60)
  - Tests for 17OHP, i.e.. specifically, 21 hydroxylase deficiency (classical CAH, often salt wasting).
- Extended screening for inborn errors of metabolism
  - E.g., organic acidurias
  - Spectroscopy for metabolite peaks
  - Generally autosomal recessive conditions

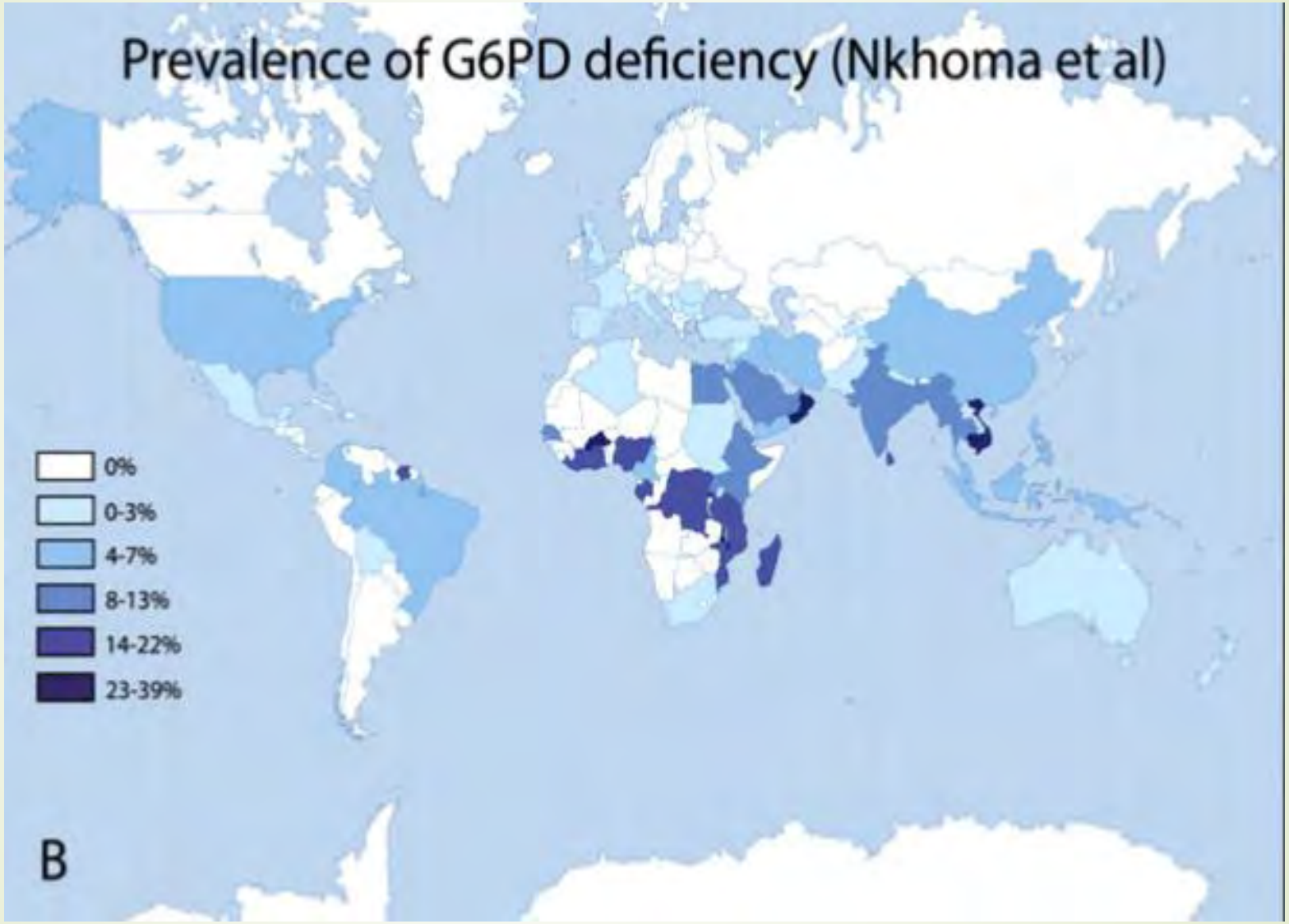
Neonatal screening messages for GPs

- Some babies might need recollection (e.g., if inadequate intake at 48-72h)
- "No news is good news"
- BUT
  - Worth calling the lab if clinically concerned (family history etc.)
  - Lab can give more detailed info (e.g., precise level of result such as TSH)
  - Stored under mother's name
  - Call RBWH switch – neonatal screening laboratory

G-6-PD deficiency

- Glucose-6-phosphate dehydrogenase
  - Protects against oxidative stress in RBC
  - If deficient, largely asymptomatic but at risk of major haemolytic event if exposed to oxidation (e.g., naphthalene, several drugs, see list)
- X-linked condition
  - i.e., mostly males affected
  - Can have homozygous females, or symptomatic carriers (Lyonization)
  - Approx 3% of world population affected, but up to 30% in high prevalence areas (e.g., 10% of African American men)
    - Africa, Asia, Middle East.

- Included in newborn screening in some jurisdictions, but not Queensland
- Therefore, low threshold to test in following situations:
  - Unexplained haemolysis/anaemia
  - Unexpectedly severe neonatal jaundice, or prolonged jaundice
  - Particularly in high risk groups
  - Test: “G6PD level”


Prevalence of G6PD deficiency (Nkhoma et al)
0%
0-3%
4-7%
8-13%
14-22%
23-39%
B

- **Antibiotics**
  - Sulphonamides (check with your doctor)
  - Co-trimoxazole (Bactrim, Septrin)
  - Dapsone
  - Chloramphenicol
  - Nitrofurantoin
  - Nalidixic acid
- **Antimalarials**
  - Chloroquine
  - Hydroxychloroquine
  - Primaquine
  - Quinine
  - Mepacrine
- **Chemicals**
  - Moth balls (naphthalene)
  - Methylene blue
- **Foods**
  - Fava beans (also called broad beans)
- **Other drugs**
  - Sulphasalazine
  - Methyldopa
  - Large doses of vitamin C
  - Hydralazine
  - Procainamide
  - Quinidine
  - Some anti-cancer drugs

G6PD Deficiency – substances to avoid (RCH Melbourne)

AM2 Postnatal Case Discussion – Purple Group

- Lily has presented on day four after the birth of her first child at term by a forceps delivery for failure to progress
- He weighed 4.8 kg at birth and was mildly jaundiced at discharge on day two, but this seems to be progressing.
- Lily is breastfeeding every 2-3 hours and settles in between feeds.
- What is your assessment and plan for baby Sam?

She has a 15 min appointment - Outline your approach

AM2 Postnatal Case Discussion – Orange Group

Reintroducing Kasie …..

- Kasie has gone on to have an uncomplicated pregnancy, with her blood pressure remaining stable until she was in labour, at which time a vacuum extraction was performed.
- She has presented today at day 12 because baby Chloe continues to appear very jaundiced. Chloe is breastfeeding every 4-5 hours and appears more lethargic in the last few days.
- What is your assessment and plan for baby Chloe?

She has a 15 min appointment - Outline your approach

Neonatal jaundice

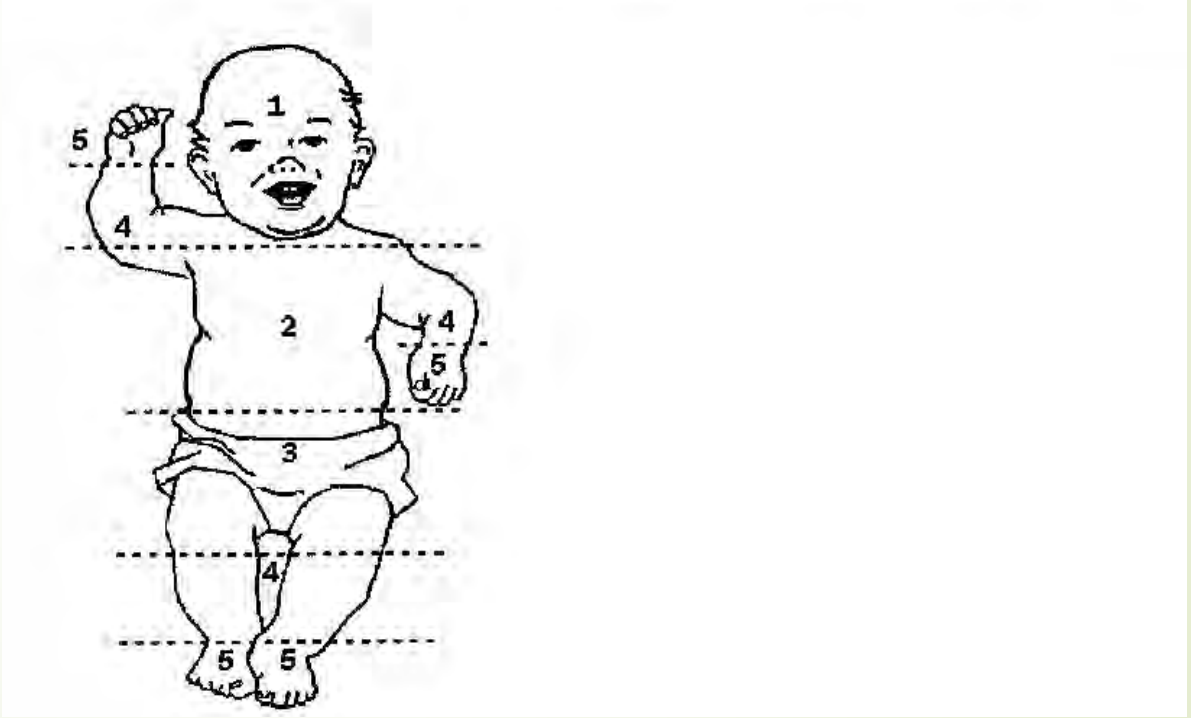
- Common (60% of term newborns)
- Risk: bilirubin encephalopathy (kernicterus)
  - "Safe" level of bilirubin not defined, but in healthy, term infants with no haemolysis, considered to be less than 425µmol/L
  - Higher risk in premature infants, or with isoimmunisation (e.g., rhesus)
- Usual features of physiological jaundice
  - Onset after first day of life (day 2-3)
  - Relatively mild (face and trunk)
  - Resolved by day 7-14

- Exacerbating conditions for physiological jaundice:
  - Dehydration (feeding difficulties) – check weight
  - Infection
  - Extensive bruising or cephalohaematoma
  - Exclusive breastfeeding

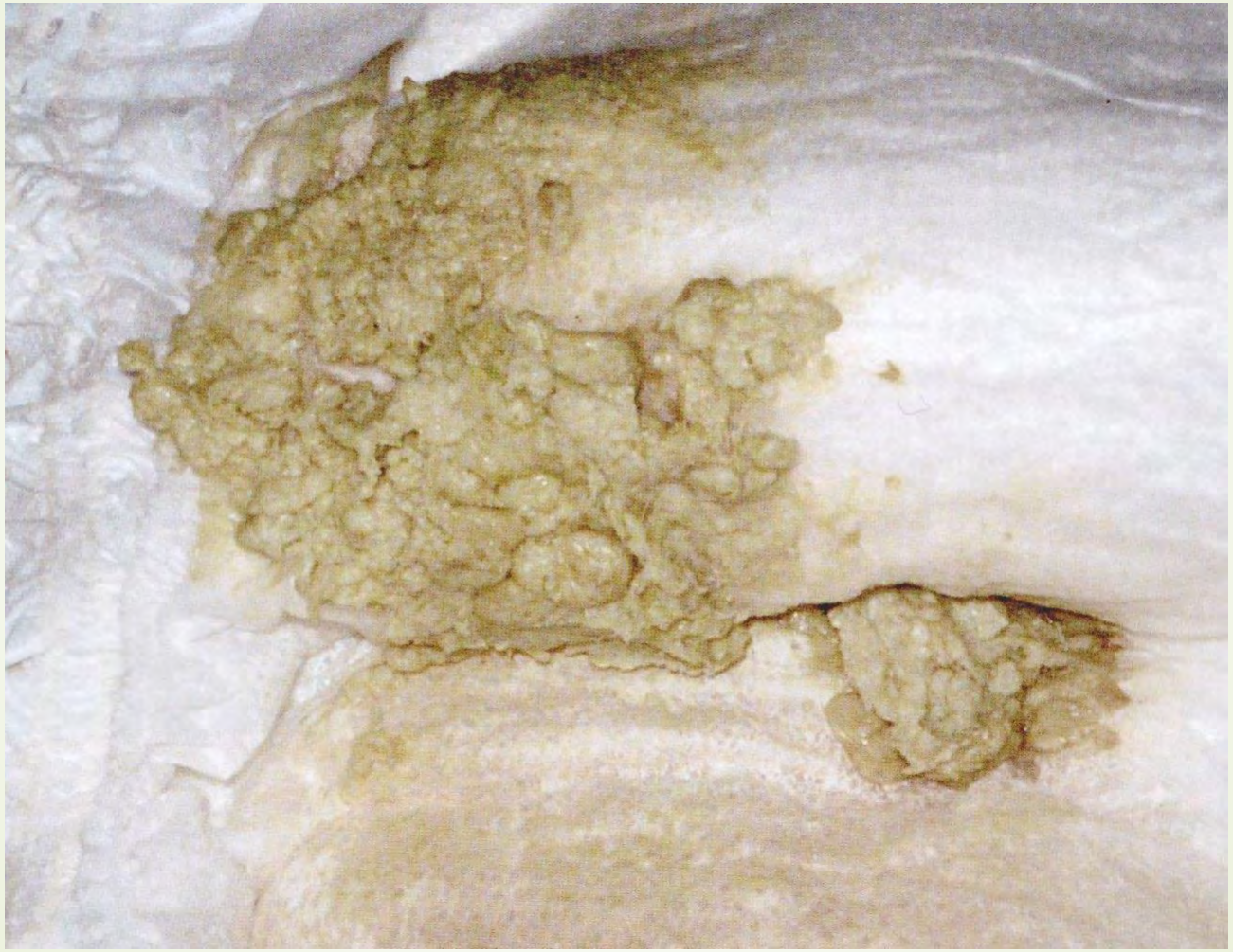
Kramer's Rule

- Perform SBR if estimated value of:
  - >150 in preterm
  - >200 in term baby

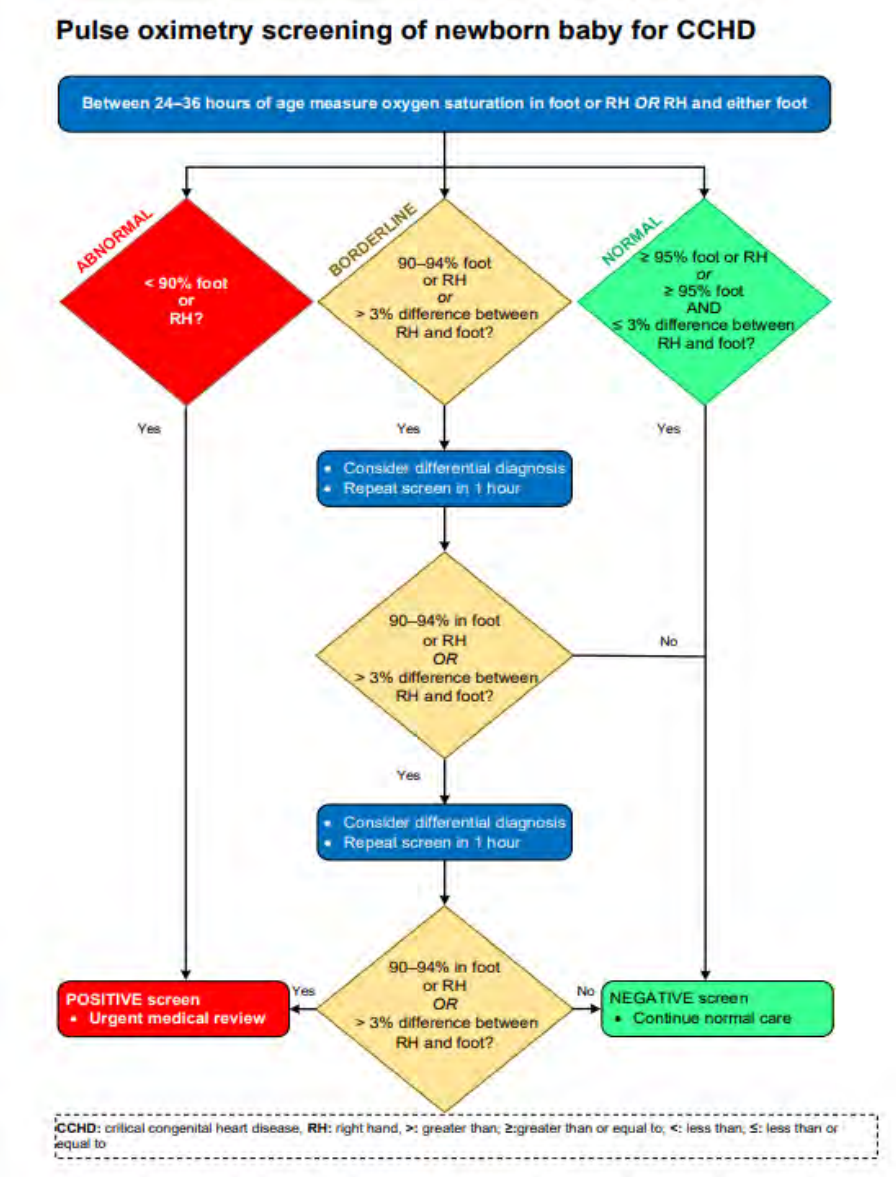
Zone	1	2	3	4	5
SBR (umol/L)	100	150	200	250	>250



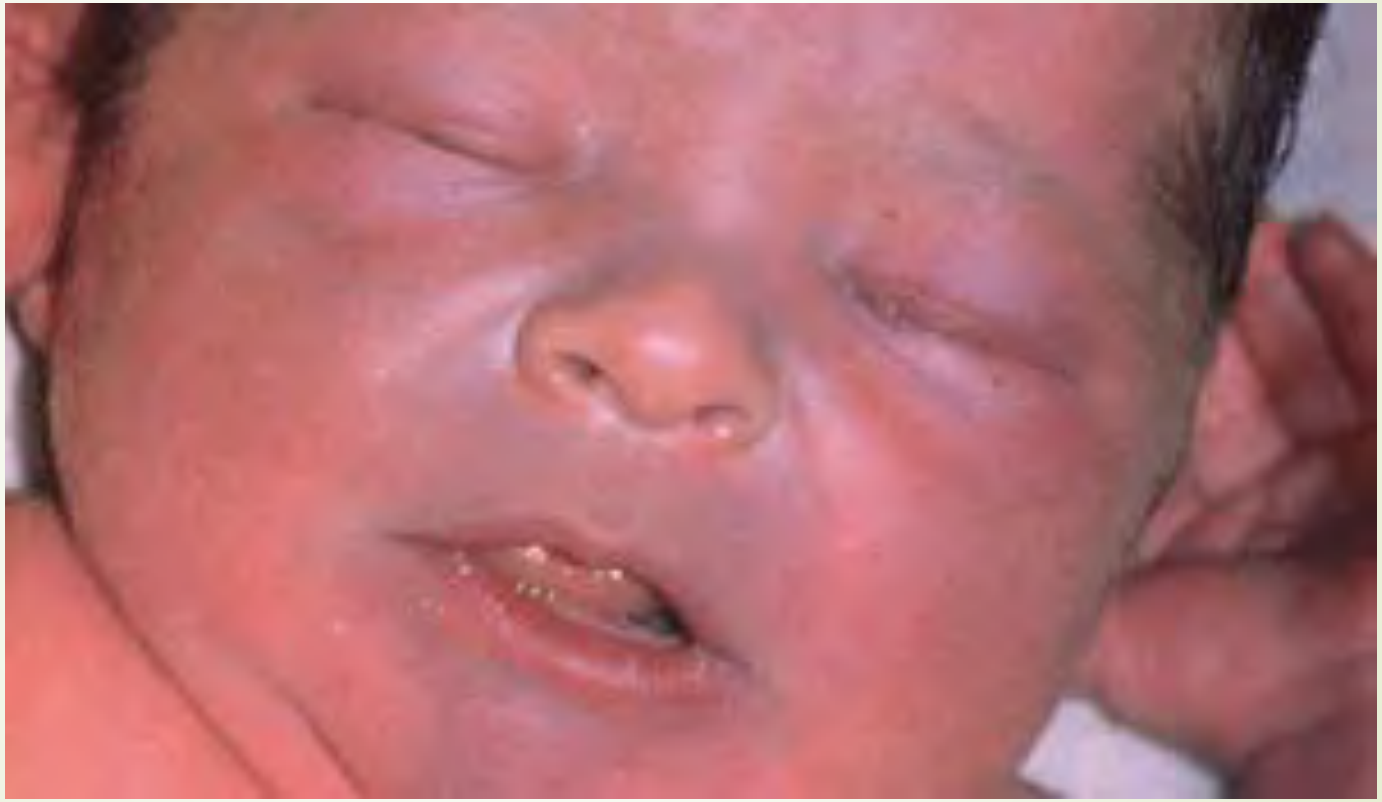
- Initial testing for jaundice:
  - Bilirubin (total and conjugated)
  - Group and direct Coombs
- Further tests if needed:
  - FBC
  - (LFT)
  - G6PD
- Prolonged jaundice:
  - FBC, G6PD, TFT
  - (Consider infection/UTI)
  - Diagnosis of exclusion – breast milk jaundice (up to 3 months)
- Red flag: Conjugated hyperbilirubinaemia
  - Total conj. Bili >20, or >20% of total
  - Check for dark urine/pale (acholic) stools
  - Workup for extra-hepatic biliary atresia (or other cause – choledochal cyst, neonatal hepatitis etc.)



Cardiac screening



Why? Central cyanosis is often not obvious

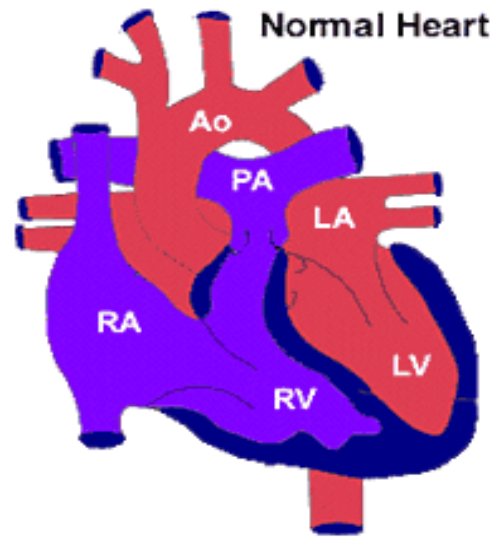


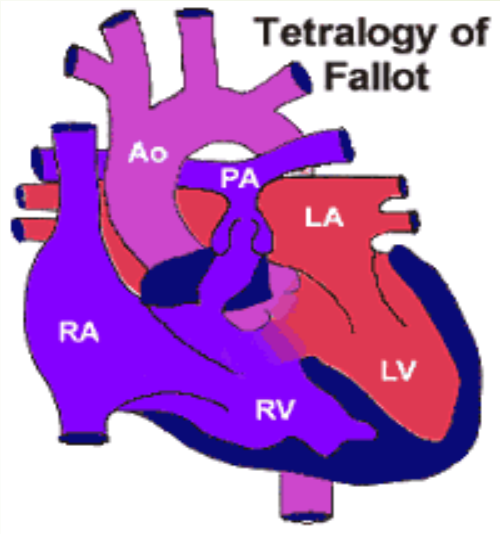
Classification – congenital heart disease

- Cyanotic vs acyanotic
- Various combinations of:
  - Obstruction (left side, right side)
  - Shunting (atrial, ventricular, ductal, collateral vessels)
  - Flow pathways (septal defects, vessels e.g., ductus arteriosus)
  - Pulmonary blood flow (increased, normal, decreased)

- Symptoms
  - Feeding difficulty
  - Breathing difficulty
  - Sweating
  - Pallor or cyanosis
- Clinical signs
  - ?Cyanotic or acyanotic
  - ?Signs of cardiac failure
    - Tachypnoea (crackles uncommon)
    - Hepatomegaly (hard to find JVP!)
    - May develop over days-weeks (decr. PVR)
    - (bronchiolitis-like, but subacute and without coryza)

Example: Tetralogy of Fallot





- VSD
- Overriding aorta (over VSD)
- Pulmonary stenosis
- Right ventricular hypertrophy

- Obstruction (yes – pulmonary)
- Shunting (yes – right to left, giving cyanosis)
- Pulmonary blood flow (decreased)

Tetralogy of Fallot (cont)

- Pathophysiology
- Most (not all) present as infants with cyanosis
  - "tet spells" of intense cyanosis
  - Murmur/s (pulmonary stenosis, VSD)
  - RVH (RV heave, ECG changes)
  - CXR: "boot shaped" heart

Cardiac messages for GPs

- Don't be reluctant to check a newborn's saturations (equipment).
- If you hear a murmur, take a good history of feeding/breathing/sweating and weight trajectory
- If concerned, refer (call if acute concerns)

Nomogram: Jaundice Management

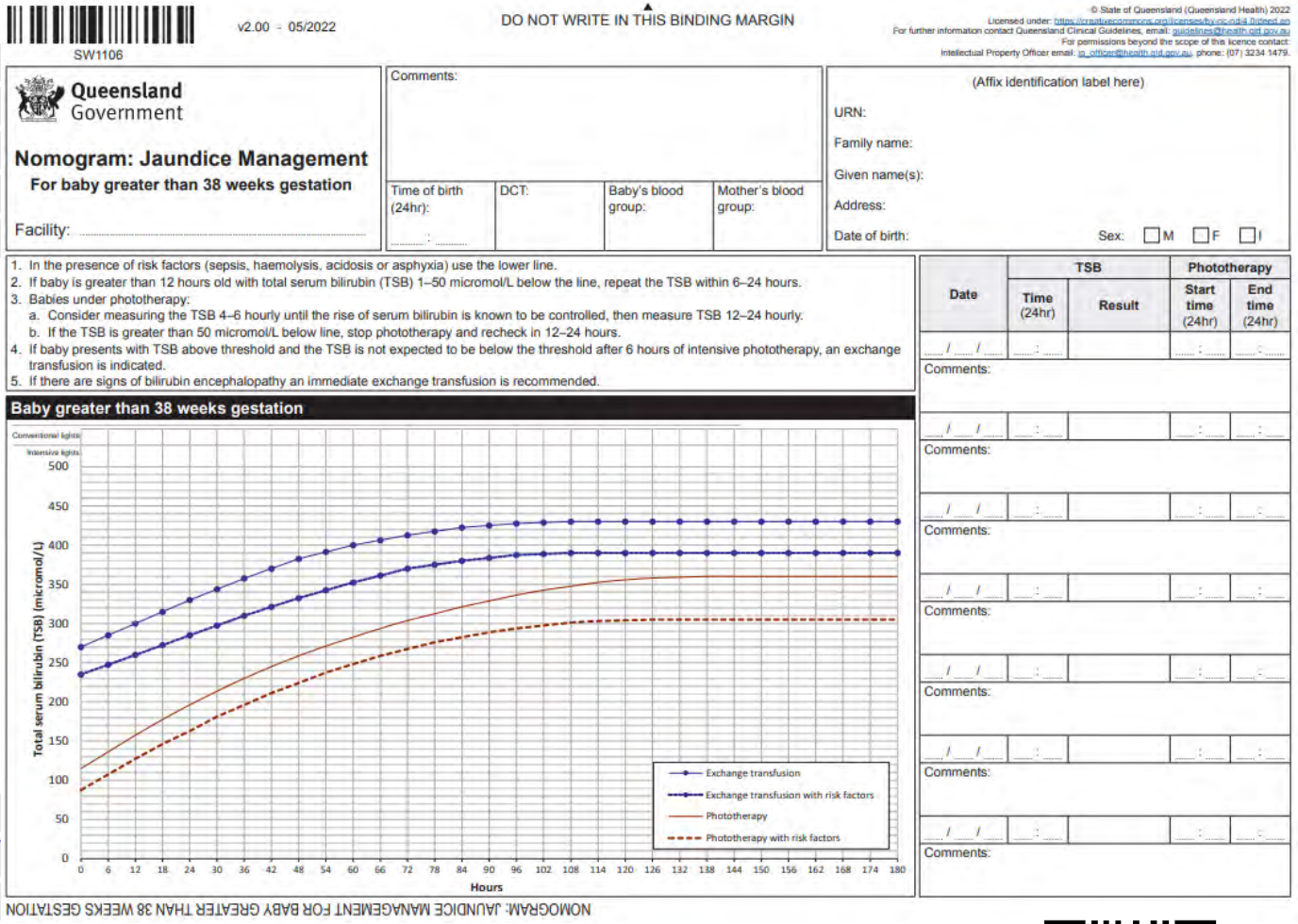
Neonatal

- Assessment - Routine Newborn
- Breastfeeding - Establishing breastfeeding
- Hypoglycaemia - newborn *(Updated June 2022)*
- Hypoxic-ischaemic encephalopathy *(Updated Nov 2022)*
- Jaundice - neonatal *(Updated Dec 2022)*

Last amended: Dec 2022 | Review date: Dec 2027 | Show history

Guideline	• Guideline: Neonatal jaundice (PDF, 786kB) • Guideline Supplement: Neonatal jaundice (PDF, 203kB)
Flowcharts	• Flowchart: Management of neonatal jaundice (PDF, 112kB)
Nomograms for jaundice, phototherapy and exchange transfusion	• All nomograms updated (V2) April 29 2022 • Nomogram: Baby greater than 38 weeks (PDF, 563kB) • Nomogram: Baby 35 to 37+6 weeks (PDF, 533kB) • Nomogram: Baby less than 35 weeks and more than 1999 grams (PDF, 500kB) • Nomogram: Baby less than 35 weeks and 1500-1999 grams (PDF, 507kB) • Nomogram: Baby less than 35 weeks and 1000-1499 grams (PDF, 496kB) • Nomogram: Baby less than 35 weeks and less than 1000 grams (PDF, 409kB)
Education	• Presentation: Neonatal jaundice (PDF, 570kB) • Knowledge assessment: Neonatal jaundice
Consumer information	• Jaundice in newborn babies (PDF, 611kB)

- Medicines - Neonatal
- Perinatal care of the extremely preterm baby
- Perinatal substance use: neonatal



SW1106 v2.00 - 05/2022

DO NOT WRITE IN THIS BINDING MARGIN

Queensland Government

Nomogram: Jaundice Management

For baby greater than 38 weeks gestation

Facility: .....

Comments:

Time of birth (24hr):	DCT:	Baby's blood group:	Mother's blood group:
..... :			

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Date of birth: Sex: ☐M ☐F ☐I

1. In the presence of risk factors (sepsis, haemolysis, acidosis or asphyxia) use the lower line.
2. If baby is greater than 12 hours old with total serum bilirubin (TSB) 1–50 micromol/L below the line, repeat the TSB within 6–24 hours.
3. Babies under phototherapy:
   a. Consider measuring the TSB 4–6 hourly until the rise of serum bilirubin is known to be controlled, then measure TSB 12–24 hourly.
   b. If the TSB is greater than 50 micromol/L below line, stop phototherapy and recheck in 12–24 hours.
4. If baby presents with TSB above threshold and the TSB is not expected to be below the threshold after 6 hours of intensive phototherapy, an exchange transfusion is indicated.
5. If there are signs of bilirubin encephalopathy an immediate exchange transfusion is recommended.

Baby greater than 38 weeks gestation

Conventional lights
Intensive lights
Total serum bilirubin (TSB) (micromol/L)
500 450 400 350 300 250 200 150 100 50 0
0 6 12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114 120 126 132 138 144 150 156 162 168 174 180
Hours
Exchange transfusion
Exchange transfusion with risk factors
Phototherapy
Phototherapy with risk factors

Date	TSB		Phototherapy	
	Time (24hr)	Result	Start time (24hr)	End time (24hr)
../../..	.....		.....	.....
Comments:				
../../..	.....		.....	.....
Comments:				
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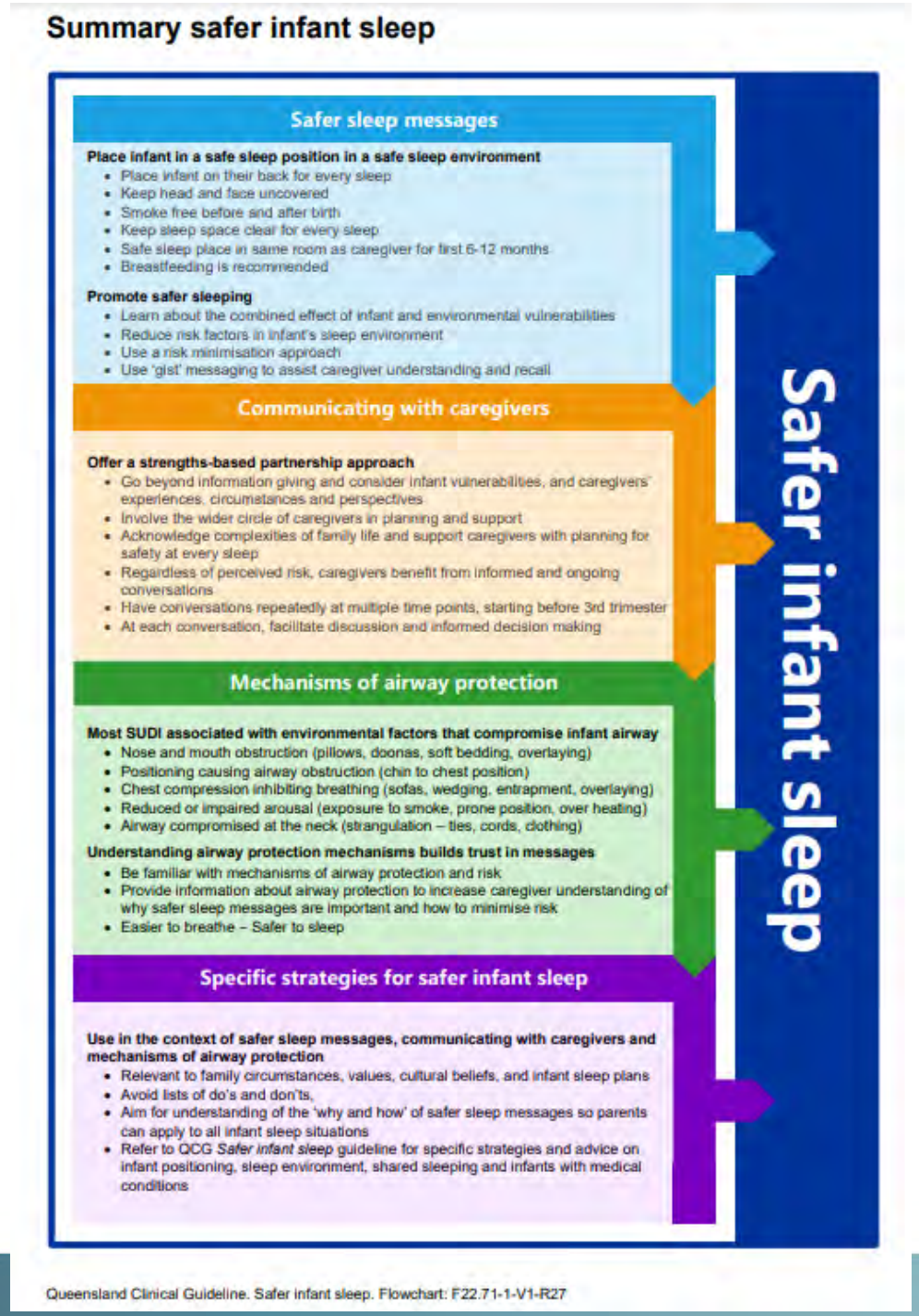
NOMOGRAM: JAUNDICE MANAGEMENT FOR BABY GREATER THAN 38 WEEKS GESTATION

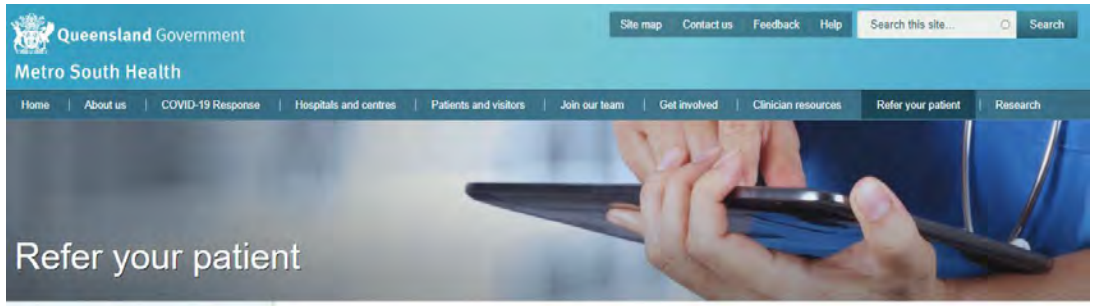
https://www.health.qld.gov.au/qcg/publications

Queensland Clinical Guideline. Safer infant sleep (July 2022) https://www.health.qld.gov.au/__data/assets/pdf_file/0024/1166352/f-safer-sleep-sum.pdf



Spot On Health Pages

- https://spotonhealth.communityhealthpathways.org/95834.htm - Poor Growth
- https://spotonhealth.communityhealthpathways.org/33560.htm – Unsettled Infant
- https://spotonhealth.communityhealthpathways.org/130765.htm – Jaundice in Babies
- https://spotonhealth.communityhealthpathways.org/72406.htm – Low Birth Weight Infants



Home > Refer your patient > General Practice Liaison Officer (GPLO) Program

General Practice Liaison Officer (GPLO) Program

Metro South GPLO Team are here to assist

The GP Liaison Officers (GPLO's) are available to support and assist GP's with:

- face to face, phone or email support
- providing information and guidance on referral pathways and navigating Metro South Health services including Refer Your patient – Metro South Health and SpotOnHealth HealthPathways
- assistance with GP Smart referrals - training support and troubleshooting
- supporting clinical handover between primary and secondary care, including assistance with updating your practice details in the STS address book for electronic communication and secure messaging
- being an escalation point and communication pathway for feedback.
- assistance with registration to the Health Provider Portal to gain read-only online access to your patients' Queensland Health (QH) records

Contact details:

Email: GPLO_Programs2@health.qld.gov.au
Telephone: 1300 364 155 (option 2) Mon-Fri 8am-4pm

General Practice Liaison Officer (GPLO) Program Metro South Health

GPLO Maternity Shared Care Team Metro South

The Metro South GPLO Maternity Shared Care team are based at Logan Hospital, but work liaising between Metro South Maternity services and GPs across the hospital catchments. The team comprises of GP Liaison Dr Kim Nolan, a highly experienced women's health specialist GP and GP Liaison Midwife Manager Lisa Miller. The team are available to assist with patient queries, referrals, patient handover, and to liaise with the obstetric team on your behalf. We currently run several GP Alignment Education events each year which are designed to assist GPs in providing high level maternity shared care within Metro South.

Contact details

Dr Kim Nolan
M.B.B.S; DRANZCOG; FRACGP; DCH
GPLO General Practitioner – Maternity
Obstetrics and Gynaecology Department
Logan Hospital
Telephone: 07 2891 5754
Email: Kim.Nolan@health.qld.gov.au

Lisa Miller
General Practice Liaison Midwife Manager
Women's & Children's Services | Logan Bayside Health Network
Logan Hospital
Telephone: 0482 677 946
Email: lisa.miller3@health.qld.gov.au

Becoming a Shared Care GP

GPs wishing to provide shared antenatal care at MSH region hospitals are encouraged to become aligned. There are a number of options to alignment including completion of a DRANZCOG, Certificate of Women's Health, MMH or MSH Alignment 1 seminar. See flowchart outlining the Alignment/Re-Alignment Options and further resources on the GP Maternity Share Care Education event page.

https://metrosouth.health.qld.gov.au/referrals/general-practice-liaison-officer-gplo-program

Home > About us > Events

GP Maternity Shared Care Alignment 2 (AM2) - Logan/Beaudesert/Redland

15 July 2023

+ Add to Calendar

To become an Aligned GP

Information on becoming an Aligned GP is available at:

- General Practice Liaison Officer (GPLO) Program | Metro South Health
- or by contacting GPLO_Maternity_Share_Care@health.qld.gov.au

Resources

Please find below useful GP Shared Care Resources, including the Brisbane South Antenatal Shared Care Summary document, and PDF versions of our most recent AM1 PowerPoint presentations, as well as the Online Bridging module. Please note that these presentations will be updated to the most recent version periodically, which may be different to the slides from an Alignment education event you have attended.

- Brisbane South Antenatal Shared Care Summary (PDF, 697.57 KB)
- MSH Maternity Shared Care – Logan/Beaudesert/Redland Hospitals – Alignment and Re-alignment Options (PDF, 142.33 KB)
- GP Maternity Shared Care Online Bridging Program (PDF, 5.2 MB)

Past events

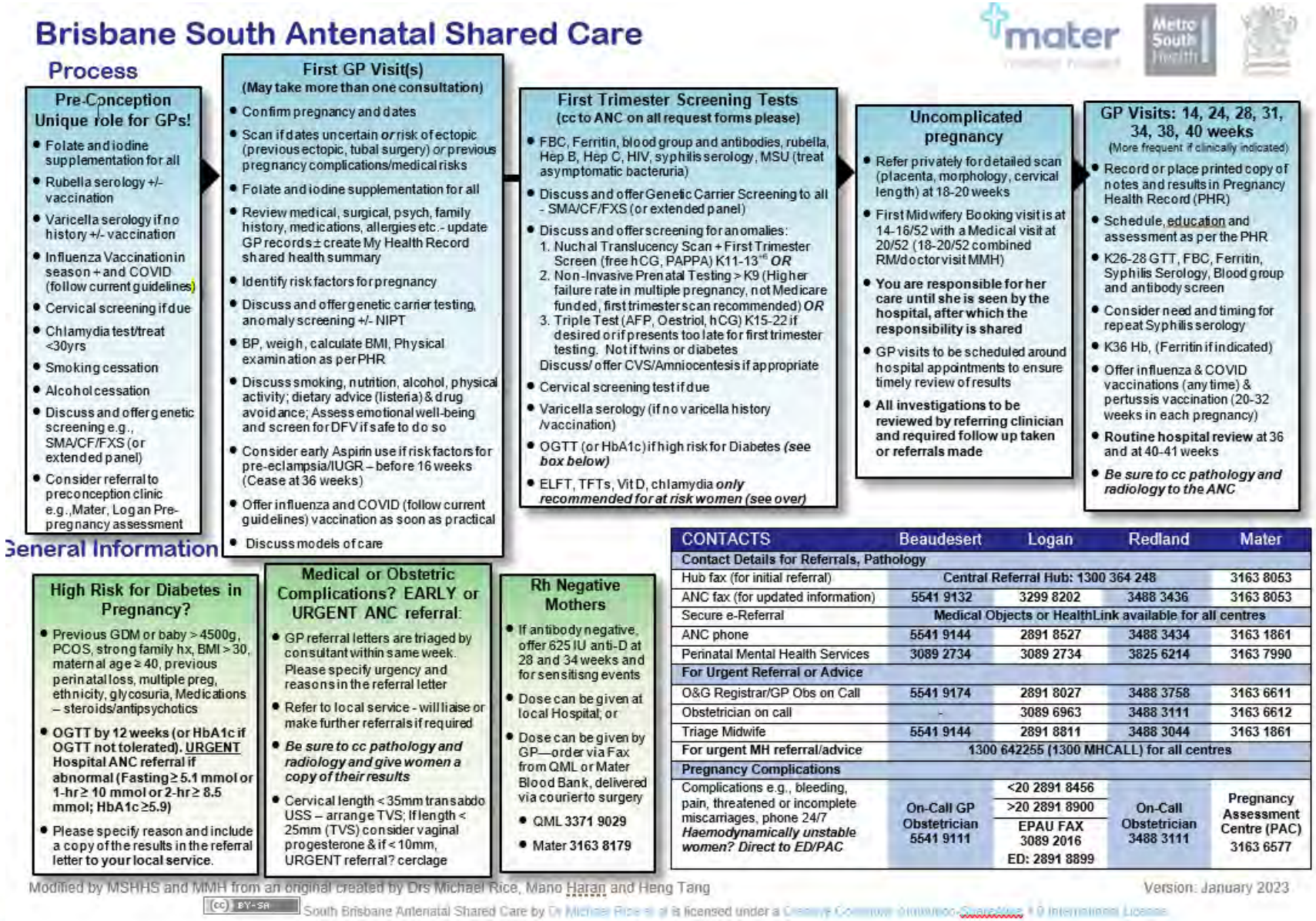
- MSH AM1 Seminar March 2023 – Part 1 (PDF, 8.55 MB)
- MSH AM1 Seminar March 2023 – Part 2 (PDF, 10.52 MB)
- MSH AM1 Seminar November 2022 – Logan/Beaudesert Hospital PowerPoint – Part 1 (PDF, 7.92 MB)
- MSH AM1 Seminar November 2022 – Logan/Beaudesert Hospital PowerPoint – Part 2 (PDF, 9.93 MB)
- MSH AM1 Seminar August 2022 – Redland Hospital PowerPoint – Part 1 (PDF, 12.77 MB)
- MSH AM1 Seminar August 2022 – Redland Hospital PowerPoint – Part 2 (PDF, 8.34 MB)

Last updated 28 June 2023

Last reviewed 22 June 2023

https://metrosouth.health.qld.gov.au/events/gp-maternity-shared-care-alignment-2-logan-beaudesert-redland

Brisbane South Antenatal Shared Care Summary – January 2023



Available at and the [GP Maternity Share Care Education Event](#) webpage

https://metrosouth.health.qld.gov.au/referrals/general-practice-liaison-officer-gplo-program

Maternity GP Shared Care
Additional Information and Advice

Additional Tests – chlamydia, ELFT, TSH/TFTs, Vit D, TORCH serology

- Chlamydia--test women < 30 years old and other high-risk women by first-pass urine PCR.
- ELFTs recommended for obese women or women with hypertension or known or suspected renal or liver disease.
- Routine TFTs *are not* recommended in low-risk women during pregnancy. TSH generally drops in first trimester with the rise in HCG. If a woman has a TSH lower than the lab reference range, check free T4/T3—if these are normal, the woman *does not* need referral, if elevated, they will need clinical review, possibly referral – liaise with your local team.
- Women with pre-existing hypothyroidism should have a TSH <2.5 in first trimester and <3.0 in the rest of the pregnancy. Lab reference ranges will reflect pregnancy recommendations if the woman is identified as being pregnant. Weekly doses usually need to go up by 30% during pregnancy, which is an extra 2 doses/week. Advise women to commence the higher dose as soon as they know they are pregnant.
- Vitamin D levels or supplementation are recommended for obese *or* dark-skinned women *or* those who have little sun exposure *or* who cover themselves for religious or cultural reasons. Levels <50 may require supplements of 2000 IU/day. Levels <15 require higher doses. Re-test after 3 months.
- Toxoplasma, cytomegalovirus and herpes serology should *not* be performed routinely. If there is a risk factor indicating a need for testing, please include it in your referral as follow-up tests or other investigations or management may be needed.

Preventing Infections

- Avoid feeding raw/undercooked meats to pets, avoid cat faeces/litter, wear gloves when gardening
- Good hand hygiene; Care with urine, saliva, nappies of young children
- Influenza and COVID Vaccination at any stage antenatally and pertussis vaccinations between 20-32 weeks (but up to time of delivery if missed; requires two weeks to be fully effective)
- Avoid soft cheeses, un-pasteurised milk, pate, raw eggs, hot dogs, undercooked and deli meats, reheated leftovers, precut fruit, bean sprouts

Nutrition and Supplements

- Folate, folate, folate! 0.5 mg for all low risk, 5 mg for high risk (diabetic, obese, previous or familial neural tube defect, anticonvulsants). Start a month before conception and continue to 12 weeks.
- Iodine 150mcg/day is recommended preconception, during pregnancy and while breastfeeding and a folate + iodine supplement is available. Multivitamins are optional, if chosen, pregnancy/breastfeeding formulas are preferred as they contain iodine and folate, but no Vit A. Iron is only needed if deficiency is identified however a low dose is included in all pregnancy supplements.
- Added supplements needed for women post Bariatric Surgery – seek Dietitian input
- Avoid or limit the intake of large/predatory fish due to their mercury content (Orange Roughy /Sea Perch, Shark/Flake, Swordfish, Marlin etc.)

Early Pregnancy Complications (<20 weeks)

- Nausea and vomiting: decrease iron (but continue iodine and folate), try ginger, acupressure, pyridoxine 75 mg/day in divided doses, doxylamine (Cat A) Metoclopramide (Maxolon Cat A) and Phenothiazines like Prochlorperazine (Stemetil Cat C, po/pr/iv, safe in first trimester); Ondansetron may be effective but is relatively expensive. Even mild dehydration/ketonuria may benefit from IV fluids.
- Bleeding: check blood group and antibodies. Threatened miscarriage in rhesus-negative women without antibodies after 12 weeks requires anti-D, before 12 weeks anti-D is not required unless the miscarriage completes, or you are concerned the woman may not re-present.
- Bleeding and pain: consider ectopic pregnancy!
- Consider advice from, or referral to, early pregnancy assessment unit (EPAU), pregnancy assessment centre (PAC) or emergency department at booking hospital (appointments may be required)

Beaudesert 5541 9111 Logan EPAU 3299 8456 Redland 3488 3111 Mater PAC 3163 6577

Late pregnancy complications (>20 weeks)

- Bleeding – can do spec exam but avoid PVE. Exclude cervical dilatation. Re-check placental site on original morphology scan, Rhesus negative mums need anti-D
- Abdominal pain - can do spec exam but no PVE. Exclude cervical dilatation. Anti-D may be required for abruption.
- Ruptured membranes - Review at hospital preferred. Can do spec exam but no PVE.
- Fundal height > 3cm above or below expected for gestational age – arrange USS & if IUGR confirmed, refer to ANC by Fax *and* Phone Obstetrician/Registrar; if LGA confirmed, refer to ANC by Fax
- Perceived change in fetal movements beyond 28 weeks or no FH detected – arrange IMMEDIATE hospital review
- Most should be referred to birth suites, pregnancy/maternity assessment/observation units or emergency department at booking hospital

Beaudesert 5541 9111 Logan MAC 3299 8811 Redlands 3488 3111 Mater PAC 3163 6577

More Information and education

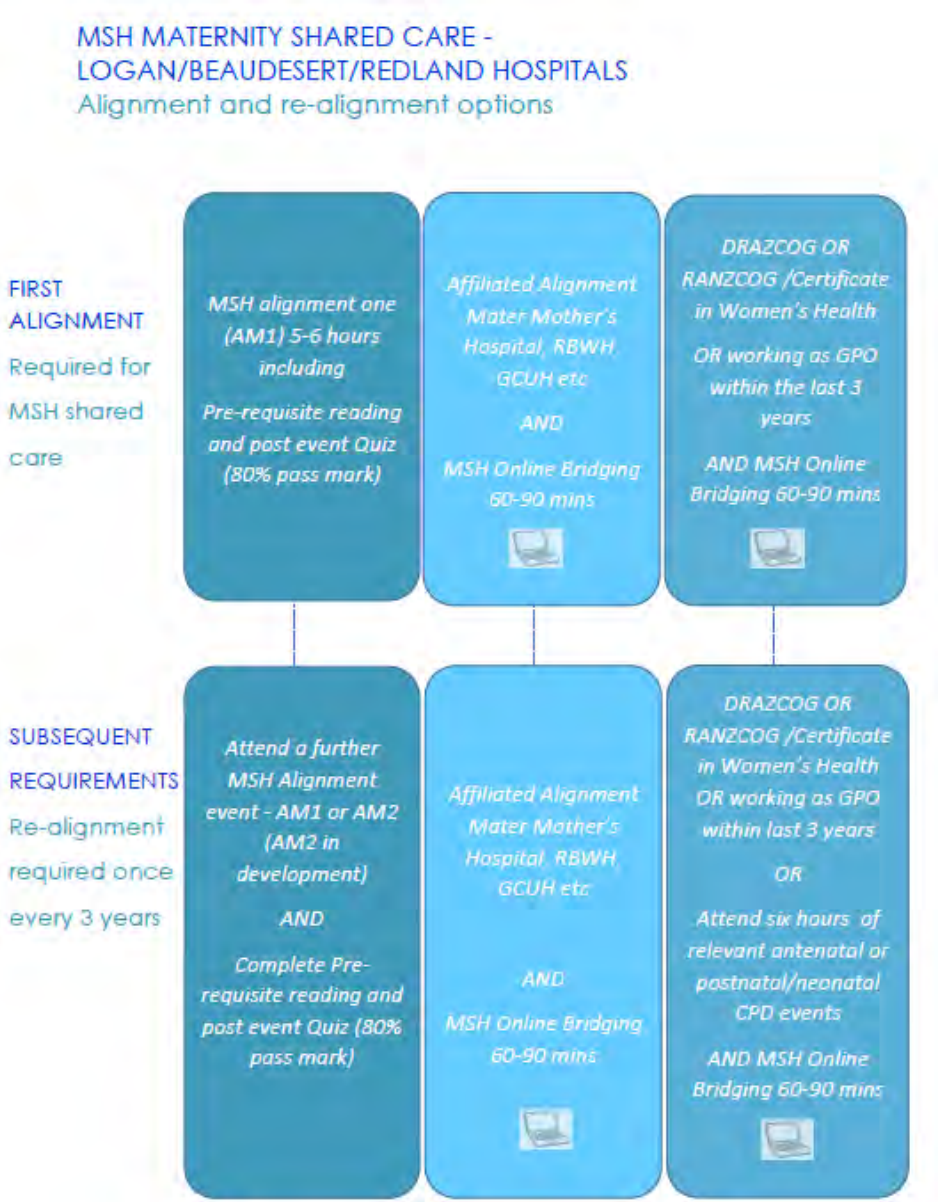
Online education/information for GPs interested in Antenatal Care are available through:

- General Practice Liaison Officer (GPLO) Program webpage: https://metrosouth.health.qld.gov.au/referrals/general-practice-liaison-officer-gplo-program
- Mater Mothers www.materonline.org.au (Click on Shared Care Alignment for a range of resources for GPs) www.matermothers.org.au (Click on Mater Mothers' Hospital for resources for women)
- Maternity Shared Care workshops will be promoted via the Brisbane South PHN website events calendar https://bsphn.org.au/support/workforce-development-education/calendar/
- www.maternity-matters.com.au has consumer and clinician resources and links to reputable websites

Modified by MSHHS and MMH from an original created by Drs Michael Rice, Mano Haran and Heng Tang. Edited and updated by Drs Kim Nolan, Wendy Burton, and Michael Rice – Jan 2023
www.materonline.org.au | www.https://metrosouth.health.qld.gov.au/referrals/general-practice-liaison-officer-gplo-program

How to be aligned with MSHHS

- Completion of an AM1 event essential
- To maintain alignment after AM2
  - Undertake Knowledge Assessment – link sent by email in next week (80% pass mark)
  - Undertake Evaluation/Feedback – link to be forwarded – please let us know what we did well and what we could do better!
  - Please log your own CPD points – recommended as Educational Activity CPD points (5.5 hours) and Reviewing Performance Points (2.5 -3 hours)
  - Alignment will need to be undertaken (or an alternative) every 3 years.



GPLO Maternity GP and Midwife Manager
General Practice Liaison Officer (GPLO) Program | Metro South Health
Email: GPLO_Maternity_Share_Care@health.qld.gov.au Phone: 07 2891 5754/0482 677 281

Maintaining Alignment

To maintain your alignment after the next 3 years, you must either:

- repeat one Alignment Seminar - you can repeat a MSHHS Alignment
  OR an affiliated Alignment (MMH/RBWH/Nambour/West Moreton/GCUH)
  + complete the online bridge including Q&A.

OR

- attend six hours of relevant antenatal or postnatal/neonatal CPD education and complete online bridge including Q & A. The CPD events DO NOT need to be with the Metro South Health Services

OR

- Complete a RANZCOG Diploma or Certificate in Women's Health + complete the online bridge

We are hoping to roll out an Alignment 3 in next 12-18 months in MSHHS.

MSH Maternity Shared Care Online Bridging Program

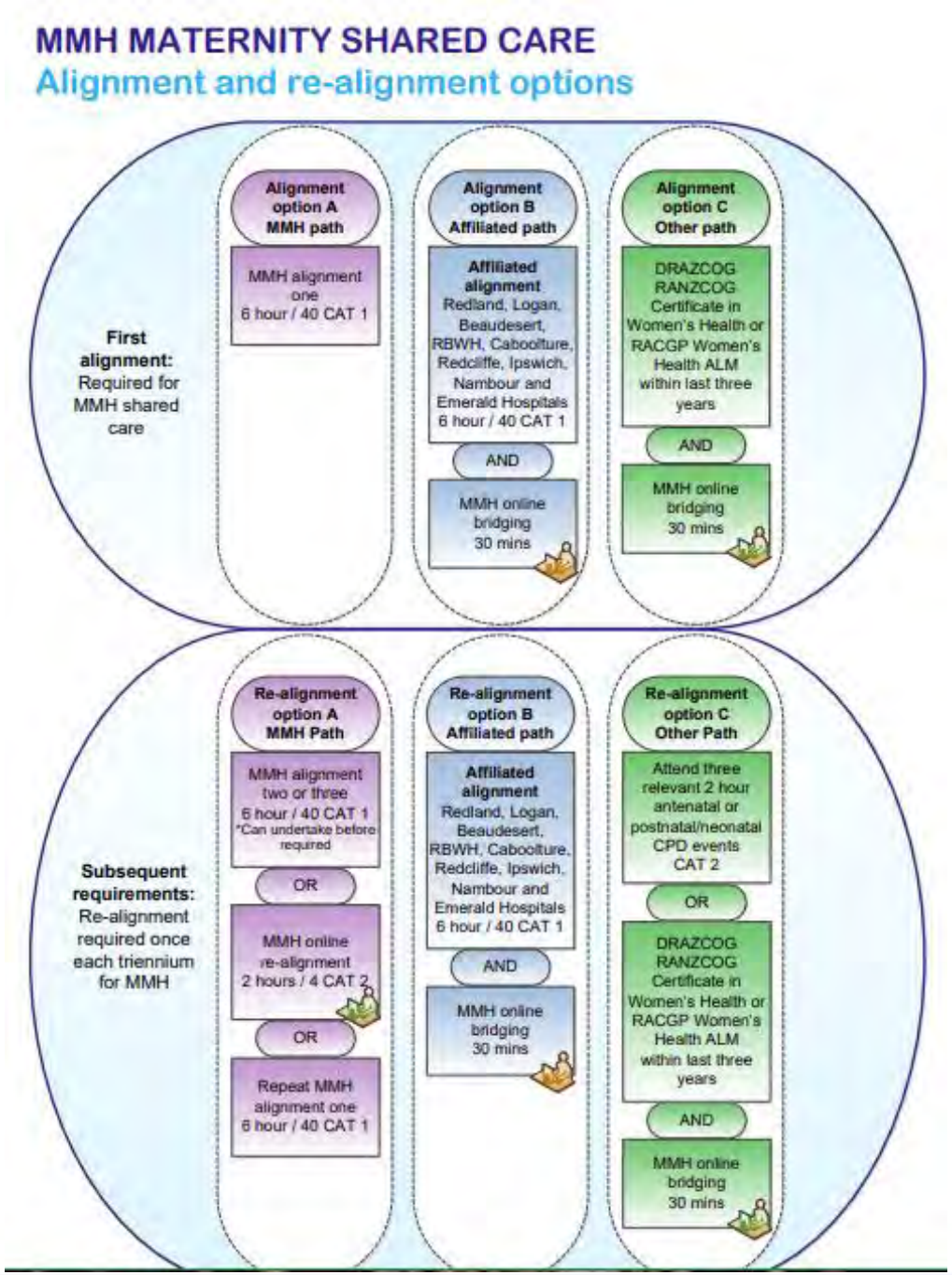
- Program is delivered via an interactive online learning module including an exam/quiz to complete.
- Available to GPs who are currently aligned to Shared Care at MMH (or an alternative SEQ Alignment) and wish to align with MSH.
- Takes approximately 1- 1 ½ hours to complete.
- Once complete, GPs will receive notice of completion which can be claimed as Continuing Professional Development (CPD), logged through the RACGP member portal or other associations.
- To access the MSH GP Maternity Shared Care Online Bridging Program, please email us on GPLO_Maternity_Share_Care@health.qld.gov.au

MMH Alignment

- To become aligned with MMH you can participate in an Alignment event run by MMH (AM1/AM2/AM3 and soon to be AM4)

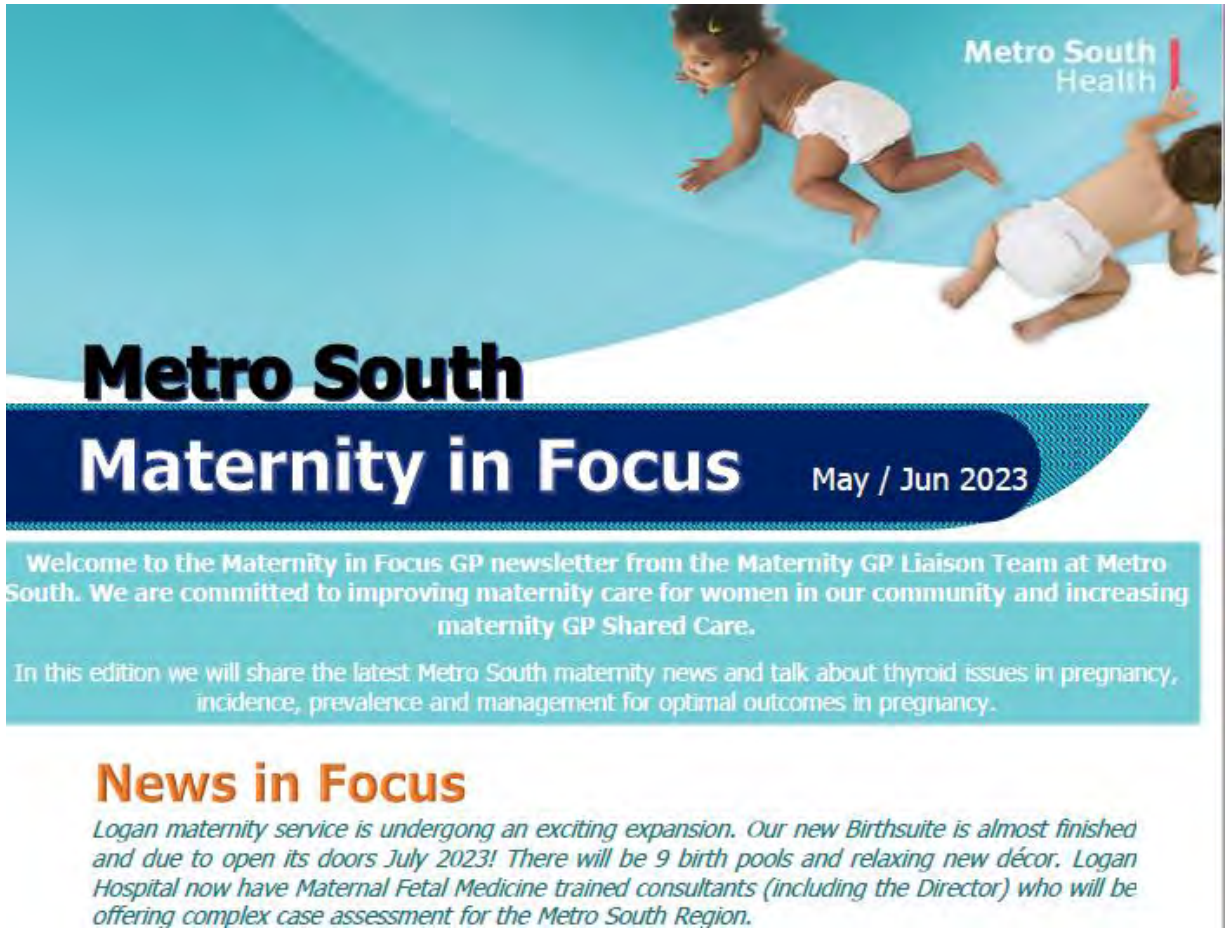
OR

- after a MSHHS Alignment, GPs will need to complete MMH's online bridge including Q&A – accessed by contacting the MMH Alignment team and forwarding a copy of your certificate from completion of this event.
- MMH GP Liaison Midwife - Telephone 07 3163 1861, mobile 0466 205 710 or email GPL@mater.org.au



Thank you …. and three more things...

- Let us know if you would be happy to have your contact information available for pregnant women who don't have a regular GP.
- MSHHS will hold your contact details – Alignment stays with the doctor, not the practice, but let us know if you move practice.
- Provide an updated email address so that we will be able to contact/update you in the future and forward our newsletter "Maternity in Focus" every 2 months



Good afternoon and thank you!