Metro North **GP Alignment Program**

MATERNITY WORKSHOP

Saturday 2nd September 2023

Workshop Presentations and Resources – Part 1

This is a joint initiative between Metro North Hospital and Health Service and Brisbane North PHN

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Metro North **GP Alignment Program**

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Welcome and Workshop Orientation

Dr Meg Cairns

GP Liaison Officer – Women Children and Families Clinical Stream

Metro North Health (MNH)

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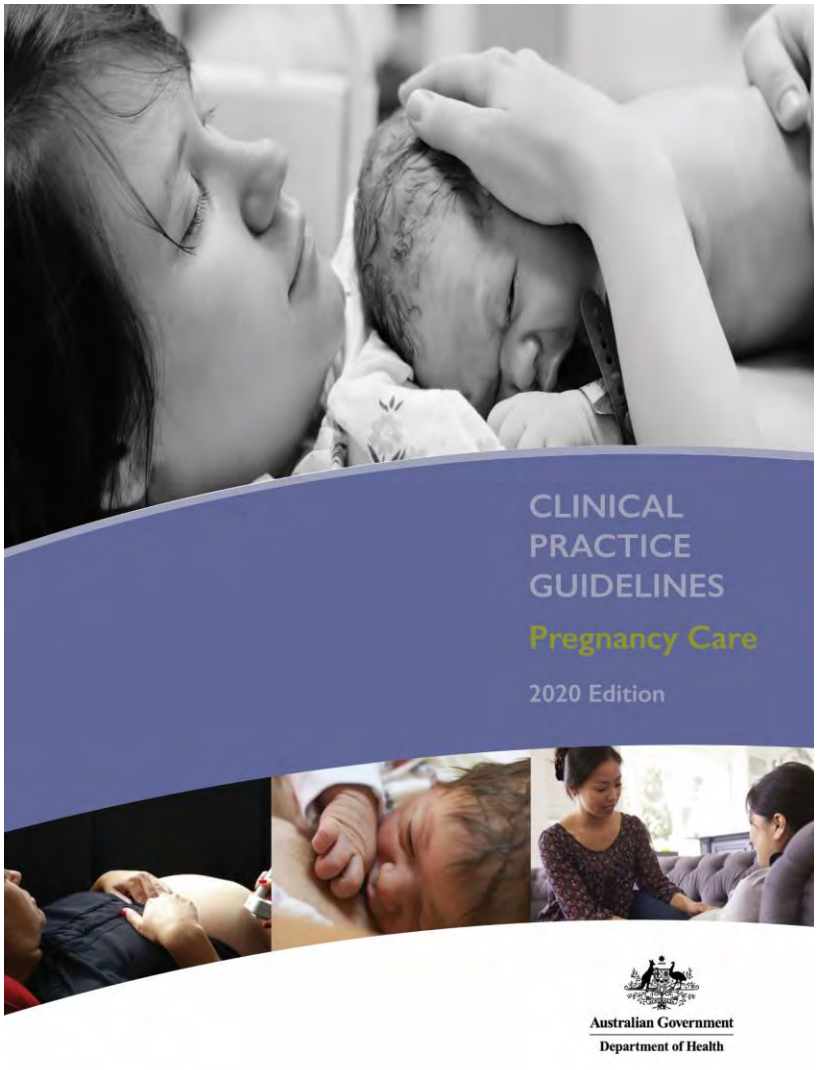
Acknowledgements

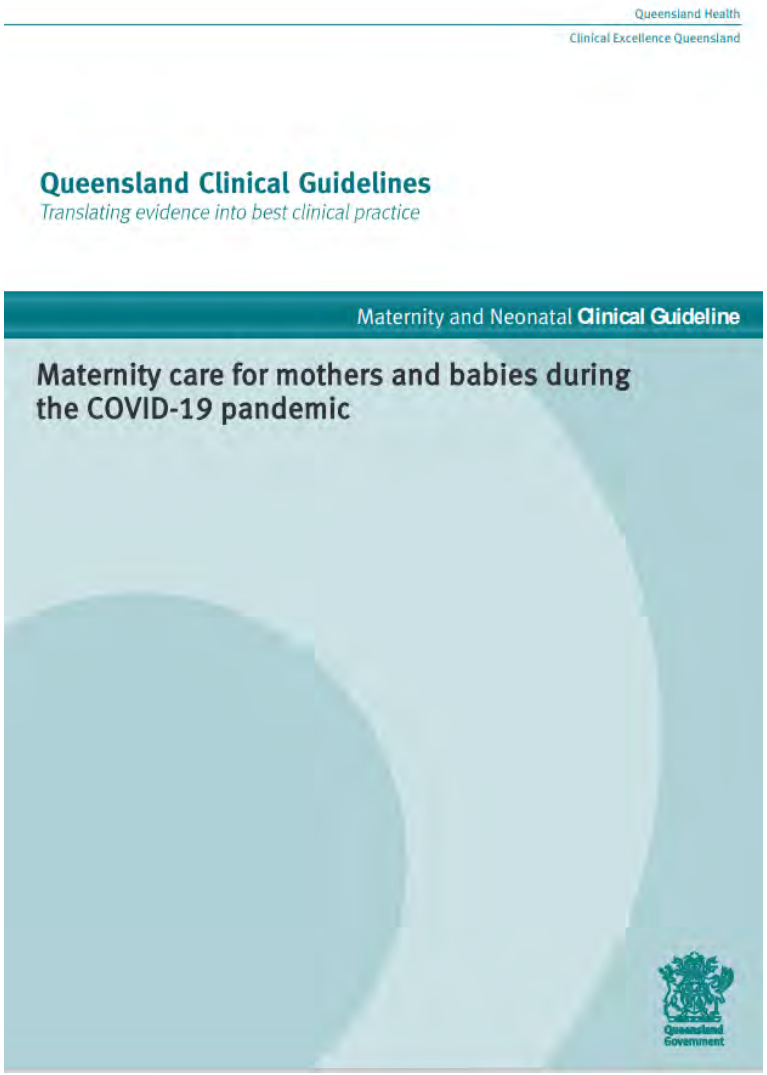
- Metro North Health
- Brisbane North Primary Health Network
- Caboolture Hospital, Redcliffe Hospital, RBWH
- Metro North Health Women Children and Families Clinical Stream
- Metro North Health Healthcare Excellence and Innovation
- Mater Mothers Hospital GP Alignment Program

National guidelines



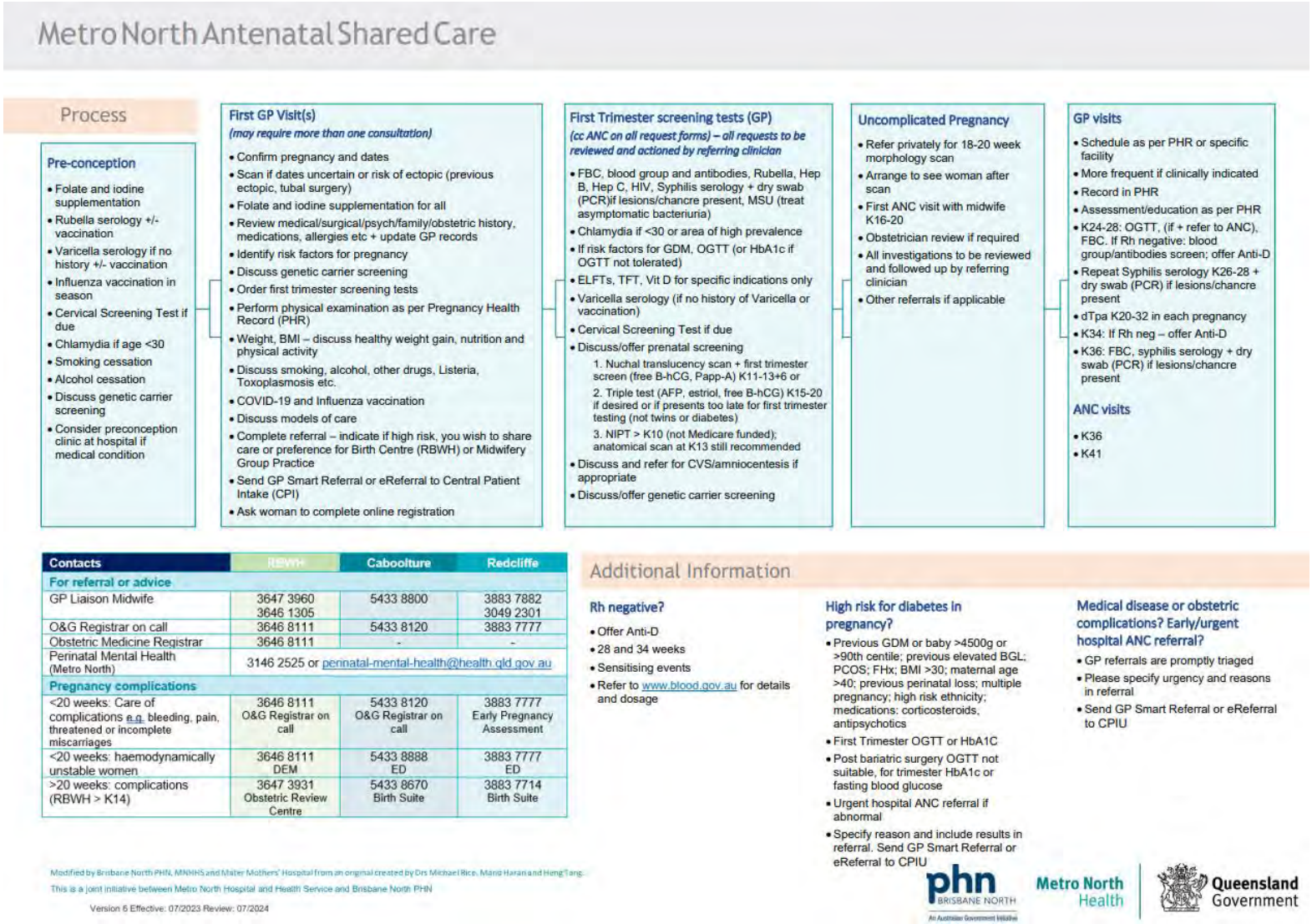
https://www.health.gov.au/resources/pregnancy-care-guidelines

Qld clinical guidelines



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

Metro North resources



Metro North Antenatal Shared Care

Process

Pre-conception

- Folate and iodine supplementation
- Rubella serology +/- vaccination
- Varicella serology if no history +/- vaccination
- Influenza vaccination in season
- Cervical Screening Test if due
- Chlamydia if age <30
- Smoking cessation
- Alcohol cessation
- Discuss genetic carrier screening
- Consider preconception clinic at hospital if medical condition

First GP Visit(s)

(may require more than one consultation)

- Confirm pregnancy and dates
- Scan if dates uncertain or risk of ectopic (previous ectopic, tubal surgery)
- Folate and iodine supplementation for all
- Review medical/surgical/psych/family/obstetric history, medications, allergies etc + update GP records
- Identify risk factors for pregnancy
- Discuss genetic carrier screening
- Order first trimester screening tests
- Perform physical examination as per Pregnancy Health Record (PHR)
- Weight, BMI – discuss healthy weight gain, nutrition and physical activity
- Discuss smoking, alcohol, other drugs, Listeria, Toxoplasmosis etc.
- COVID-19 and Influenza vaccination
- Discuss models of care
- Complete referral – indicate if high risk, you wish to share care or preference for Birth Centre (RBWH) or Midwifery Group Practice
- Send GP Smart Referral or eReferral to Central Patient Intake (CPI)
- Ask woman to complete online registration

First Trimester screening tests (GP)

(cc ANC on all request forms) – all requests to be reviewed and actioned by referring clinician

- FBC, blood group and antibodies, Rubella, Hep B, Hep C, HIV, Syphilis serology + dry swab (PCR)if lesions/chancre present, MSU (treat asymptomatic bacteriuria)
- Chlamydia if <30 or area of high prevalence
- If risk factors for GDM, OGTT (or HbA1c if OGTT not tolerated)
- ELFTs, TFT, Vit D for specific indications only
- Varicella serology (if no history of Varicella or vaccination)
- Cervical Screening Test if due
- Discuss/offer prenatal screening
  1. Nuchal translucency scan + first trimester screen (free B-hCG, Papp-A) K11-13+6 or
  2. Triple test (AFP, estriol, free B-hCG) K15-20 if desired or if presents too late for first trimester testing (not twins or diabetes)
  3. NIPT > K10 (not Medicare funded); anatomical scan at K13 still recommended
- Discuss and refer for CVS/amniocentesis if appropriate
- Discuss/offer genetic carrier screening

Uncomplicated Pregnancy

- Refer privately for 18-20 week morphology scan
- Arrange to see woman after scan
- First ANC visit with midwife K16-20
- Obstetrician review if required
- All investigations to be reviewed and followed up by referring clinician
- Other referrals if applicable

GP visits

- Schedule as per PHR or specific facility
- More frequent if clinically indicated
- Record in PHR
- Assessment/education as per PHR
- K24-28: OGTT, (if + refer to ANC), FBC. If Rh negative: blood group/antibodies screen; offer Anti-D
- Repeat Syphilis serology K26-28 + dry swab (PCR) if lesions/chancre present
- dTpa K20-32 in each pregnancy
- K34: If Rh neg – offer Anti-D
- K36: FBC, syphilis serology + dry swab (PCR) if lesions/chancre present

ANC visits

- K36
- K41

Contacts	RBWH	Caboolture	Redcliffe
For referral or advice			
GP Liaison Midwife	3647 3960 3646 1305	5433 8800	3883 7882 3049 2301
O&G Registrar on call	3646 8111	5433 8120	3883 7777
Obstetric Medicine Registrar	3646 8111	-	-
Perinatal Mental Health (Metro North)	3146 2525 or perinatal-mental-health@health.qld.gov.au		
Pregnancy complications			
<20 weeks: Care of complications e.g. bleeding, pain, threatened or incomplete miscarriages	3646 8111 O&G Registrar on call	5433 8120 O&G Registrar on call	3883 7777 Early Pregnancy Assessment
<20 weeks: haemodynamically unstable women	3646 8111 DEM	5433 8888 ED	3883 7777 ED
>20 weeks: complications (RBWH > K14)	3647 3931 Obstetric Review Centre	5433 8670 Birth Suite	3883 7714 Birth Suite

Additional Information

Rh negative?

- Offer Anti-D
- 28 and 34 weeks
- Sensitising events
- Refer to www.blood.gov.au for details and dosage

High risk for diabetes in pregnancy?

- Previous GDM or baby >4500g or >90th centile; previous elevated BGL; PCOS; FHx; BMI >30; maternal age >40; previous perinatal loss; multiple pregnancy; high risk ethnicity; medications: corticosteroids, antipsychotics
- First Trimester OGTT or HbA1C
- Post bariatric surgery OGTT not suitable, for trimester HbA1c or fasting blood glucose
- Urgent hospital ANC referral if abnormal
- Specify reason and include results in referral. Send GP Smart Referral or eReferral to CPIU

Medical disease or obstetric complications? Early/urgent hospital ANC referral?

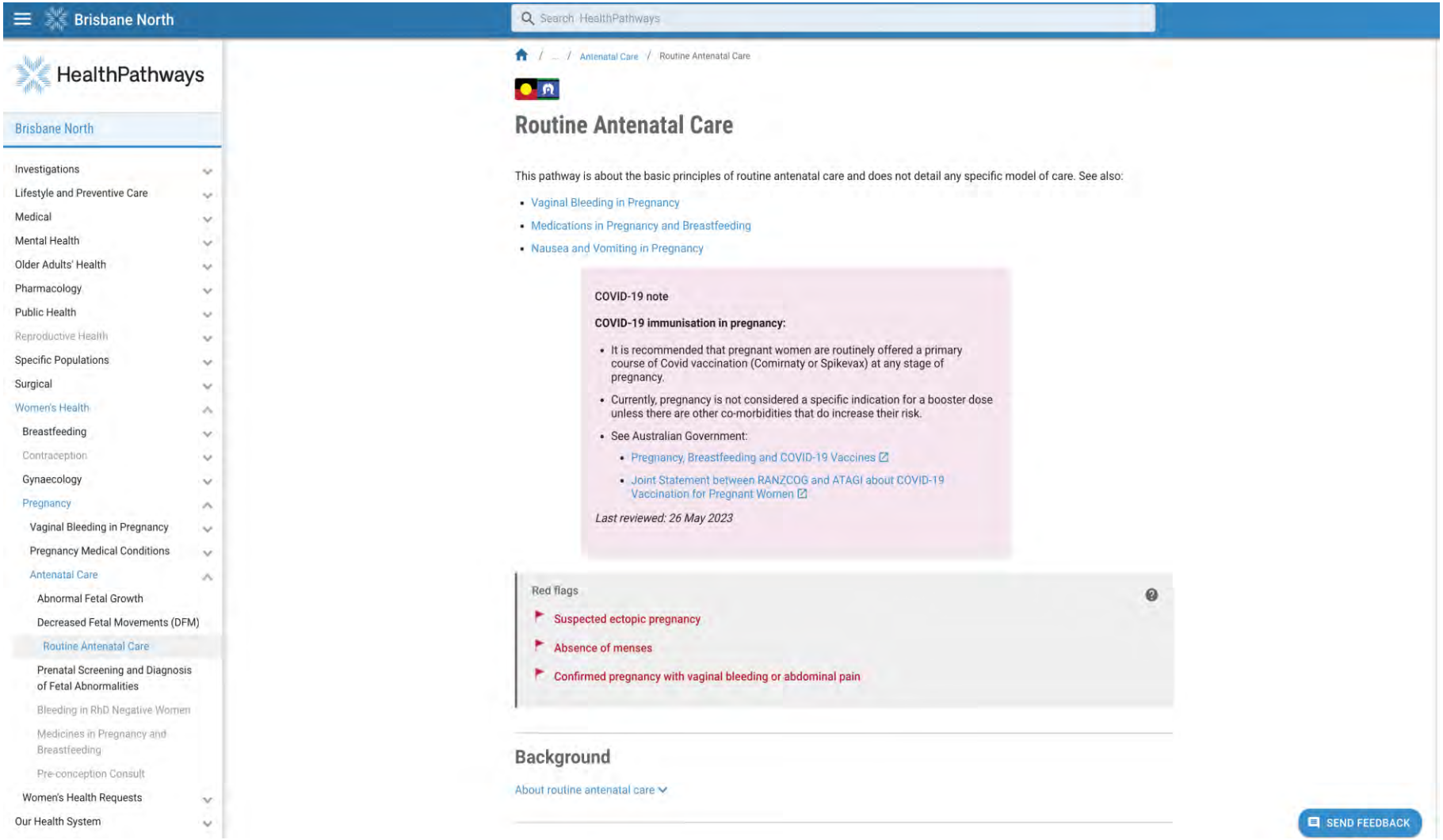
- GP referrals are promptly triaged
- Please specify urgency and reasons in referral
- Send GP Smart Referral or eReferral to CPIU

Modified by Brisbane North PHN, MNHHS and Mater Mothers' Hospital from an original created by Drs Michael Rice, Mario Harari and Heng'Tang.
This is a joint initiative between Metro North Hospital and Health Service and Brisbane North PHN
Version 6 Effective: 07/2023 Review: 07/2024

phn BRISBANE NORTH — Metro North Health — Queensland Government

https://metronorth.health.qld.gov.au/refer-your-patient-page/gp-events/education-resources

Brisbane North HealthPathways



https://brisbanenorth.communityhealthpathways.org/

Online resources

- RANZCOG Statements & Guidelines

http://ranzcog.edu.au/resources/statements-and-guidelines-directory/

- RACGP Clinical Guidelines, *gplearning*, *AJGP*

https://www.racgp.org.au/

- Metro North Health

https://metronorth.health.qld.gov.au/specialist_service/refer-your-patient

- Brisbane North PHN

https://brisbanenorthphn.org.au/

Online resources

- Therapeutic Guidelines

https://tgldcdp.tg.org.au/etgcomplete

- Choosing Wisely Australia

https://www.choosingwisely.org.au/recommendations

- Royal College of Obstetricians and Gynaecologists

https://www.rcog.org.uk/guidelines

- Royal Women's Hospital Victoria

https://www.thewomens.org.au/health-professionals/for-gps

Online resources

- Society of Obstetric Medicine of Australia and New Zealand

https://www.somanz.org/guidelines/

- Australasian Diabetes in Pregnancy Society

https://www.adips.org/

- Australasian Society for Infectious Diseases

https://www.asid.net.au/

- Stillbirth Centre for Research Excellence

https://stillbirthcre.org.au/

- Safer Baby Bundle

https://learn.stillbirthcre.org.au/

- Australian Preterm Birth Alliance

https://www.pretermalliance.com.au/

Online resources

- COPE Centre of Perinatal Excellence

https://www.cope.org.au/health-professionals/

- Genetic Health Queensland

https://metronorth.health.qld.gov.au/rbwh/genetic-health-queensland/information-for-practitioners/resources

- Genetics in General Practice

https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/genomics-in-general-practice

- Centre for Genetics Education – NSW Health

https://www.genetics.edu.au/

RACGP

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On-demand

Maternity moments webinar series – Preconception

Like any other consult - history, examination, investigation, treatment, and management

On-demand

Maternity moments webinar series - First presentation in pregnancy

Like any other consult - history, examination,

On-demand

Maternity moments webinar series – First trimester

Like any other consult - history, examination, investigation, treatment, and management

https://www.racgp.org.au/online-events/maternitymoments

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Diabetes

Dr Fiona Britten
Senior Medical Officer Endocrinology & Obstetric Medicine RBWH

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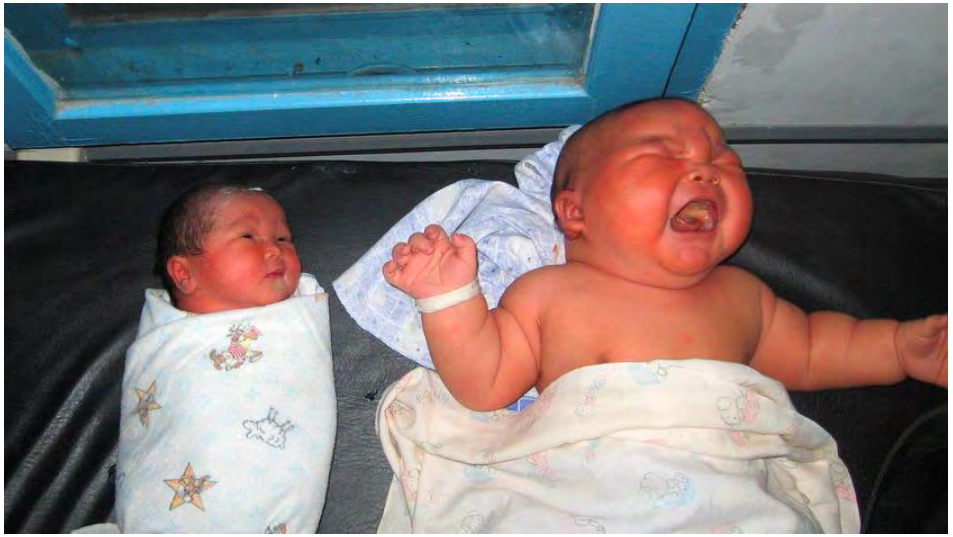
Why do we care about Diabetes in Pregnancy?

- Earliest possible diagnosis and treatment of hyperglycaemia in pregnancy is proven to be beneficial
- Prevalence
  - T1DM: 0.4%
  - T2DM: 1%
  - GDM: 15%



Newborn, 8.7kg, maternal diabetes
https://www.abc.net.au/news/2009-09-23/woman-gives-birth-to-87kg-super-baby/1440266

Risks of Hyperglycaemia Maternal

Short Term	Long Term
Pre-eclampsia	Recurrent GDM
Induction of labour	Increased risk T2DM
Operative birth	Cardiovascular disease
Polyhydramnios	
Postpartum haemorrhage	
Infection	

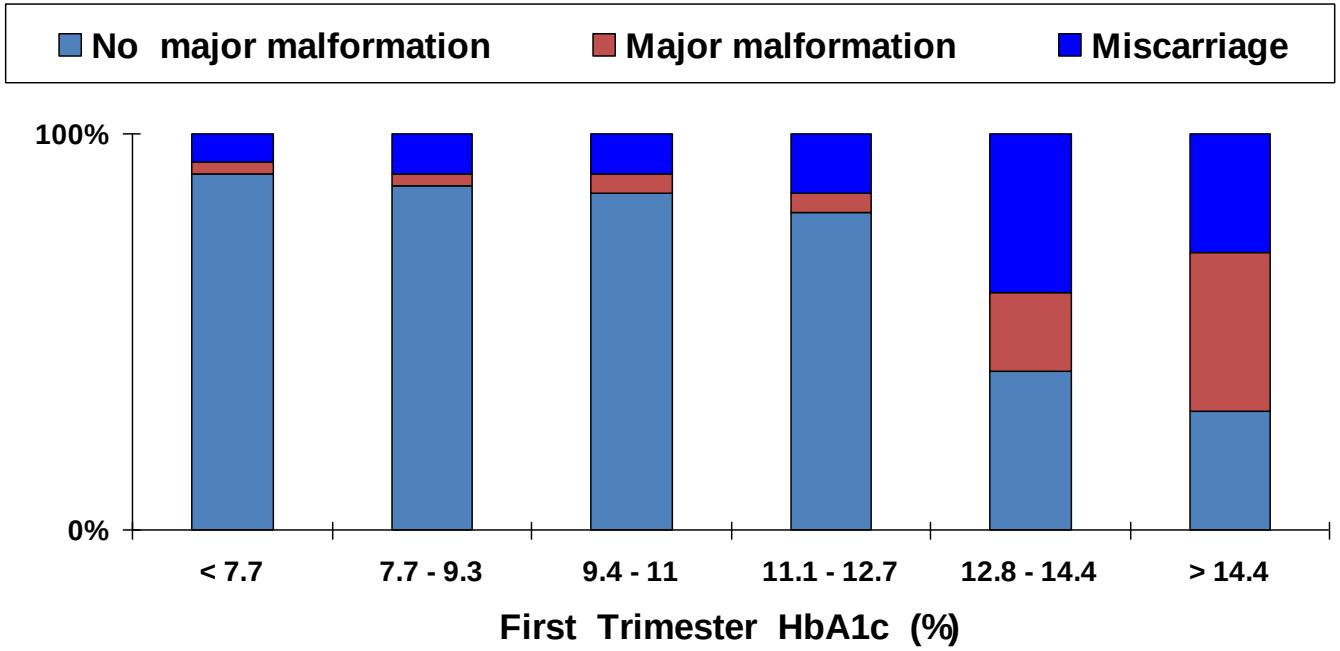
Risk of Hyperglycaemia Fetal / Neonatal

Short term	Long term
Respiratory distress	Impaired glucose tolerance
Jaundice	T2DM
Hypoglycaemia	Obesity
Premature birth	
Hypocalcaemia	
Polycythaemia	
Increased newborn weight / adiposity	
Macrosomia / associated risks	

T1DM / T2DM

- Pre-conception review ideal
- Otherwise refer as soon as pregnant
- 2 x HbA1c 6.5% prior to trying for pregnancy
- Lower is better whilst avoiding hypoglycaemia
- All complication screening up to date
  - Eye review (and treatment if needed)
  - Significant renal disease may be a contraindication to pregnancy
- Folic acid 2.5 - 5mg daily once pregnant
- Aspirin 100mg nocte from K10 to K36

Pre-gestational Diabetes



Continuous Glucose Monitoring

- Subsidised $32.50/month all T1
- Free for T1
  - 6 months pre-conception and for further 6 months on application
  - During pregnancy
  - 3 months post expected date of birth of baby
- Endocrinologists/Credentialled Diabetes Educators may apply
- Freestyle Libre 2 $102/2 weeks sensor + free app (Android/iPhone)

http://dailyhellas.com/wp-content/uploads/2016/06/FreeStyle-Libre.png
https://www.medtronic-diabetes.com.au/sites/default/files/senssub1-deal-image.jpg
http://www.dexcom.com/sites/dexcom.com/files/metatag/dexcom-g5-mobile-social.jpg

https://www.ndss.com.au/about-the-ndss/cgm-access/type-1-diabetes-pregnancy/

High Risk Patients – Early Screening

Risk factors for GDM

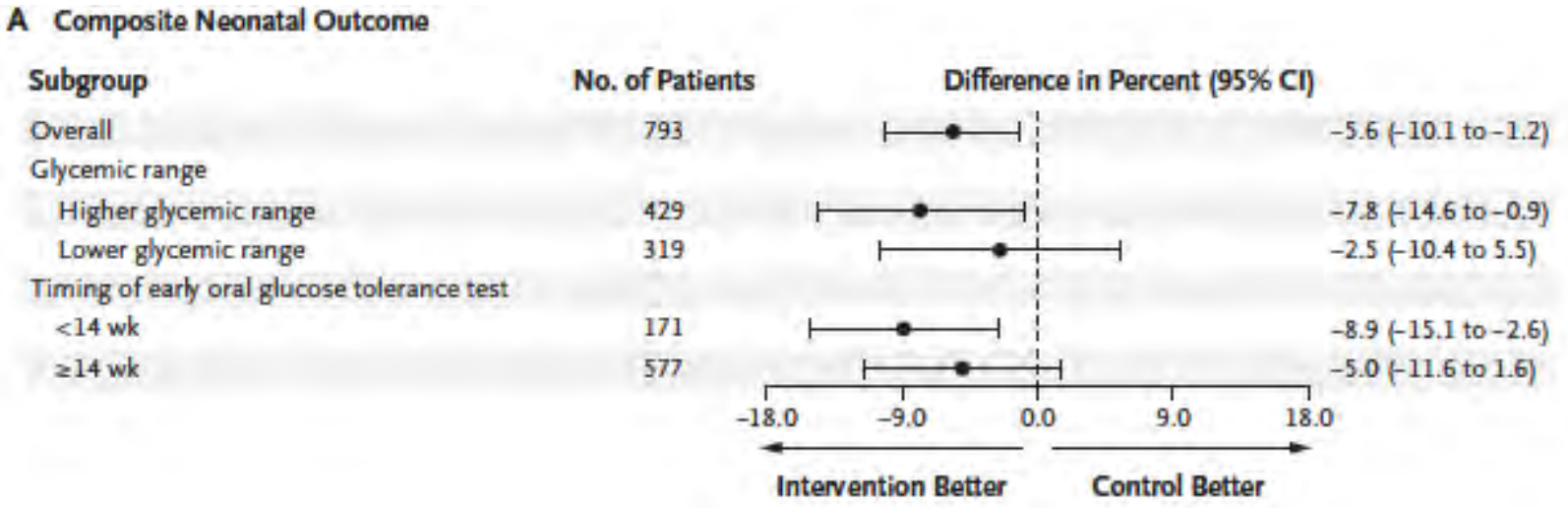
- **BMI > 30 kg/m^2** (pre-pregnancy or on entry to care)
- **Ethnicity** (Asian, Indian subcontinent, Aboriginal, Torres Strait Islander, Pacific Islander, Maori, Middle Eastern, non-white African)
- **Previous GDM**
- **Previous elevated BGL**
- **Maternal age ≥ 40 years**
- **Family history DM** (1st degree relative or sister with GDM)
- **Previous macrosomia** (birth weight > 4500 g or > 90th percentile
- **Previous perinatal loss**
- **Polycystic Ovarian Syndrome**
- **Medications** (corticosteroids, antipsychotics)
- **Multiple pregnancy**

Queensland Clinical Guidelines http://www.health.qld.gov.au/qcg/

TOBOGM

- RCT looking at treatment of GDM commenced before K20 Nov 2022
- 802 women randomised; mean time 75g OGTT K15.6
- Modestly lower incidence of severe adverse neonatal outcomes – neonatal respiratory distress
- 1/3 who had positive early OGTT had negative OGTT on repeat testing K24-28
- Likely will be changes to thresholds for early OGTT cut-off and standard OGTT cut-offs shortly

Higher glycemic group – 78% GDM K24 - 28
Lower glycemic group – 51% GDM K24 - 28



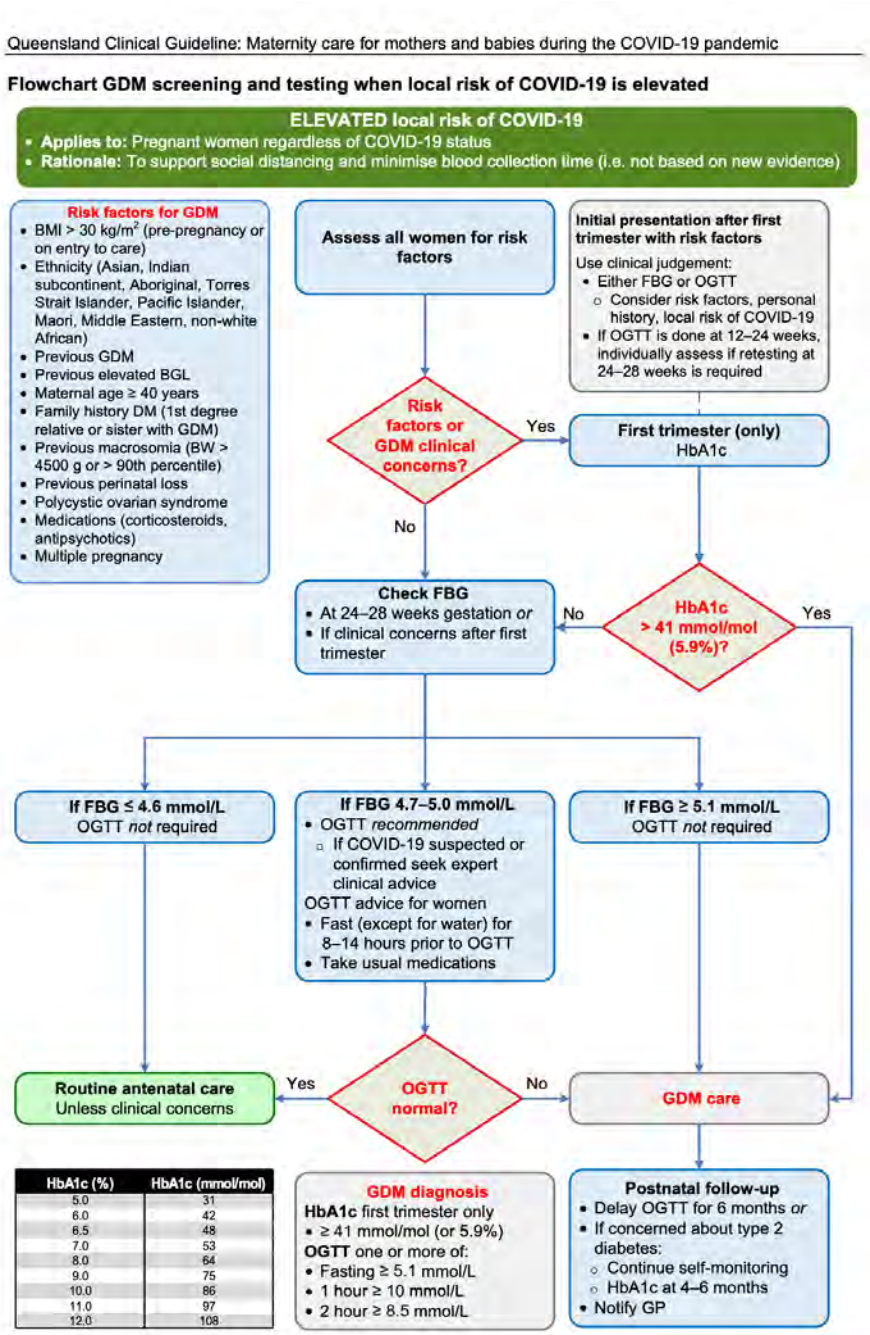
COVID guideline – not currently in use

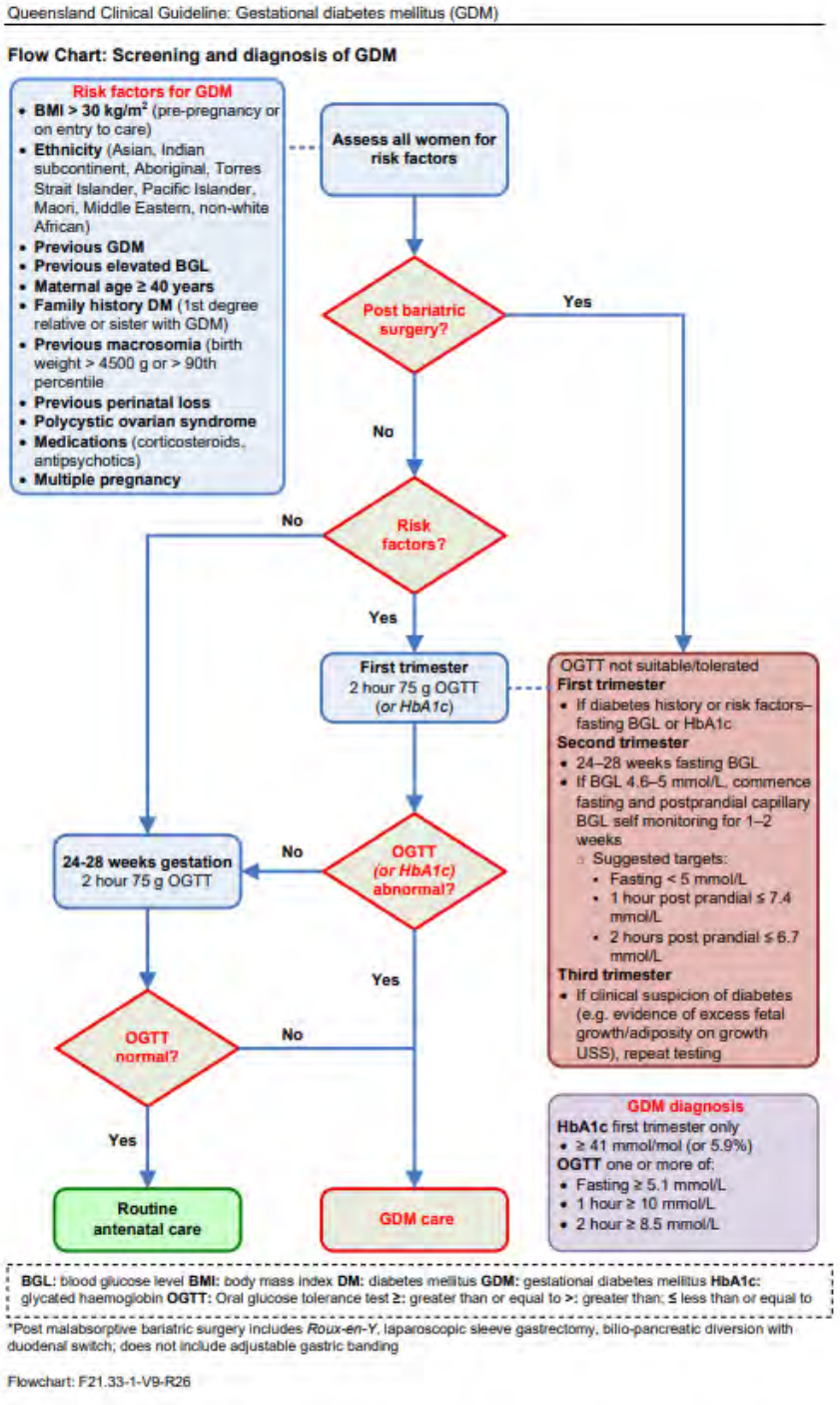
Missed 25.3% GDM

(Zhu,2021, Diabetes and Metabolic Syndrome: Clinical Research and Reviews)

However, missed GDM lower risk complications

(McIntyre, 2020, Diabetes Research and Clinical Practice)





- 75g OGTT
  - Fast 8-14 hours prior
  - High CHO diet 3 days prior not required
- Mildly elevated fasting BGLs in early pregnancy normal
- For women with GDM risk factors – 75g OGTT after 12 weeks

Oral Glucose Tolerance Test

- 75g OGTT
- Fast 8-14 hours prior
- High CHO diet 3 days prior not required
- Mildly elevated fasting BGLs in early pregnancy may not be accurate
- Avoid OGTT/fasting plasma glucose in early first trimester as may have false positive fasting glucose
- For women with risk factors - 75g OGTT after 12 weeks

GDM diagnosis post Bariatric Surgery

- OGTT not helpful after gastric bypass: 50-80% symptomatic hypoglycaemia[1] – mostly after gastric bypass
- Gastric sleeve – can do OGTT but may not tolerate
- Bypass or Sleeve with nausea
  - First trimester HbA1c >5.9% specific GDM
  - Late first trimester BGL >5.1
  - If negative 1-2 weeks of BGL monitoring at K24-28 with fasting and 2 hour post prandial blood sugar levels

(1) Rottenstreich et al,2018, A Surg Obes Relat Dis.
(2) Khallafallah, 2016,BMJ

ADIPS Diagnostic Criteria

One (or more) high reading only required

Time	Plasma Glucose Level mmol/L		
	Normal	GDM	DIP
Fasting	<5.1	5.1-6.9	≥ 7.0
1 hour	<10.0	≥ 10	
2 hours	<8.5	8.5-11.0	≥ 11.1

Reactive hypoglycaemia in pregnancy

- Altered glucose handling can lead to post meals glucose spikes and reactive hypoglycemia especially if diabetes pre-surgery
- Exacerbated by pregnancy
- Exclude other causes of hypoglycaemia
- Managed by change to low GI diet, small frequent meals
- Can be difficult if recent surgery
- Acarbose used in pregnancy in small case series with no harmful effects but can cause bloating ++

Referral Process RBWH - GDM

- Complete referral via GP Smart Referrals or eReferral
- Send to Metro North Central Patient Intake
- https://metronorth.health.qld.gov.au/specialist_service/refer-your-patient/antenatal-and-maternity
- Include GDM diagnosis and OGTT pathology report
- Patient seen within the week of receiving referral by diabetes educator and dietician
- Ongoing review and escalation of treatment

Referral Process RBWH – T1DM/T2DM

- Pre-conception referral ideal OR Refer ASAP after conception
- Seen in Endocrine Obstetric Medicine Clinic usually the Wednesday following referral being received
- First trimester control is critical to avoid teratogenesis
- Diabetes Educator contact number RBWH 3646 2158
- GP Liaison midwife RBWH 3647 3960
- Obstetric Medicine Clinic Registrar (Consultant after hours) 3163 8111
- Metro North contacts: https://metronorth.health.qld.gov.au/wp-content/uploads/2017/10/antenatal-shared-care.pdf

What do we do?

- Multidisciplinary clinic
- See patients frequently (1-4 weekly)
- T1DM weekly phone review CGM, 4th weekly F2F
- T2DM second weekly phone, 4th weekly F2F
- GDM 2-4 weekly with DE in interim - ”Mother” App now used
- Review BGLs
- Fasting and 2 hours post-prandial (GDM)
- Pre- and 2 hour post meals (T1DM/T2DM) or CGM (T1DM)
- BP / urinalysis at every visit
- Baseline HbA1c
- Other bloods as needed

Allied Health

- Diabetes Educators
- Group session followed by one-on-one
  - All initial education regarding
    - GDM
    - HBGM (including supply of meter for testing)
  - Follow up of BGLs whilst in target
  - Initiation of therapy in conjunction with doctor
- Dieticians
  - Specialised dietary and exercise advice
  - At least 3 reviews during pregnancy

BGL Targets - RBWH

Time	Finger prick BGL (mmol/L)
Fasting	<5.0
1 hour post-prandial	<7.4
2 hours post-prandial	<6.7

Pharmacological Therapy

- Metformin or insulin if not achieving targets with lifestyle modification alone
- Start if significant hyperglycaemia – i.e., fasting readings above 6, postprandial > 8 or not meeting target after 2 weeks of diet and exercise modification

- Decision to commence based on:
  - Degree and pattern of hyperglycaemia
  - Maternal choice
  - Gestational age
  - Fetal growth

Metformin

- Crosses the placenta
- MiG trial

  Rowan JA et al. NEJM. 2008
- MiG TOFU (2 year olds)

  Rowan JA et al. Diabetes Care. 2011
- MiG 7-9 year follow-up

  Rowan JA et al. BMJ Open Diab Res Care. 2018

  At 9 years infants larger weight, height, waist and triceps skinfold (1-1.5cm difference)

  Bodyfat measured by MRI and DEXA similar

  Insulin/HBA1c similar
- 8 year olds

  Rø et al. Scan J Clin Lab Invest. 2012

Metformin

- Can continue metformin in T2DM / PCOS patients throughout pregnancy
- Ongoing strict dietary adherence important
- Up-titrate to maximum 2g either SR or XR
- Good for:
  - Mild generalised hyperglycaemia
- Bad for:
  - GI side effects
  - May not tolerate first trimester if hyperemesis

Metformin for pre-eclampsia?!

- Cluver (2021) double blind RCT
- 180 women pre-term PET
- Placebo or 3g metformin XR
- 17.7 days to delivery in metformin arm and 7.9 days in placebo arm (p=0.054)
- More data needed
- Mity RCT (Feig) 2020 – 502 women with type 2 diabetes on insulin/metformin vs insulin/placebo commenced at K6-22
- Metformin group had less maternal weight gain, lower birth weight babies, fewer c-section births, better glycemic control
- No difference hypertensive disorders

Cluver et al, 2021, BMJ
Feig et al, 2020, Lancet Diabetes and Endocrinology

Insulin

- Safety data well established; doesn't cross the placenta
- Continue usual insulin in T1DM/T2DM
- Long acting insulins: Protaphane (Innolet device) or Levemir flexpen (not PBS, $60 for 5 pens)
- Glargine Solostar (Optisulin formerly Lantus) esp T2DM
- Novorapid (Flexpen) or Humalog or Fiasp
- Good for:
  - BGLs very elevated
  - Early in pregnancy
  - Fetal macrosomia
- Start low and increase dose depending on BGL
- Women should understand doses will increase dramatically during pregnancy and this is physiological

When to Deliver RBWH

- T1DM/T2DM K37+0 to 39
- GDM
  - Well controlled on diet alone – induction K40 - 40+10
  - Insulin or oral agents with good control K39 - K40
  - Poor glycaemic control – K38 - 39 weeks
  - Individualise treatment
- Other risk factors age/hypertension/macrosomia may necessitate earlier delivery i.e., PET K37-38
- Gestational Hypertension K38-39, LGA K38-39

Post-partum

- GDM
  - Stop all treatment immediately post-partum
  - Monitor sugars for 24 hours
  - If all normal nothing until 75g OGTT at 6-12/52 post-partum
- T1DM
  - Reduce insulin dose to ½ pre-pregnancy dose
  - Patients on pumps usually go back to pre-pregnancy dose
  - Ask patients to note pre-pregnancy doses at conception
  - Hypo risk if pregnancy insulin is continued – may be 2-3x non pregnant dose
- T2DM
  - Metformin and insulin as required

Breastfeeding

Breastfeeding Benefits GDM

- Reduces risk of 6 week positive post partum OGTT
- Long term metabolic benefits for mothers and babies
- ↓ cardiovascular and T2DM risk (observational data)
- **Metformin** and **insulin** safe
- **Other oral hypoglycaemics and GLP-1 agonists**
- Not enough evidence in breast feeding
- May be detrimental (sulfonylurea → neonatal hypoglycaemia)

T1DM

- Strategies to avoid hypoglycaemia post feeds

GDM – Post partum OGTT

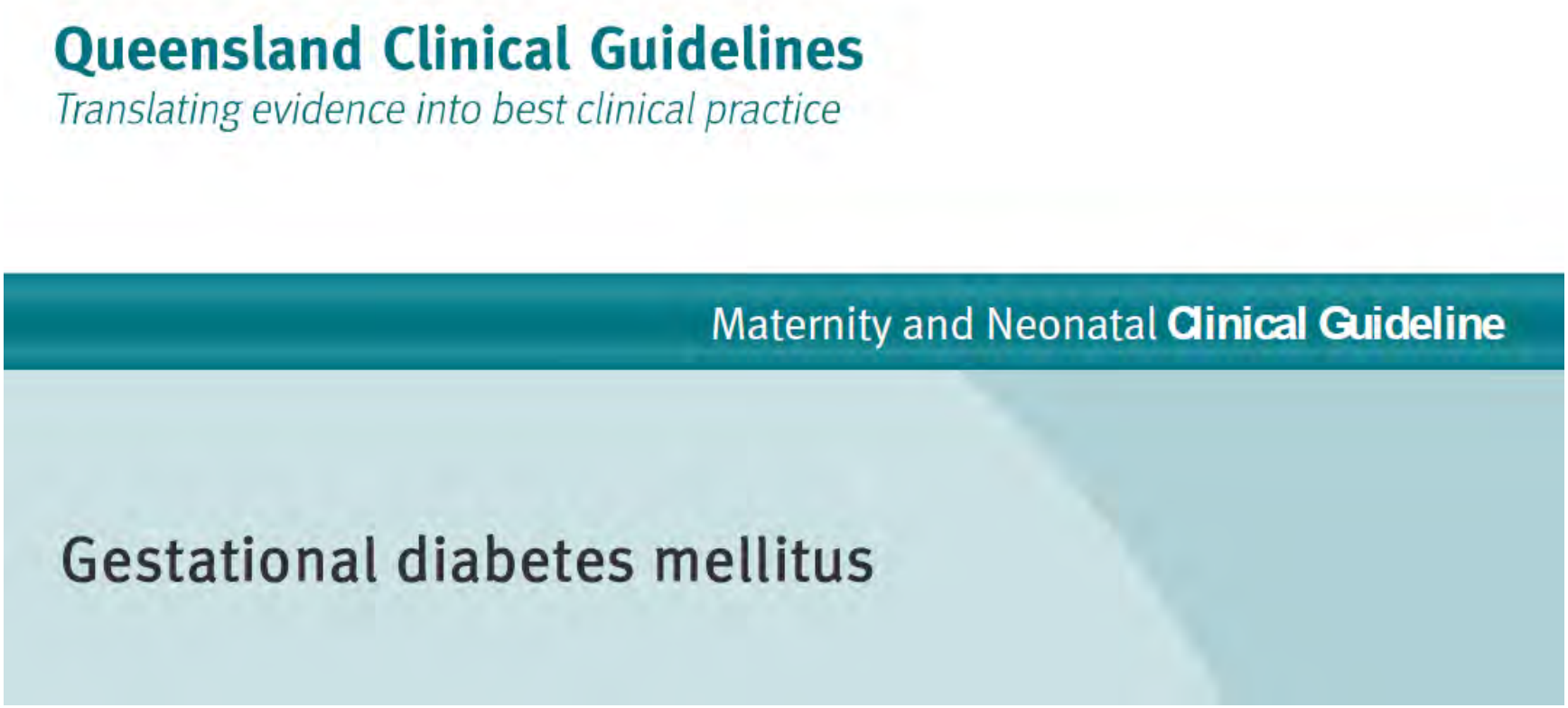
- Form for OGTT given to all GDM patients at 36/40 by diabetes educators
- Results either given by phone or patient reviewed in clinic
- Diabetes educator sends a letter to GP with copy of OGTT results (RBWH)
- Do not need to stop breastfeeding for OGTT

- Yes, it may impact result but will still diagnose clinically important overt hyperglycaemia
- Mild impaired glucose tolerance will be detected by future screening

The Long Term

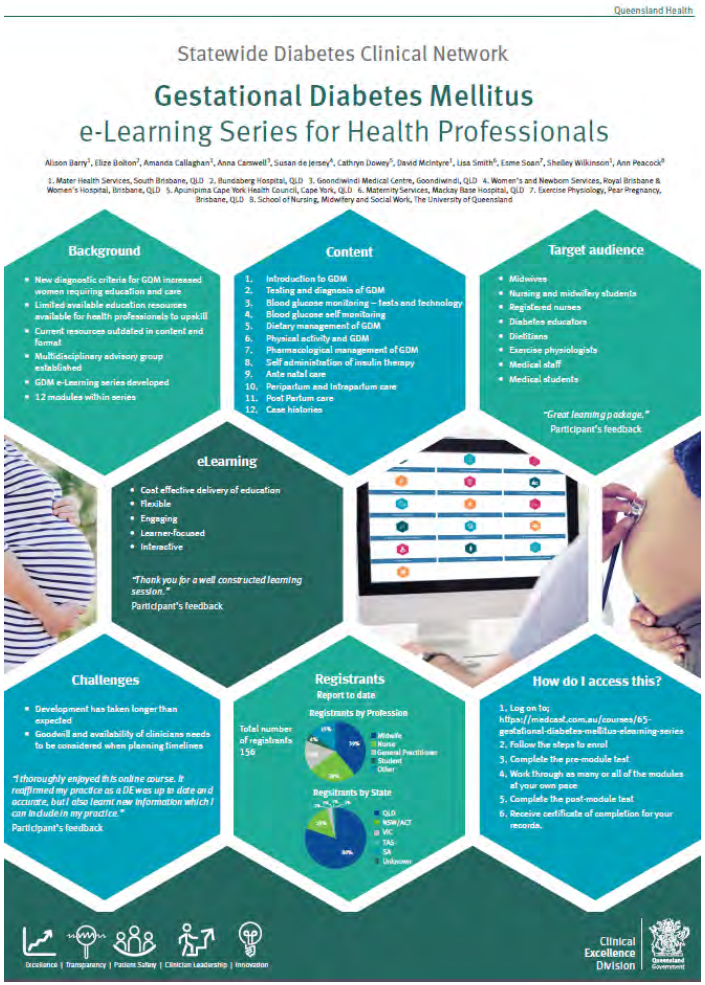
- 50-60 % risk of T2DM “early warning"
- Emphasise exercise and maintain normal BMI
- Screen DM 2-3 yearly; annually if planning more children
- HBA1c may be a reasonable alternative to OGTT
- Ensure they attend the 6 week OGTT

Online resources



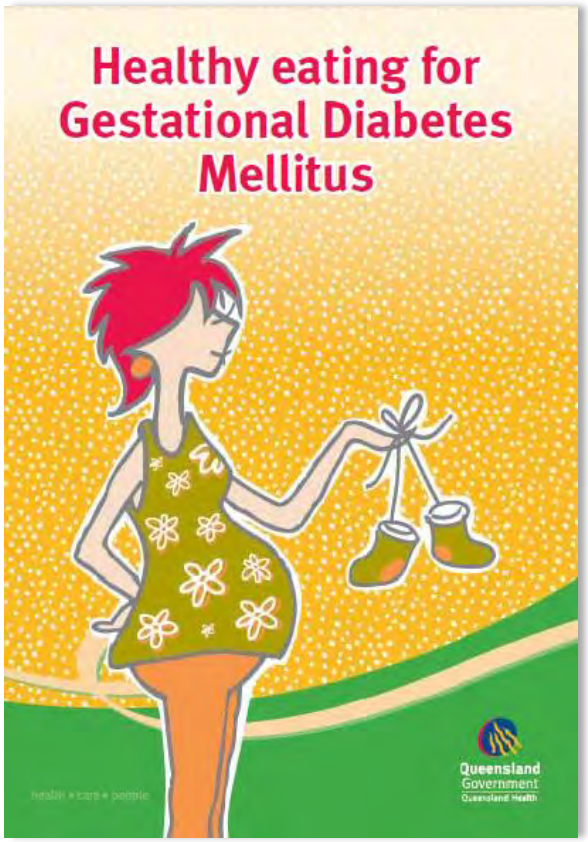
Queensland Clinical Guidelines www.health.qld.gov.au/qcg/

GDM e-Learning Series



https://medcast.com.au/courses/789

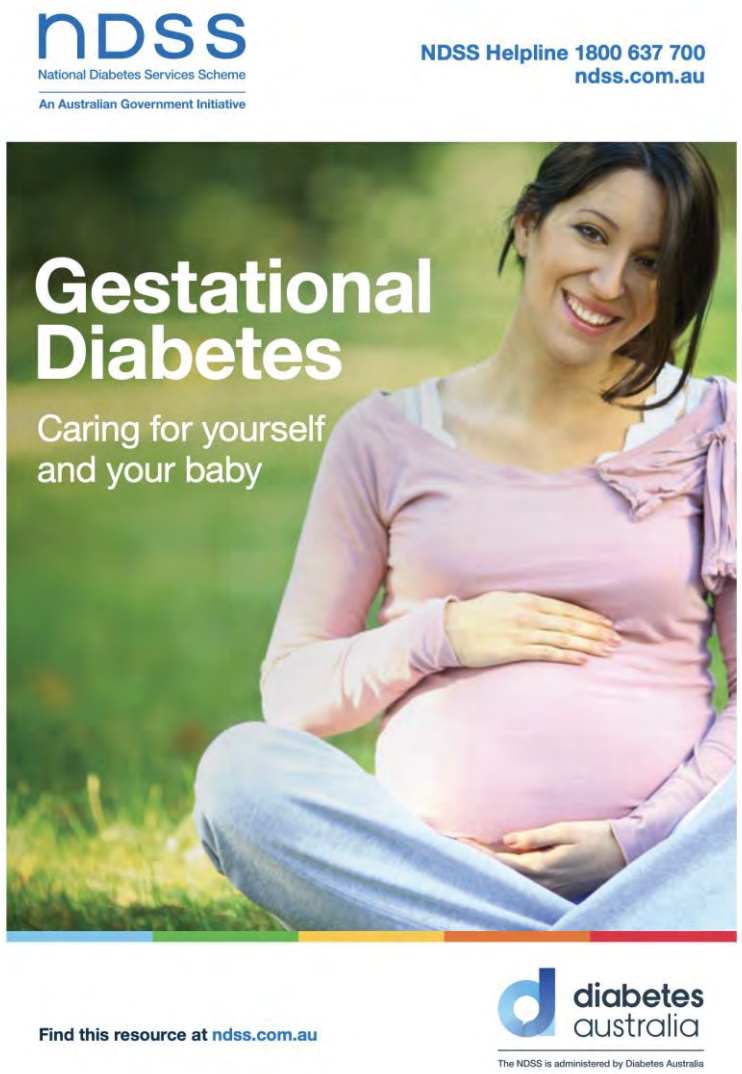
Online resources



https://www.health.qld.gov.au/__data/assets/pdf_file/0030/621588/sdcn-gdmbooklet.pdf

https://www.health.qld.gov.au/__data/assets/pdf_file/0025/621619/sdcn-healthyeating.pdf

Online resources



https://www.ndss.com.au/about-diabetes/resources/find-a-resource/gestational-diabetes-caring-for-yourself-and-your-baby/

Online resources

- Australasian Diabetes in Pregnancy Society
  - www.adips.org
- Diabetes Australia
  - www.diabetesaustralia.com.au
- Australian Diabetes Educators Association
  - www.adea.com.au

Metro North **GP Alignment Program**

MATERNITY WORKSHOP

Saturday 2nd September 2023

Supporting pregnant women with nutrition and physical activity

Taylor Guthrie APD
Senior Dietician RBWH
PhD candidate University of Queensland

This is a joint initiative between Metro North Hospital and Health Service and Brisbane North PHN

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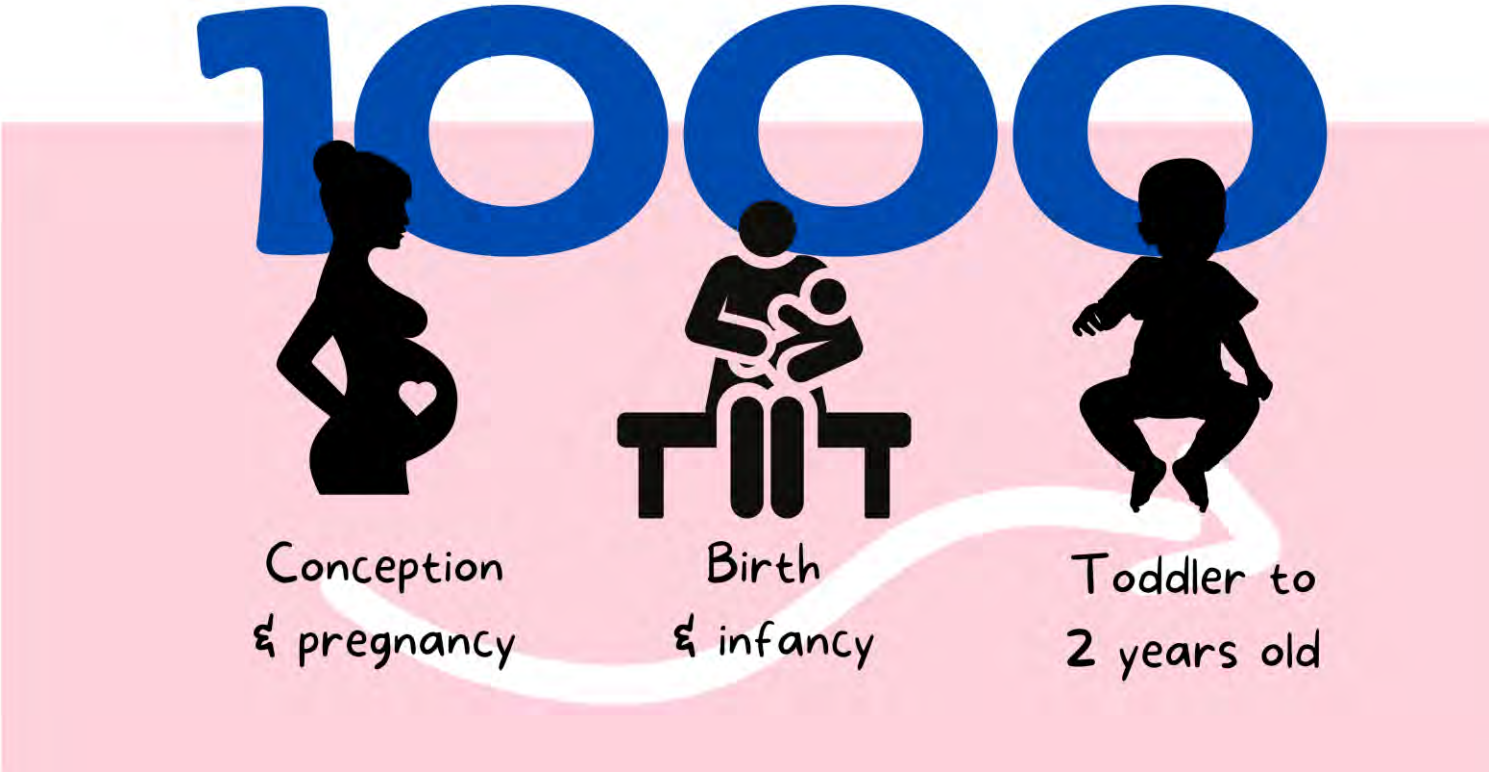
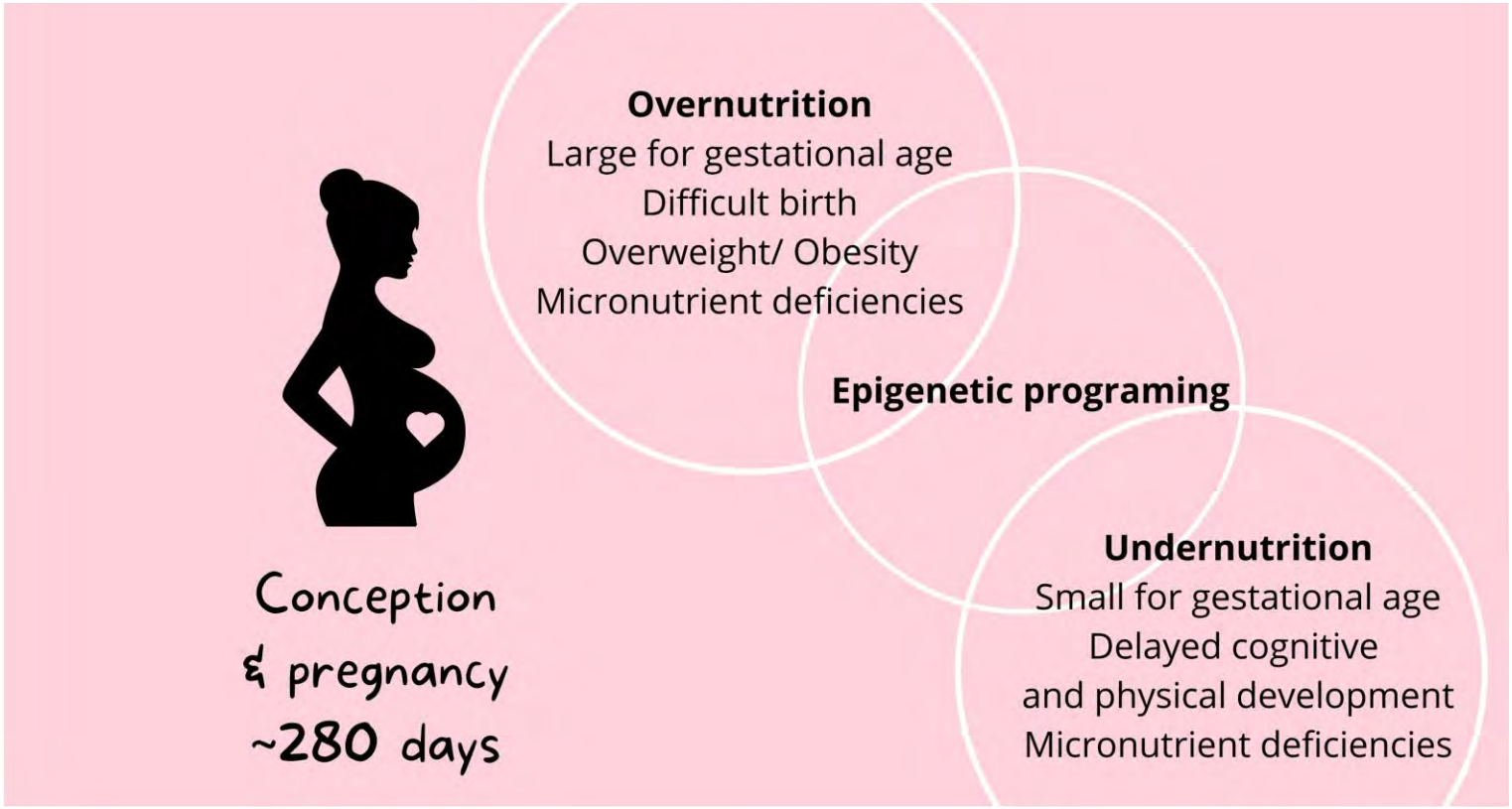
Kerry

50%	Pre-pregnancy BMI ≥25 kg/m²
30-60%	Excess gestational weight gain
Adverse outcomes mother and baby	
Independent predictor childhood obesity	

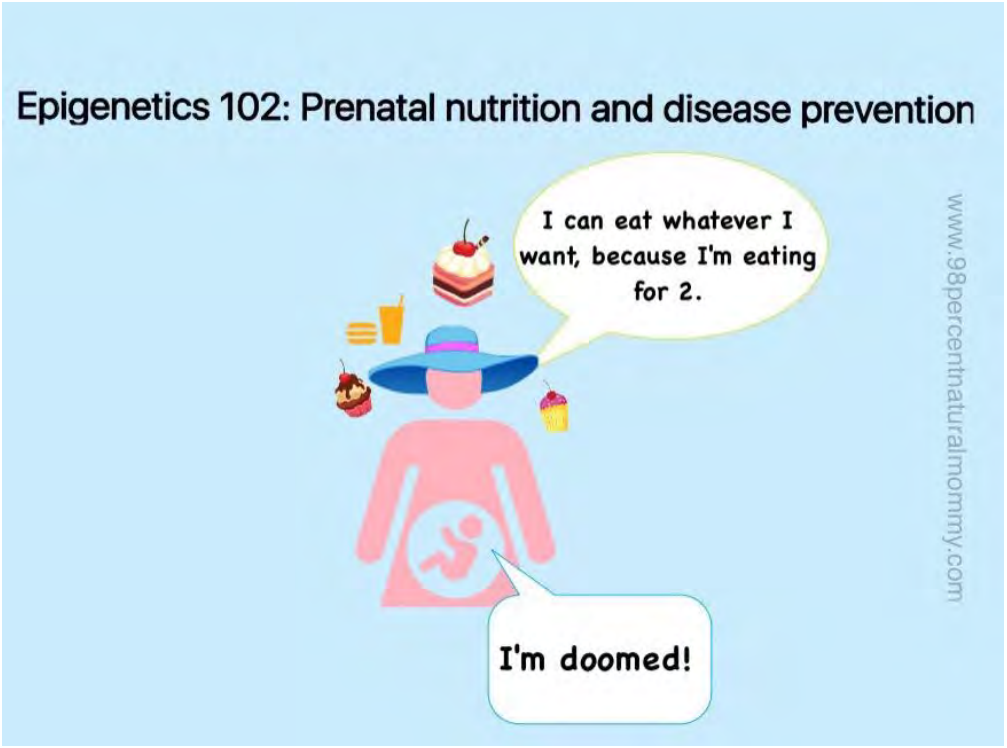
The first 1000 days



The first 280 days…



Pregnancy Health



Nutrition Recommendations

Metro North Health | Queensland Government

Dietary guidelines

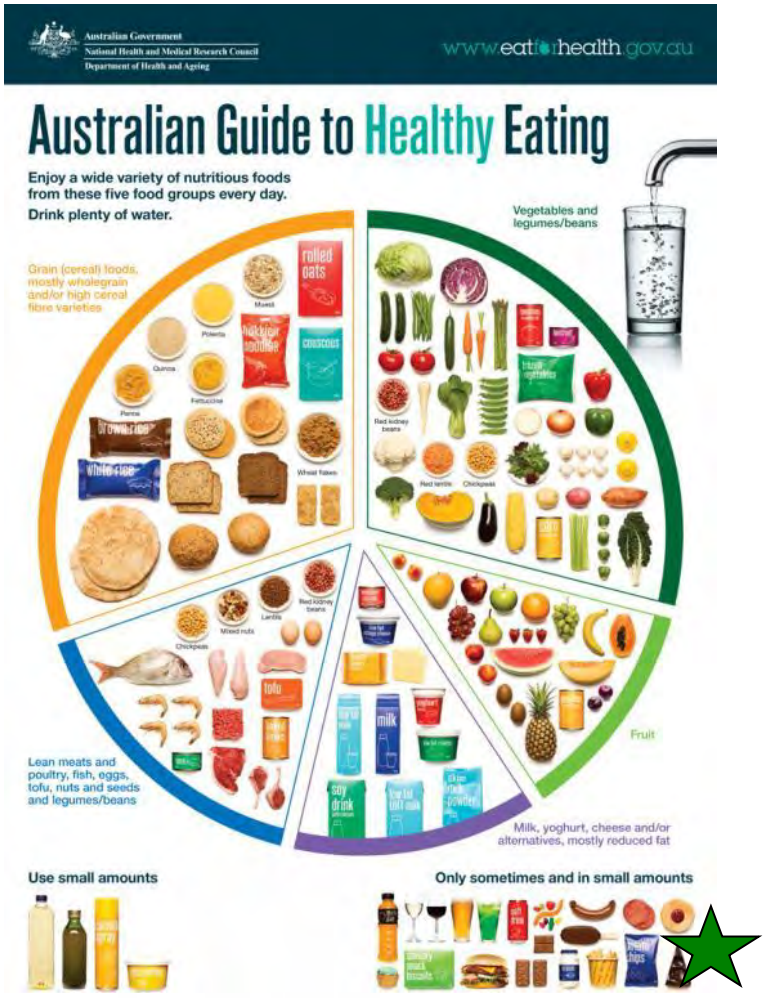
1. **Achieve and maintain a healthy weight**, by being physically active and choosing amounts of nutritious food and drinks to meet your energy needs

2. **Eat a wide variety of food every day** – including vegetables; fruit; grain foods (preferably wholegrain); protein foods (e.g. meat, fish, eggs, nuts, legumes), and dairy (mostly reduced fat)

3. **Limit your intake of food/drinks that contain added sugar, salt and/or saturated fat** (and of course, in planning a pregnancy, limit/avoid alcohol)

4. Encourage, support and promote **breastfeeding**

5. Prepare and store **food safely**.



SERVE SIZES

Vegetables and legumes/beans

Serves per day	18 years or under	19–50 years
Women	5	5
Pregnant	5	5
Breastfeeding	5½	7½

A standard serve of vegetables is about 75g (100-350kJ) or:

½ cup	cooked green or orange vegetables (for example, broccoli, spinach, carrots or pumpkin)
½ cup	cooked, dried or canned beans, peas or lentils*
1 cup	green leafy or raw salad vegetables
½ cup	sweet corn
½ medium	potato or other starchy vegetables (sweet potato, taro or cassava)
1 medium	tomato

**preferably with no added salt*

Fruit

Serves per day	18 years or under	19–50 years
Women	2	2
Pregnant	2	2
Breastfeeding	2	2

A standard serve of fruit is about 150g (350kJ) or:

1 medium	apple, banana, orange or pear
2 small	apricots, kiwi fruits or plums
1 cup	diced or canned fruit (with no added sugar)

Or only occasionally:

125ml	(½ cup) fruit juice (with no added sugar)
30g	dried fruit (for example, 4 dried apricot halves, 1½ tablespoons of sultanas)

Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties

Serves per day	18 years or under	19–50 years
Women	7	6
Pregnant	8	8½
Breastfeeding	9	9

A standard serve (500kJ) is:

1 slice (40g)	bread
½ medium (40g)	roll or flat bread
½ cup (75–120g)	cooked rice, pasta, noodles, barley, buckwheat, semolina, polenta, bulgur or quinoa
½ cup (120g)	cooked porridge
⅔ cup (30g)	wheat cereal flakes
¼ cup (30g)	muesli
3 (35g)	crispbreads
1 (60g)	crumpet
1 small (35g)	English muffin or scone

Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans

Serves per day	18 years or under	19–50 years
Women	2½	2½
Pregnant	3½	3½
Breastfeeding	2½	2½

A standard serve (500-600kJ) is:

65g	cooked lean meats such as beef, lamb, veal, pork, goat or kangaroo (about 90–100g raw)*
80g	cooked lean poultry such as chicken or turkey (100g raw)
100g	cooked fish fillet (about 115g raw weight) or one small can of fish
2 large (120g)	eggs
1 cup (150g)	cooked or canned legumes/beans such as lentils, chick peas or split peas (preferably with no added salt)
170g	tofu
30g	nuts, seeds, peanut or almond butter or tahini or other nut or seed paste (no added salt)

**weekly limit of 455g*

Milk, yoghurt, cheese and/or alternatives, mostly reduced fat

Serves per day	18 years or under	19–50 years
Women	3½	2½
Pregnant	3½	2½
Breastfeeding	4	2½

1 cup (250ml)	fresh, UHT long life, reconstituted powdered milk or buttermilk
½ cup (120ml)	evaporated milk
2 slices (40g)	or 4 x 3 x 2cm cube (40g) of hard cheese, such as cheddar
¾ cup (200g)	yoghurt
1 cup (250ml)	soy, rice or other cereal drink with at least 100mg of added calcium per 100ml

- To meet additional energy needs, extra serves from the Five Food Groups or unsaturated spreads and oils, or discretionary choices may be needed only by those women who are taller or more active, but not overweight.
- An allowance for unsaturated spreads and oils for cooking, or nuts and seeds can be included in the following quantities: 14–20g per day for pregnant and breastfeeding women.
- For meal ideas and advice on how to apply the serve sizes go to:

www.eatforhealth.gov.au

Equivalent to an additional…

2x bread with nut butter and

1/2c rice

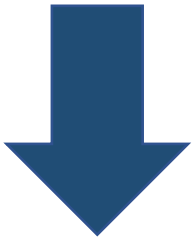
Received: 14 March 2019 | Revised: 25 October 2019 | Accepted: 30 October 2019
DOI: 10.1111/mcn.12916

REVIEW ARTICLE

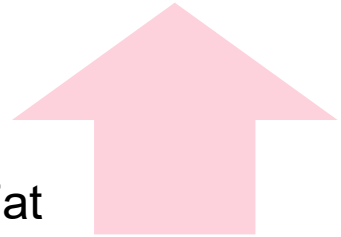
WILEY | Maternal & Child Nutrition

Dietary guideline adherence during preconception and pregnancy: A systematic review

Cherie Caut[1] | Matthew Leach[2] | Amie Steel[3]



Vegetables
Cereals and grains
Micronutrients (iron, folate, calcium)



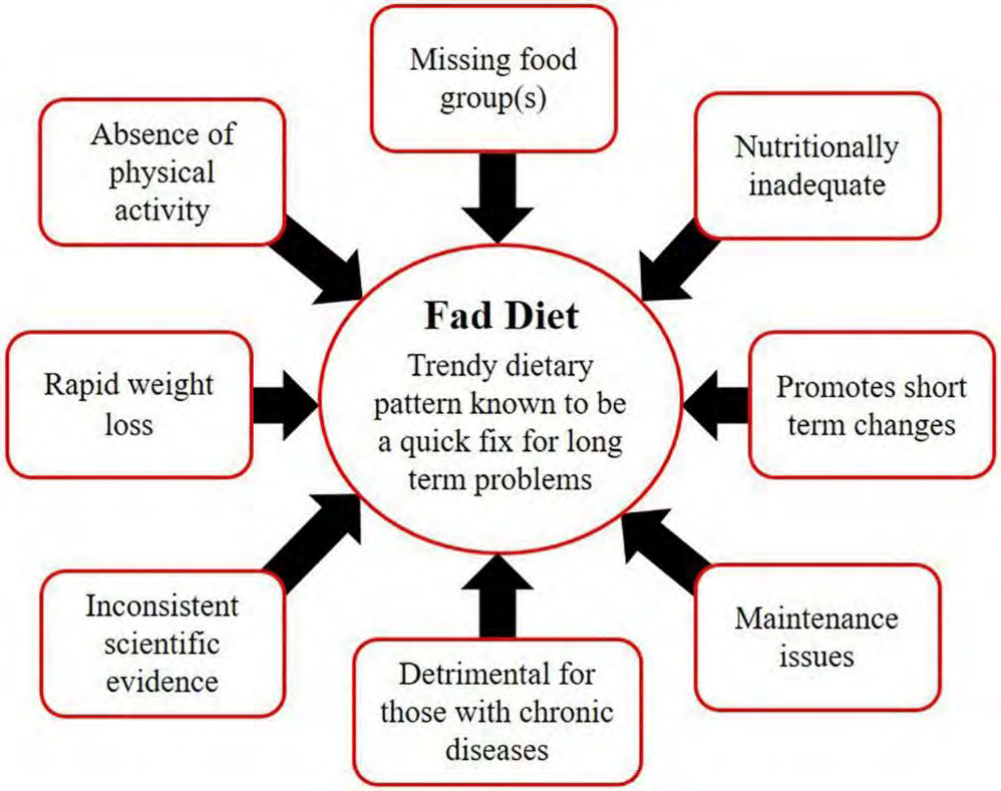
Fat

Fad diets

Low carbohydrate / Ketogenic diet

Paleo

Fad diets



Desrosiers et al 2018
Tahreem et al 2022

Physical Activity recommendations

Metro North Health

Queensland Government

Guidelines for Physical Activity

All women should aim for at least **30 minutes of moderate intensity exercise** on most or all days of the week

- May commence at 15 to 20 minutes
- Improved bowel habits, sleep patterns and mood
- Less nausea, lower back pain, anxiety or stress
- Helps maintain a healthy weight
- Reduces risk of prolonged labour, as well as leg cramps and swelling
- Decreases your risk of developing diabetes or heart disease

Wilkinson, Miller, Watson, 2009

Weight gain recommendations

Metro North Health | Queensland Government

Healthy gestational weight gain Singleton pregnancy

Pre-pregnancy BMI	GWG range	Rate of gain in trimester 2 & 3
Less than 18.5 kg/m²	12.5 - 18kg	0.45 kg/week
18.5-24.9 kg/m²	11.5 - 16kg	0.45 kg/week
25-30 kg/m²	7 - 11.5kg	0.28 kg/week
30kg/m² or above	5 - 9kg	0.22 kg/week

IOM, Re-examining the guidelines, 2009

Pregnancy weight gain chart for BMI 25kg/m² or over

(Affix patient identification label here)

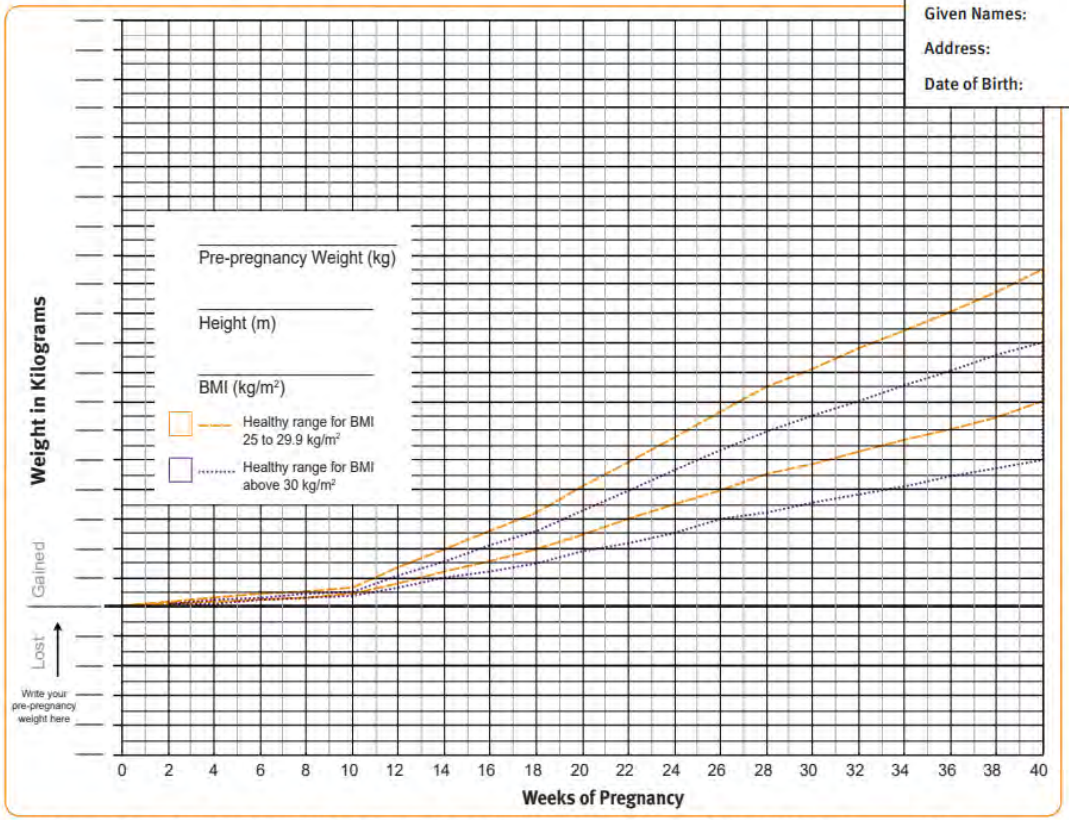
URN:

Family Name:

Given Names:

Address:

Date of Birth: Sex: ☐ M ☐ F ☐ I

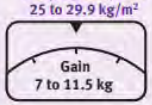


Congratulations on your pregnancy!

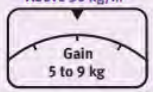
Healthy pregnancy weight gain is important for your health and the health of your baby as you can see on the other side of this page. . Almost all women can gain a healthy amount by eating well, being active and monitoring their weight. Bring this pregnancy weight gain chart to your antenatal appointments and ask your maternity health care provider to plot your weight and discuss your progress towards your weight gain goals for this pregnancy.

The amount of weight you should gain depends on your weight (and body mass index – BMI) before you became pregnant. Choose the weight gain range that matches your pre-pregnancy BMI (see below to calculate your BMI).

Pre-pregnancy BMI 25 to 29.9 kg/m²



Pre-pregnancy BMI Above 30 kg/m²



How to use this tracker:

1. Write down height and weight before pregnancy in the two spaces provided.
2. Calculate your pre-pregnancy BMI using the following equation: $\frac{\text{weight (in kg)}}{\text{height x height (in meters)}}$

   Alternatively, you can do so using this online calculator: http://www.getahealthyqld.com.au/healthier-you/tools-and-calculators/bmi-calculator/
3. Starting from pre-pregnancy weight, add 1kg to each space along the left hand line on the graph.
4. Weigh yourself each appointment and every week or two between appointments and place a mark on the line where your weight and weeks gestation cross.
5. Connect the dots to track your weight gain throughout pregnancy.

Acknowledgement to Royal Brisbane and Women's Hospital Nutrition and Dietetics Department, adapted from Institute of Medicine weight gain recommendations for pregnancy.

Version 4 | Effective Dec 2017 | Review Nov 2021

Queensland Government

Healthy gestational weight gain
Twin or triplet pregnancy

Pre-pregnancy BMI	GWG range
Less than 18.5 kg/m²	Insufficient evidence to make a recommendation
18.5-24.9 kg/m²	17-25kg
25-30 kg/m²	14-23kg
30kg/m² or above	11-19kg

IOM, Re-examining the guidelines, 2009

Risks of unhealthy GWG

- Excess
  - Gestational diabetes
  - Hypertensive disorders of pregnancy
  - Delivery complications
  - Macrosomia
  - Longer hospital stays
  - Weight retention post partum
  - Childhood obesity and chronic disease
- Inadequate
  - Preterm birth
  - SGA baby & later chronic disease

Gestational weight gain

- 50 - 75% of women gain weight outside recommendations
- 10% of women achieve or exceed total GWG recommendations within the first 16-20 weeks
- Excess GWG 1st trimester associated with GDM risk
- EARLY support and advice when in primary care essential

Australian and New Zealand Journal of Obstetrics and Gynaecology 2012; 52: 545–551 DOI: 10.1111/ajo.12013

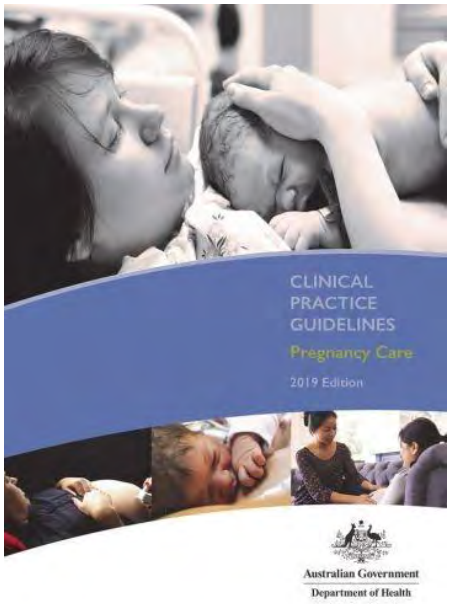
Original Article

A prospective study of pregnancy weight gain in Australian women

Susan J. de JERSEY,[1,2] Jan. M. NICHOLSON,[3,4] Leonie K. CALLAWAY[5,6] and Lynne A. DANIELS[2]

[1]*Department of Nutrition and Dietetics, Royal Brisbane and Women's Hospital, Herston,* [2]*School of Exercise and Nutrition Sciences, and Institute of Health and Biomedical Innovation, Queensland University of Technology, Kelvin Grove,* [3]*Parenting Research Centre, East Melbourne, Victoria,* [4]*Centre for Learning Innovation, Queensland University of Technology, Kelvin Grove,* [5]*Royal Brisbane and Women's Hospital Clinical School, School of Medicine, University of Queensland, Herston, and* [6]*Department of Internal Medicine, Royal Brisbane and Women's Hospital, Herston, Queensland, Australia*

Clinical Practice Guidelines



Initial Physical Examination

BMI: Use pre-pregnancy weight if known, otherwise use first weight taken

Date:

/ /

Booking-in weight:	Pre-pregnancy weight:	Height:
kg	kg	cm

Pre-pregnancy BMI:

- ☐ Underweight (≤18.5)
- ☐ Normal (18.5–24.9)
- ☐ Overweight (25–29.9)
- ☐ Clinically obese (≥30)

- ☐ Referral to medical officer
- ☐ Dietitian for review
- ☐ Physio for review

Consensus-based recommendation

X. At every antenatal visit, offer women the opportunity to be weighed and encourage self-monitoring of weight gain.

Consensus-based recommendation

XI. At every antenatal visit, discuss weight change, diet and level of physical activity with all women.

What works and what's recommended?

- Women not advised **3.6** times more likely to fall outside the correct GWG range

- Interventions based on **diet counselling** and theoretically derived behaviour change strategies, usually in combination with supplementary **weight monitoring** successful in decreasing GWG

Interactive skills session

Cogswell et al 1999 Obste Gyn; Muktabhant et al 2015 Cochrane Reviews; Thangaratinam et al 2012 BMJ

"The outcome of pregnancy must be considered in terms of maternal and neonatal health, the growth and cognitive development of the infant, its health as an adult and even the health of subsequent generations"

Gluckman et al 2008 NEJM

Metro North **GP Alignment Program**

MATERNITY WORKSHOP

Saturday 2nd September 2023

Antenatal Testing for chromosomal conditions

Pauline McGrath

Senior Genetic Counsellor

Genetic Health Queensland

This is a joint initiative between Metro North Hospital and Health Service and Brisbane North PHN

phn BRISBANE NORTH

An Australian Government Initiative

Queensland Government

Overview

- Reproductive carrier screening
- Screening for haemoglobinopathies
- First trimester screening
- cFTS
- NIPT
- Maternal serum screen
- USS
- Genomic Medicine

Reproductive Carrier Screening

- Estimated carrier of 3-5 genetic conditions
- Determines whether you are a carrier for a serious genetic condition
- Genetic conditions screened are rare autosomal recessive and X-linked recessive conditions
- In most cases, there is no family history of the condition

Reproductive Carrier Screening

- Learning about genetic carrier status through preconception carrier screening provides couples opportunity to understand what their chance, as an individual or couple, would be of having a child with a serious genetic condition
- This information would provide the opportunity for to utilise reproductive planning options to reduce the chance of passing the faulty gene on to a future child

Reproductive Carrier Screening

- Reproductive planning options currently available include;
- Prenatal testing genetic testing of an established pregnancy
- Preimplantation genetic diagnosis in an embryo created using IVF – now Medicare funded
- Donor gametes
- No testing
- No children

Reproductive Carrier Screening

- Preconception carrier screening is readily available to determine carrier status for many genetic conditions including Fragile X syndrome, Spinal Muscular Atrophy (SMA), Duchenne Muscular Dystrophy and Cystic Fibrosis (CF)
- This will be Medicare funded from November 2023

Reproductive Carrier Screening

- 3 gene test – $400
- 400 gene test – $600
- If choosing to test only one partner test the female first until November where it is likely test will be available to both

- Reproductive genetics VCGS - AC.pdf

Reproductive Carrier Screening

- https://ranzcog.edu.au/statements-guidelines

- https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/genomics/reproductive-carrier-screening

Genetic carrier screening

Reproductive Carrier Screening

Practice point

All women or couples planning a pregnancy, or who are already pregnant, should have a comprehensive family history recorded.[1]

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 (ie genetics or obstetrics).[1]

Information on carrier screening for the more common genetic conditions that affect children (eg cystic fibrosis [CF], spinal muscular atrophy [SMA], fragile X syndrome [FXS]) should be offered to low-risk women and couples (ie regardless of family history and ethnicity).

The decision to have screening is a personal choice to be made by the individual or couple.

Reproductive Carrier Screening

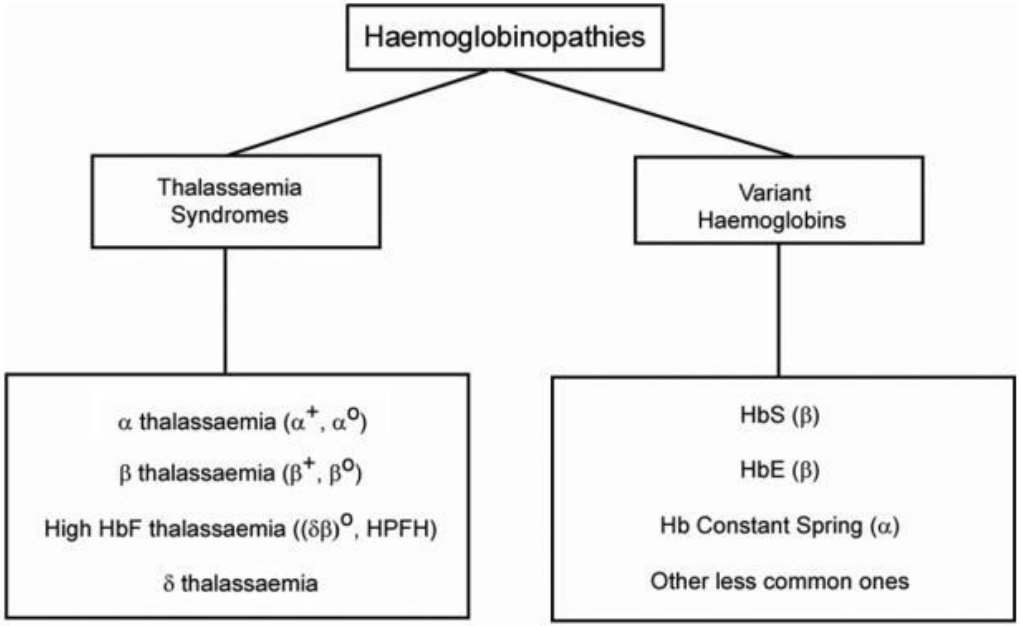
Table 1- frequency of carrier and affected individuals for cystic fibrosis, spinal muscular atrophy and fragile X syndrome from 12,000 screened individuals in Australia[3]

Condition	Carrier	Affected	Main clinical features of the condition
Cystic fibrosis	1 in 35	1 in 4925*	Recurrent lung infections, malabsorption, shortened life span
Spinal muscular atrophy	1 in 50	1 in 9917*	Severe muscle weakness, death usually during childhood
Fragile X syndrome	1 in 332	1 in 7143 males ^	Intellectual disability, autism

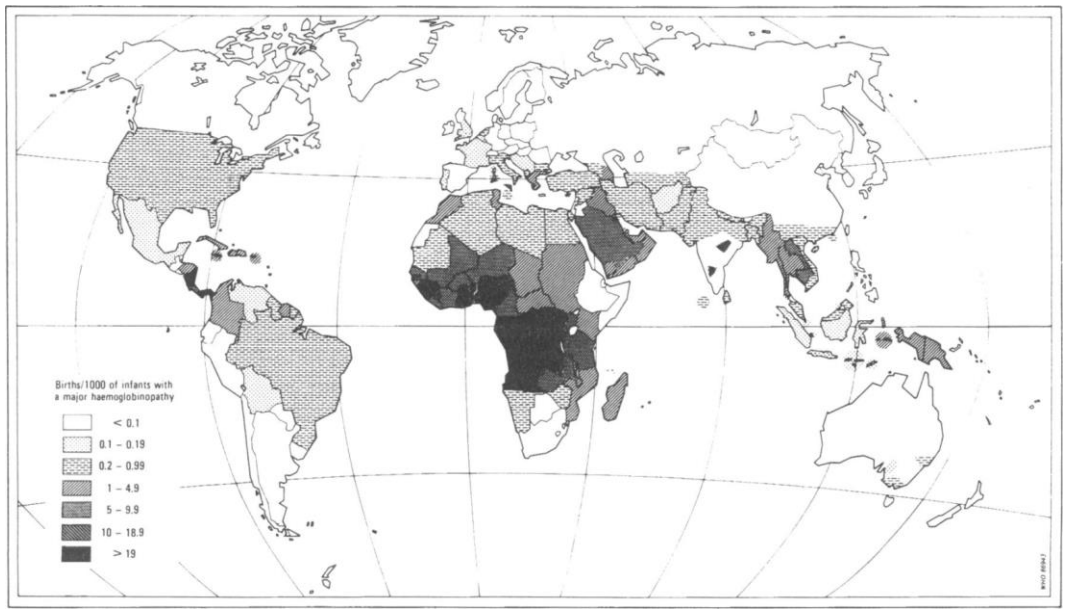
* = inferred from the carrier frequency

^ = based on a meta-analysis of data[4]

- Trent R, J, A., (2006) ‘Diagnosis of the Haemoglobinopathies’, Clin Biochem Rev. 2006 February; 27(1): 27–38.



- Prevention and control of haemoglobinopathies*
- M. Angastiniotis, B. Modell, P. Englezos, & V. Boulyjenkov



Bulletin of the World Health Organization, 1995, 73 (3): 375-386

Screening for Thalassaemia

- Offer at risk pregnant women FBE, HbEPG, ferritin (if indicated)
- DNA analysis (if indicated). Include lab numbers of FBE/HbEPG on lab forms or send copies to lab
- Male partners of women with abnormal FBE and/or HbEPG also require investigation. Include female partners details on request
- There is now Medicare funding for alpha globin gene testing.
  - Item 73410 | Medicare Benefits Schedule (health.gov.au)

Results

- If Hb, MCV and HbEPG normal – risk of being a carrier of a major haemoglobinopathy and having an affected child is low
- If the woman has abnormal results but her partners are normal the risk of having an affected child is low
- If both partners have abnormal results a referral to appropriate service for DNA testing needs to be made ASAP

Table. Risk of Down's Syndrome and Chromosomal Abnormalities at Live Birth, According to Maternal Age.*

Maternal Age at Delivery (yr)	Risk of Down's Syndrome	Risk of Any Chromosomal Abnormality
20	1/1667	1/526
25	1/1200	1/476
30	1/952	1/385
35	1/378	1/192
40	1/106	1/66
45	1/30	1/21

Chromosome risk by maternal age (at term)

Source: New England Journal of Medicine

Advantages of screening

More accurate than age-related risk alone

Screening in first trimester enables diagnostic testing

Reduction of invasive tests

Highest detection rate

- NIPT – 99% detection rate for trisomy 21
- Combined first trimester screen - 85-90% detection rate

Aneuploidy tests compared

Test	Down Syndrome Detection Rate	Screen positive rate
Non-Invasive Prenatal Testing (NIPT)	99%	0.1%
Nuchal translucency scan (NTS)	70%	5%
Combined NTS, Serum testing (B HCG, PAPP-A)	85-90%	5%
Second trimester serum test (Free B HCG, oestriol, AFP +/- Inhibin)	65-70%	5%
Morphology scan	20-50%	10-15%

Source: https://www.ranzcog.edu.au

Nuchal translucency scan 11 to 13^{+6} weeks

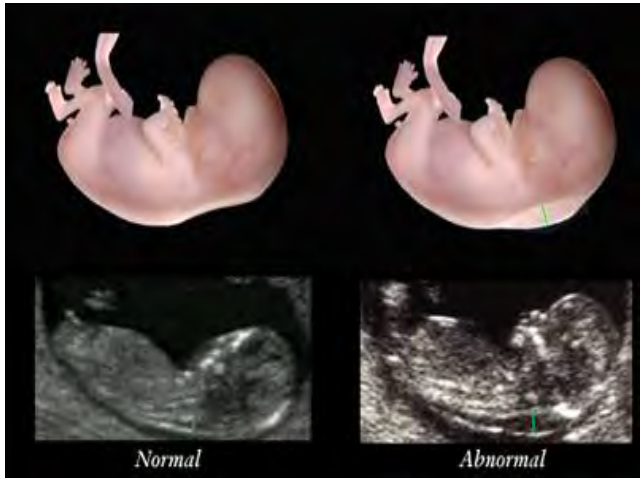


Image source: http://www.fetal.com

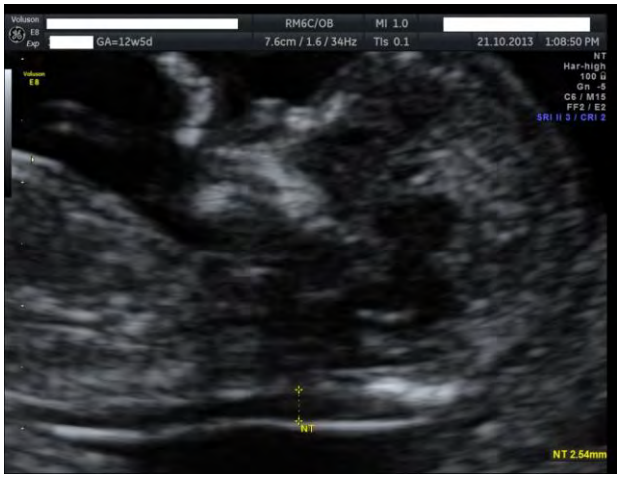


Image source: Woman's and Newborn Services RBWH

Sensitivity (detection rate) = 70%
Screen positive rate = 5% (1/20 screened 'high risk')

Nasal bone (NB)

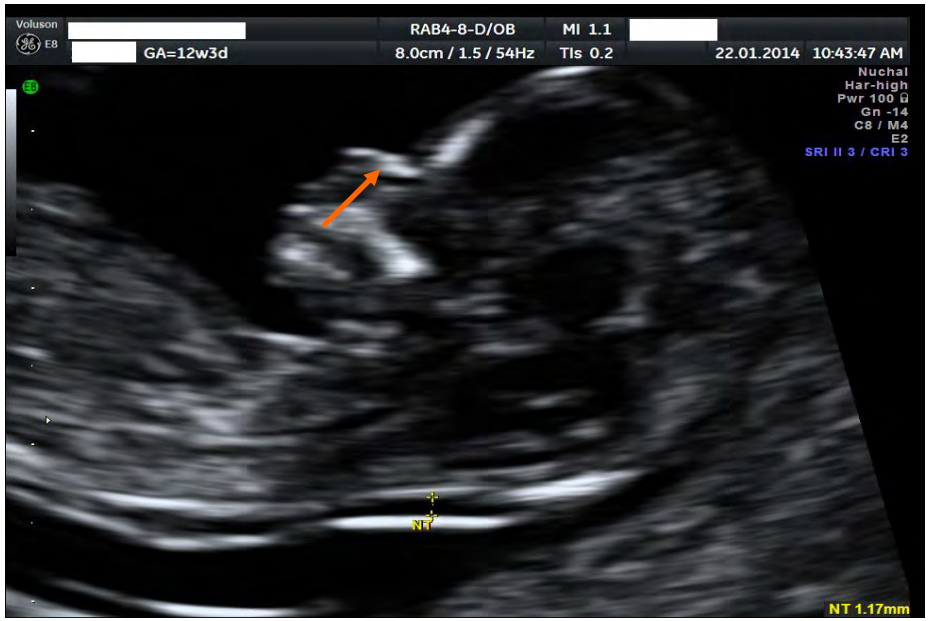
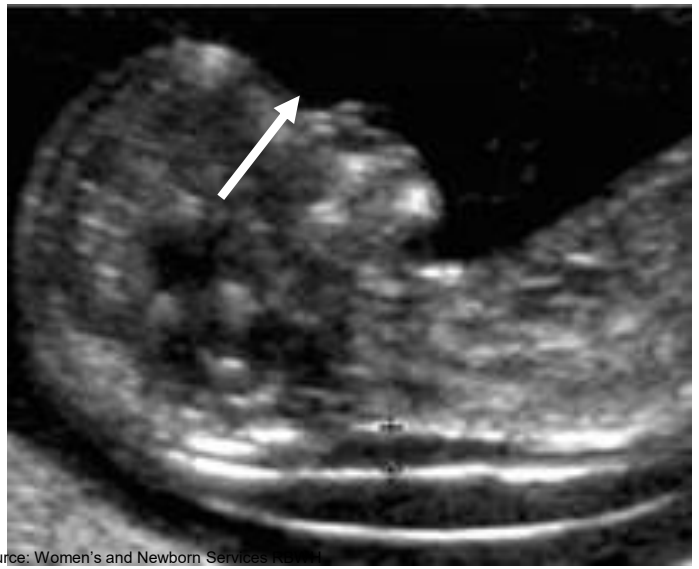


Image Source: Women's and Newborn Services RBWH

Presence of NB increases screening sensitivity

Absent nasal bone

- What is it?
- Delayed ossification of NB
- It does NOT mean that baby does not have a nose



Source: Women's and Newborn Services Report

Absent nasal bone

- At 11-13 weeks gestation, ~1-2% of normal fetuses have an absent nasal bone
- ~60% of fetuses with trisomy 21 have an absent nasal bone
- Overall effect on screening is increased detection and reduced screen positives

Combined First Trimester Screen

- Nuchal translucency scan and maternal serum-PAPP-A and fβhCG (9-13 weeks)
- Cut-off for high risk 1/300
- Test results should be 'combined' and not provided separately

	Trisomy 21	**Trisomy 18**	**Trisomy 13**
Background risk:	1 : 267	1 : 640	1 : 2010
Ultrasound risk:	*1 : 2173*	*1 : 3215*	*1 : 25877*
Biochemistry risk:	*1 : 626*	*1 : 4552*	*1 : 5169*
Adjusted risk:	1 : 5115	1 : 12794	1 : 40199

Example Report

Indication:
1st Trimester screening.

History:
Maternal age: 33 years, pre-pregnancy weight 62.0 kg, height 170.0 cm, BMI 21.5, blood group: O, (Rh D): Rh +ve. Conception spontaneous. Non-smoker.
Obstetric History: **Gravida: 5**. **Para: 2**. CMV infection.

EDD by ultrasound: 7 January 2011.
Gestational age: 13 weeks + 3 days

First Trimester Ultrasound:
Transabdominal US with Voluson E8. Ultrasound view: good.
Fetal heart action present. Frequency 149 bpm.

Crown-rump length (CRL)	75.0	mm	50th%
Nuchal translucency (NT)	1.92	mm	

Nasal bone present
Fetal anatomy: **skull/brain** appears normal, **heart** not examined, **spine** appears normal, **abdomen** appears normal, **stomach** visible, **bladder** visible, **hands** both visible, **feet** both visible.
Additional Markers for Risk Assessment: Ductus Venosus (a-wave): positive.
Placenta: posterior, structure normal. Amniotic fluid: normal. Cord: 3 vessels.
Cervix length 46 mm.

Summary of ultrasound findings: normal intrauterine pregnancy.
Size agrees with dates. I could not see any fetal abnormality on today's scan. Ultrasound is unable to detect all fetal abnormalities.

Maternal Serum Biochemistry:
Sample taken on 30 June 2010.
No. of fetuses: A. Maternal weight: 62.0 kg. Non-smoker. Ethnic origin: White. Parity > 0. Manufacturer: Kryptor.
Free beta hCG: 99.000 IU/l, equivalent to 2.7078 MoM.
PAPP-A: 2.000 IU/l, equivalent to 0.5254 MoM.

Estimated risk for chromosomal abnormalities:

	Trisomy 21	**Trisomy 18**	**Trisomy 13**
Background risk:	1 : 360	1 : 924	1 : 2886
Adjusted risk:	1 : 110	1 : 18484	1 : 57726

Nuchal translucency size and outcome

Nuchal translucency	% Chromosomal defects	% Normal karyotype – fetal death usually prior to 20 weeks of gestation	% Normal karyotype – major fetal abnormalities	% Normal karyotype – alive and well
< 95th centile	0.2	1.3	1.6	97
3.5 – 4.4mm	21.1	2.7	10.0	70
4.5 – 5.4mm	33.3	3.4	18.5	50
5.5 – 6.4mm	50.5	10.1	24.2	30
> or equal to 6.5mm	64.5	19.0	46.2	15

Image source: Snijders et al 1998;2001;2005; Michailidis et al 2001

What else can be detected with cFTS?

Increased nuchal translucency (>3.5mm)

- cardiac malformations, genetic syndromes
- Recommend tertiary morphology scan 18-20 weeks gestation

Low PAPP-A (<0.4 MoM)

- associated with pre-eclampsia, growth restriction & stillbirth
- fetal growth & uterine artery doppler assessment at 22-24 weeks gestation

Non-invasive Prenatal Testing (NIPT)

Fetal cell-free DNA found in plasma of pregnant women from 10 weeks gestation

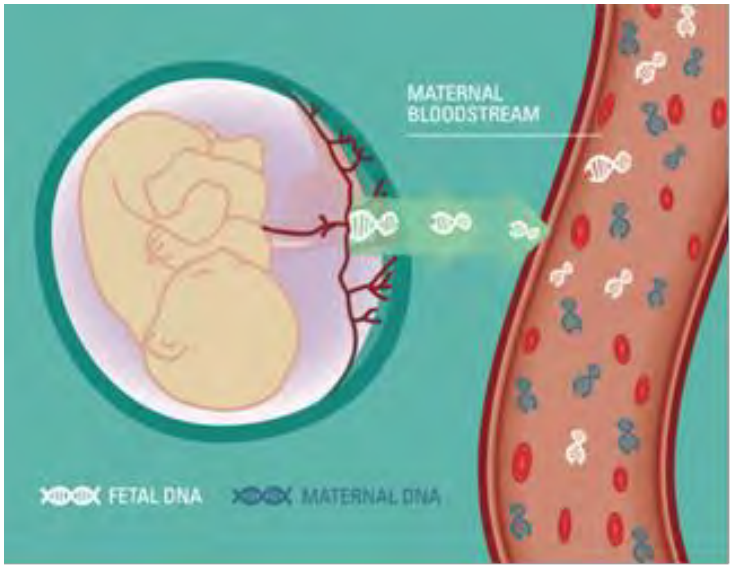
Testing of fetal DNA in maternal blood poses no risk to pregnancy

Not a diagnostic test, **abnormal results should be confirmed via invasive testing**

Cost approximately $400

NIPT

- Mother with chromosomally normal fetus the proportion of fragments will be in a narrow normal range
- If fetus has abnormal chromosomes the fetal contribution for that chromosome will be abnormal and distort the overall proportion



Benefits of NIPT

- Highest sensitivity and specificity
- Reduces invasive testing
- Beneficial for women unable to access cFTS or later gestation
- Low false positive rate
- Early as 10 weeks
- Noninvasive

Limitations of NIPT

- No Medicare rebate, costs vary
- Abnormal results require confirmation by invasive testing
- Complex false positive and negative results
- Failure rate of NIPT 0.1 - 3%
  - More likely to fail in high BMI
  - Patient using anti-coagulant therapy

When NIPT is not a good option

- Abnormalities on USS
  - NT > 3.5mm
  - Ventriculomegaly
  - Cardiac anomalies
- 8% of women who have fetal abnormality detected with have an abnormal chromosome micro array test
- Screening results > 1:100 (minimise delay)

False positive NIPT

- Placental
  - Confined placental mosaicism
- Fetal
  - Vanishing twin – early demise of aneuploid twin
- Maternal
  - Sex chromosome aneuploidy (SCA) – mosaic or non mosaic
  - Other aneuploid or structural mosaicism
  - Benign or malignant tumour
  - Bone marrow or organ transplant

NIPT Compared

	Laboratory	Test	Additional test	Costs	Method
Harmony	SNP	T13/18/21 X Y		$425	WGS
Generation	QML	T13/18/21 X Y	22q del* 15q11del* 1p36del* 4pdel* 5pdel*	$395 $695*	WGS
Percept	QPath/Mater Path (for collection) VCGS	T13/18/21 X Y	Rare autosomal trisomies Segmental imbalances 7-10mb in size Translocation analysis (must be negotiated with lab)	$449	WGS
Panorama	QFG/Virtus Diagnostics	T13/18/21 X Y	22q del*” 15q11del” 1p36del” 4pdel” 5pdel” Triploidy Zygosity in twins Fetal gender for twins	$435 $510* $635”	WGS

Maternal Serum Screen

- Rarely used
- Blood test at 15-20 weeks gestation
- fβhCG + Oestriol + alpha fetoprotein (AFP)
- Detection rate 70%
- Provided risk assessment for open neural tube defects (AFP)
- Used 1 in 250 cut-off for high risk for chromosomal abnormalities
- Provides an option for screening later in gestation

ISUOG consensus statement

- All women should be offered a first-trimester ultrasound regardless of their intention to undergo NIPT
- First trimester combined screen should not be computed if the woman has already received a normal NIPT result
- In the presence of a structural fetal anomaly the indications for microarray should **not** be modified by a normal NIPT result obtained previously

2017-2018 - recommended standard of care

Recommendation 1	Grade and supporting references
All pregnant women should be provided with information and have timely access to screening tests for fetal chromosome and genetic conditions. Prenatal screening options should be discussed and offered in the first trimester whenever possible.	Level III-3 Grade C 4
Recommendation 2	**Grade and supporting references**
Screening or diagnostic testing for fetal chromosomal and genetic conditions is voluntary and should only be undertaken as an informed decision by the pregnant woman.	Consensus-based recommendation
Recommendation 3	**Grade and supporting references**
If a screening test result indicates an increased chance of a chromosome or genetic condition, the woman should have access to genetic counselling for further information and support. The available options for prenatal diagnosis should be discussed and offered.	Consensus-based recommendation
Recommendation 4	**Grade and supporting references**
Acceptable first-line screening tests for fetal chromosome abnormalities in the first trimester include either: a) combined first trimester screening with nuchal translucency and serum pregnancy-associated plasma protein A (PAPP-A) and beta human chorionic gonadotropin (βHCG) measurements b) cell-free DNA (cfDNA)-based screening. The choice of first line screening test will depend on local resources, patient demographics, and individual patient characteristics.	Consensus-based recommendation
Recommendation 5	**Grade and supporting references**
Pre-test counselling for cfDNA-based screening should include informed decision making regarding testing for fetal sex and sex chromosome aneuploidy.	Consensus-based recommendation

HGSA and RANZCOG Statement

Recommendation 6	Grade and supporting references
Acceptable first-line screening tests for chromosome conditions in second trimester include: a) maternal serum screening (MA + AFP + βHCG +UE3 +/- Inhibin)and, b) cf DNA-based screening. The choice of first line screening test will depend on local resources, patient demographics, and individual patient characteristics.	Consensus-based recommendation
Recommendation 7	**Grade and supporting references**
The option of cfDNA-based screening as a second-tier test should be discussed with all women at increased probability of a chromosome condition after primary screening. The advantages and disadvantages of second tier cfDNA-based screening, compared with diagnostic testing, or no further assessment, should be discussed by a clinician with appropriate expertise.	Consensus-based recommendation
Recommendation 8	**Grade and supporting references**
Diagnostic testing should be recommended prior to definitive management decisions in cases of "increased chance" screening results, including cfDNA-based screening.	Consensus-based recommendation
Recommendation 9	**Grade and supporting references**
Routine population-based screening for genome-wide chromosome abnormalities and microdeletion syndromes are not recommended due to the absence of well-performed clinical validation studies.	Consensus-based recommendation

HGSA and RANZCOG Statement

Appropriate Diagnostic Tests

High Risk Result	CVS	Amnio
T21	☑	☑
T18	☑	☑
T13		☑
XO		☑
XXX	☑	☑
XXY	☑	☑
XYY	☑	☑

* CVS would be appropriate for inc risk T13 and XO in the context of an abnormal ultrasound

Detection rates for fetal abnormalities at 18-20 week morphology scan

- Neural tube defects (>90%)
- Cardiac abnormalities (major 40-75%)
- Cleft lip (>75%)
- Trisomy 21 (20-50%)
- Trisomy 13 (>90%)
- Trisomy 18 (>90%)

Morphology scan as Down syndrome screen

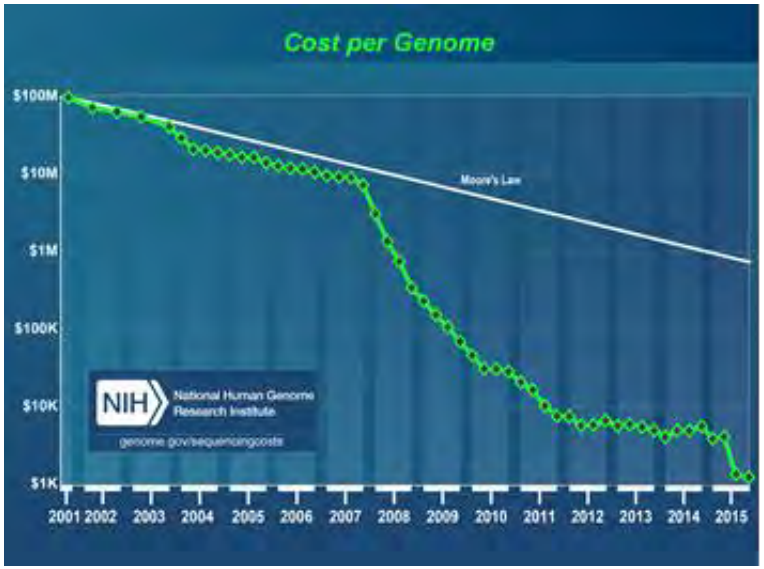
- Detection rates reported as low as 17% (Finland)
- Markers on morphology scan that are useful
  - thickened nuchal fold >6mm
    - short or absent nasal bone
    - Echogenic bowel
- Echogenic bowel
  - associated with early onset growth restriction, CMV and cystic fibrosis

Screening summary

- *Inform and offer* reproductive carrier testing and chromosome screening tests to **ALL** pregnant women
- NIPT has best detection rate for trisomy 21
  - No Medicare rebate
- cFTS – reliable detection rate and offers additional morphological findings
  - Medicare rebate available

Genomic Medicine

- More than 10 years ago the ‘reference’ human genome sequence was published
- Approximately 20,000 human genes
- The smaller than expected number hinted at the hidden complexity of the human genome



Genetic Testing

- Routine Genetic testing
  - 4-6 weeks ie CF, DMD, Fragile X
- Targeted Panel testing
- Whole Exome Sequencing
- Whole Genome Sequencing

Genomic testing – Trio Exome sequencing

Single abnormality	Additional 6-22%
Multiple abnormality	Additional 15-38%
Isolated increased nuchal measurement	Additional 6%
Skeletal	Additional 15-30%
Cardiovascular	Additional 3-34%
CNS	Additional 3-34%
Hydrops fetalis/lymphatic/effusion	Additional 9-29%

Antenatal testing for chromosomal & genetic abnormality & reproductive carrier screening

- Always feel free to call regarding genetic patients. We are happy to help 3646 2269

- Thank you

Metro North **GP Alignment Program**

MATERNITY WORKSHOP

Saturday 2nd September 2023

Pharmacy

Claudia Barkeij

Senior Pharmacist

Women's and Newborn Services RBWH

This is a joint initiative between Metro North Hospital and Health Service and Brisbane North PHN

phn BRISBANE NORTH

An Australian Government Initiative

Queensland Government

Medications in Pregnancy

- Use of a prescribed or non-prescribed medication 96-97% across trimesters

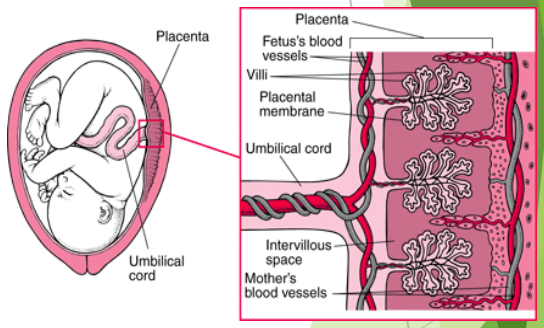
  (Crowther HA. Patterns of medication use during and prior to pregnancy: the MAP study. Aust NZ J Obstet Gynaecol 2000;40:165-72)

- Pre-pregnancy chronic health conditions are on the rise (CDC USA) – including cardiac, metabolic, mental health and respiratory)

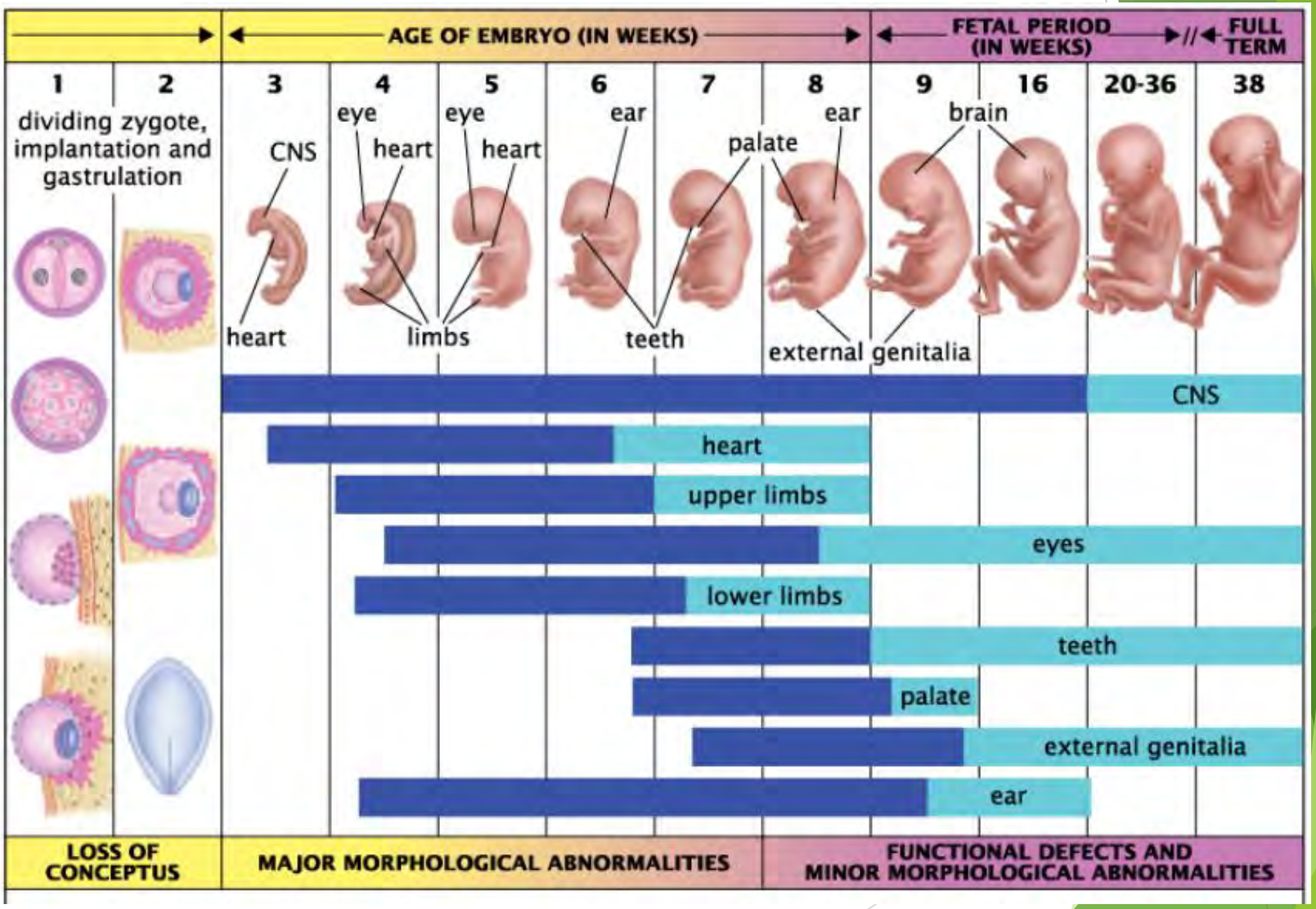
  (Laura E. Riley et al. Improving Safe and Effective Use of Drugs in Pregnancy and Lactation: Workshop Summary. Amer J Perinatol 2017)

Developmental stages

Week	Organogenesis calendar	
0-2	Conception	Prior to implantation Drug exposure in this time -all or nothing effect
2	Implantation	If implantation occurs following drug exposure –risk of malformation same as baseline
2-8	Embryogenesis	- Maternal & fetal circulation are connected - Discrete time line for organ formation •Heart - days 18 - 40 •Brain - days 18 - 60 •Eyes - days 25 - 40 •Limbs - days 25 - 38 •Genitalia - days 40 – 60 •Potential harm depends on timing of drug exposure
8 - term		Drugs may affect growth and function of normally formed organs and tissue Later stages of pregnancy drugs may accumulate in fetus



Organogenesis



Australian Categorisation System for Prescribing Medicines in Pregnancy (TGA)

A: Taken by a large number of pregnant women without any proven increase in frequency of malformations or other direct or indirect harmful effects on fetus

B: Taken by only limited numbers of pregnancy women, without an increase in frequency of malformation other direct or indirect harmful effects on fetus

Studies in animals:

B1 Show no evidence of fetal damage

B2 Inadequate/lacking but available data show no evidence of fetal damage

B3 Have shown evidence of increased occurrence of fetal damage, but human significance uncertain

C: Drugs which owing to their pharmacological effects, have caused or suspected of causing, harmful effects on human fetus or neonate without causing malformations. Effects may be reversible

D: Have caused or suspected to cause, an increased incidence of human fetal malformations or irreversible damage

X: High risk of permanent damage in the fetus-contraindicated

Antenatal Pharmacist Clinics

- Individualized advice regarding safety and efficacy of medications during pregnancy and breastfeeding
- Pre-conception counselling on management of high-risk medications
- Patient counselling and education
- Providing vaccinations during pregnancy
- Management of common conditions during pregnancy, smoking cessation, pregnancy supplements

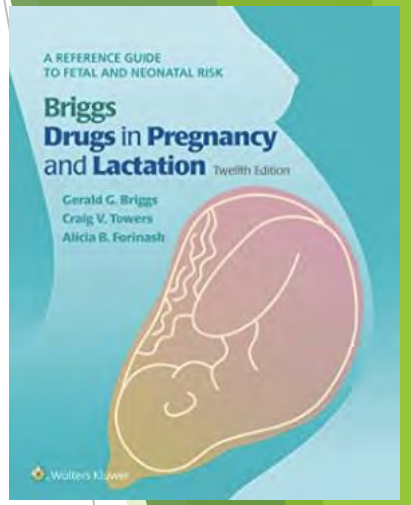
Useful resources

- Antenatal pharmacist:

  Phone: 07 36470810 or email:

  Pharmacy-MaternityOutpatients-RBWH@health.qld.gov.au

- Drugs in Pregnancy and Lactation (Gerald G Briggs)
  - More complex monographs, Additional information with human/animal studies
  - USA – different pregnancy categorisation
- Breast feeding – Medications in Mothers Milk (Dr Thomas Hale and Dr Hilary Rowe)
- Queensland Medicines Advice and Information Service (QMAIS)
  - Email: QMAIS@health.qld.gov.au
  - Phone: 36467098 or 36467599



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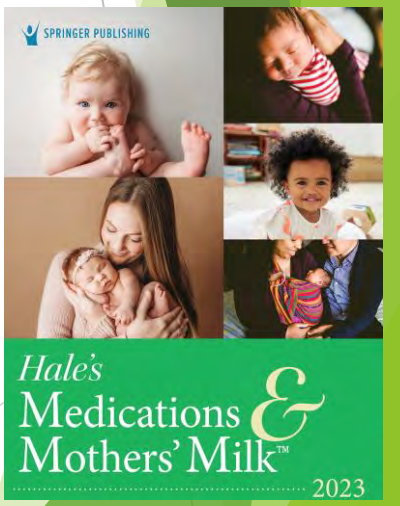


Source: Google images

Metro North **GP Alignment Program**

MATERNITY WORKSHOP

Saturday 2nd September 2023

Referral Processes and Maternity Care Options

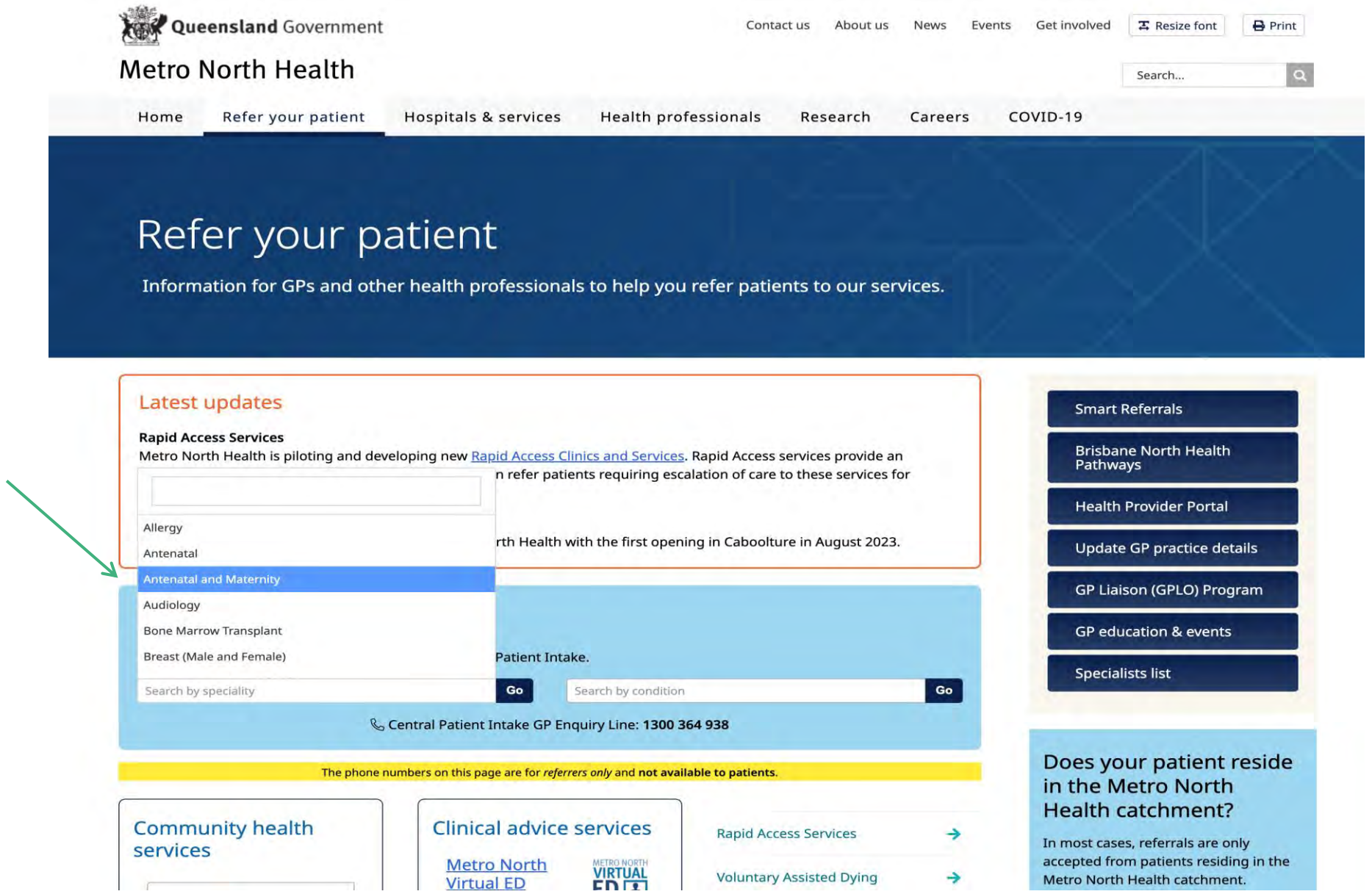
Dr Meg Cairns

This is a joint initiative between Metro North Hospital and Health Service and Brisbane North PHN

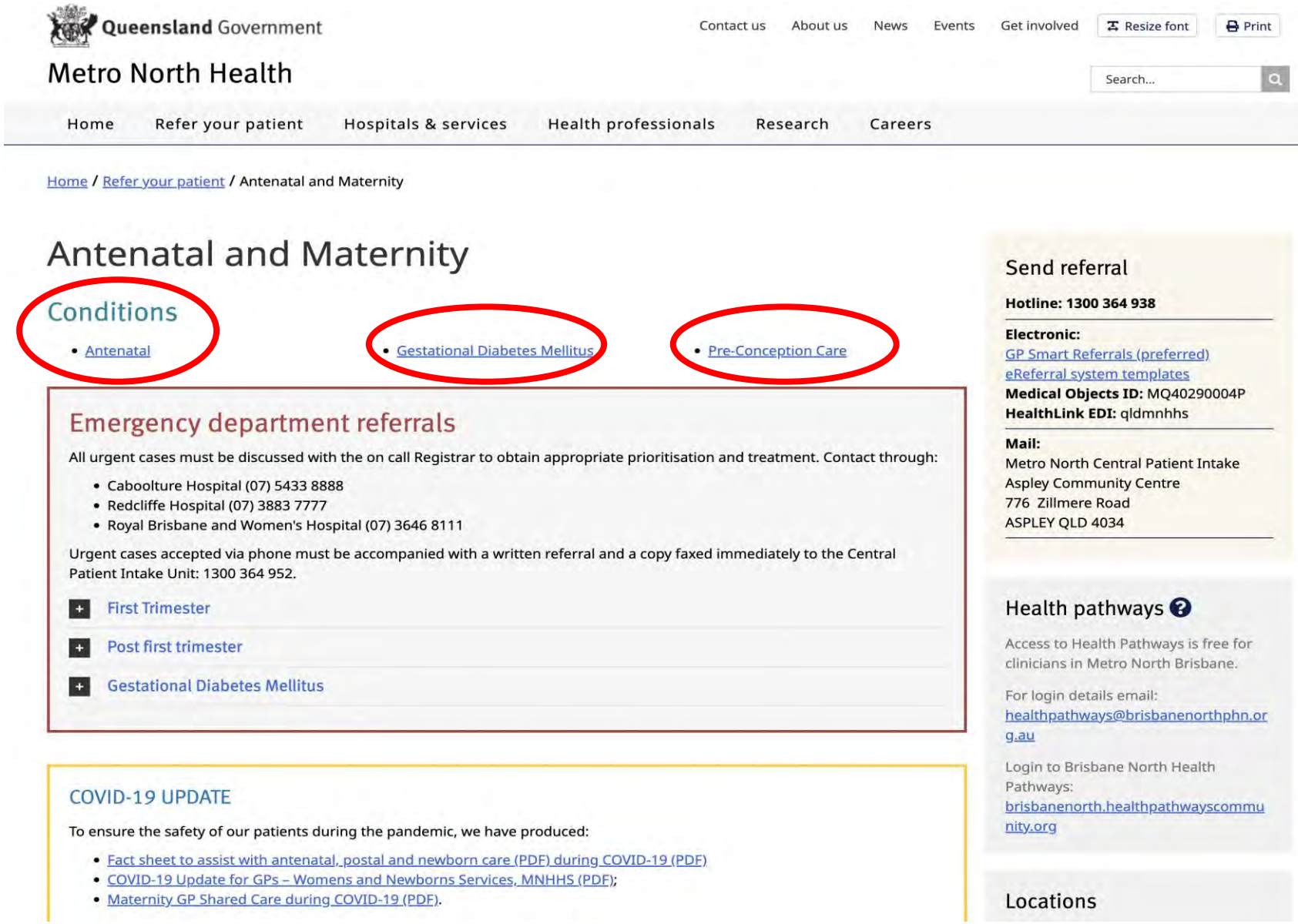
phn BRISBANE NORTH
An Australian Government Initiative

Queensland Government

Refer your patient



Refer your patient



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Antenatal and Maternity

Conditions

- Antenatal
- Gestational Diabetes Mellitus
- Pre-Conception Care

Emergency department referrals

All urgent cases must be discussed with the on call Registrar to obtain appropriate prioritisation and treatment. Contact through:

- Caboolture Hospital (07) 5433 8888
- Redcliffe Hospital (07) 3883 7777
- Royal Brisbane and Women's Hospital (07) 3646 8111

Urgent cases accepted via phone must be accompanied with a written referral and a copy faxed immediately to the Central Patient Intake Unit: 1300 364 952.

+ First Trimester

+ Post first trimester

+ Gestational Diabetes Mellitus

COVID-19 UPDATE

To ensure the safety of our patients during the pandemic, we have produced:

- Fact sheet to assist with antenatal, postal and newborn care (PDF) during COVID-19 (PDF)
- COVID-19 Update for GPs – Womens and Newborns Services, MNHHS (PDF);
- Maternity GP Shared Care during COVID-19 (PDF).

Send referral

Hotline: 1300 364 938

Electronic:
GP Smart Referrals (preferred)
eReferral system templates
Medical Objects ID: MQ40290004P
HealthLink EDI: qldmnhhs

Mail:
Metro North Central Patient Intake
Aspley Community Centre
776 Zillmere Road
ASPLEY QLD 4034

Health pathways

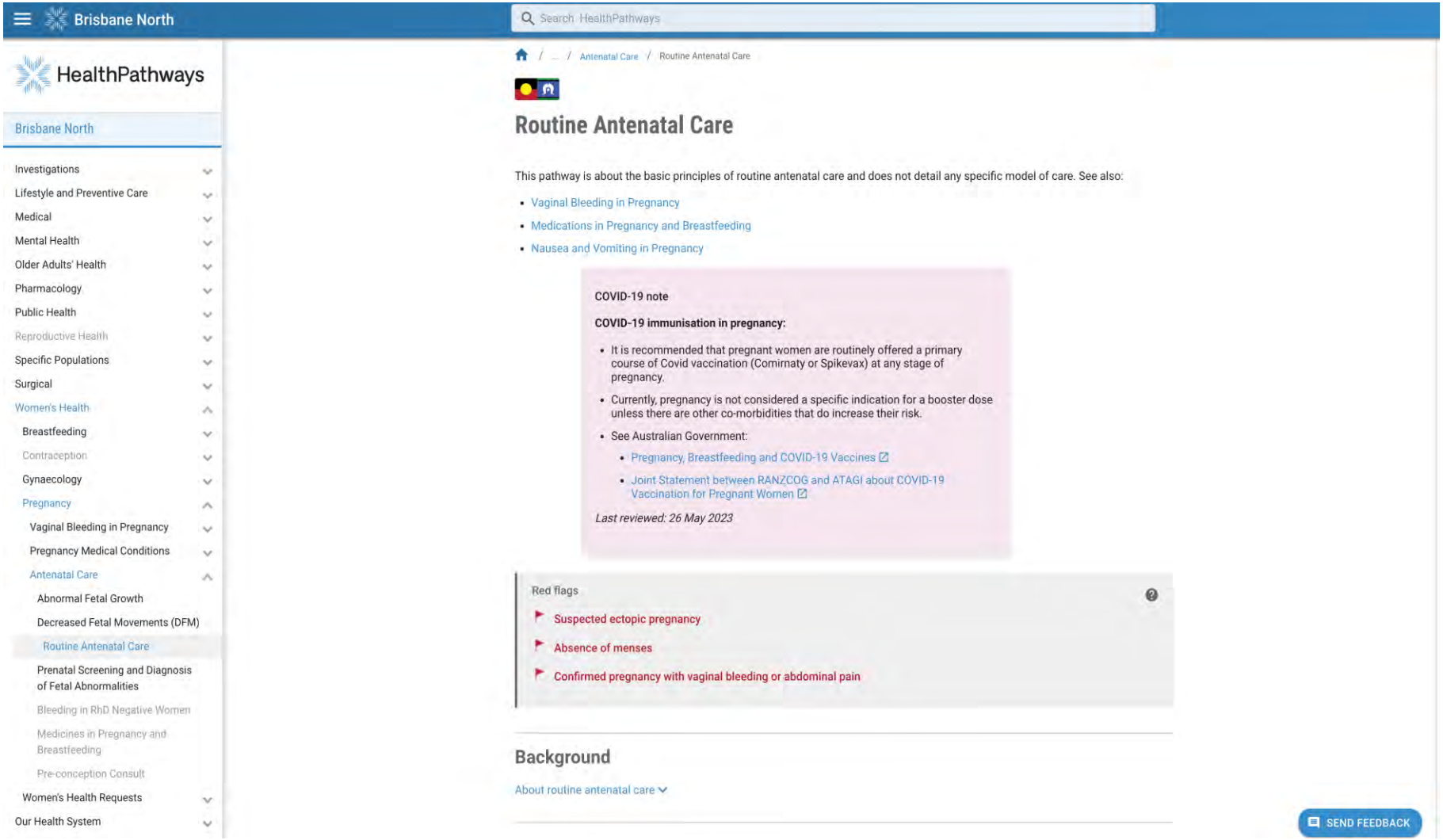
Access to Health Pathways is free for clinicians in Metro North Brisbane.

For login details email:
healthpathways@brisbanenorthphn.org.au

Login to Brisbane North Health Pathways:
brisbanenorth.healthpathwayscommunity.org

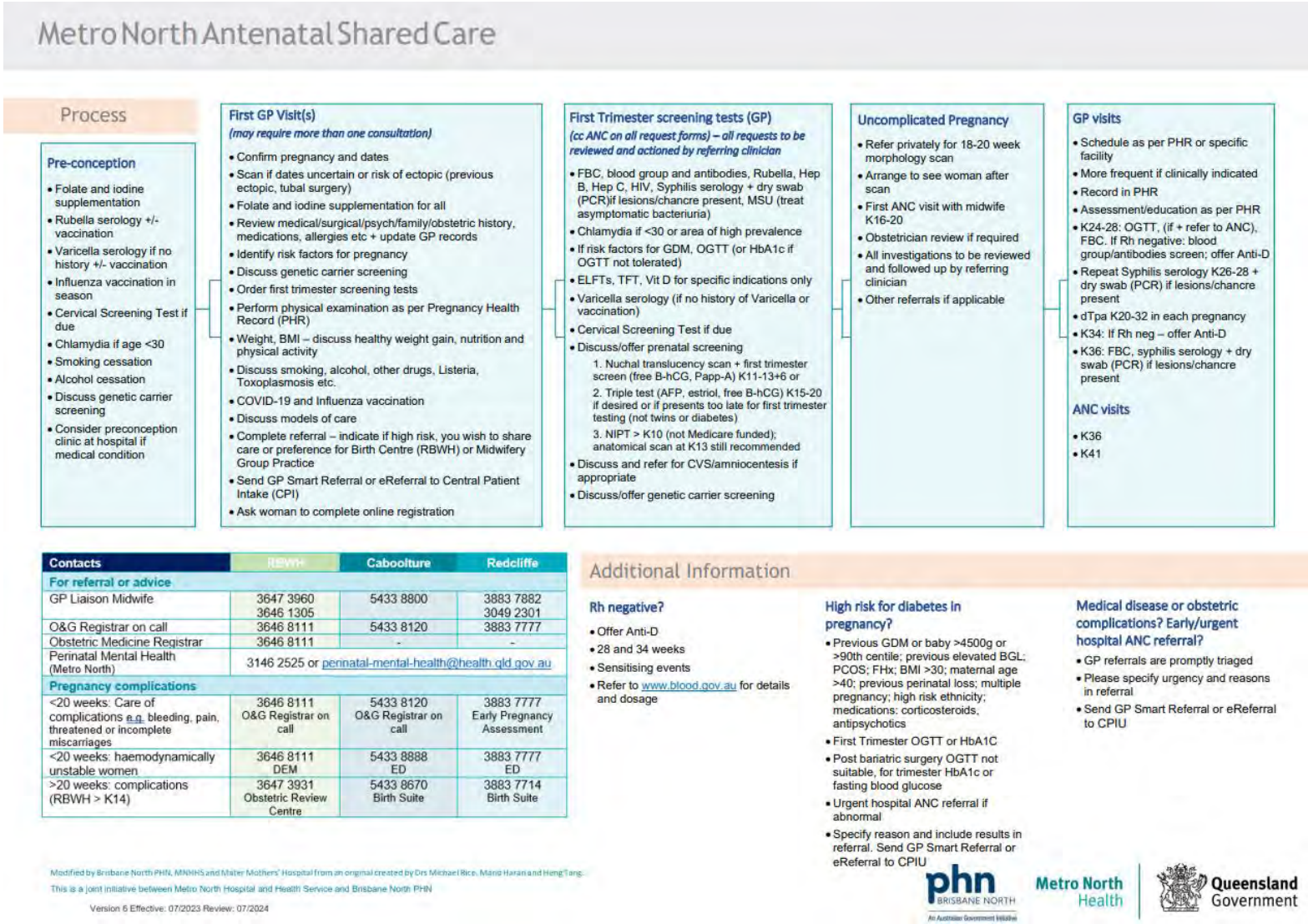
Locations

Brisbane North HealthPathways



https://brisbanenorth.communityhealthpathways.org/

Metro North resources



Metro North Antenatal Shared Care

Process

Pre-conception

- Folate and iodine supplementation
- Rubella serology +/- vaccination
- Varicella serology if no history +/- vaccination
- Influenza vaccination in season
- Cervical Screening Test if due
- Chlamydia if age <30
- Smoking cessation
- Alcohol cessation
- Discuss genetic carrier screening
- Consider preconception clinic at hospital if medical condition

First GP Visit(s)

(may require more than one consultation)

- Confirm pregnancy and dates
- Scan if dates uncertain or risk of ectopic (previous ectopic, tubal surgery)
- Folate and iodine supplementation for all
- Review medical/surgical/psych/family/obstetric history, medications, allergies etc + update GP records
- Identify risk factors for pregnancy
- Discuss genetic carrier screening
- Order first trimester screening tests
- Perform physical examination as per Pregnancy Health Record (PHR)
- Weight, BMI – discuss healthy weight gain, nutrition and physical activity
- Discuss smoking, alcohol, other drugs, Listeria, Toxoplasmosis etc.
- COVID-19 and Influenza vaccination
- Discuss models of care
- Complete referral – indicate if high risk, you wish to share care or preference for Birth Centre (RBWH) or Midwifery Group Practice
- Send GP Smart Referral or eReferral to Central Patient Intake (CPI)
- Ask woman to complete online registration

First Trimester screening tests (GP)

(cc ANC on all request forms) – all requests to be reviewed and actioned by referring clinician

- FBC, blood group and antibodies, Rubella, Hep B, Hep C, HIV, Syphilis serology + dry swab (PCR)if lesions/chancre present, MSU (treat asymptomatic bacteriuria)
- Chlamydia if <30 or area of high prevalence
- If risk factors for GDM, OGTT (or HbA1c if OGTT not tolerated)
- ELFTs, TFT, Vit D for specific indications only
- Varicella serology (if no history of Varicella or vaccination)
- Cervical Screening Test if due
- Discuss/offer prenatal screening
  1. Nuchal translucency scan + first trimester screen (free B-hCG, Papp-A) K11-13+6 or
  2. Triple test (AFP, estriol, free B-hCG) K15-20 if desired or if presents too late for first trimester testing (not twins or diabetes)
  3. NIPT > K10 (not Medicare funded); anatomical scan at K13 still recommended
- Discuss and refer for CVS/amniocentesis if appropriate
- Discuss/offer genetic carrier screening

Uncomplicated Pregnancy

- Refer privately for 18-20 week morphology scan
- Arrange to see woman after scan
- First ANC visit with midwife K16-20
- Obstetrician review if required
- All investigations to be reviewed and followed up by referring clinician
- Other referrals if applicable

GP visits

- Schedule as per PHR or specific facility
- More frequent if clinically indicated
- Record in PHR
- Assessment/education as per PHR
- K24-28: OGTT, (if + refer to ANC), FBC. If Rh negative: blood group/antibodies screen; offer Anti-D
- Repeat Syphilis serology K26-28 + dry swab (PCR) if lesions/chancre present
- dTpa K20-32 in each pregnancy
- K34: If Rh neg – offer Anti-D
- K36: FBC, syphilis serology + dry swab (PCR) if lesions/chancre present

ANC visits

- K36
- K41

Contacts	RBWH	Caboolture	Redcliffe
For referral or advice			
GP Liaison Midwife	3647 3960 3646 1305	5433 8800	3883 7882 3049 2301
O&G Registrar on call	3646 8111	5433 8120	3883 7777
Obstetric Medicine Registrar	3646 8111	-	-
Perinatal Mental Health (Metro North)	3146 2525 or perinatal-mental-health@health.qld.gov.au		
Pregnancy complications			
<20 weeks: Care of complications e.g. bleeding, pain, threatened or incomplete miscarriages	3646 8111 O&G Registrar on call	5433 8120 O&G Registrar on call	3883 7777 Early Pregnancy Assessment
<20 weeks: haemodynamically unstable women	3646 8111 DEM	5433 8888 ED	3883 7777 ED
>20 weeks: complications (RBWH > K14)	3647 3931 Obstetric Review Centre	5433 8670 Birth Suite	3883 7714 Birth Suite

Additional Information

Rh negative?

- Offer Anti-D
- 28 and 34 weeks
- Sensitising events
- Refer to www.blood.gov.au for details and dosage

High risk for diabetes in pregnancy?

- Previous GDM or baby >4500g or >90th centile; previous elevated BGL; PCOS; FHx; BMI >30; maternal age >40; previous perinatal loss; multiple pregnancy; high risk ethnicity; medications: corticosteroids, antipsychotics
- First Trimester OGTT or HbA1C
- Post bariatric surgery OGTT not suitable, for trimester HbA1c or fasting blood glucose
- Urgent hospital ANC referral if abnormal
- Specify reason and include results in referral. Send GP Smart Referral or eReferral to CPIU

Medical disease or obstetric complications? Early/urgent hospital ANC referral?

- GP referrals are promptly triaged
- Please specify urgency and reasons in referral
- Send GP Smart Referral or eReferral to CPIU

Modified by Brisbane North PHN, MNHHS and Mater Mothers' Hospital from an original created by Drs Michael Rice, Mario Harari and Heng'Tang.
This is a joint initiative between Metro North Hospital and Health Service and Brisbane North PHN
Version 6 Effective: 07/2023 Review: 07/2024

phn BRISBANE NORTH — Metro North Health — Queensland Government

https://metronorth.health.qld.gov.au/refer-your-patient-page/gp-events/education-resources

GP Smart Referrals

GP Smart Referrals

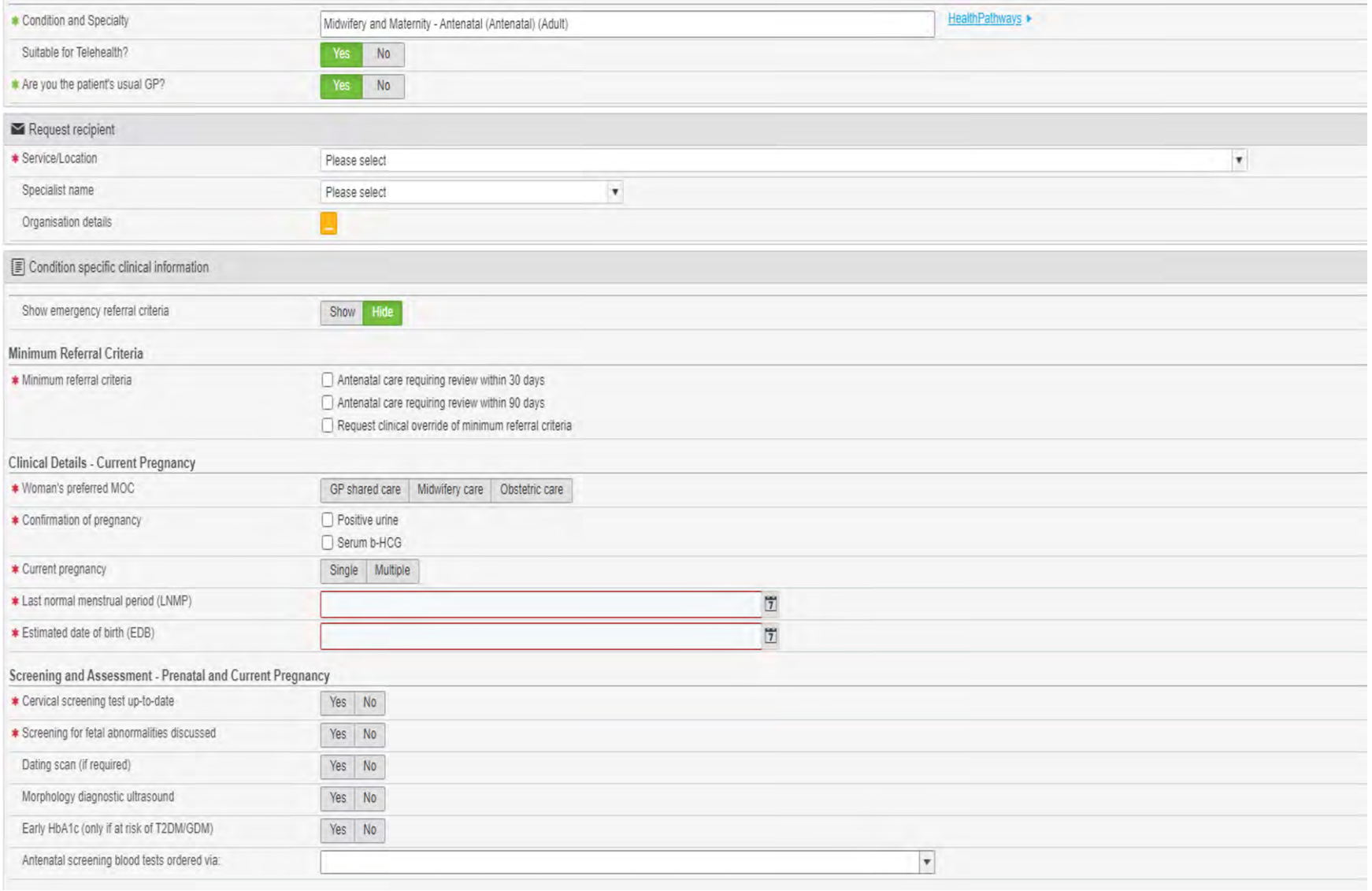
GP Smart Referrals are digital referrals that integrate with *Best Practice* and *Medical Director* software to enable faster, more streamlined management of referrals to Queensland public hospitals. Key features include:

- fields requiring patient demographics will auto-populate from the clinical record, reducing time spent with manual data entry
- it allows for the attachment of test results, imaging and other clinical documents from the clinical record or your PC, in multiple formats
- aligns with state-wide essential referral criteria, reducing the number of referrals being returned
- has an in-built Service Directory to inform you of the closest service available to your patient's home.

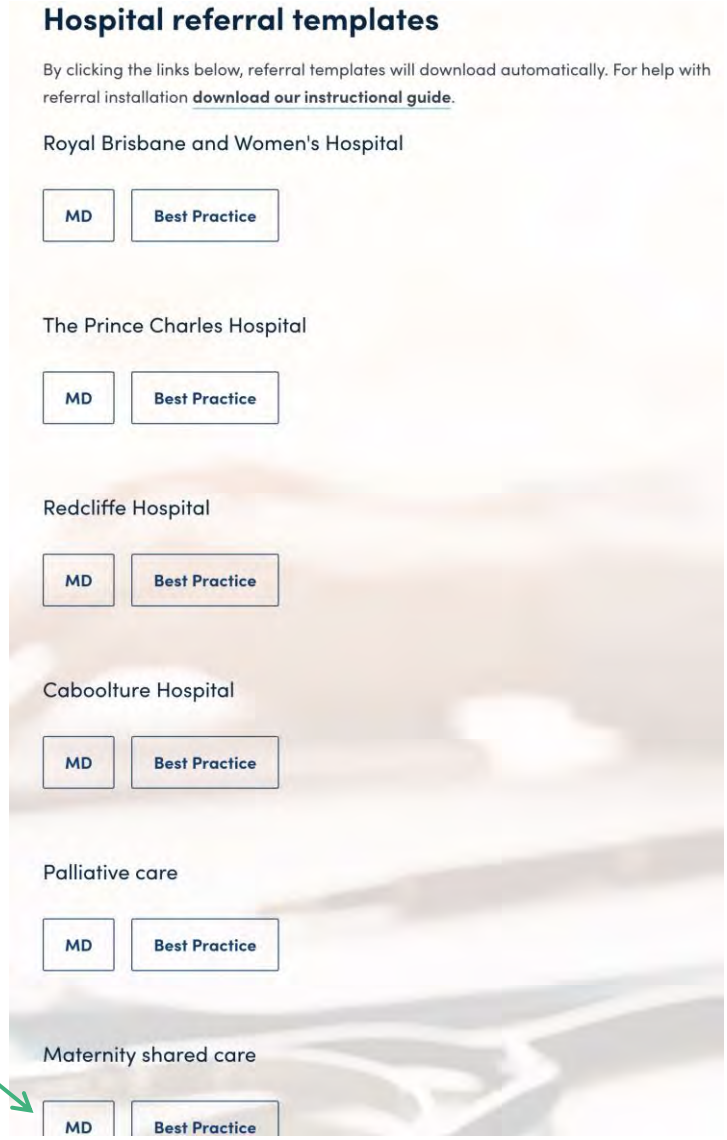
Register | **Download the fact sheet** | **Further information** | **Download our Simplified GPSR Guide for General Practice**

https://brisbanenorthphn.org.au/practice-support/digital-health

GP Smart Referrals



Metro North eReferral template



https://brisbanenorthphn.org.au/practice-support/referral-and-patient-management

Antenatal referrals

- Confirm pregnancy and EDB
- Confirm Medicare eligibility
- Indicate preferred Maternity Care Option on referral
  - if requesting Birth Centre (RBWH) or Midwifery Group Practice, include on referral – allocations are completed at 12 weeks gestation
- Send referral to CPI
  - GP Smart Referral
  - eReferral
  - enquiries 1300 364 938

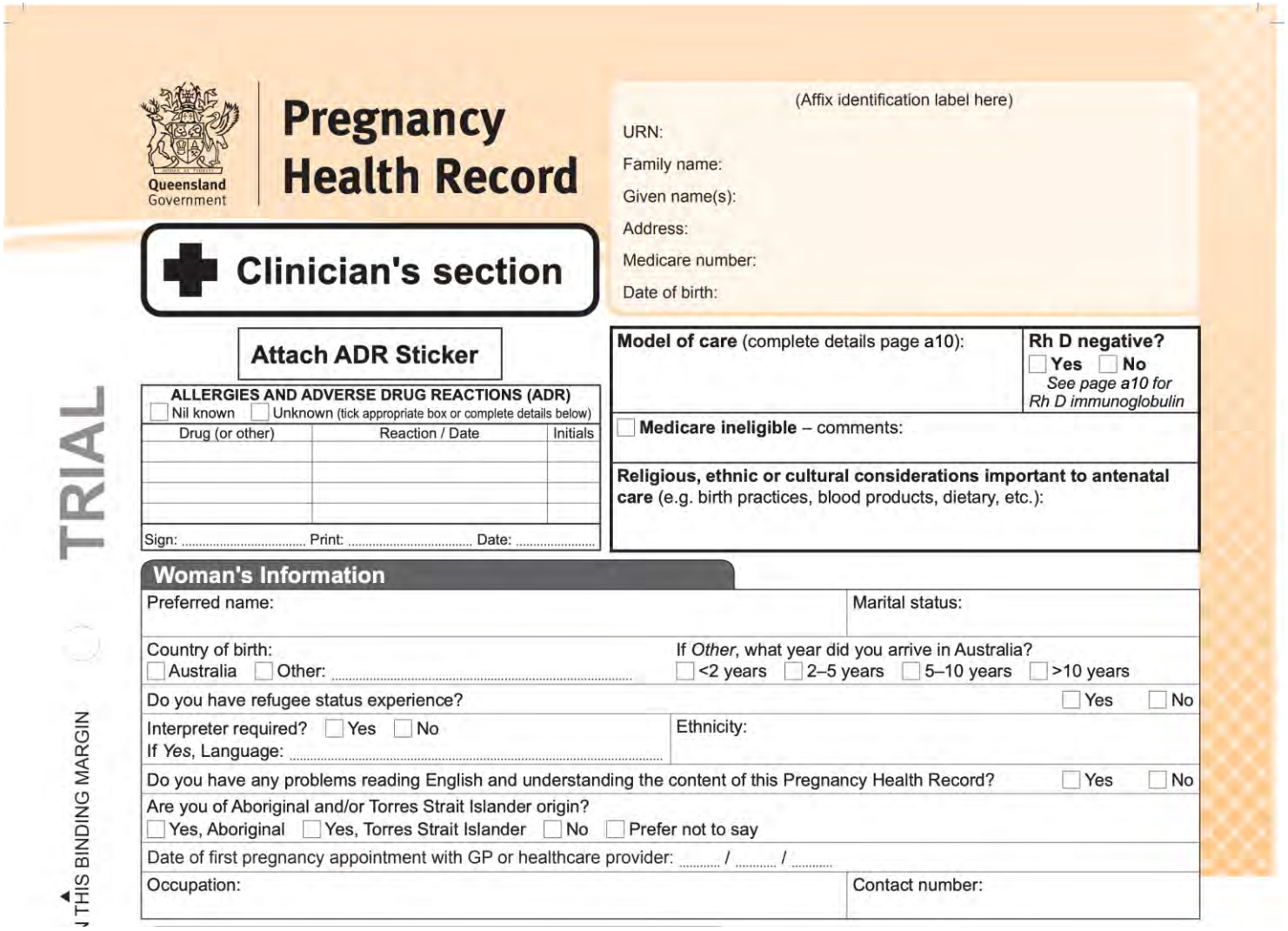
Antenatal referrals

- Include copies of available results with referral
- All pathology & USS results must be reviewed and **actioned** by requesting practitioner
- Advise woman to follow-up results with you and attend regularly for antenatal visits (every 4 weeks in Trimesters 1 & 2)

Antenatal referrals

- Advise woman to visit Hospital websites for more information regarding maternity services
  - https://metronorth.health.qld.gov.au/rbwh/healthcare-services/maternity-services/pregnant-what-to-do-next
  - https://metronorth.health.qld.gov.au/redcliffe/healthcare-services/maternity-services/pregnant-what-to-do-next
  - https://metronorth.health.qld.gov.au/caboolture/healthcare-services/maternity-services/pregnant-what-to-do-next
- Online registration is available at all Metro North Maternity Facilities
- First Appointment
  - “booking-in” appointment will be completed prior to 18 weeks

Pregnancy Health Record



Queensland Government

Pregnancy Health Record

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Medicare number:

Date of birth:

Clinician's section

Attach ADR Sticker

ALLERGIES AND ADVERSE DRUG REACTIONS (ADR)

☐ Nil known ☐ Unknown (tick appropriate box or complete details below)

Drug (or other)	Reaction / Date	Initials

Sign: ..... Print: ..... Date: .....

Model of care (complete details page a10):

Rh D negative? ☐ **Yes** ☐ **No** *See page a10 for Rh D immunoglobulin*

☐ **Medicare ineligible** – comments:

Religious, ethnic or cultural considerations important to antenatal care (e.g. birth practices, blood products, dietary, etc.):

TRIAL

THIS BINDING MARGIN

Woman's Information

Preferred name:

Marital status:

Country of birth: ☐ Australia ☐ Other: .....

If *Other*, what year did you arrive in Australia? ☐ <2 years ☐ 2–5 years ☐ 5–10 years ☐ >10 years

Do you have refugee status experience? ☐ Yes ☐ No

Interpreter required? ☐ Yes ☐ No

If *Yes*, Language: .....

Ethnicity:

Do you have any problems reading English and understanding the content of this Pregnancy Health Record? ☐ Yes ☐ No

Are you of Aboriginal and/or Torres Strait Islander origin?

☐ Yes, Aboriginal ☐ Yes, Torres Strait Islander ☐ No ☐ Prefer not to say

Date of first pregnancy appointment with GP or healthcare provider: ..... / ..... / .....

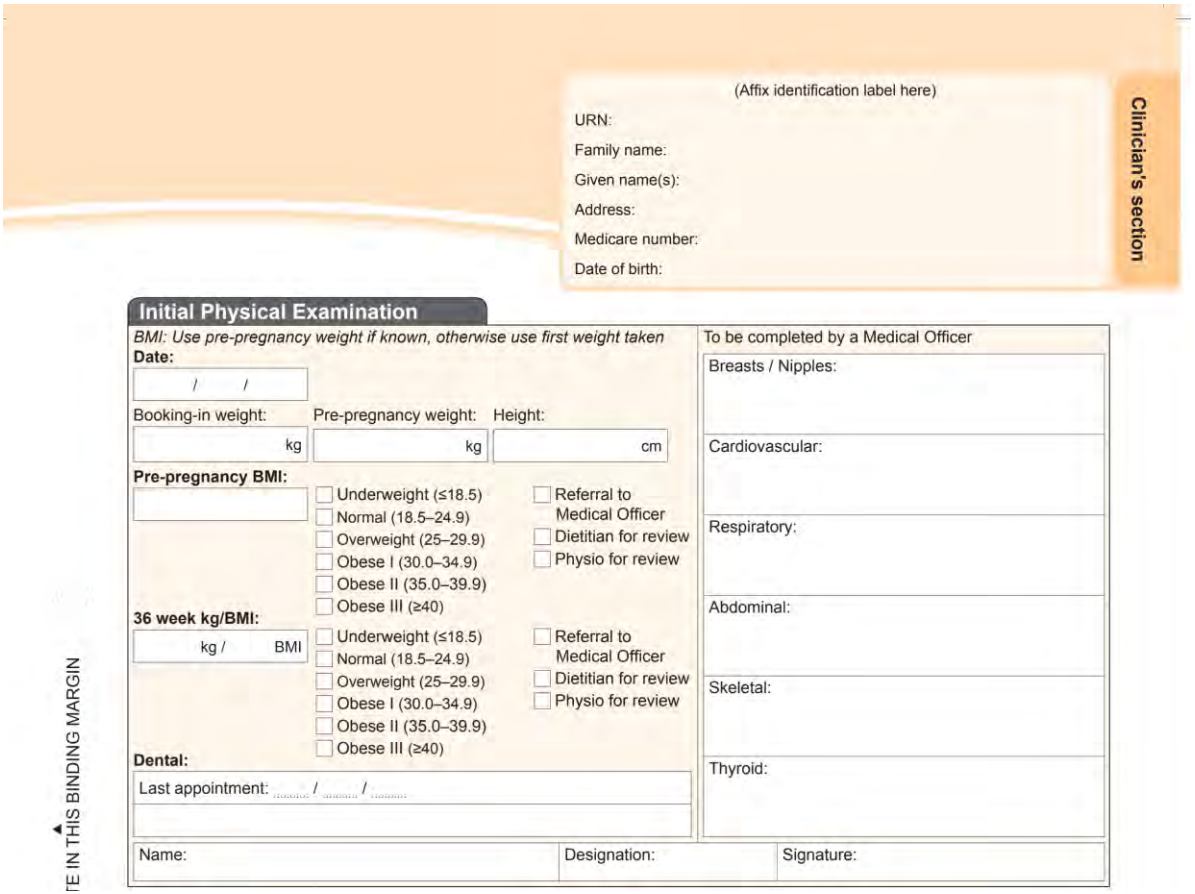
Occupation:

Contact number:

https://clinicalexcellence.qld.gov.au/sites/default/files/docs/clinical-pathways/pregnancy-health-record.pdf

Initial physical examination

Responsibility of referring GP regardless of woman's requested maternity care option



(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Medicare number:

Date of birth:

Clinician's section

Initial Physical Examination

BMI: Use pre-pregnancy weight if known, otherwise use first weight taken

Date: / /

Booking-in weight: kg

Pre-pregnancy weight: kg

Height: cm

Pre-pregnancy BMI:

- Underweight (≤18.5)
- Normal (18.5–24.9)
- Overweight (25–29.9)
- Obese I (30.0–34.9)
- Obese II (35.0–39.9)
- Obese III (≥40)

Referral to Medical Officer
Dietitian for review
Physio for review

36 week kg/BMI: kg / BMI

- Underweight (≤18.5)
- Normal (18.5–24.9)
- Overweight (25–29.9)
- Obese I (30.0–34.9)
- Obese II (35.0–39.9)
- Obese III (≥40)

Referral to Medical Officer
Dietitian for review
Physio for review

Dental:

Last appointment: ... / ... / ...

To be completed by a Medical Officer

Breasts / Nipples:

Cardiovascular:

Respiratory:

Abdominal:

Skeletal:

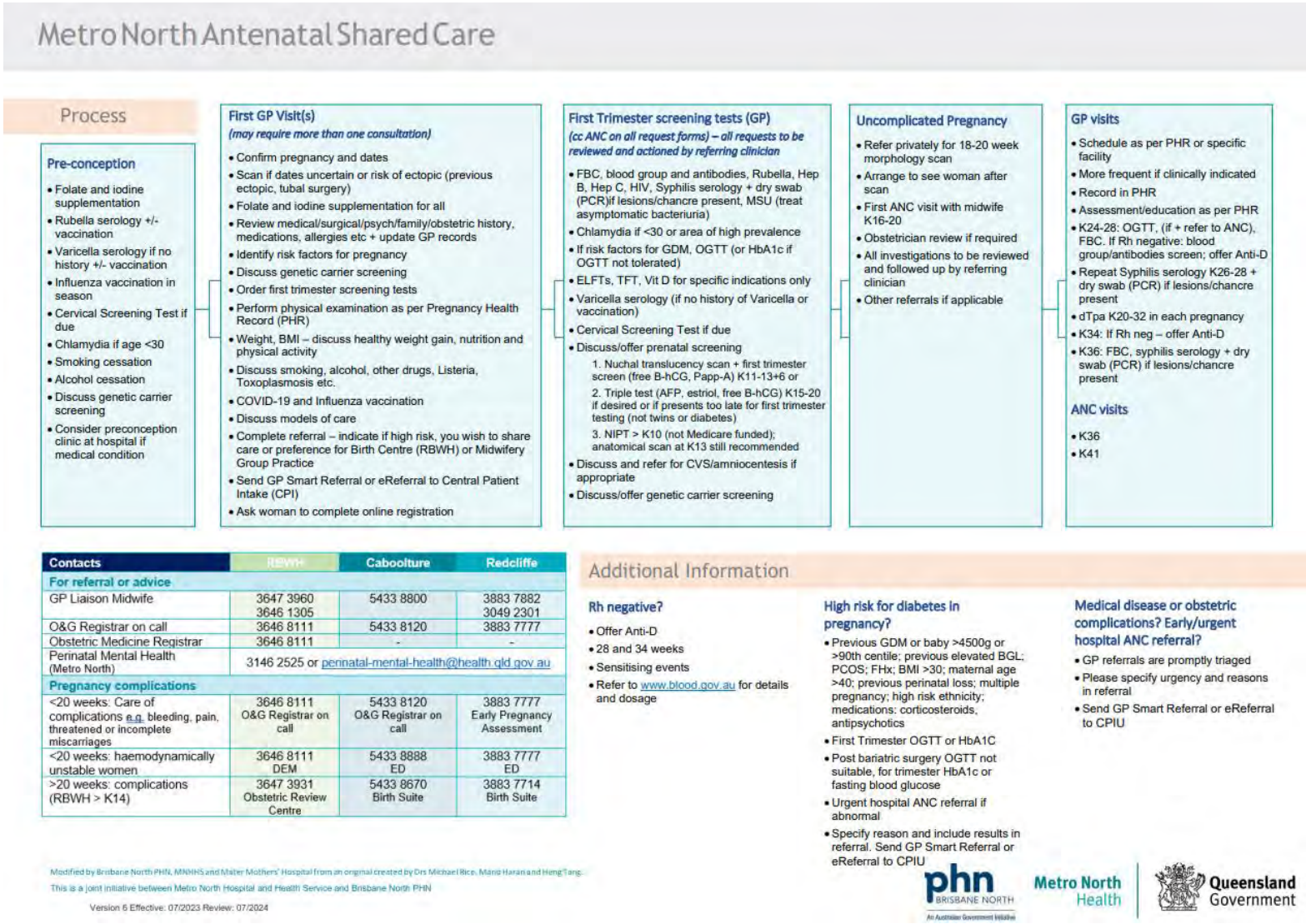
Thyroid:

Name: | Designation: | Signature:

TE IN THIS BINDING MARGIN

https://clinicalexcellence.qld.gov.au/sites/default/files/docs/clinical-pathways/pregnancy-health-record.pdf

Routine antenatal tests



Metro North Antenatal Shared Care

Process

Pre-conception

- Folate and iodine supplementation
- Rubella serology +/- vaccination
- Varicella serology if no history +/- vaccination
- Influenza vaccination in season
- Cervical Screening Test if due
- Chlamydia if age <30
- Smoking cessation
- Alcohol cessation
- Discuss genetic carrier screening
- Consider preconception clinic at hospital if medical condition

First GP Visit(s)

(may require more than one consultation)

- Confirm pregnancy and dates
- Scan if dates uncertain or risk of ectopic (previous ectopic, tubal surgery)
- Folate and iodine supplementation for all
- Review medical/surgical/psych/family/obstetric history, medications, allergies etc + update GP records
- Identify risk factors for pregnancy
- Discuss genetic carrier screening
- Order first trimester screening tests
- Perform physical examination as per Pregnancy Health Record (PHR)
- Weight, BMI – discuss healthy weight gain, nutrition and physical activity
- Discuss smoking, alcohol, other drugs, Listeria, Toxoplasmosis etc.
- COVID-19 and Influenza vaccination
- Discuss models of care
- Complete referral – indicate if high risk, you wish to share care or preference for Birth Centre (RBWH) or Midwifery Group Practice
- Send GP Smart Referral or eReferral to Central Patient Intake (CPI)
- Ask woman to complete online registration

First Trimester screening tests (GP)

(cc ANC on all request forms) – all requests to be reviewed and actioned by referring clinician

- FBC, blood group and antibodies, Rubella, Hep B, Hep C, HIV, Syphilis serology + dry swab (PCR)if lesions/chancre present, MSU (treat asymptomatic bacteriuria)
- Chlamydia if <30 or area of high prevalence
- If risk factors for GDM, OGTT (or HbA1c if OGTT not tolerated)
- ELFTs, TFT, Vit D for specific indications only
- Varicella serology (if no history of Varicella or vaccination)
- Cervical Screening Test if due
- Discuss/offer prenatal screening
  1. Nuchal translucency scan + first trimester screen (free B-hCG, Papp-A) K11-13+6 or
  2. Triple test (AFP, estriol, free B-hCG) K15-20 if desired or if presents too late for first trimester testing (not twins or diabetes)
  3. NIPT > K10 (not Medicare funded); anatomical scan at K13 still recommended
- Discuss and refer for CVS/amniocentesis if appropriate
- Discuss/offer genetic carrier screening

Uncomplicated Pregnancy

- Refer privately for 18-20 week morphology scan
- Arrange to see woman after scan
- First ANC visit with midwife K16-20
- Obstetrician review if required
- All investigations to be reviewed and followed up by referring clinician
- Other referrals if applicable

GP visits

- Schedule as per PHR or specific facility
- More frequent if clinically indicated
- Record in PHR
- Assessment/education as per PHR
- K24-28: OGTT, (if + refer to ANC), FBC. If Rh negative: blood group/antibodies screen; offer Anti-D
- Repeat Syphilis serology K26-28 + dry swab (PCR) if lesions/chancre present
- dTpa K20-32 in each pregnancy
- K34: If Rh neg – offer Anti-D
- K36: FBC, syphilis serology + dry swab (PCR) if lesions/chancre present

ANC visits

- K36
- K41

Contacts	RBWH	Caboolture	Redcliffe
For referral or advice			
GP Liaison Midwife	3647 3960 3646 1305	5433 8800	3883 7882 3049 2301
O&G Registrar on call	3646 8111	5433 8120	3883 7777
Obstetric Medicine Registrar	3646 8111	-	-
Perinatal Mental Health (Metro North)	3146 2525 or perinatal-mental-health@health.qld.gov.au		
Pregnancy complications			
<20 weeks: Care of complications e.g. bleeding, pain, threatened or incomplete miscarriages	3646 8111 O&G Registrar on call	5433 8120 O&G Registrar on call	3883 7777 Early Pregnancy Assessment
<20 weeks: haemodynamically unstable women	3646 8111 DEM	5433 8888 ED	3883 7777 ED
>20 weeks: complications (RBWH > K14)	3647 3931 Obstetric Review Centre	5433 8670 Birth Suite	3883 7714 Birth Suite

Additional Information

Rh negative?

- Offer Anti-D
- 28 and 34 weeks
- Sensitising events
- Refer to www.blood.gov.au for details and dosage

High risk for diabetes in pregnancy?

- Previous GDM or baby >4500g or >90th centile; previous elevated BGL; PCOS; FHx; BMI >30; maternal age >40; previous perinatal loss; multiple pregnancy; high risk ethnicity; medications: corticosteroids, antipsychotics
- First Trimester OGTT or HbA1C
- Post bariatric surgery OGTT not suitable, for trimester HbA1c or fasting blood glucose
- Urgent hospital ANC referral if abnormal
- Specify reason and include results in referral. Send GP Smart Referral or eReferral to CPIU

Medical disease or obstetric complications? Early/urgent hospital ANC referral?

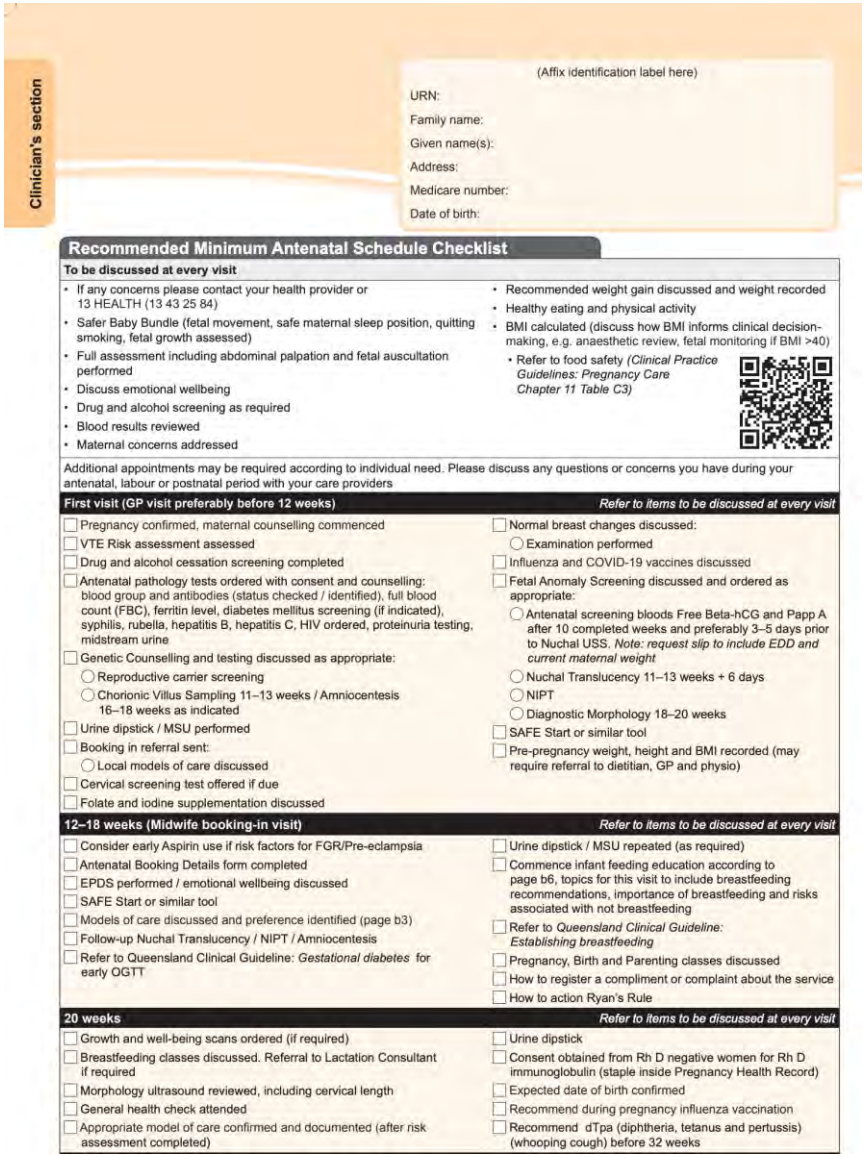
- GP referrals are promptly triaged
- Please specify urgency and reasons in referral
- Send GP Smart Referral or eReferral to CPIU

Modified by Brisbane North PHN, MNHHS and Mater Mothers' Hospital from an original created by Drs Michael Rice, Manis Harani and Heng Tang.
This is a joint initiative between Metro North Hospital and Health Service and Brisbane North PHN
Version 6 Effective: 07/2023 Review: 07/2024

phn BRISBANE NORTH
Metro North Health
Queensland Government

https://metronorth.health.qld.gov.au/refer-your-patient-page/gp-events/education-resources

Appointment schedule



Clinician's section

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Medicare number:

Date of birth:

Recommended Minimum Antenatal Schedule Checklist

To be discussed at every visit

- If any concerns please contact your health provider or 13 HEALTH (13 43 25 84)
- Safer Baby Bundle (fetal movement, safe maternal sleep position, quitting smoking, fetal growth assessed)
- Full assessment including abdominal palpation and fetal auscultation performed
- Discuss emotional wellbeing
- Drug and alcohol screening as required
- Blood results reviewed
- Maternal concerns addressed
- Recommended weight gain discussed and weight recorded
- Healthy eating and physical activity
- BMI calculated (discuss how BMI informs clinical decision-making, e.g. anaesthetic review, fetal monitoring if BMI >40)
- Refer to food safety *(Clinical Practice Guidelines: Pregnancy Care Chapter 11 Table C3)*

Additional appointments may be required according to individual need. Please discuss any questions or concerns you have during your antenatal, labour or postnatal period with your care providers

First visit (GP visit preferably before 12 weeks) — *Refer to items to be discussed at every visit*

- ☐ Pregnancy confirmed, maternal counselling commenced
- ☐ VTE Risk assessment assessed
- ☐ Drug and alcohol cessation screening completed
- ☐ Antenatal pathology tests ordered with consent and counselling: blood group and antibodies (status checked / identified), full blood count (FBC), ferritin level, diabetes mellitus screening (if indicated), syphilis, rubella, hepatitis B, hepatitis C, HIV ordered, proteinuria testing, midstream urine
- ☐ Genetic Counselling and testing discussed as appropriate:
  - ○ Reproductive carrier screening
  - ○ Chorionic Villus Sampling 11–13 weeks / Amniocentesis 16–18 weeks as indicated
- ☐ Urine dipstick / MSU performed
- ☐ Booking in referral sent:
  - ○ Local models of care discussed
- ☐ Cervical screening test offered if due
- ☐ Folate and iodine supplementation discussed
- ☐ Normal breast changes discussed:
  - ○ Examination performed
- ☐ Influenza and COVID-19 vaccines discussed
- ☐ Fetal Anomaly Screening discussed and ordered as appropriate:
  - ○ Antenatal screening bloods Free Beta-hCG and Papp A after 10 completed weeks and preferably 3–5 days prior to Nuchal USS. *Note: request slip to include EDD and current maternal weight*
  - ○ Nuchal Translucency 11–13 weeks + 6 days
  - ○ NIPT
  - ○ Diagnostic Morphology 18–20 weeks
- ☐ SAFE Start or similar tool
- ☐ Pre-pregnancy weight, height and BMI recorded (may require referral to dietitian, GP and physio)

12–18 weeks (Midwife booking-in visit) — *Refer to items to be discussed at every visit*

- ☐ Consider early Aspirin use if risk factors for FGR/Pre-eclampsia
- ☐ Antenatal Booking Details form completed
- ☐ EPDS performed / emotional wellbeing discussed
- ☐ SAFE Start or similar tool
- ☐ Models of care discussed and preference identified (page b3)
- ☐ Follow-up Nuchal Translucency / NIPT / Amniocentesis
- ☐ Refer to Queensland Clinical Guideline: *Gestational diabetes* for early OGTT
- ☐ Urine dipstick / MSU repeated (as required)
- ☐ Commence infant feeding education according to page b6, topics for this visit to include breastfeeding recommendations, importance of breastfeeding and risks associated with not breastfeeding
- ☐ Refer to *Queensland Clinical Guideline: Establishing breastfeeding*
- ☐ Pregnancy, Birth and Parenting classes discussed
- ☐ How to register a compliment or complaint about the service
- ☐ How to action Ryan's Rule

20 weeks — *Refer to items to be discussed at every visit*

- ☐ Growth and well-being scans ordered (if required)
- ☐ Breastfeeding classes discussed. Referral to Lactation Consultant if required
- ☐ Morphology ultrasound reviewed, including cervical length
- ☐ General health check attended
- ☐ Appropriate model of care confirmed and documented (after risk assessment completed)
- ☐ Urine dipstick
- ☐ Consent obtained from Rh D negative women for Rh D immunoglobulin (staple inside Pregnancy Health Record)
- ☐ Expected date of birth confirmed
- ☐ Recommend during pregnancy influenza vaccination
- ☐ Recommend dTpa (diphtheria, tetanus and pertussis) (whooping cough) before 32 weeks

https://clinicalexcellence.qld.gov.au/sites/default/files/docs/clinical-pathways/pregnancy-health-record.pdf

Metro North Perinatal Mental Health Service

- Metro North HHS Perinatal Mental Health Service - Non-Acute
  - https://metronorth.health.qld.gov.au/hospitals-services/mental-health-services/perinatal-mental-health
  - P: 07 3146 2525
  - F: 07 3146 2314
  - E: perinatal-mental-health@health.qld.gov.au
  - Perinatal Psychiatrist – Dr Anastasia Braun – fax referral 07 3646 2314

- 1300 MH CALL (1300 64 2255) - Acute

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Community and health support services

Cancer care

Mental health

Older persons

https://metronorth.health.qld.gov.au/rbwh/healthcare-services

Maternity Services

Pregnancy

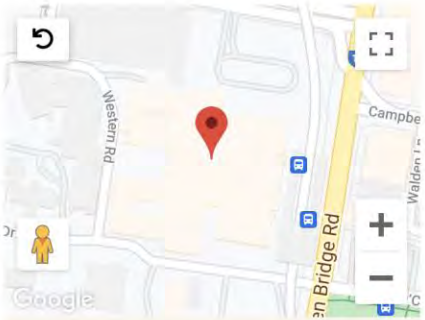
- Choosing an option for maternity care
- Maternity Services Referral Catchment
- Tests and scans
- Learning about pregnancy, birth and baby
- Pregnancy problems
- Your appointments

Having your baby

- Preparing for labour
- Labour and birth
- When complications occur
- Care after birth
- While you're in hospital

Think you might be in labour?

Call **(07) 3647 3931** and speak to a midwife before you come to hospital



Contact us

Maternity outpatient appointments
Location: Ground floor, Ned Hanlon Building
Phone: (07) 3646 7182
Email: rbwh_maternity@health.qld.gov.au
Open: Monday-Friday 8.00am-4.00pm

Birth Suite and Birth Centre
Location: Level 5, Ned Hanlon Building
Phone: (07) 3646 8516 or (07) 3646 8317

Women's Obstetric Review Centre
Location: Level 5, Ned Hanlon Building
Phone: (07) 3647 3931

Private practice appointments
Location: Level 1, Dr James Mayne Building
Phone: (07) 3646 3395

Postnatal Ward 6B
Location: Level 6, Ned Hanlon Building

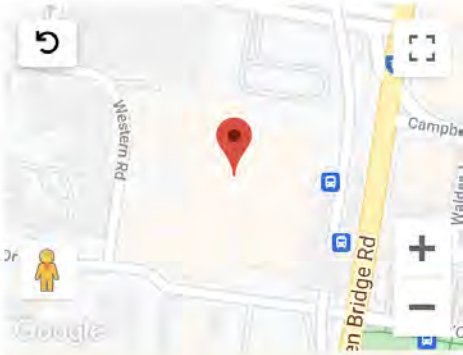
https://metronorth.health.qld.gov.au/rbwh/healthcare-services/maternity-services

Maternity Services Referral Catchment

To facilitate supporting families closer to home, from October 2021 the RBWH will not be accepting referrals from Brisbane Metro South and West Moreton. This will apply to all models of care currently offered with the exception of the below.

The exclusions include:

- The acceptance of all referrals for Aboriginal and Torres Strait Islander women (i.e. Ngarrama) who would like maternity care at RBWH to support the 'Closing the Gap' initiative
- Women requiring tertiary care at RBWH due to pre-existing medical conditions which are currently managed at RBWH
- Complex maternal cardiac conditions occurring in pregnancy
- Women under the care of Private Practice Midwives credentialled at RBWH; and
- General medicine / Obstetric medicine telehealth referrals



Contact us

Maternity outpatient appointments
Location: Ground floor, Ned Hanlon Building
Phone: (07) 3646 7182
Email: rbwh_maternity@health.qld.gov.au
Open: Monday-Friday 8.00am-4.00pm

Choosing an option for maternity care

All options for maternity care (PDF) are delivered by caring and dedicated health professionals in partnership with you and your support people. Your general practitioner (GP) or midwife will discuss these options at your first appointment.

Which maternity care best suits you?

Take the quiz

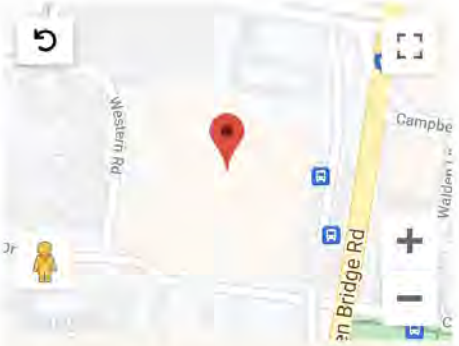
Choosing the best option for you will depend on your own personal preferences, and sometimes, your medical history. We offer three main options for maternity care for your pregnancy, birth and after your baby is born:

- Midwifery care
- GP shared care
- Specialist care

All care options have the opportunity for discharge home at **6 hours** after birth, if you have a normal birth and you and your baby are well. If you need to stay longer, you can expect to be discharged around **24 hours** following a normal birth or within **72 hours** after a caesarean birth.

We recommend you return to your GP at 1 week after birth (for a baby check-up) and 6 weeks after birth (a check-up for you and your baby). You may like to ask your GP if they have completed the Maternity GP Alignment Program offered by RBWH.

Midwifery care



Contact us

Maternity outpatient appointments
Location: Ground floor, Ned Hanlon Building
Phone: (07) 3646 7182
Email: rbwh_maternity@health.qld.gov.au
Open: Monday-Friday 8.00am-4.00pm

Private practice appointments
Phone: (07) 3646 3395

Refer a patient

Maternity outpatient
Complete the Maternity booking in referral form (PDF) and forward it to Metro North Central Patient Intaketo refer your patient.

https://metronorth.health.qld.gov.au/rbwh/healthcare-services/maternity-services/choosing-an-option-for-maternity-care

Learning about pregnancy, birth and baby

Learning about your pregnancy, birth and baby can help build your confidence and prepare you for the weeks ahead. The RBWH has resources and experienced staff available to ensure you're supported throughout your journey.

Nurture Your Bump - Workshop

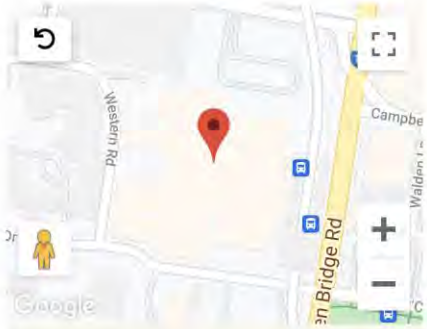
Unsure of what foods you need to avoid during pregnancy or if you need a pregnancy multivitamin? Our 2-hour Nurture Your Bump workshop, is run by our experienced maternity dietitian and will provide you with all the building blocks needed to grow a healthy baby. Book your workshop instantly online or call RBWH Maternity Outpatients Department on (07) 3646 7182.

Register or refer now >

GLOW (online resource)

GLOW (PDF) is a free online resource, full of helpful and factual information about pregnancy, breastfeeding, birth and going home with a newborn. Access to GLOW is offered for all women having their baby at RBWH and includes the following topics:

- your care during pregnancy
- looking after yourself and baby, including exercise, food, vaccinations and emotional health
- breastfeeding
- labour and birth
- when complications occur
- postnatal support.



Contact us

Maternity Outpatients
Location: Ground floor, Ned Hanlon Building

Appointment enquiries
Phone: (07) 3646 7182
Email: rbwh_maternity@health.qld.gov.au
Open: Monday-Friday 8.00am-4.00pm

Private practice appointments
Phone: (07) 3646 3395

Refer a patient

Complete the Maternity booking in referral form (PDF) and forward it to Metro North Central Patient Intake to refer your patient.

https://metronorth.health.qld.gov.au/rbwh/healthcare-services/maternity-services/learning-about-pregnancy-birth-and-baby

Learning about pregnancy, birth & baby

GLOW

an online resource for pregnant women
proudly presented by Metro North Hospital & Health Service

- Free online resource for women having their baby at RBWH
- Women opt-in at booking-in visit
- Access 24/7 from home computer, tablet or smartphone

Other RBWH Women's and Newborn Services

Early Pregnancy Assessment Unit (EPAU)	Obstetric Review Centre (ORC)
Pregnancy, birth & baby education	Gestational Diabetes Mellitus midwives
Postnatal in-home visiting following discharge	Complex Case Manager (Inc. Obstetric Medical Team)
Gynaecology, Urogynaecology, Gynaecology Oncology, Adolescent Gynaecology 14-18yrs	Specialist Clinics including Anaesthetics, Cardiac and Endocrine
Social Work including Child Protection Liaison Officer	Centre for Advanced Prenatal Care (Maternal Fetal Medicine)
Allied Health	Fertility
Perinatal Mental Health	OASIS (Obstetric Anal Sphincter Injuries)
Lactation Service	Centre for Breast Health
Grantley Stable Neonatal Unit	

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Cancer care

Older persons

Women and children

Rehabilitation

https://metronorth.health.qld.gov.au/redcliffe/healthcare-services

Maternity services

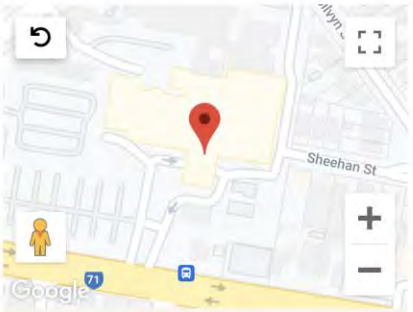
Pregnancy

- Pregnant? What to do next
- Choosing an option for your maternity care
- Tests and scans
- Learning about pregnancy, birth and baby
- Your appointments

Having your baby

- Preparing for labour
- Labour and birth
- When complications occur

Complete the online registration form to start the booking process



Contact us

Antenatal Clinic
Location: Rear of the hospital, access via Silvyn Street
Phone: (07) 3883 7802

Birth Suite
Location: Level 3, Main Building, Redcliffe Hospital
Phone: (07) 3883 7714

Childbirth and Parenting Education
Location: Education Centre, Redcliffe Hospital
Phone: (07) 3883 7802
Open: Please call 1.00pm-4.00pm Monday-Friday

Home Maternity Service
Phone: (07) 3883 7709

https://metronorth.health.qld.gov.au/redcliffe/healthcare-services/maternity-services

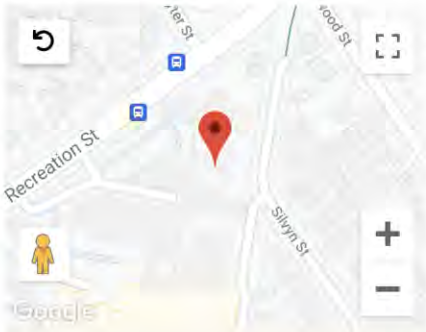
Choosing an option for your maternity care

All options for maternity care are delivered by our caring and dedicated health professionals in partnership with you and your support people. Your GP or midwife will discuss these options with you.

Maternity care options

Choosing the best option for you will depend on your own personal preferences, and sometimes, your medical history.

- Midwives clinic **+ CRIB Clinic - complex MH & psychosocial issues – Redcliffe & Deception Bay**
- Midwifery Group Practice **AMITY**
- Private Practice Midwives
- Aboriginal and Torres Strait Islander Maternity Service – Ngarrama **Redcliffe & Deception Bay**
- Young Parent Group
- Obstetric led care with Doctors and Midwives
- GP Shared Care



Contact us

Location: Antenatal Clinic, Redcliffe Hospital
Phone: (07) 3883 7802

Complete the antenatal online registration form

https://metronorth.health.qld.gov.au/redcliffe/healthcare-services/maternity-services/choosing-option-maternity-care

Learning about pregnancy, birth and baby

Learning about your pregnancy, birth and baby can help build your confidence and prepare you for the weeks ahead. Redcliffe Hospital has resources and experienced staff available to help you throughout your pregnancy.

Childbirth and Parenting Education

We offer classes with experienced staff, who will answer any of your questions about your pregnancy, birth and parenting. If you have any questions outside of these classes, please ask your health care provider.

To book these classes please ring (07) 3883 7802 between 1.00pm–4.00pm Monday–Friday.

Birth and parenting classes

Evening classes

When: Monday or Thursday evenings from 6.30pm–8.30pm. You can choose which evening to attend.
Located: Education Centre, Redcliffe Hospital

Saturday classes

When: Saturday 9.00am-2.30pm (please note that these classes are on two consecutive Saturdays each month)
Located: Education Centre, Redcliffe Hospital or North Lakes Health Precinct

Young Parent Group (YPG)

When: Every second Tuesday from 1.00pm-3.00pm
Located: Community Health, Anzac Avenue, Redcliffe

Emotional preparation for parenthood classes

Emotional health is just as important as physical health. A combined team of health professionals and peers outline some of the emotional challenges of pregnancy, birth and adjustment for parenthood. Information is provided about practical resources to support your own and your partner's emotional wellbeing during this time.

Contact us

Childbirth and Parenting Education
Location: Education Centre, Redcliffe Hospital
Phone: (07) 3883 7802

Maternity tour
Location: Birth Suite, Level 3, Main Building, Redcliffe Hospital
Phone: (07) 3883 7714

Resources

Raising Children

Nutrition while pregnant

https://metronorth.health.qld.gov.au/redcliffe/healthcare-services/maternity-services/learning-pregnancy-birth-baby

Other Redcliffe Women's and Children's Services

Early Pregnancy Assessment Unit (EPAU)	Antenatal Day Assessment Service (ANDAS) Obstetric Review Centre (ORC)
Pregnancy, birth & baby education	Gestational Diabetes Team Credentialed Diabetes Educator
Home Maternity Services - postnatal in-home visiting	Complex Case Manager (Inc. Obstetric Medical Team)
Gynaecology	Specialist Clinics including Anaesthetics and Endocrine
Social Work including Child Protection Liaison Officer	Neonatal Unit from 32 weeks
Allied Health	Lactation Service
Perinatal Mental Health	Paediatrics

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Find an outpatient clinic

https://metronorth.health.qld.gov.au/caboolture/healthcare-services

Maternity services

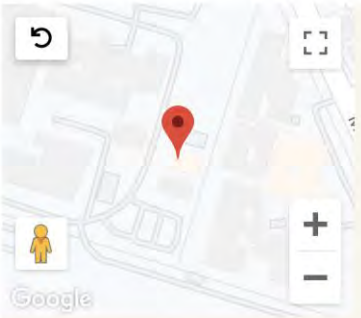
Pregnancy

- Pregnant? What to do next
- Choosing an option for maternity care
- Tests and scans
- Learning about pregnancy, birth and baby
- Your appointments

Having your baby

- Preparing for labour
- Labour and birth
- When complications occur

Complete the online registration form to book an appointment



Contact us

Outpatient Services
Location: 120 McKean Street, Caboolture Hospital
Phone: (07) 5433 8474

Birth Suite
Location: Level 2, Caboolture Hospital
Phone: (07) 5433 8888

Community Child Health
Location: Various
Phone: 1300 366 039
Website: Children's Health

Home Maternity Service
Phone: (07) 5433 8923

Resources

- Factsheet: COVID and Pregnancy (PDF)
- Factsheet: COVID-19 and Breastfeeding (PDF)

https://metronorth.health.qld.gov.au/caboolture/healthcare-services/maternity-services

Choosing an option for maternity care

All options for maternity care are delivered by caring and dedicated health professionals in partnership with you and your support people. Your general practitioner (GP) or midwife will discuss these options at your first appointment. Choosing the best option for you will depend on your own personal preferences, and sometimes, your medical history.

Maternity care options

Caboolture Hospital offers a range of care options that vary to suit your individual needs.

- + Midwives clinic
- + Midwifery Group Practice – Continuity of Care
- + Private practice midwives
- + The Lotus Circle (TLC)
- + Aboriginal and Torres Strait Islander Maternity Service – Ngarrama North
- + Kilcoy Outreach Clinic
- + Obstetric led care with doctors and midwives
- + GP shared care

Contact us

Antenatal Clinic
Location: Outpatient Services, 120 McKean Street Caboolture Hospital
Phone: (07) 5433 8701

Ngarrama Maternal Health
Location: Caboolture Satellite Hospital
Phone: 044 730 7411 (Leonie)

https://metronorth.health.qld.gov.au/caboolture/healthcare-services/maternity-services/choosing-an-option-for-maternity-care

Learning about pregnancy, birth and baby

Learning about your pregnancy, birth and baby can help build your confidence and prepare you for the weeks ahead. Caboolture Hospital has resources and experienced staff available to help you throughout your journey.

Classes

We offer classes with our experienced staff, who will answer any of your questions about your pregnancy, birth and parenting. If you have any questions outside of these classes, please ask your health care provider.

+ Becoming a family
+ Evening class
+ Saturday class
+ Breast feeding classes

Class timetable

Bookings are essential for all classes

Antenatal Classes	Time
Saturday class (Core team – childbirth and parenting)	Saturday 9.00am–3.30pm
Thursday evening class (Core team – childbirth and parenting)	Thursday evening 6:00pm – 8:30pm
Team - Ngarrama	See your midwife
Team - Midwives and Me	See Your Midwife
Breastfeeding class	2 sessions twice a month. Friday 9.00am–12.00pm and 1.00pm–4.00pm

Contact us

Antenatal Clinic
Location: Outpatient Services, 120 McKean Street, Caboolture Hospital
Phone: (07) 5433 8474

https://metronorth.health.qld.gov.au/caboolture/healthcare-services/maternity-services/learning-pregnancy-birth-baby

Caboolture Complex Maternity Midwife Navigator

Caboolture catchment

Refer by

- Email: http://CABHMidwifeNavigator@health.qld.gov.au
- Phone:

  0436 937 527

Eligibility:

- Mental Health
- Domestic and Family Violence
- Child Safety
- Substance use
- History of poor engagement with care

Caboolture Young Mothers for Young Women

https://www.ypic.org.au/

https://micahprojects.org.au/services - cab-young-mothers

Services

Micah Projects provides a range of support and advocacy services to individuals and families according to their needs and capacity.

Micah Projects is committed to supporting young women, who are pregnant and/or parenting, to grow and develop as individuals and as mothers in a supportive, respectful environment.

Caboolture Young Mothers for Young Women (YMYW) works in partnership with the **Caboolture Hospital** in the provision of integrated support.

Caboolture YMYW assists young, pregnant and parenting women, 20 years and under, along with their children and families. The team incorporates peer and professional support, to assist young pregnant and parenting women in practical ways, allowing them to participate, socially and economically within their community.

At Caboolture YMYW we celebrate and support young parents! Our service incorporates a peer-mentoring model where our Peer Support Workers are experts on young parenting because they are young parents themselves. They bring knowledge, skills, experience and understanding to the program.

Caboolture Young Mothers for Young Women

19 Morayfield Road (corner Oaklands Drive), Caboolture South. Phone 5294 9600

The Women's Business Shared Pathway

Culturally Safe Gynaecology Care

- Metro North Health + Institute of Urban Indigenous Health collaborative
- Specialist gynaecology care available at 4 community-based clinics per month:
  - 2 @ Nundah Community Health Centre
  - 1 @ Morayfield MATSICHS
  - 1 @ Deception Bay MATSICHS
- 1 theatre list per month at RBWH
- Dedicated pelvic health physiotherapy + nutrition & dietetics available weekly

How to refer

- Eligibility:
  - Patient of Aboriginal and/or Torres Strait Islander origin
  - Requires specialist gynaecology, pelvic health physiotherapy or dietetics review

- Referral Process:
  - Gynaecology GPSR or eReferral to Central Patient Intake Unit
  - Please write “Women’s Business Shared Pathway” and highlight same on referral

The Women’s Business Shared Pathway does not cover urogynaecology or gynaeoncolgy – women requiring this specialist input will be seen via mainstream services

Ngarrama Allied Health

Social Work

Nutrition & Dietetics

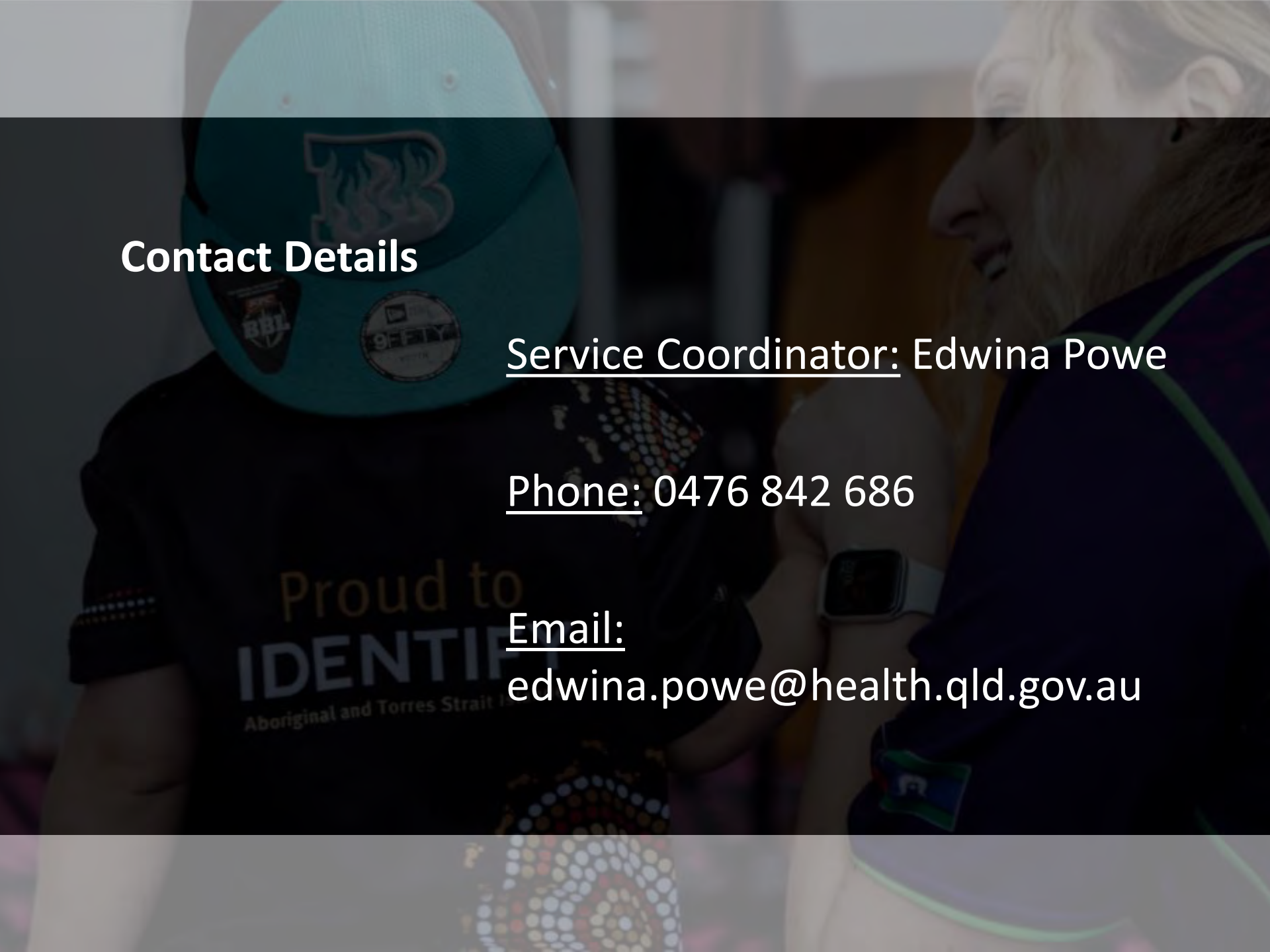
Physiotherapy

- Dedicated Allied Health service for Ngarrama Royal Midwifery Group Practice
- Allied Health co-located at Nundah Community Health Centre
- Available to all women carrying an Aboriginal and/or Torres Strait Islander baby birthing at the RBWH
- Available during pregnancy and into the postnatal period

How to refer

- Eligibility:
  - Patient carrying an Aboriginal and/or Torres Strait Islander baby
  - Birthing at RBWH
  - Requires pelvic health physiotherapy, social work or nutrition & dietetics input during pregnancy

- Referral Process:
  - GPSR or eReferral to Central Patient Intake Unit
  - Please write “Ngarrama Allied Health” and highlight same on referral
  - Specify discipline – physio/dietetics/social work



Contact Details

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