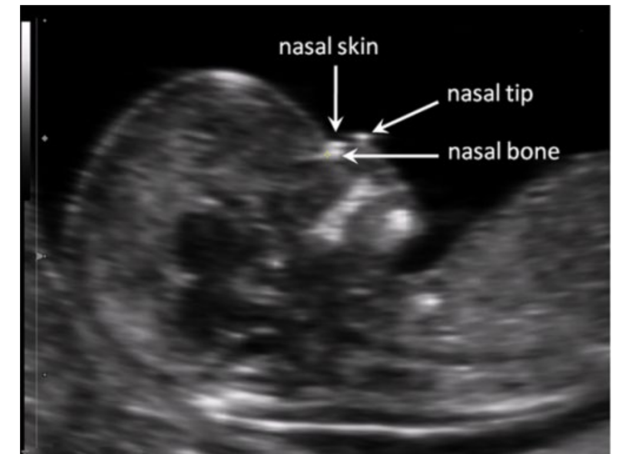
FIRST TRIMESTER SCREENING FOR ANEUPLOIDY AND PREECLAMPSIA, IMPLEMENTING THE NATIONAL SAFER BABY BUNDLE STRATEGIES AND REFERRAL PATHWAYS

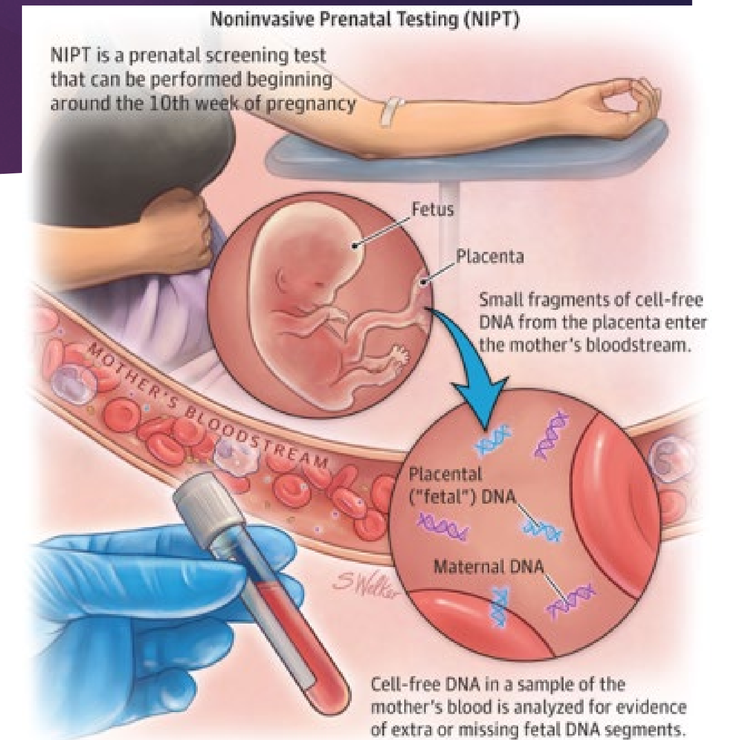
Aneuploidy screening
NT scan

- Risk based screening
- Should at least be *offered* to **all** women between 11+0 and 13+6

- Current is gold standard
  - NT scan + maternal age + serum Bhcg + PAPP-A
  - Detection rate 90% (FPR 5)
  - Additional markers: nasal bone, tricuspid valve, DV
    - Increase detection to 95% (FPR 3)



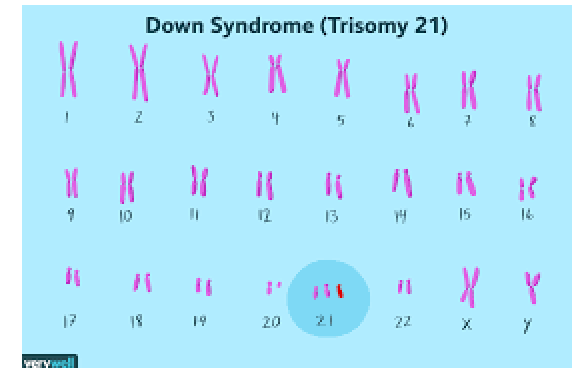
Aneuploidy screening
NIPT



- From 10 weeks
- Self-funded
  - Between $300-$700
- Through pathology services
  - Roche (harmony) – counting, inconclusive results++
  - Natera (panorama) – snp, long turn around
  - Illumina (generation, nest, percept) – snp. Reliable few inconclusives

- Placental cell turn over, chromosomes fragment and release short fetal DNA fragments into maternal circulation

Aneuploidy screening
NIPT

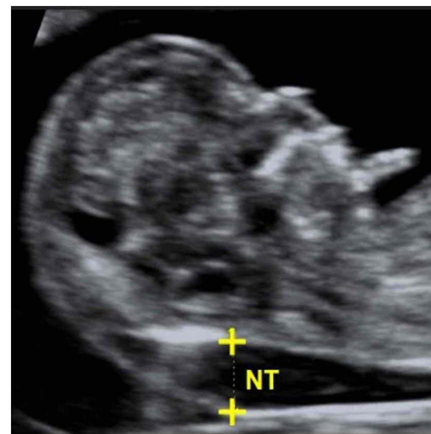


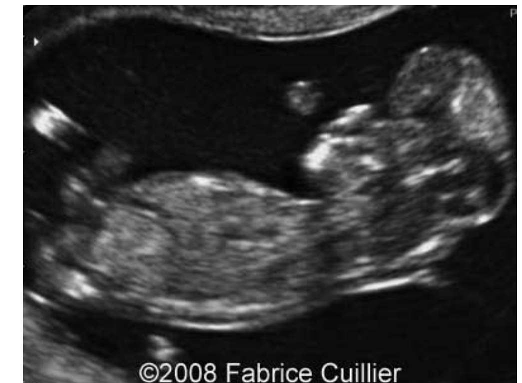
- Affected by gestation, maternal BMI, aneuploidy
- Very high detection rate for T21=99% (FP = 1%)
- T18=97%, T13=92%, XO=89%, microdeletion=70% (Don't do!)

- Limitations
  - Cost, 3% test failure, not diagnostic, limited chromosome testing currently, placental origin, no structural information

Aneuploidy screening
Why do a scan?

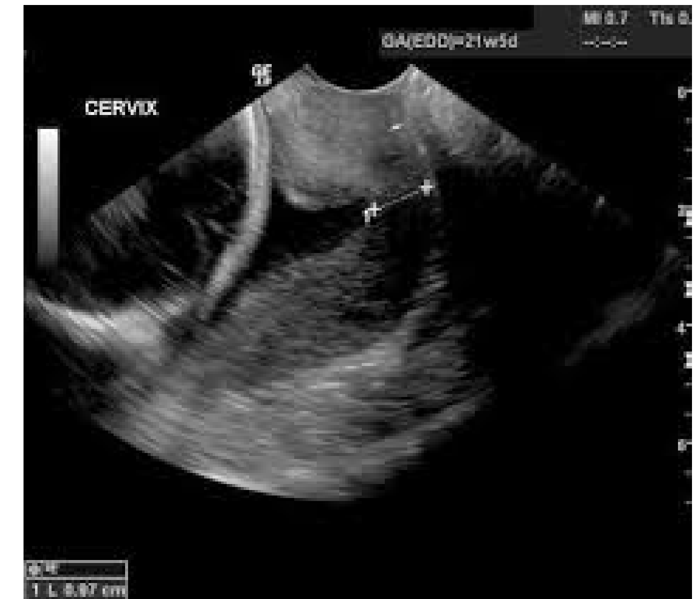
- Defects in eupolid fetus
  - Always: acrania, holoprosencephaly, gastroschisis, megacystis, exomphalos, body stalk anomalies
  - Sometimes: spina bifida, ventriculomegaly, cardiac defect, diaphragmatic hernia, skeletal dysplasia, absent hands/feet
  - Undetectable (early): agenesis corpus callosum, cerebellar hypoplasia, CCAM, duodenal atresia, hydronephrosis, talipes
- NT enlargement (particularly >3.5mm)
  - Chromosomal abnormality
  - Cardiac abnormality
  - Other structural
  - Genetic syndromes





Aneuploidy screening
Why do a scan?

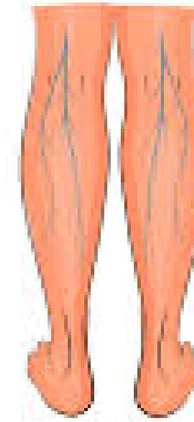
- Screening for PET and growth restriction
  - Uterine artery dopplers, Mean arterial BP, PAPP-A
- Consider checking the cervix
  - Women with history of PTB, previous short cervix/suture

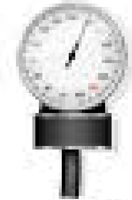


Aneuploidy screening

- Offer NT scan or NIPT (+scan)
- Contingent screening
  - NT result >1:50= High risk
    - Should be offered definitive testing (CVS/Amnio)
    - But consider NIPT
  - NT result 1:50-1:1000 = Intermediate risk
    - Offer NIPT
    - Normal morphology scan probably halves risk

PET screening
Why do we need it?

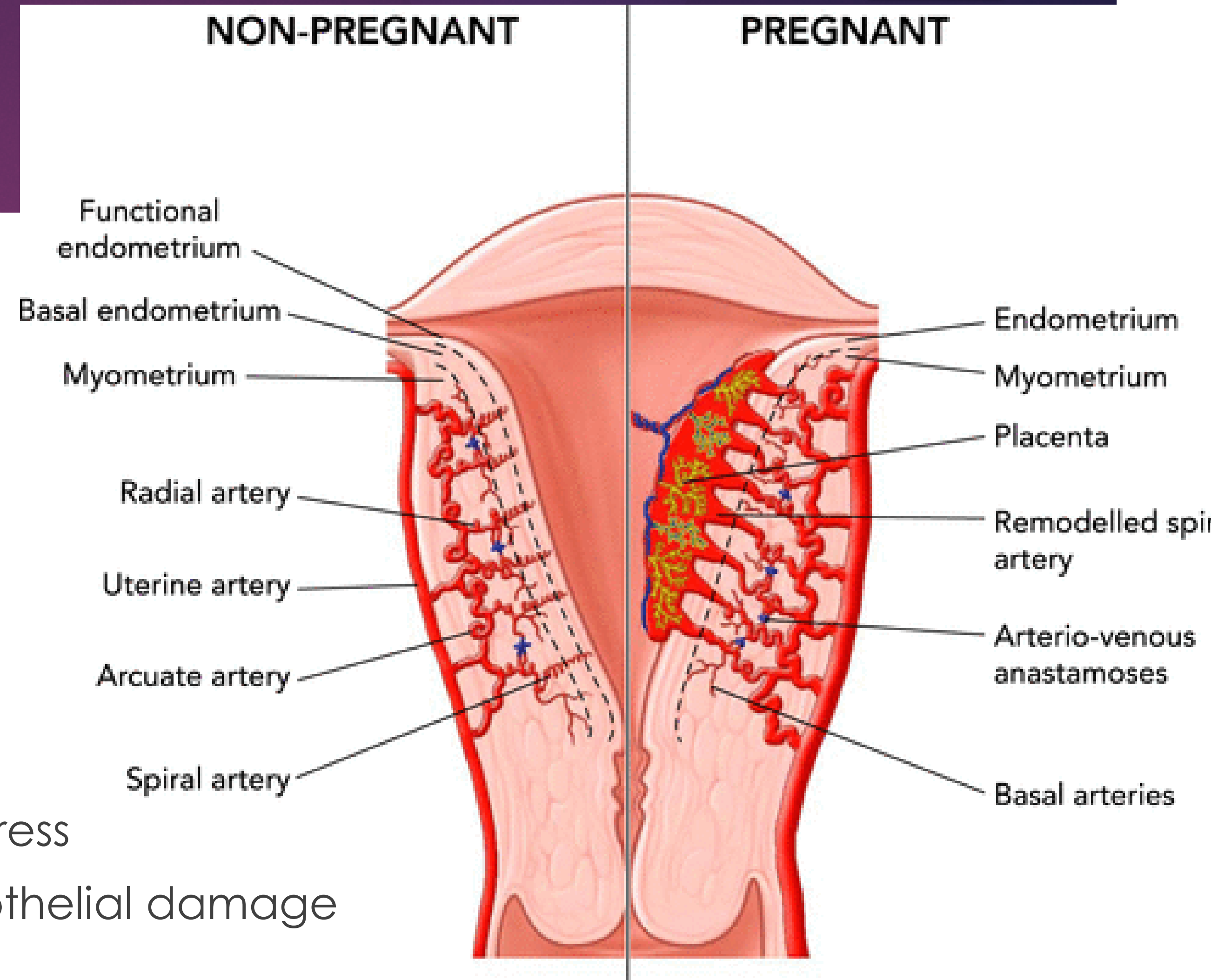




- 2-5% pregnancies
- Maternal complications
  - Eclampsia, DIC, stroke, blindness, renal and hepatic failure
  - Doubling lifetime risk CVD
- Fetal/neonatal complications
  - 1/3 will require delivery <37 weeks
  - Death, haemorrhage, seizures, respiratory difficulties, retinopathy, prolonged hospital stay
  - Long term risks – CP, Increased BMI, CVD, diabetes

PET screening Pathogenesis

- First wave placentation 8weeks
  - Spiral arteries in decidua
- Second wave 14-18 weeks
  - Spiral arteries in myometrium



- Reduced perfusion leads to oxidative stress
- Trophoblast derived factors cause endothelial damage

PET screening
What is involved?

- Performed at 11-13 weeks
  - MAP (increased)
  - PIGF (decreased)
  - PAPP-A (decreased)
  - Uterine artery dopplers (pulsitility increased)
- Predicts
  - 90% early PET <34 weeks
  - 75% preterm PET <37 weeks
  - 45% term PET >37 weeks
- High risk = >1:100 <37 weeks

PET screening
Prevention

- Aspirin
  - ASPRE trial: Use of aspirin was associated with a 62% reduction in the incidence of preterm PE and 82% reduction in the incidence of PE at <34 weeks’ gestation.
  - 150mg po nocte prior to 16weeks
- Calcium
  - In deficient women can reduce risk by 50%

Safer baby bundle smoking

- Significant contributor to stillbirth and fetal growth restriction (+miscarriage, PTB, congenital anomalies)
- CO -> reduced oxygenation
- Nicotine -> vasoconstriction
- QUIT
  - “5A’s” (Ask, Advise, Assess, Assist and Arrange) brief intervention model
  - CO monitoring
  - Offer support including Quitline
  - Nicotine replacement is better than smoking

Safer Baby Bundle
Side sleeping

- Side sleeping after 28 weeks (recommended from 20 weeks) can half the risk of stillbirth
- Reduced uteroplacental flow due to compression of major vessels
  - 85% reduction in vena-caval diameter and around 30% compression of the aorta

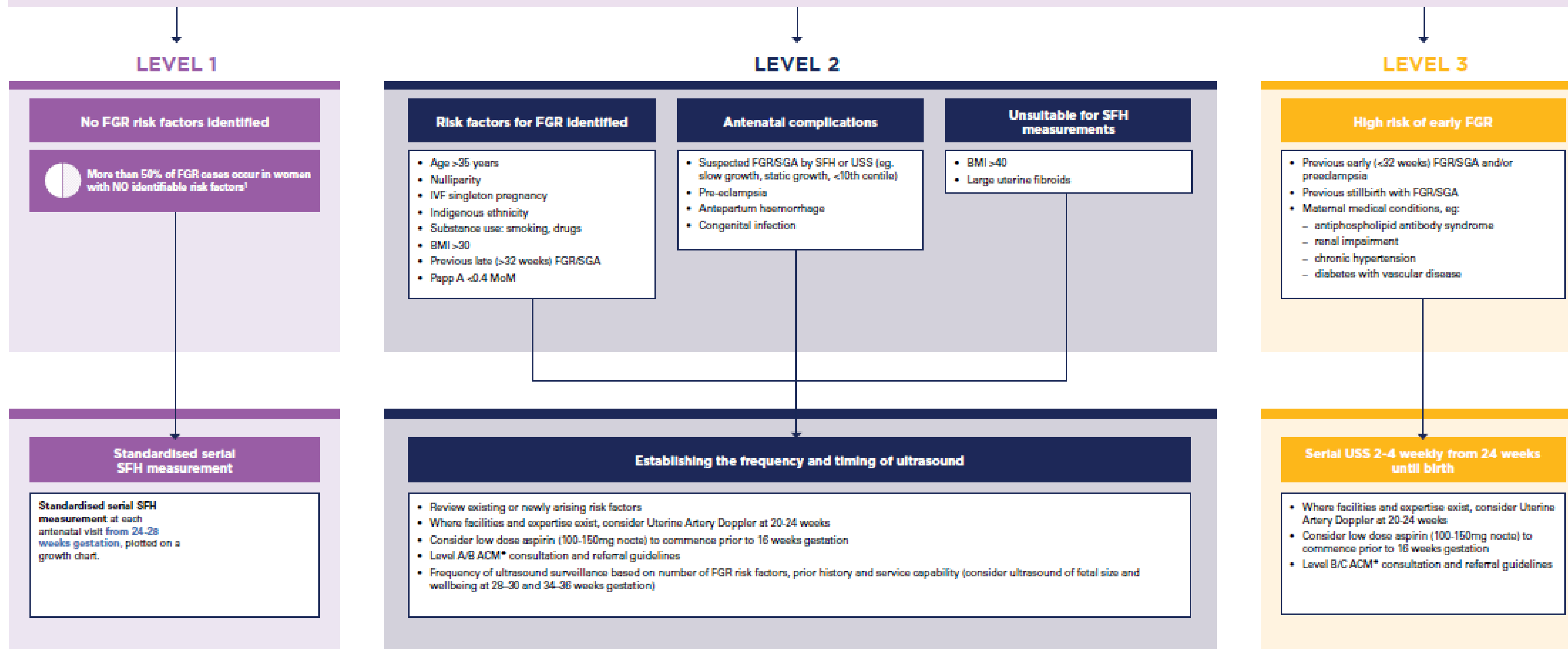
Safer Baby Bundle
Reduced fetal movement

- Around 50% of women who had a stillbirth reported a slowing or no fetal movements just prior
- Fetal movement should continue in the same pattern throughout pregnancy – babies do not move less in the 3rd T
- Women who are concerned should contact the D/Suite ASAP
  - Clinical assessment
  - CTG
  - Kleihauer
  - Ultrasound
  - Birth planning

Fetal Growth Restriction (FGR) Care Pathway

for singleton pregnancies

RISK ASSESSMENT IN AUSTRALIA FOR FGR AT BOOKING AND AT EACH ANTENATAL VISIT



* Australian College of Midwives. A copy of the guideline can be accessed here: https://www.midwives.org.au/resources/national-midwifery-guidelines-consultation-and-referral-3rd-edition-issue-2-2014

1. Isabelle M, Béatrice B, Anne E, Monique K, François G, Jennifer Z. Does the Presence of Risk Factors for Fetal Growth Restriction Increase the Probability of Antenatal Detection? A French National Study. Paediatric and Perinatal Epidemiology 2016; 30(1): 46-55.

Adapted by PSANZ/Stillbirth CRE 2018 from Royal College of Obstetricians and Gynaecologists. The Investigation and Management of the Small-for-Gestational-Age fetus, 2013. Maternal/paternal SGA, low fruit intake and excessive daily exercise are not readily ascertainable.

Safer Baby Bundle

WORKING TOGETHER TO REDUCE STILLBIRTH

The Safer Baby Bundle resources are based on five key areas to support healthcare professionals with new strategies to help reduce stillbirths.

Smoking Cessation — Supporting women to stop smoking in pregnancy. #Quit4Baby

Fetal Growth Restriction (FGR) — Improving screening and surveillance for fetal growth restriction. #GrowingMatters

Decreased Fetal Movements (DFM) — Improving awareness and management of decreased fetal movement. #MovementsMatter

Side Sleeping — Improving awareness of maternal safe sleeping position. #SleepOnSide

Timing of Birth — Improving decision-making around timing of birth for women with risk factors. #LetsTalkTiming

LEVEL 2

Risk factors for FGR identified

- Age >35 years
- Nulliparity
- IVF singleton pregnancy
- Indigenous ethnicity
- Substance use: smoking, drugs
- BMI >30
- Previous late (>32 weeks) FGR/SGA
- Papp A <0.4 MoM

Antenatal complications

- Suspected FGR/SGA by SFH or USS (eg. slow growth, static growth, <10th centile)
- Pre-eclampsia
- Antepartum haemorrhage
- Congenital infection

Unsuitable for SFH measurements

- BMI >40
- Large uterine fibroids

Establishing the frequency and timing of ultrasound

- Review existing or newly arising risk factors
- Where facilities and expertise exist, consider Uterine Artery Doppler at 20-24 weeks
- Consider low dose aspirin (100-150mg nocte) to commence prior to 16 weeks gestation
- Level A/B ACM* consultation and referral guidelines
- Frequency of ultrasound surveillance based on number of FGR risk factors, prior history and service capability (consider ultrasound of fetal size and wellbeing at 28–30 and 34–36 weeks gestation)

LEVEL 3

High risk of early FGR

- Previous early (<32 weeks) FGR/SGA and/or preeclampsia
- Previous stillbirth with FGR/SGA
- Maternal medical conditions, eg:
  - antiphospholipid antibody syndrome
  - renal impairment
  - chronic hypertension
  - diabetes with vascular disease

Serial USS 2-4 weekly from 24 weeks until birth

- Where facilities and expertise exist, consider Uterine Artery Doppler at 20-24 weeks
- Consider low dose aspirin (100-150mg nocte) to commence prior to 16 weeks gestation
- Level B/C ACM* consultation and referral guidelines

Referral pathways

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- Investigations
- Lifestyle & Preventive Care
- Medical
- Mental Health
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- Therapeutics
- Public Health
- Specific Populations
- Surgical
- Women's Health
  - Breastfeeding
  - Contraception and Sterilisation
  - Gynaecology
  - Pregnancy Related Conditions
  - Maternity and Gynaecology Referrals
    - COVID-19 Changes to Maternity Care
    - Early Pregnancy Assessment

https://hne.communityhealthpathways.org/13212.htm

Women's Health / Maternity and Gynaecology Referrals

Maternity and Gynaecology Referrals

In This Section

- COVID-19 Changes to Maternity Care
- Early Pregnancy Assessment
- Gynaecological Cancer Referrals
- Acute Gynaecology Referrals
- Non-acute Gynaecology Referrals
- Hysteroscopy Outpatient Service
- Lactation Consultants
- Long Term Contraception Referrals
- Maternal Fetal Medicine Unit
- Maternity Referrals
- Maternity - Urgent Referrals
- Perinatal Education
- Tongue Tie Release Providers

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Referral pathways

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    - Perinatal Education
    - Tongue Tie Release Providers
- Our Health System
  - What is HealthPathways?
    - SeNT eReferral

Maternity Referrals

(02) 6799-2085.

3. Give patients a copy of blood and scan results to bring to their maternity outpatients appointment.
4. Ask the patient to phone Narrabri Hospital for a maternity booking appointment via **(02) 6799-2085**.

Quirindi HealthOne

Weekly antenatal clinic attended once a month by an obstetrician. Location: 50 Nowland Street, Quirindi, NSW 2343.

Refer to the antenatal clinic by:

- faxing a general practitioner referral letter to **(02) 6766-5711**.
- patient self-referral, phone **(02) 6760-2500**.

Tamworth Hospital

Tamworth Maternity offers these services and models of care.

1. To refer, fax the Referral for Antenatal Care Form clearly documenting the reason for referral to **(02) 4923-6420**, with a copy of all available pathology and ultrasound results.
2. Consider referral to the Aboriginal Maternal Infant Health Service by phoning **(02) 6767-7699**.
3. Give patients a copy of all blood and scan results to bring to their maternity and gynaecology outpatients appointment.
4. Ask the patient to phone the Maternity Clinic for a maternity booking appointment via **(02) 6767 7699**.

   If referring a patient from outside the region, the maternity booking appointment should be made at their local hospital.

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Referral pathways

Hunter New England

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  - Pregnancy Related Conditions
    - Routine Antenatal Care - GP Shared Care
    - Anaemia in Pregnancy
    - Antenatal Screening
    - Asthma in Pregnancy

Pregnancy Related Conditions

See the RANZCOG coronavirus (COVID-19) message for pregnant women and their families, which has advice and information about COVID-19.

In This Section

- Routine Antenatal Care - GP Shared Care
- Anaemia in Pregnancy
- Antenatal Screening
- Asthma in Pregnancy
- Bleeding in Rhesus Negative Women
- Epilepsy in Pregnancy
- Gestational Diabetes
- Heart Conditions in Pregnancy
- Hyperemesis in Pregnancy
- Hypertension and Pre-eclampsia in Pregnancy and Postpartum
- Medications in Pregnancy and Breastfeeding
- Miscarriage and Ectopic Pregnancy
- Next Birth After Caesarean Section
- Palpitations in Pregnancy
- Perinatal Mental Health
- Preconception Assessment
- Renal Disease in Pregnancy
- Skin Conditions (Rash and Itch) in Pregnancy
- Termination of Pregnancy (TOP)
- Thromboprophylaxis in Pregnancy
- Thyroid Disease in Pregnancy
- UTIs in Pregnancy

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Referral

- Please ensure all antenatal bloods are done +/- dating scan
  - FBC, group and Ab screen, Rubella, Syphilis, Hep B/C, HIV
- Referral is triaged by MW
- Booking visit usually around 14 weeks
- First visit around 20-22weeks (COVID changes)
- High risk patients earlier where indicated
- Current COVID changes to visits

Other early pregnancy concerns

- Medications
  - Epilepsy
  - Depression
  - Rheumatological
  - Hypertension
- Obesity
  - BMI >50-> go to JHH
  - Encourage no weight gain or weight loss
  - Significant risks to mother and baby
- Asthma management