phn NORTH WESTERN MELBOURNE
An Australian Government Initiative

Shared Maternity Care Collaborative Workshop 1

Tuesday 8 October 2024

The content in this session is valid at date of presentation

Mercy Health
Care first

northern health
the northern way of caring

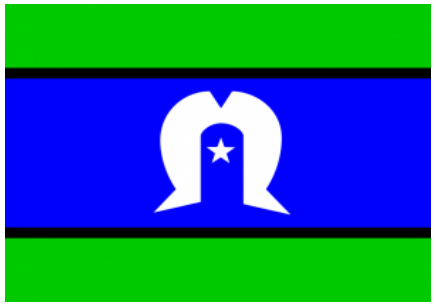
the women's
the royal women's hospital

Western Health

Acknowledgement of Country

The Royal Women's Hospital, Mercy Health, Northern Health, Western Health and North Western Melbourne Primary Health Network acknowledge the Traditional Custodians of the land on which our work takes place, The Wurundjeri Woi Wurrung People, The Boon Wurrung People and The Wathaurong People.

We pay respects to Elders past, present and emerging as well as pay respects to any Aboriginal and Torres Strait Islander people in the session with us today.



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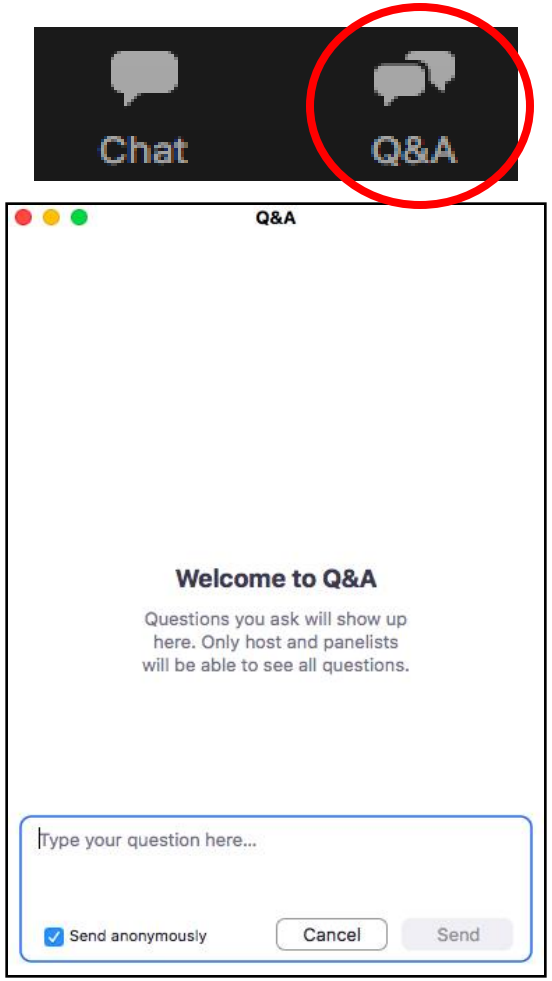

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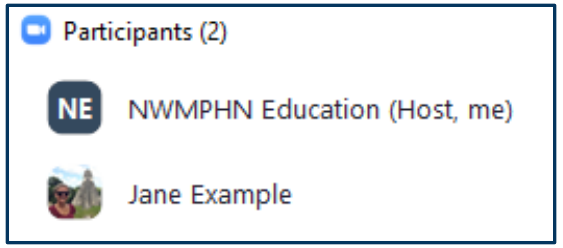

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Moderator

A/Prof Ines Rio – The Royal Women's Hospital

- A/Prof Ines Rio has extensive experience in many facets of health care and is committed to quality, effective, efficient, equitable and integrated health care services and the central importance and role of general practice and primary care in this provision.
- Ines is Head of the General Practice Liaison Unit and GP Obstetrician at the Royal Women's Hospital, Chief Medical Officer at Monash University and GP at North Richmond Community Health
- Member of the:
    - Pharmaceutical Benefits Advisory Committee
    - TGA Advisory Committee on Vaccines
    - National Women's Health Advisory Council
    - CALD Communities Health Advisory Group

SMCC Workshop 1 Overview

1. Third Trimester Issues, A/Prof Stefan Kane
2. Perinatal Infections: 2024 Update for GPs, Prof Lisa Hui
3. Q & A time *(submit via the Zoom Q&A function)*
4. HealthPathways & Health Service Updates

Speaker

Royal Women's Hospital

Associate Professor Stefan Kane is a maternal fetal medicine subspecialist obstetrician who has the privilege of serving as the Medical Director of Maternity Services and the Acting Director of Maternal Fetal Medicine at the Royal Women's Hospital. His clinical engagements cover the full scope of complexity in pregnancy, from multiple gestations to complex fetal anomalies and significant pre-existing maternal medical conditions. Stefan also holds an honorary appointment as Clinical Associate Professor at the University of Melbourne Department of Obstetrics, Gynaecology and Newborn Health.

Third Trimester Issues

Stefan C. Kane

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Maternal Fetal Medicine Subspecialist Obstetrician

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Clinical Lead | Preterm Birth | Safer Care Victoria
President | Society of Obstetric Medicine of Australia and New Zealand

Disclosures

- I have received honoraria from Organon Australia and Besins Healthcare Australia
- The content of this presentation is unrelated to the areas for which I have received honoraria
- All images used in this presentation are free from copyright and available in the public domain

Overview

- Non-cephalic presentation
- Small for gestational age
- Large for gestational age
- Decreased fetal movements
- Cholestasis
- Hypertension
- Induction of labour

Fetal orientation: definitions

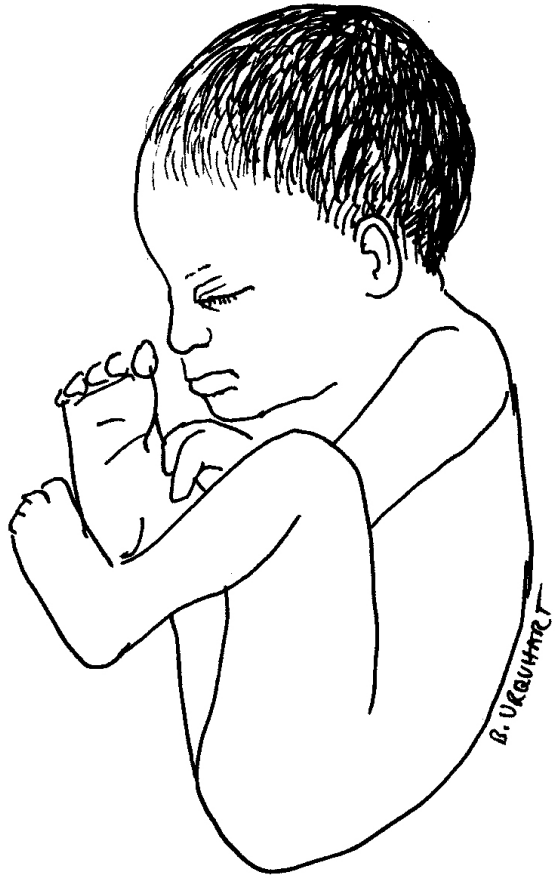
- **Presentation**: part of the fetus located closest to the internal cervical os
  - Can be **cord** (funic presentation)
  - **Cephalic** presentation normally refers to the **vertex** (head in full flexion), but can also be **face** presentation (head hyperextended) and **brow** presentation (mid-way between)
- **Position** describes the relationship of the presenting part to the pelvis (e.g. occiput anterior, sacrum transverse)
- **Lie** describes the relationship of the long axis of the fetus to the long axis of the uterus

Non-cephalic presentation

- Presenting part anything other than the fetal head
  - Breech
  - Extremity (transverse lie)
  - Cord
- Generally not an issue until after 36 weeks
- Vast majority (96% or so) of babies will be in cephalic presentation by term

Breech presentation

- Around 4% at 36 weeks, falling to 3% by 40 weeks
- **KEY POINT**: all women anticipating a vaginal birth should have a 'presentation scan' at 36 week visit
  - Clinical examination is notoriously unreliable:
    - Sensitivity in detecting non-cephalic presentation is 70%, while specificity is 95%



Nassar N, Roberts CL, Cameron CA, Olive EC. Diagnostic accuracy of clinical examination for detection of non-cephalic presentation in late pregnancy: cross sectional analytic study. BMJ. 2006 Sep 16; 333(7568): 578-80.

Breech presentation

- Management options:
  - External cephalic version (ECV)
  - Elective CS
  - Expectant management, anticipating either emergency CS or vaginal breech birth if version does not occur
- **KEY POINT**: Infants who were in breech presentation in late pregnancy should all have screening for **hip dysplasia**, even if born cephalic

Breech presentation: ECV

- External cephalic version is **safe** and **effective**
  - NNT of **2**
  - Serious complication (e.g. cord prolapse, abruption) in < 0.5%
  - About 3% revert to breech
- Optimally performed from **37** weeks onwards
  - Higher success rates if performed earlier, but higher reversion rates too
  - If a complication occurs and immediate birth indicated, preferable to be at term

Hutton EK, Hannah ME, Ross SJ et al; Early ECV2 Trial Collaborative Group. The Early External Cephalic Version (ECV) 2 Trial: an international multicentre randomised controlled trial of timing of ECV for breech pregnancies. BJOG. 2011 Apr;118(5):564-77.

Rodgers R, Beik N, Nassar N, Brito I, de Vries B. Complications of external cephalic version: a retrospective analysis of 1121 patients at a tertiary hospital in Sydney. BJOG. 2017 Apr;124(5):767-772.

Mode of birth after ECV

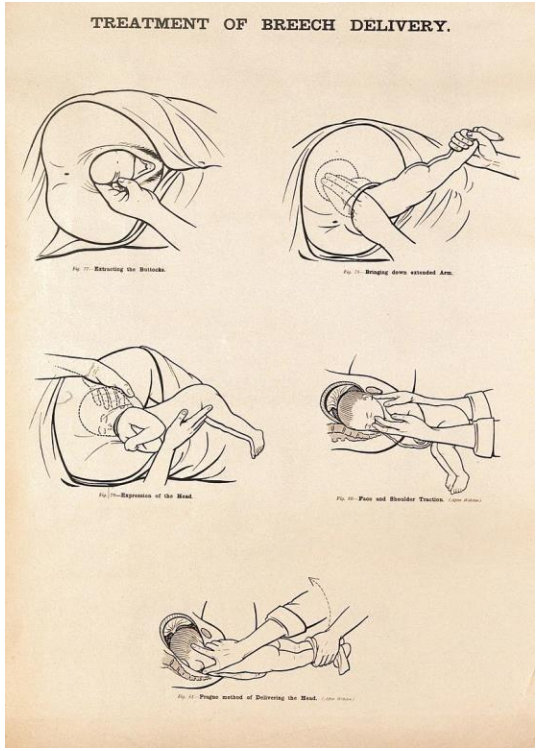
Table 3. Labour and delivery outcome of the study population

	ECV n = 220 n (%)	Control subjects n = 1030 n (%)	*P* (χ^2 test)
Onset of labour			0.58
Spontaneous	183 (83)	872 (85)	
Induction	37 (17)	158 (15)	
Delivery outcome			< 0.001
Spontaneous vaginal	167 (76)	865 (84)	
Operative vaginal	20 (9)	103 (10)	
Caesarean section	33 (15)	62 (6)	
Reasons for operative vaginal delivery	n = 20	n = 103	0.41
Fetal distress	9 (45)	41 (40)	
Dystocia in second stage	11 (55)	62 (60)	
Reasons for Caesarean section	n = 33	n = 62	0.45
Fetal distress	14 (42)	21 (34)	
Dystocia in first stage	10 (30)	27 (44)	
Dystocia in second stage	9 (28)	14 (22)	
Cephalic presentation			0.70
Occiput anterior	205 (93)	952 (92)	
Occiput posterior	15 (7)	78 (8)	

Kuppens SM, Hutton EK, Hasaart TH, Aichi N, Wijnen HA, Pop VJ. Mode of delivery following successful external cephalic version: comparison with spontaneous cephalic presentations at delivery. J Obstet Gynaecol Can. 2013 Oct;35(10):883-888.

Breech presentation: vaginal breech birth

- Becoming something of a lost art in the post- Term Breech Trial epoch
- Efforts being made to provide vaginal breech birth as an option in larger centres
- These births remain at higher risk of adverse perinatal outcome



Yaouzis Olsson N, Bartfai ED, Åmark H, Wallström T. Outcomes in term breech birth according to intended mode of delivery-A Swedish prospective single-center experience of a dedicated breech birth team. Acta Obstet Gynecol Scand. 2024 Aug 12.

Hannah ME, Hannah WJ, Hewson SA, Hodnett ED, Saigal S, Willan AR. Planned caesarean section versus planned vaginal birth for breech presentation at term: a randomised multicentre trial. Term Breech Trial Collaborative Group. Lancet. 2000 Oct 21;356(9239):1375-83.

Breech presentation: vaginal breech birth

TABLE 4 Neonatal mortality and morbidity outcomes in the planned breech population according to intended mode of delivery.

Neonatal and maternal morbidity outcomes	Planned vaginal delivery (*n* = 225)	Planned cesarean delivery (*n* = 842)	OR
Apgar at 5 min <4, *n* %	5 (2.2%)	2 (0.2%)	9.55 [1.84, 49.53]
Apgar at 5 min <7, *n* %	10 (4.4%)	5 (0.6%)	7.79 [2.63, 23.02]
Apgar at 10 min <6, *n* %	4 (1.8%)	1 (0.1%)	15.22 [1.69, 136.88]
Umbilical cord pH <7, *n* %	5 (3.1%)	4 (0.5%)	6.04 [1.60, 22.76]
Umbilical cord BE <−16, *n*%	4 (2.5%)	3 (0.4%)	6.54 [1.45, 29.50]
Any injury, *n* %	3 (1.3%)	0 (0%)	0 [0, NaN]
Long bone of clavicle fracture, *n* %	1 (0.5%)	0 (0%)	0 [0, NaN]
Other fractures, *n* %	0 (0%)	0 (0%)	NaN [NaN, NaN]
Brachial plexus injury, *n* %	1 (0.5%)	0 (0%)	0 [0, NaN]
Other injuries, *n* %	1 (0.5%)	0 (0%)	0 [0, NaN]
Transfer to NICU, *n* %	13 (5.8%)	42 (5.0%)	1.16 [0.61, 2.20]
NICU >4 days, *n* %	2 (0.9%)	3 (0.4%)	2.49 [0.41, 14.98]
Intubation, *n* %	2 (0.9%)	0 (0%)	0 [0, NaN]
Intubation persistent after 24 h, *n* %	0 (0%)	0 (0%)	NaN [NaN, NaN]
Convulsion, *n*%	1 (0.5%)	1 (0.1%)	3.75 [0.23, 60.17]
Continued after first 24 h, *n*%	1 (0.5%)	0 (0%)	0 [0, NaN]
Parenteral feeding, *n* %	4 (1.8%)	7 (0.8%)	2.16 [0.63, 7.43]
Parenteral feeding >4 days, *n* %	2 (0.9%)	5 (0.6%)	1.5 [0.29, 7.78]
ICH or IVH	0 (0%)	0 (0%)	NaN [NaN, NaN]
Perinatal mortality, *n* %	1 (0.4%)	0 (0%)	0 [0, NaN]
Neonatal mortality or serious neonatal morbidity, *n* %	7 (3.1%)	6 (0.7%)	4.44 [1.48, 13.34]

Yaouzis Olsson N, Bartfai ED, Åmark H, Wallström T. Outcomes in term breech birth according to intended mode of delivery - A Swedish prospective single-center experience of a dedicated breech birth team. Acta Obstet Gynecol Scand. 2024 Aug 12.

Presentation other than cephalic or breech

- Generally requires a lie that is other than longitudinal (i.e. transverse or oblique)
  - But hand presentation can occur with longitudinal lie
- **KEY POINT**: Important to ask **why** a fetus has an atypical presentation:

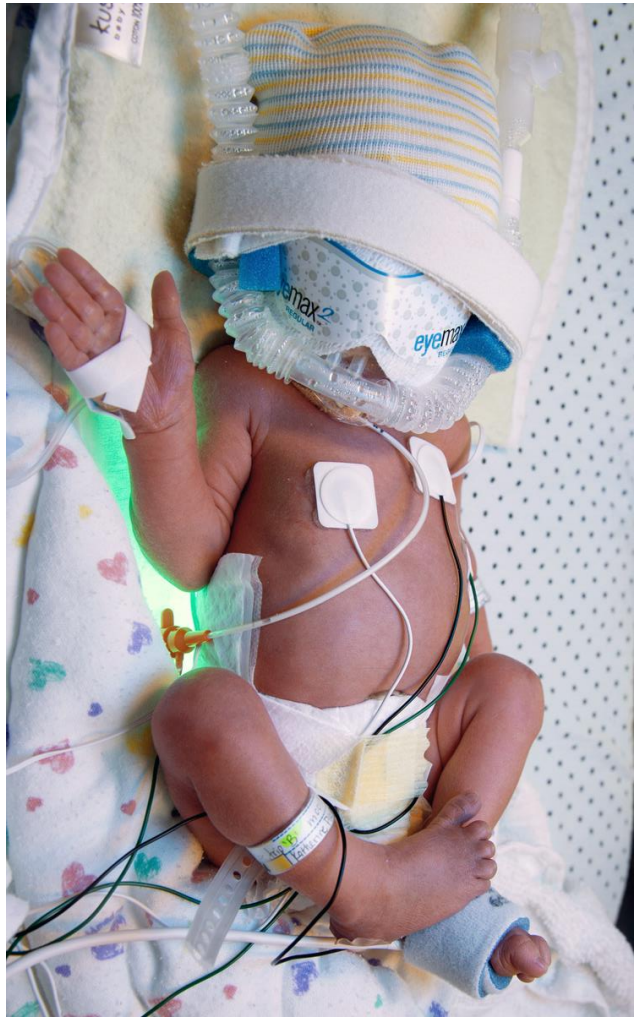
• Placenta praevia • Polyhydramnios • Uterine anomaly • Fetal anomaly	• SGA • Cord complications • Fibroids • Multiple pregnancy

Presentation other than cephalic or breech

- Management similar to breech
- Need careful sonographic assessment to **exclude** pathological reason for presentation
- Higher risk of **cord prolapse**: consider admission to hospital from 37 weeks
- More likely to have an '**unstable**' (i.e. variable) lie
- Often move to IOL immediately after ECV rather than waiting, as higher chance of reversion
- More common in grand multiparae

Small for gestational age (SGA)

- Estimated fetal weight (EFW) < 10th%
- Which chart? Debate rages!
- **Not** the same as fetal growth restriction (FGR)
  - Formerly known as intrauterine growth restriction (IUGR)
  - PSANZ and Stillbirth CRE define FGR as '*a fetus that has not reached its (genetic) growth potential*'
  - How do we know the growth potential of a fetus?
    - Need to use surrogate markers; SGA is a proxy for FGR



Fetal growth restriction

- **Not all** SGA fetuses have FGR
- **Not all** FGR fetuses are SGA
- A fetus with EFW on the 30th% is not SGA, but would be growth restricted if it ‘should’ be on the 70th% according to its genetic growth potential
- A fetus with EFW on the 7th% is SGA, but would not be growth restricted if that matched its genetic growth potential
- **The clinical challenge . . . looking for FGR, not just SGA**

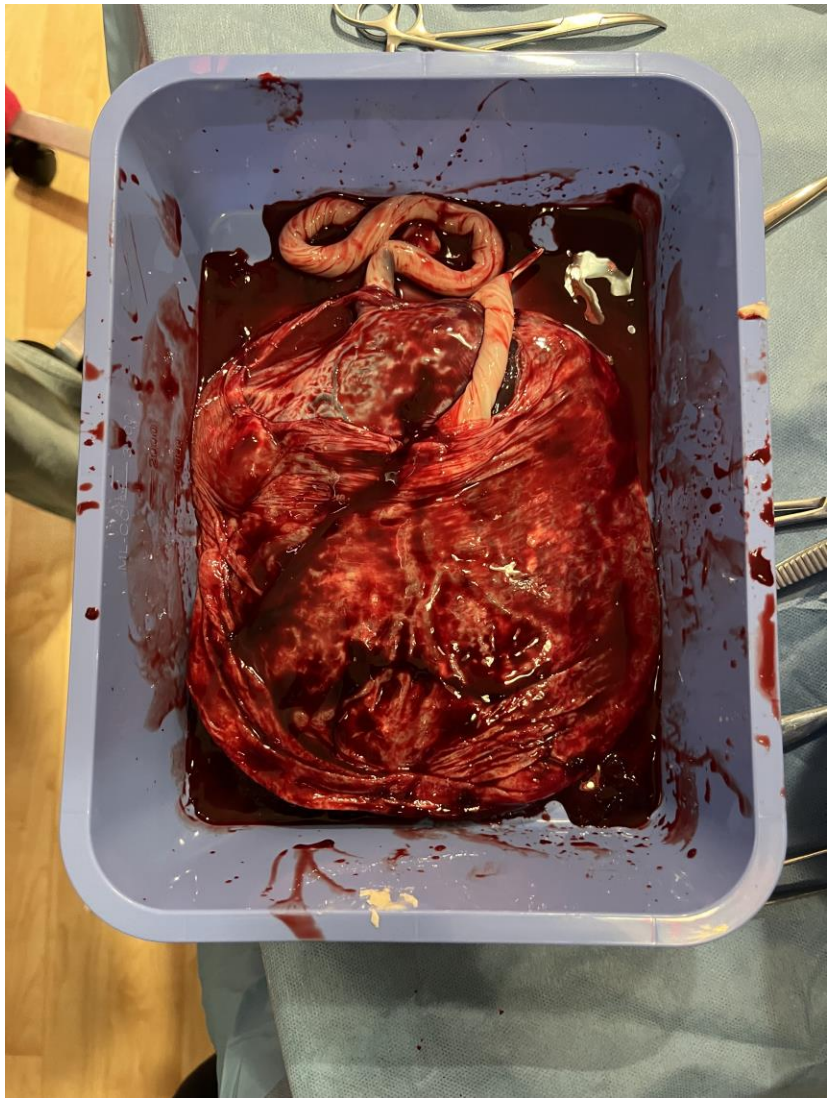
Fetal growth restriction

	Early FGR	Late FGR
Gestation	<32 weeks	≥32 weeks
Prevalence	0.5-1%	5-10%
Pre-eclampsia	Strong association	Weak association
Placental pathology	Strong association	Weak association
Relation to SGA	Often SGA <10th centile	Not always SGA
Umbilical artery Doppler	Often abnormal	Normal or abnormal
Detection	Often are readily detectable	Challenging to detect
Clinical consequences	Risks of prematurity, high mortality and morbidity	Associated with increased mortality and morbidity

Fetal growth restriction

Causes of FGR:

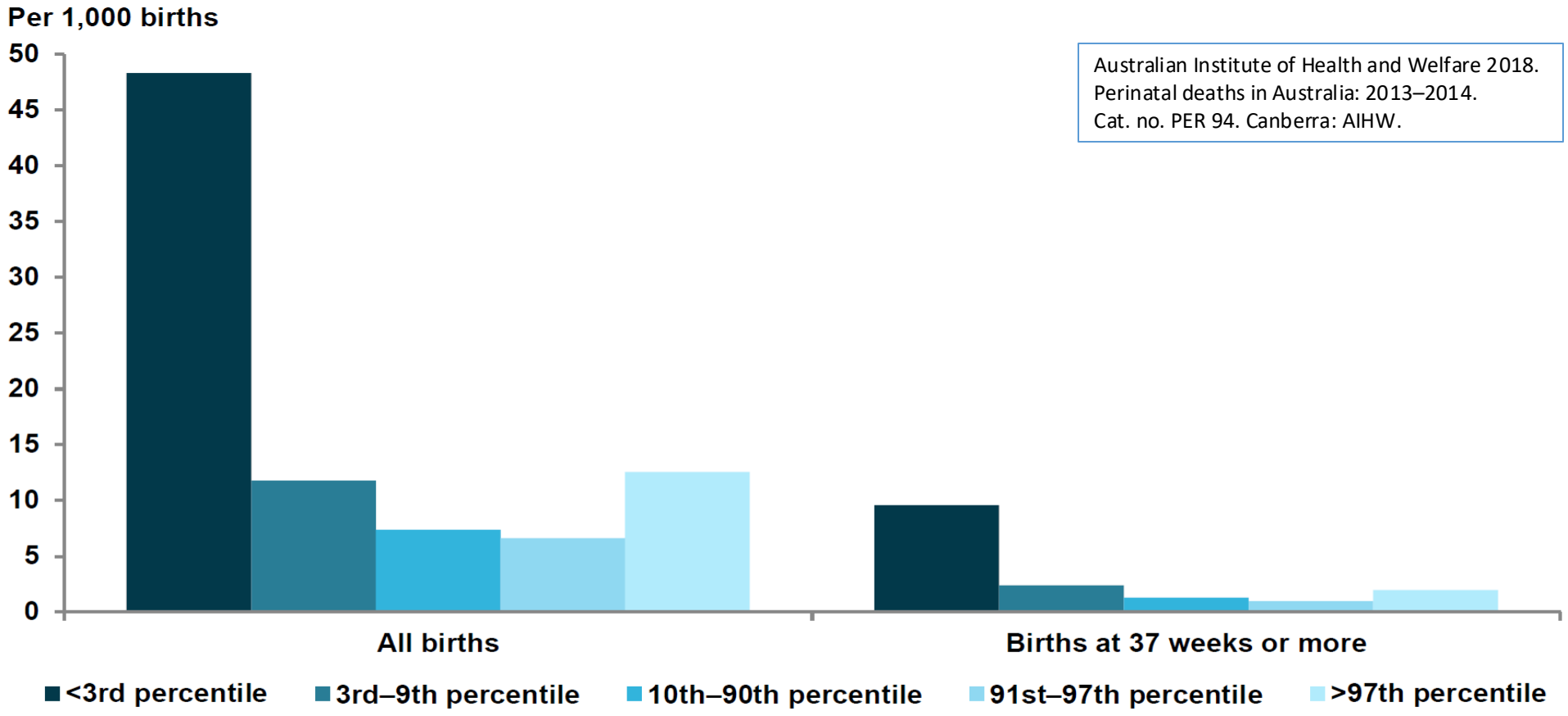
- Fetal growth restriction can be the result of **maternal**, **fetal**, **placental** or **genetic** causes, or a **combination** of these
- The underlying cause of fetal growth restriction in most cases is **placental**



Fetal growth restriction: why worry?

- Less than **1/3** of growth restricted/small for gestational age fetuses are detected antenatally
- Antenatal detection of FGR is a key national maternity indicator of safe and effective care
- Detection and care of women with FGR is relevant to all maternity care providers

Fetal growth restriction: why worry?

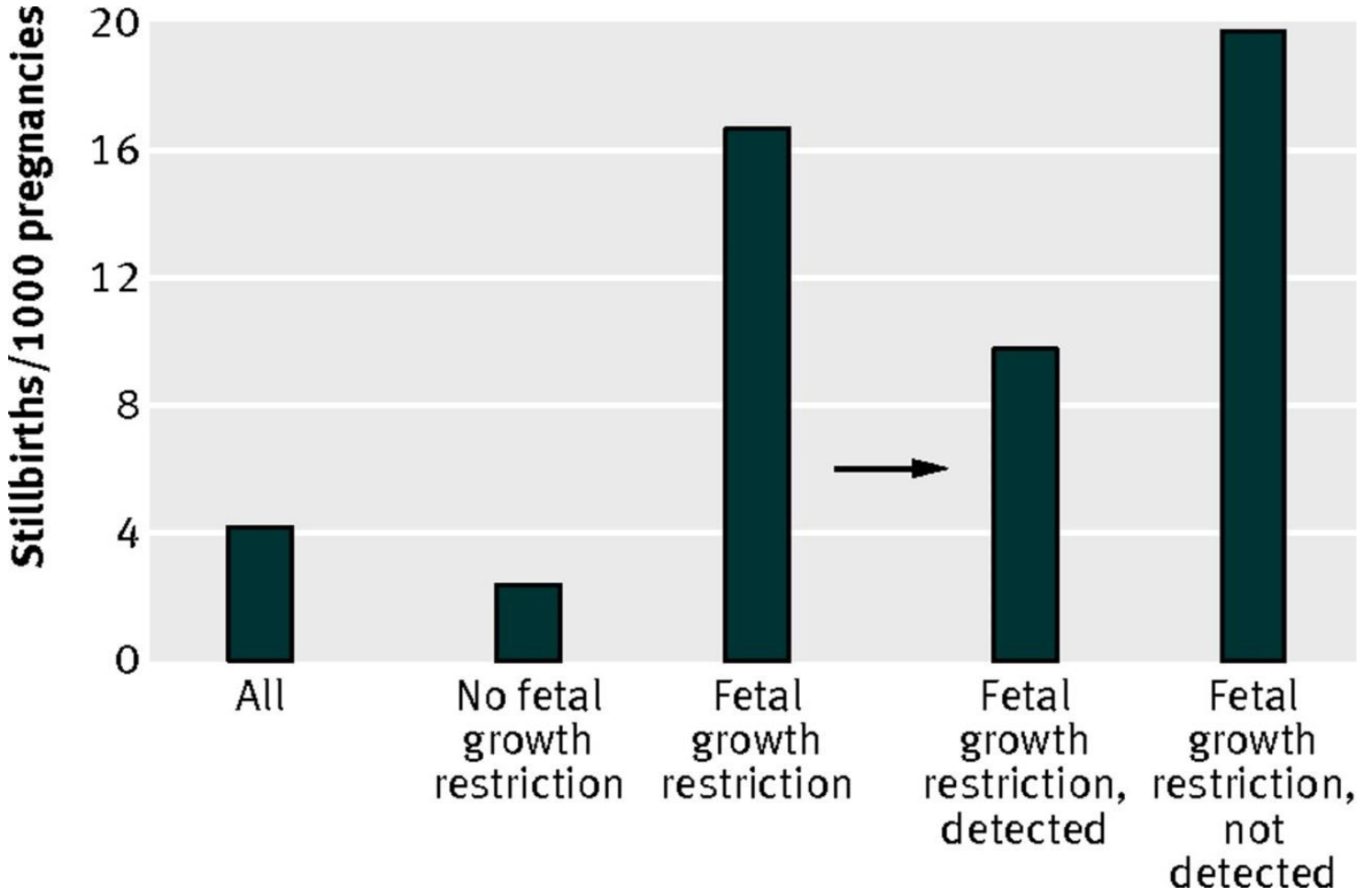


Australian Institute of Health and Welfare 2018. Perinatal deaths in Australia: 2013–2014. Cat. no. PER 94. Canberra: AIHW.

Note: Data for this figure, including the stillbirth and neonatal death components, are available in Supplementary Table A5 <https://www.aihw.gov.au/reports/mothers-babies/perinatal-deaths-in-australia-2013-2014/data>.

Figure 3.1: Perinatal deaths by birthweight percentiles, Australia, 2013–2014

Fetal growth restriction: why worry?



Gardosi J, Madurasinghe V, Williams M, Malik A, Francis A. Maternal and fetal risk factors for stillbirth: population-based study. BMJ 2013 Jan 24; 346: f108.

Fetal growth restriction: risk factor assessment

Maternal age > 35

Nulliparity

IVF singleton pregnancy

Indigenous ethnicity

Substance use: smoking, drugs

BMI > 30

Previous late (>32 weeks)
FGR/SGA and/or pre eclampsia

PAPP A < 0.4 MoM

Antepartum haemorrhage

Congenital infection

"High risk" factors:

Previous early (< 32 weeks)
FGR/SGA baby and/or pre eclampsia

Previous stillbirth with FGR/SGA

Maternal medical conditions:

- Anti-phospholipid syndrome
- Renal impairment
- Chronic hypertension
- Diabetes with vascular disease

Symphyseal fundal height assessment

- Symphyseal fundal height (SFH) refers to the distance measured in centimetres on the longitudinal axis of the abdomen from the **top of the fundus** to the **top of the symphysis pubis**

- It is simple, inexpensive, and can be used in any setting

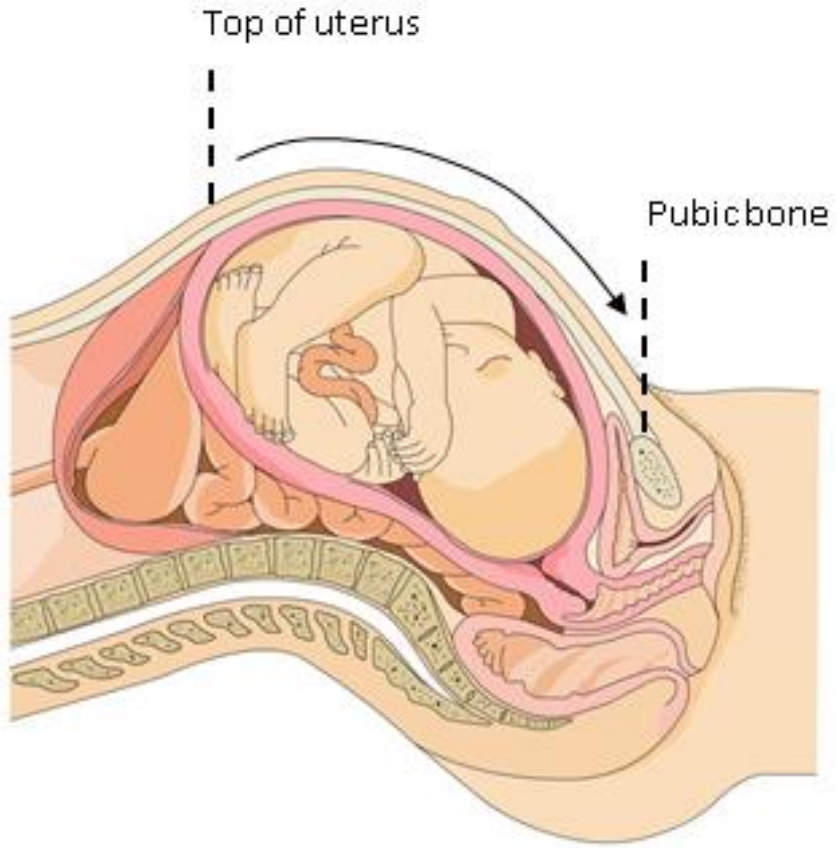
However . . .

- It is subject to clinician bias, inter- and intra-observer errors, and thus variable detection rates for FGR

Symphyseal fundal height assessment

Standardised technique:

- From 24 weeks
- Consent
- Empty bladder (if full/uncomfortable)
- Position comfortably in semi-recumbent position (with wedge if required)
- Hand hygiene
- Fundus first
- To top of symphysis pubis
- Tape markings facing away
- Measure once only



Acting on symphyseal fundal height assessment

- Abdominal palpation alone should **not** be used for assessment of fetal size and/or growth
- **Ultrasound** assessment of fetal growth should be undertaken if:
  - SFH <10th centile
  - Static growth
  - Slow growth

- **KEY POINT**: Women with high **BMI**, or who have large uterine **fibroids**, are unsuitable for SFH and ultrasound should be considered

Acting on symphyseal fundal height assessment

- **KEY POINT**: Songraphic estimation of fetal weight is simply a snapshot in time, and does **not** necessarily predict **future growth velocity**
  - A fetus on the 30th% at 36 weeks can very easily become **SGA** through fetal growth restriction by 40 weeks
  - Important to continue **clinical** assessment of **fetal growth** after the last ultrasound.

Diagnostic aspects of FGR

Investigation	Description	Suggestive of FGR
Fetal biometry by ultrasound	• Abdominal circumference (AC) • Head circumference (HC) • Biparietal diameter (BPD) • Femur length (FL) • Estimated fetal weight (EFW)	EFW or AC <10th centile (severe FGR <3rd centile)
Amniotic fluid volume (AFV)	Measured by the single deepest vertical pocket (DVP) of amniotic fluid	DVP <2cm
Umbilical artery Doppler (UAD)	Measures resistance to blood flow in the umbilical artery and placenta	UA PI>95th centile, absent or reverse end diastolic flow (AREDF)
Cardiotocography (CTG)	Continuous recording of fetal heart rate and uterine activity	Non-reassuring or pathological CTG trace
Enquiry about fetal movements	Ask each woman to identify her baby's normal pattern of movements	Maternal concern about strength or frequency of fetal movement. This overrides any definition of decreased fetal movement (DFM)

Management principles for suspected FGR

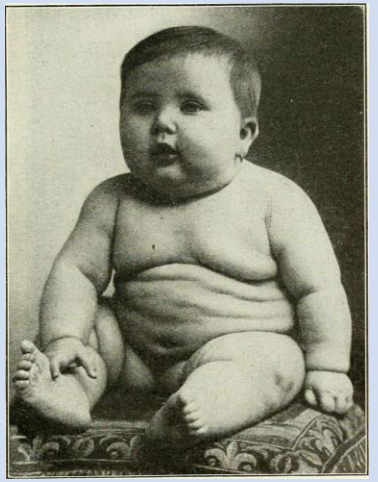
- **Investigate** for a cause (where appropriate)
- Assess for **associated** maternal conditions, esp. pre-eclampsia
- Develop a plan for **surveillance** (where appropriate)
- Initiate planning for **birth** with the woman
- Including **timing**, **mode**, **location** and **team**
- Send the placenta for **histopathology** and arrange postnatal debrief / review

Large for gestational age

- Generally defined as EFW or birthweight > 90th%
  - Again, which chart?
- **Macrosomia** is generally defined as a birthweight of greater than 4000 or 4500 g
  - Can only be diagnosed after birth
- Ultrasound does **not** perform well in identifying macrosomia:
  - sensitivity of **56%** and a specificity of **92%** for predicting birth weight more than 4000 g

Robinson R, Walker KF, White VA, Bugg GJ, Snell KIE, Jones NW. The test accuracy of antenatal ultrasound definitions of fetal macrosomia to predict birth injury: A systematic review. Eur J Obstet Gynecol Reprod Biol. 2020 Mar;246:79-85.

Large for gestational age: risk factors

Maternal	Fetal
• Pre-existing diabetes or gestational diabetes • Race • Pre-pregnancy body mass index (BMI)/ maternal obesity • Prior history of LGA/macrosomia • Maternal age > 30yr • High parity • Post term pregnancy • Excessive maternal weight gain.	• Male infant • Fetal overgrowth syndromes, e.g. Beckwith-Wiedemann 

RANZCOG Clinical Guidance Statement: Diagnosis and management of suspected fetal macrosomia. Melbourne, 2021

Large for gestational age: risks

Maternal	Fetal

• Caesarean birth
• Shoulder dystocia
• Post-partum haemorrhage
• Obstetric anal sphincter injury
	• Shoulder dystocia
	  • Clavicular fracture
	  • Brachial plexus injury
	  • HIE
	  • Death
	• Low 5-minute Apgar score
	• Admission to neonatal nursery
	• Hypoglycaemia
	• Obesity and metabolic syndrome in later life

RANZCOG Clinical Guidance Statement: Diagnosis and management of suspected fetal macrosomia. Melbourne, 2021

Large for gestational age: reducing the risks

Recommendation 3	Grade
The benefit of induction of labour before 39+0 weeks of gestation in the presence of ultrasound confirmed fetal macrosomia of EFW >95th centile (namely, reduction of clinically significant shoulder dystocia and fractures in the neonate) must be weighed against the challenges with the ultrasound diagnosis of fetal macrosomia as well as the short-term and long-term outcomes for babies born before 39+0 weeks gestation.	Evidence based Recommendation Level B
Good Practice Point	
The principles of Shared Decision Making (SDM) should be applied to make individualised plans for timing of birth in partnership with the woman taking into consideration the full clinical picture. The discussion including risks, benefits, options and recommendations should be clearly documented.	

RANZCOG Clinical Guidance Statement: Diagnosis and management of suspected fetal macrosomia. Melbourne, 2021

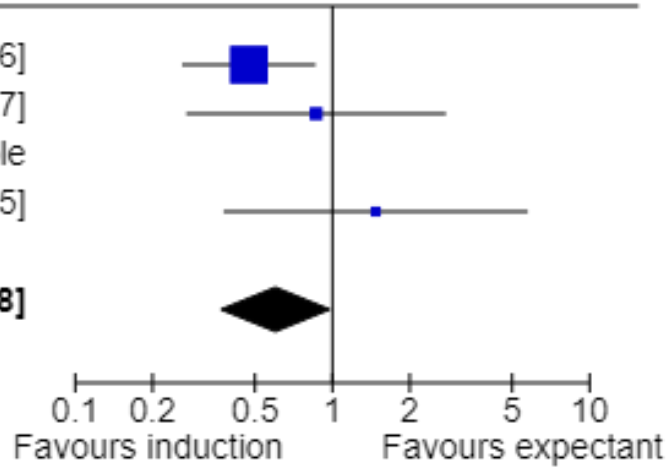
Large for gestational age: reducing the risks

Study or Subgroup	Induction Events	Induction Total	Expectant Events	Expectant Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Boulvain 2015 (1)	15	407	32	411	78.5%	0.47 [0.26 , 0.86]
Gonen 1997	5	134	6	139	14.5%	0.86 [0.27 , 2.77]
LIBBY 1998	0	30	0	29		Not estimable
Tey 1995	4	19	3	21	7.0%	1.47 [0.38 , 5.75]
Total (95% CI)		**590**		**600**	**100.0%**	**0.60 [0.37 , 0.98]**
Total events:	24		41			

Heterogeneity: Chi² = 2.65, df = 2 (P = 0.27); I² = 25%

Test for overall effect: Z = 2.05 (P = 0.04)

Test for subgroup differences: Not applicable



Outcome = shoulder dystocia

Footnotes

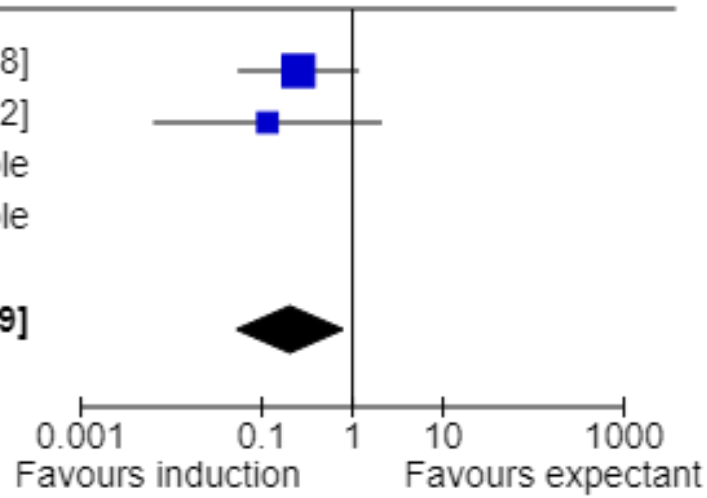
(1) Any shoulder dystocia

Boulvain M, Thornton JG. Induction of labour at or near term for suspected fetal macrosomia. Cochrane Database Syst Rev. 2023 Mar 8;3(3):CD000938.

Large for gestational age: reducing the risks

Study or Subgroup	Induction Events	Total	Expectant management Events	Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Boulvain 2015	2	407	8	411	64.3%	0.25 [0.05 , 1.18]
Gonen 1997	0	134	4	139	35.7%	0.12 [0.01 , 2.12]
LIBBY 1998	0	30	0	29		Not estimable
Tey 1995	0	19	0	21		Not estimable
Total (95% CI)		**590**		**600**	**100.0%**	**0.20 [0.05 , 0.79]**
Total events:	2		12			

Heterogeneity: Chi² = 0.22, df = 1 (P = 0.64); I² = 0%
Test for overall effect: Z = 2.30 (P = 0.02)
Test for subgroup differences: Not applicable



Outcome = any fracture

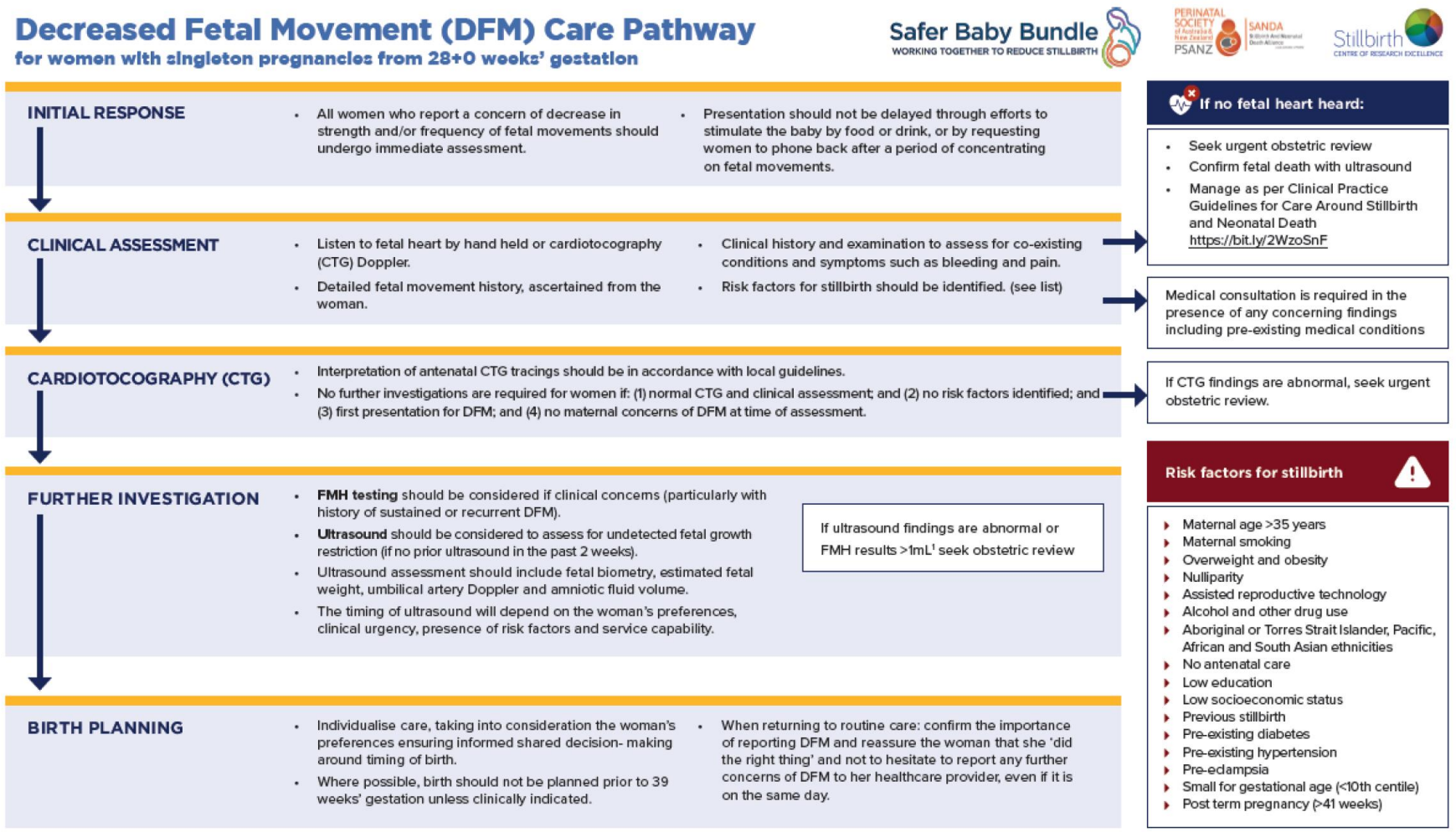
Boulvain M, Thornton JG. Induction of labour at or near term for suspected fetal macrosomia. Cochrane Database Syst Rev. 2023 Mar 8;3(3):CD000938.

Large for gestational age: reducing the risks

Recommendation 4	Grade
Although the prediction of macrosomia is imprecise, elective caesarean birth may be beneficial for newborns with suspected macrosomia who have an estimated fetal weight of 5000g or more in women without diabetes and an estimated fetal weight of 4500g or more in women with diabetes.	Consensus based Recommendation
Recommendation 5	**Grade**
Pregnant women with suspected macrosomia should be provided with individualised counselling about the risks and benefits of vaginal birth and caesarean section based on their individual clinical circumstances. This discussion should be clearly documented. A plan for mode of birth should be made using the principles of SDM.	Consensus based Recommendation

RANZCOG Clinical Guidance Statement: Diagnosis and management of suspected fetal macrosomia. Melbourne, 2021

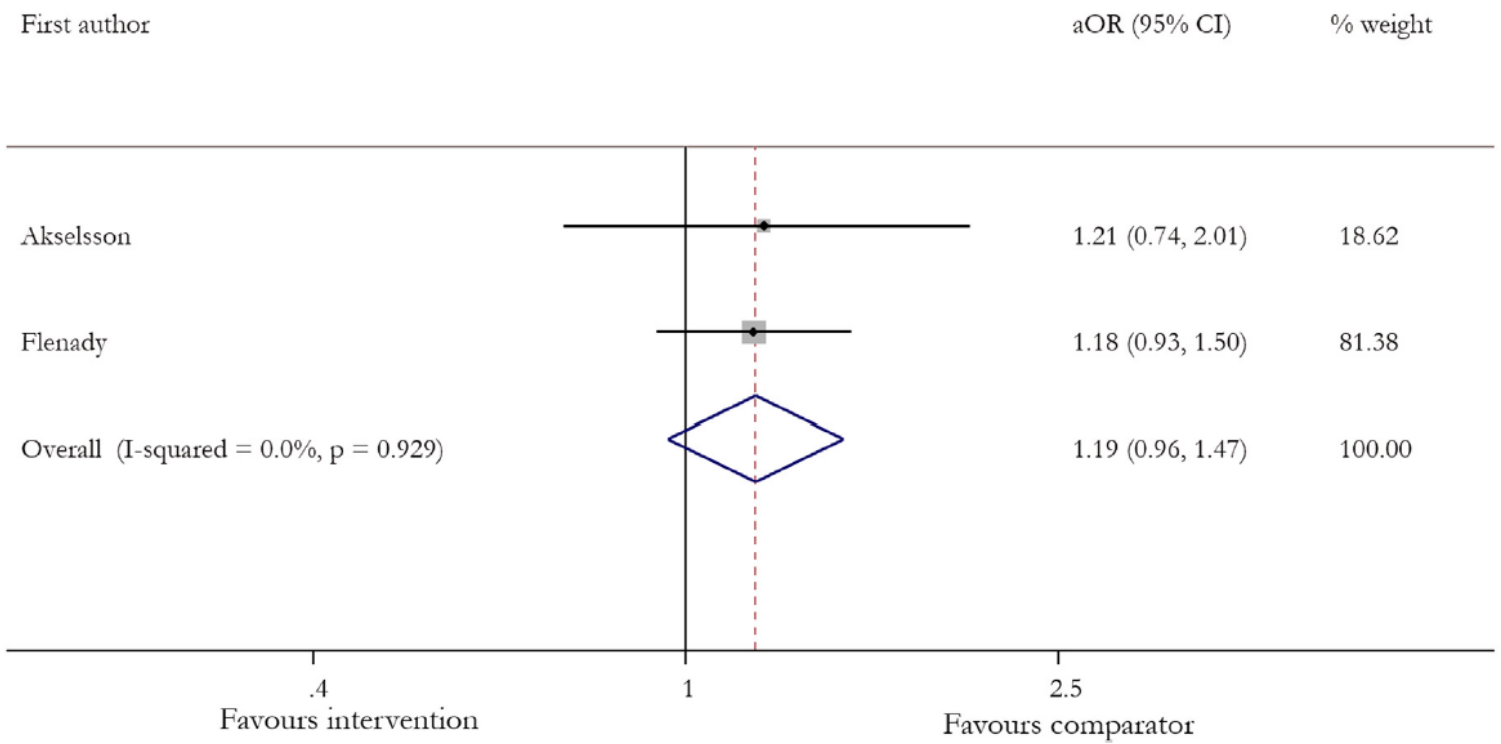
Decreased fetal movements



PSANZ and Stillbirth CRE. Clinical practice guideline for the care of women with decreased fetal movements for women with a singleton pregnancy from 28 weeks' gestation. Centre of Research Excellence in Stillbirth. Brisbane, Australia, September 2019.

Decreased fetal movements

FIGURE 2
Effect of encouraging awareness of fetal movement on stillbirth



Forest plot showing the effect estimates for stillbirth from studies aimed at encouraging awareness of fetal movement.

aOR, adjusted odds ratio; *CI*, confidence interval.

Hayes DJL, Dumville JC, Walsh T et al. Effect of encouraging awareness of reduced fetal movement and subsequent clinical management on pregnancy outcome: a systematic review and meta-analysis. Am J Obstet Gynecol MFM. 2023 Mar; 5(3): 100821.

Decreased fetal movements

Recommendation 2		
a. All women who contact their health care provider with a concern about fetal movements should be invited to the health service for immediate assessment.	6,9,16	**C**
b. Presentation should not be delayed through efforts to stimulate the baby with food or drink or by requesting women to phone back after a period of concentrating on fetal movements.	21,22	**√**
Recommendation 3		
a. Maternal concern of DFM overrides any definition of DFM based on numbers of fetal movements.	9,16,23	**√**
b. The use of kick-charts is not currently recommended as part of routine antenatal care.	24	**B**

PSANZ and Stillbirth CRE. Clinical practice guideline for the care of women with decreased fetal movements for women with a singleton pregnancy from 28 weeks' gestation. Centre of Research Excellence in Stillbirth. Brisbane, Australia, September 2019.

Intrahepatic cholestasis of pregnancy (ICP)

- Characterised by **pruritis**, **elevated transaminases** and **elevated serum bile acids**
- Most common pregnancy-specific liver disorder
  - Incidence varies widely with geography and by season
- More common in those with pre-existing liver disease (e.g. hepatitis C)
- Onset in second and third trimester

Intrahepatic cholestasis of pregnancy

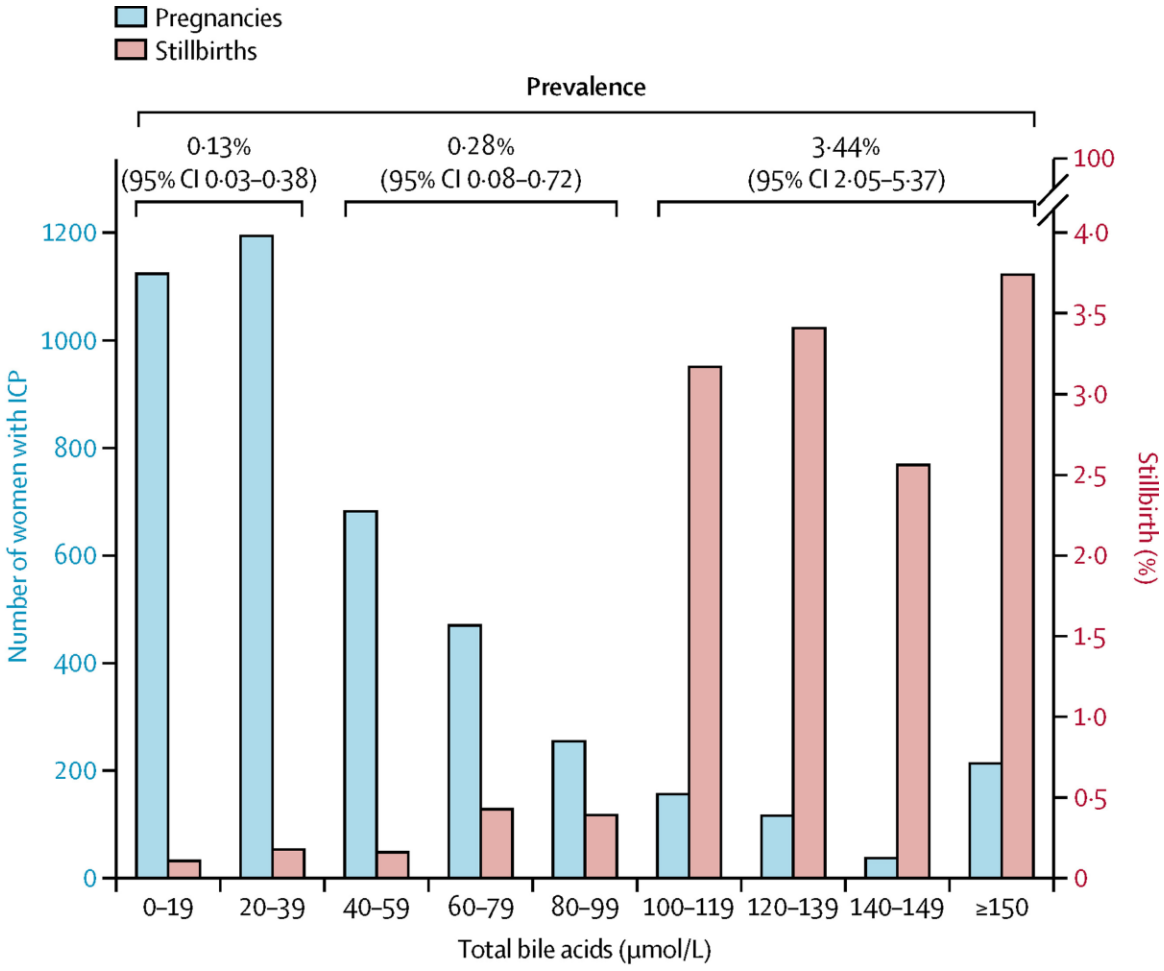
- **KEY POINT:** Bile acids should be assessed **non-fasting** rather than fasting
  - May be artificially low if non-fasting
- **KEY POINT:** ICP is **not** associated with a rash/skin lesions apart from excoriations and scratch marks
- **KEY POINT:** The cardinal feature of ICP – **pruritis** – helps distinguish ICP from other causes of elevated transaminases in pregnancy

Intrahepatic cholestasis of pregnancy: risks

- Iatrogenic **preterm** birth
  - (OR 3.65, 95% CI 1.94-6.85)
- Spontaneous **preterm** birth
  - (13.4 versus 4 percent; OR 3.47, 95% CI 3.06-3.95)
- **Meconium-stained** amniotic fluid
  - (18.7 versus 10.8 percent; OR 2.60, 95% CI 1.62-4.16)
- Neonatal intensive care unit (**NICU**) admission
  - (OR 2.12, 95% CI 1.48-3.03)
- **Stillbirth**
  - (0.91 versus 0.32 percent; odds ratio [OR] 1.46, 95% CI 0.73-2.89)

Ovadia C, Seed PT, Sklavounos A et al. Association of adverse perinatal outcomes of intrahepatic cholestasis of pregnancy with biochemical markers: results of aggregate and individual patient data meta-analyses. Lancet. 2019 Mar 2;393(10174):899-909.

Intrahepatic cholestasis of pregnancy: risks



Ovadia C, Seed PT, Sklavounos A et al. Association of adverse perinatal outcomes of intrahepatic cholestasis of pregnancy with biochemical markers: results of aggregate and individual patient data meta-analyses. Lancet. 2019 Mar 2;393(10174):899-909.

Intrahepatic cholestasis of pregnancy: treatment

- Mainstay of therapy is **ursodeoxycholic acid (UDCA)**
  - Consistently reduces pruritic scores
  - Consistently improves bile acid and transaminase levels
  - Trend toward fewer stillbirths and preterm births
  - No adverse fetal/neonatal impacts
- **KEY POINT:** UDCA can be very expensive: arranging prescription through public hospital pharmacy may be more cost effective for patients

Ovadia C, Sajous J, Seed PT et al. Ursodeoxycholic acid in intrahepatic cholestasis of pregnancy: a systematic review and individual participant data meta-analysis. Lancet Gastroenterol Hepatol. 2021 Jul;6(7):547-558.

Intrahepatic cholestasis of pregnancy: treatment

TURRIFIC trial

TURRIFIC is the **T**rial of **UR**sodeoxycholic acid versus **RIF**ampicin in severe early onset **I**ntrahepatic **C**holestasis of pregnancy: the TURRIFIC study.

Who is heading this trial?

Professor Bill Hague, a researcher and obstetric physician in Adelaide, is leading the trial from The Robinson Research Institute of The University of Adelaide, and you can find a link to it here. Recruitment is taking place in Sweden and Finland, as well as in the UK. The trial is also registered here: https://www.clinicaltrialsregister.eu/ctr-search/trial/2018-004011-44/FI.

What will this trial do?

This trial was started in 2019 and the main objective is to compare the effectiveness of reducing itch between ursodeoxycholic acid (UDCA), the most commonly used medication to treat intrahepatic cholestasis of pregnancy (ICP), with rifampicin (RIF), which is less commonly used.

Secondary objectives are:

1. To compare the effect of RIF treatment with UDCA on short-term outcomes for both mother and infant including the length of gestation and the incidence of caesarean section and preterm birth
2. To compare the effect of RIF treatment with UDCA on serum concentrations of: bile acids, transaminases, and on metabolites such as serum autotaxin and progesterone sulphated metabolites, and urine glucuronidated 6α-hydroxylated BA.
3. To assess the effect of RIF and UDCA on the metabolome and the gut microbiome
4. To assess the effect of treatment with RIF compared with UDCA on maternal and fetal outcomes analysed by bile acid transporter genotype.

Hague WM, Callaway L, Chambers J et al. A multi-centre, open label, randomised, parallel-group, superiority Trial to compare the efficacy of URsodeoxycholic acid with RIFampicin in the management of women with severe early onset Intrahepatic Cholestasis of pregnancy: the TURRIFIC randomised trial. BMC Pregnancy Childbirth. 2021 Jan 12;21(1):51.

Intrahepatic cholestasis of pregnancy: birth

- Peak bile acids 19 to 39 micromol/L and no other risk factors, the risk of stillbirth is similar to the background risk.
- Peak bile acids 40 to 99 micromol/L and no other risk factors, the risk of stillbirth is similar to the background risk until 38 to 39 weeks of gestation.
  - Consider planned birth at 38 to 39 weeks of gestation.
- Peak bile acids ≥100 micromol/L, the risk of stillbirth is higher than the background risk.
  - Consider planned birth at 35 to 36 weeks of gestation.

Girling J, Knight CL, Chappell L; Royal College of Obstetricians and Gynaecologists. Intrahepatic cholestasis of pregnancy: Green-top Guideline No. 43 June 2022. BJOG. 2022 Dec;129(13):e95-e114.

Key points in pregnancy hypertension

1	Women with hypertension in pregnancy (Systolic BP ≥140 and/or diastolic BP ≥90mmHg) should be assessed for a diagnosis of a hypertensive disorder of pregnancy (HDP) – preeclampsia, gestational hypertension, chronic hypertension, super-imposed preeclampsia, white coat hypertension or masked hypertension[1]. (Part 1)*
2	All women should be assessed in the first trimester for their risk of developing preeclampsia, at a minimum, with clinical parameters (history and blood pressure assessment). Where available, combined first trimester screening, including uterine artery Doppler together with biomarkers, may enhance the risk assessment[2]. (Part 2)*
3	Initiate preventative strategies if a woman is identified to be at high-risk of preeclampsia. Preventative measures proven to be beneficial include: commencing aspirin 150mg daily (taken at night/bedtime) prior to 16 weeks of gestation, supplemental calcium (where assessed dietary calcium intake is <1g/day) and undertaking aerobic exercise as recommended as part of routine pregnancy well-being[3]. (Part 3)*
4	Proteinuria in pregnancy should ideally be assessed with a spot (random) urinary assessment rather than dipstick assessment alone. If dipstick assessment is the initial means of assessment, proteinuria should be confirmed with laboratory quantification. A urinary protein:creatinine ratio with a cut off of ≥30mg/mmol or where this is unavailable, a spot albumin:creatinine ratio with a cut off of ≥8mg/mmol can be used to diagnose proteinuria in pregnancy[4]. (Part 4)*
5	An angiogenic biomarker (sFlt-1/PlGF ratio) result of ≤38, used after 20 weeks gestation in conjunction with clinical assessment, can be used to rule out preeclampsia within 1-4 weeks of testing in symptomatic women where there is a clinical suspicion of preeclampsia. The sFlt-1/PlGF ratio should not replace clinical assessment. The use of the sFlt-1/PlGF ratio for diagnosis of preeclampsia, predictingdelivery or fetal outcomes and routine testing in asymptomatic women is not recommended until more data is available[5]. (Part 4)*

SOMANZ Hypertension in Pregnancy Guideline 2023.

Key points in pregnancy hypertension

6	Women with gestational hypertension or chronic hypertension should have blood pressure controlled to a target of ≤135/85mmHg. This has been shown to be maternally beneficial without adverse effects to the fetus[6]. (Part 5)*
7	Home blood pressure monitoring or ambulatory blood pressure assessment [when assessed with validated machines] can be used to diagnose white coat or masked hypertension. Home blood pressure monitoring can be safely utilised in women with chronic or gestational hypertension with appropriate counselling but should not replace the minimum frequency of antenatal review based on the clinical scenario[7]. (Part 5)*
8	Where clinically possible, women with preeclampsia should have delivery initiated at ≥37 weeks gestation. At less than 37 weeks, delivery should be planned based on the clinical scenario with consideration for corticosteroids and magnesium sulphate in women at risk of early preterm delivery[8]. (Part 6)*
9	Non-steroidal anti-inflammatory drugs (NSAIDs) should be avoided in the immediate post-partum period. In the absence of an alternative analgesic agent, the use of NSAIDs should be limited to short-term inpatient usage[9].(Part 7)*
10	Women should be informed of the longer-term risks associated with HDP (e.g. hypertension, cardiovascular disease, stroke, kidney disease). Strategies to optimise their future cardiometabolic profile and prevent preeclampsia/gestational hypertension in subsequent pregnancies should start prior to discharge and be ongoing. Women with a HDP postpartum should have an assessment of abnormalities identified in pregnancy (eg proteinuria, hypertension). Persisting clinical and biochemical abnormalities should be further evaluated and managed as appropriate[10]. (Part 8)*

SOMANZ Hypertension in Pregnancy Guideline 2023.

Key points in pregnancy hypertension: treatment

Target BP ≤ 135/85

FIRST LINE^†

Antihypertensives	Class of agent	Dose (Start from low dose and titrate as required)	Caution
Oral methyldopa	Alpha blocker	250-750mg three to four times a day	Avoid in women with a history of depression, anxiety or postpartum depression
*Oral clonidine	Alpha blocker	75-300 micrograms three to four times a day	Risk of rebound hypertension with sudden withdrawal
Oral labetalol	Beta blocker	100-400mg three to four times a day	Avoid in women with a history of asthma or chronic airway limitation
Oral nifedipine SR	Calcium channel blocker	20-60mg (slow release) twice a day	Avoid in women with aortic stenosis, may cause peripheral oedema
*Oral nifedipine IR	Calcium channel blocker	10-30mg (immediate release) three times a day	Avoid in women with aortic stenosis, may cause peripheral oedema
Oral hydralazine	Vasodilator	12.5-50mg three to four times a day	May cause headache, tachycardia if given as first line (without concurrent alpha, beta or calcium blockade)

SECOND & THIRD LINE	Consider adding a second or third agent from another class (Second line agent can be initiated prior to reaching the maximum dose of the first line agent)

SOMANZ Hypertension in Pregnancy Guideline 2023.

Pharmaceuticals in pregnancy: a multifaceted challenge in Australia

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doi: 10.5694/mja2.52421

Recent supply constraints for labetalol, immediate-release nifedipine and misoprostol tablets in Australia have highlighted pregnant women's vulnerability to critical medication supply disruptions, and underscored the broader structural disadvantage this population faces in accessing effective, evidence-based pharmaceutical agents. In this perspective article, we summarise key challenges underpinning this disadvantage and propose some solutions.

Exclusion of pregnant women and women of childbearing age from clinical trials

Drug companies and regulatory authorities worldwide have demonstrated a longstanding reluctance to study the effects of medications in pregnancy and women of reproductive age. Consequently, these women are significantly under-represented in pharmacological clinical trials.[1] The thalidomide tragedy exemplifies the capacity for medications to cause birth defects. However, not developing new agents to treat medical conditions in pregnancy also causes harm by denying pregnant women pharmacotherapeutic advances enjoyed by other populations.

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic reinforced this disadvantage: despite their greater risk of coronavirus disease 2019 (COVID-19)-related morbidity and mortality, pregnant women were systematically excluded from trials of vaccines and medical therapies,[2] resulting in fewer therapeutic options for this more vulnerable group. Conversely, a recent trial of maternal sildenafil therapy for fetal growth restriction (FGR) highlights the importance of research in guiding evidence-based perinatal practice.[3] In the absence of an alternative effective treatment, and given the biological plausibility of benefit, sildenafil was used off-label for FGR, but the STRIDER trial identified a potential excess risk of fatal neonatal persistent pulmonary hypertension, without FGR survival benefit. Sildenafil use in FGR thus cannot be justified.[4]

Indemnity costs and medicolegal concerns are only partially responsible for the reluctance to include pregnant women in therapeutic trials.[5] These considerations need to be reframed with reference to the inequity and risks of not including them.[6]

We have a narrow spectrum of medications known to be safe and efficacious for use in pregnancy. These medications tend to be old, off-patent, and — in Australia — are often used off-label, as sponsoring pharmaceutical companies have not sought to have them registered for treatment of pregnancy-specific conditions. For example, in contrast to the more than 50 antihypertensive agents available to the non-pregnant population, the *Hypertension in pregnancy guideline 2023*,[7] published by the Society of Obstetric Medicine of Australia and New Zealand (SOMANZ) and endorsed by the National Health and Medical Research Council (NHMRC), identifies only six medications with adequate safety and efficacy data in pregnancy for treating gestational high blood pressure, and of these six medications, all are more than 30 years old. Furthermore, exclusion of pregnant women from clinical trials has resulted in limited evidence about pharmacokinetics in pregnancy, thereby increasing the chance of inappropriate (usually inadequate) dosing due to fears of harm.

In addition to clinical trials, robust post-marketing surveillance systems (eg, the United States Food and Drug Administration's pregnancy exposure registries) have an important role in ensuring medications used in pregnancy are safe, as many adverse pharmacotherapy-related pregnancy outcomes are rare, so may not be identified in a randomised controlled trial unless it is very large.[8]

Sponsor-driven registration and regulation of medications

Many agents used frequently in maternity care, such as nifedipine for tocolysis and misoprostol for postpartum haemorrhage, have never been registered for these purposes in Australia, despite featuring in national and international clinical practice guidelines.[9,10] Indeed, pregnancy is a listed contraindication for immediate-release nifedipine, despite it being a first-line agent for treating both hypertension[7] and preterm labour.[11] Australia's pharmaceutical milieu generally relies on a commercial sponsor seeking registration of a medicine with the Therapeutic Goods Administration (TGA), with the sponsor's proposed list of indications (and pregnancy safety categorisation) applied once the agent is registered. Consequently, off-label indications — despite the evidence — are not well appreciated, and pharmaceutical companies can (with some justification) claim that decisions to remove certain agents from the market are acceptable because better, newer agents are available for the officially registered indications.

Substantial efficacy and safety evidence has accumulated over time for the agents we use in pregnancy, and these older drugs are often cheap with generic equivalents available. Indeed, the appropriate use of old, cheap drugs should be promoted by health systems and their funders. However, these agents are understandably unattractive to commercial sponsors given their negligible or non-existent profit margins, small Australian market, and high entry costs of registration and importation. These drugs are thus vulnerable to withdrawal on commercial grounds with no readily identifiable public-interest importer to fill the gap, as has occurred recently with immediate-release nifedipine.

Key points in pregnancy hypertension: postpartum

< 6 weeks postpartum

- Blood pressure assessment
- Non-steroidal anti-inflammatory avoidance (where possible)
- Adherence to antihypertensives
- Screen for features of postpartum depression and/or anxiety. The Edinburgh Postnatal Depression Scale (EPDS) can be used as an initial screening tool

3-6 months postpartum

- Blood pressure assessment with a 24-hour blood pressure monitor where possible
  - Consider further assessment for a secondary hypertension screen +/- specialist review if blood pressure remains ≥130/80mmHg (ABPM), ≥140/90mmHg (clinic blood pressure assessment) or if remains on antihypertensives
  - Encourage lifestyle measures if BP is noted to be persistently > 120/80mmHg
- Assess for normalisation of abnormal laboratory-based results
  - Consider further assessment +/- specialist review for persistently abnormal renal function, urine microalbumin to creatinine ratio (uACR), urine protein to creatinine ratio (uPCR), liver function or haematological parameters.
- Screen for features of postpartum depression and/or anxiety
  - Consider a combination of non-pharmacological and pharmacological intervention
- Metabolic screen: BMI, fasting cholesterol and fasting blood glucose level assessment
  - Consider a combination non-pharmacological and pharmacological interventions in addressing abnormal metabolic features
- Discuss future pregnancies: importance of pre-conception care and early preeclampsia prophylactic intervention (i.e: aspirin, regular exercise, dietary +/- supplemental calcium)
- Discuss contraception where relevant (where there is need for medical optimisation) prior to next pregnancy)
- Explain future cardiovascular, metabolic and renal risk factors.

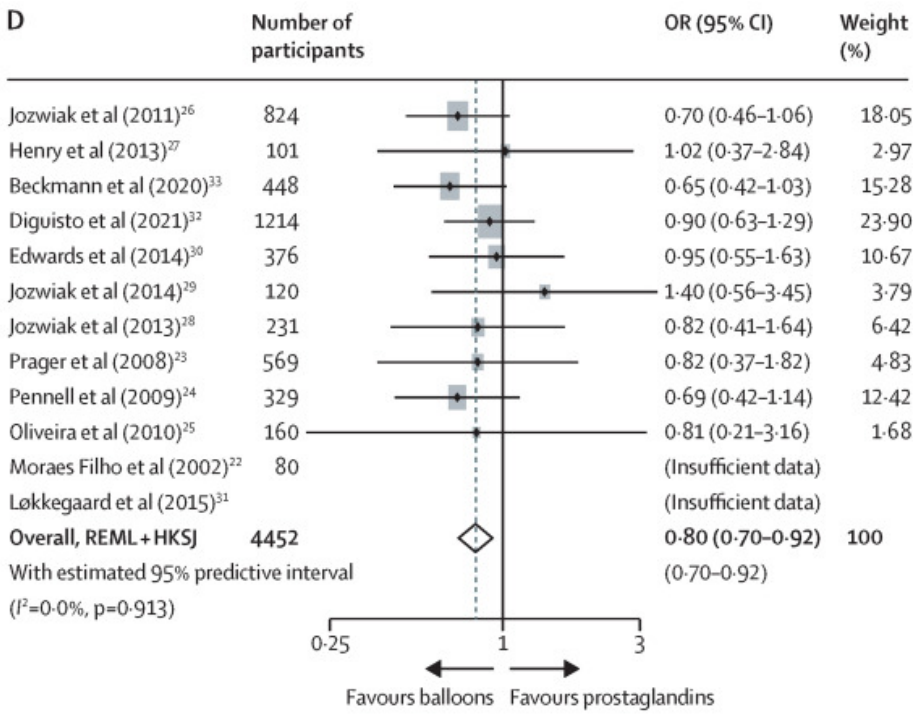
Yearly review

- Reassessment of metabolic, cardiovascular and renal risk factors (BP, weight, lipid and glycaemic profile, urine protein analysis)
- Discuss future pregnancies: importance of pre-conception care and early preeclampsia prophylactic intervention (i.e. aspirin, regular exercise, dietary +/- supplemental calcium)
- Explain future cardiovascular, metabolic and renal risk factors

SOMANZ Hypertension in Pregnancy Guideline 2023.

Induction of labour: what's new

- Increasing trend toward **outpatient** cervical ripening with **balloon catheters**: reduced composite adverse perinatal outcome



Jones MN, Palmer KR, Pathirana MM at el. Balloon catheters versus vaginal prostaglandins for labour induction (CPI Collaborative): an individual participant data meta-analysis of randomised controlled trials. Lancet. 2022 Nov 12; 400(10364): 1681-1692.

Induction of labour: what's new

- Low-dose **misoprostol** is now available (25 mcg)

Kerr RS, Kumar N, Williams MJ, Cuthbert A, Aflaifel N, Haas DM, Weeks AD. Low-dose oral misoprostol for induction of labour. Cochrane Database Syst Rev. 2021 Jun 22;6(6):CD014484.

Joint statement between Stillbirth CRE and APTBPA

For most women, **planned birth** can be **delayed safely** until **39 weeks** or beyond, or to await spontaneous onset of labour.

In the absence of an agreed reason for early planned birth, women should be encouraged to continue their pregnancy until 39 weeks or later to enable the baby to develop fully.

Birth **before** this time **cannot** normally be justified for social reasons alone

https://learn.stillbirthcre.org.au/wp-content/uploads/2023/08/SBB_Timing-of-Birth-Joint-Statement_20Mar1333-1.pdf

WHO recommends IOL by 41 weeks

▶ Induction of labour in women at or beyond term

Evidence summary

Evidence related to induction of labour at term and beyond term was extracted from one Cochrane systematic review of 22 randomized controlled trials *(10)*. Most of the trials were judged by the Cochrane review authors to likely have a moderate risk of bias, largely due to unclear concealment of allocation and generation of the sequence of randomization. The trials had evaluated the effect of inducing labour at 37–40 weeks, 41 completed weeks, and 42 completed weeks of gestation, and the intervention was compared with expectant management with fetal monitoring at varying intervals.

There were no statistical and clinical differences in the priority comparisons and outcomes, except for a reduction in perinatal deaths when labour was induced at 41 completed weeks. A total of 12 studies had compared the incidence of perinatal deaths at 41 weeks. The total number of women included in this comparison (labour induction versus expectant management with fetal monitoring at 41 completed weeks) was 6274. Only eight perinatal deaths occurred in the 12 trials, all in the expectant management group. The resulting relative risk (RR) was 0.27, with the 95% confidence interval (CI) being 0.08–0.98 (EB Table 1.1.1).

Recommendations

1. Induction of labour is recommended for women who are **known with certainty** to have reached 41 weeks (> 40 weeks + 7 days) of gestation.
   (Low-quality evidence. Weak recommendation.)
2. Induction of labour is not recommended for women with an uncomplicated pregnancy at gestational age less than 41 weeks.
   (Low-quality evidence. Weak recommendation.)

Remarks

1. Recommendation No. 1 above does not apply to settings where the gestational age cannot be estimated reliably.
2. There is insufficient evidence to recommend induction of labour for uncomplicated pregnancies before 41 weeks of pregnancy.

https://apps.who.int/iris/bitstream/handle/10665/44531/9789241501156_eng.pdf?sequence=1&isAllowed=y

IOL by 41 weeks

- IOL group: no perinatal deaths (0%)
- Expectant group: six perinatal deaths (5 stilbirths & 1 NND) (0.4%)
- NNT to avoid one perinatal death is 230

Induction of labour at 41 weeks versus expectant management and induction of labour at 42 weeks (SWEdish Post-term Induction Study, SWEPIS): multicentre, open label, randomised, superiority trial

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Additional material is published online only. To view please visit the journal online.

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Accepted: 16 October 2019

ABSTRACT

OBJECTIVE

To evaluate if induction of labour at 41 weeks improves perinatal and maternal outcomes in women with a low risk pregnancy compared with expectant management and induction of labour at 42 weeks.

DESIGN

Multicentre, open label, randomised controlled superiority trial.

SETTING

14 hospitals in Sweden, 2016-18.

PARTICIPANTS

2760 women with a low risk uncomplicated singleton pregnancy randomised (1:1) by the Swedish Pregnancy Register. 1381 women were assigned to the induction group and 1379 were assigned to the expectant management group.

INTERVENTIONS

Induction of labour at 41 weeks and expectant management and induction of labour at 42 weeks.

MAIN OUTCOME MEASURES

The primary outcome was a composite perinatal outcome including one or more of stillbirth, neonatal mortality, Apgar score less than 7 at five minutes, pH less than 7.00 or metabolic acidosis (pH <7.05 and base deficit >12 mmol/L) in the umbilical artery, hypoxic ischaemic encephalopathy, intracranial haemorrhage, convulsions, meconium aspiration syndrome, mechanical ventilation within 72 hours, or obstetric brachial plexus injury. Primary analysis was by intention to treat.

RESULTS

The study was stopped early owing to a significantly higher rate of perinatal mortality in the expectant management group. The composite primary perinatal outcome did not differ between the groups: 2.4% (33/1381) in the induction group and 2.2% (31/1379) in the expectant management group (relative risk 1.06, 95% confidence interval 0.65 to 1.73; P=0.90). No perinatal deaths occurred in the induction group but six (five stillbirths and one early neonatal death) occurred in the expectant management group (P=0.03). The proportion of caesarean delivery, instrumental vaginal delivery, or any major maternal morbidity did not differ between the groups.

CONCLUSIONS

This study comparing induction of labour at 41 weeks with expectant management and induction at 42 weeks does not show any significant difference in the primary composite adverse perinatal outcome. However, a reduction of the secondary outcome perinatal mortality is observed without increasing adverse maternal outcomes. Although these results should be interpreted cautiously, induction of labour ought to be offered to women no later than at 41 weeks and could be one (of few) interventions that reduces the rate of stillbirths.

TRIAL REGISTRATION

Current Controlled Trials ISRCTN26113652.

Benefits of birth at 39 weeks

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Comparison of Maternal Labor-Related Complications and Neonatal Outcomes Following Elective Induction of Labor at 39 Weeks of Gestation vs Expectant Management

A Systematic Review and Meta-analysis

James Hong, MD; Jessica Atkinson, BBiomedSc; Alexandra Roddy Mitchell, MPH; Stephen Tong, PhD; Susan P. Walker, MD; Anna Middleton, MPH; Anthea Lindquist, DPhil; Roxanne Hastie, PhD

Abstract

IMPORTANCE Elective induction of labor at 39 weeks of gestation is common. Thus, there is a need to assess maternal labor-related complications and neonatal outcomes associated with elective induction of labor.

OBJECTIVE To examine maternal labor-related complications and neonatal outcomes following elective induction of labor at 39 weeks compared with expectant management.

DATA SOURCES A systematic review of the literature was conducted using the MEDLINE (Ovid), Embase (Ovid), Cochrane Central Library, World Health Organization, and ClinicalTrials.gov databases and registries to search for articles published between database inception and December 8, 2022.

STUDY SELECTION This systematic review and meta-analysis included randomized clinical trials, cohort studies, and cross-sectional studies reporting perinatal outcomes following induction of labor at 39 weeks vs expectant management.

DATA EXTRACTION AND SYNTHESIS Two reviewers independently assessed study eligibility, extracted data, and assessed studies for bias. Pooled odds ratios (ORs) and 95% CIs were calculated using a random-effects model. This study is reported per the Preferred Reporting Items for Systematic Reviews and Meta-analyses 2020 guideline, and the protocol was prospectively registered with PROSPERO.

MAIN OUTCOMES AND MEASURES Maternal outcomes of interest included emergency cesarean section, perineal injury, postpartum hemorrhage, and operative vaginal birth. Neonatal outcomes of interest included admission to the neonatal intensive care unit, low 5-minute Apgar score (<7) after birth, macrosomia, and shoulder dystocia.

RESULTS Of the 5827 records identified in the search, 14 studies were eligible for inclusion in this review. These studies reported outcomes for 1 625 899 women birthing a singleton pregnancy. Induction of labor at 39 weeks of gestation was associated with a 37% reduced likelihood of third- or fourth-degree perineal injury (OR, 0.63 [95% CI, 0.49-0.81]), in addition to reductions in operative vaginal birth (OR, 0.87 [95% CI, 0.79-0.97]), macrosomia (OR, 0.66 [95% CI, 0.48-0.91]), and low 5-minute Apgar score (OR, 0.62 [95% CI, 0.40-0.96]). Results were similar when confined to multiparous women only, with the addition of a substantial reduction in the likelihood of emergency cesarean section (OR, 0.61 [95% CI, 0.38-0.98]) and no difference in operative vaginal birth (OR,

Key Points

Question What maternal labor-related and neonatal outcomes are experienced following elective induction of labor at 39 weeks of gestation compared with expectant management?

Findings In this systematic review and meta-analysis of 14 studies with more than 1.6 million participants, induction of labor at 39 weeks of gestation was associated with improved maternal labor-related and neonatal complications, including a reduced likelihood of perineal injury, macrosomia, and low 5-minute Apgar score after birth. However, among nulliparous women only, induction of labor was associated with an increased likelihood of shoulder dystocia compared with expectant management.

Meaning These findings suggest that elective induction of labor at 39 weeks may be safe and beneficial for some women; however, potential risks should be discussed with nulliparous women.

+ Supplemental content

Author affiliations and article information are listed at the end of this article.

Benefits of birth at 39 weeks

AP U.S. WORLD POLITICS VIDEO SPOTLIGHT ENTERTAINMENT SPORTS BUSINESS SCIENCE FACT CHECK CLIMA

Labor Day Russia-Ukraine war Metallica postpones concert Burning Man Streal

Helping nature: Inducing labor avoids cesarean for some moms

BY MARILYNN MARCHIONEAP CHIEF MEDICAL WRITER

Published 8:15 AM AEST, August 9, 2018

Share

Move over, Mother Nature. First-time moms at low risk of complications were less likely to need a cesarean delivery if labor was induced at 39 weeks instead of waiting for it to start on its own, a big study found. Their babies fared better, too.

The results overturn the longtime view that inducing labor raises the risk for a C-section, and prompted two leading OB-GYN doctor groups to say it's now reasonable to offer women like those in the study that option.

But only certain pregnant women qualify, and the study did not track how inducing labor affected breastfeeding or other mom-baby issues later. Some groups such as Lamaze International still advocate letting nature take its course rather than giving medicines to make the womb start contracting.

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 AUGUST 9, 2018 VOL. 379 NO. 6

Labor Induction versus Expectant Management in Low-Risk Nulliparous Women

William A. Grobman, M.D., Madeline M. Rice, Ph.D., Uma M. Reddy, M.D., M.P.H., Alan T.N. Tita, M.D., Ph.D., Robert M. Silver, M.D., Gail Mallett, R.N., M.S., C.C.R.C., Kim Hill, R.N., B.S.N., Elizabeth A. Thom, Ph.D., Yasser Y. El-Sayed, M.D., Annette Perez-Delboy, M.D., Dwight J. Rouse, M.D., George R. Saade, M.D., Kim A. Boggess, M.D., Suneet P. Chauhan, M.D., Jay D. Iams, M.D., Edward K. Chien, M.D., Brian M. Casey, M.D., Ronald S. Gibbs, M.D., Sindhu K. Srinivas, M.D., M.S.C.E., Geeta K. Swamy, M.D., Hyagriv N. Simhan, M.D., and George A. Macones, M.D., M.S.C.E., for the Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal–Fetal Medicine Units Network*

ABSTRACT

BACKGROUND

The perinatal and maternal consequences of induction of labor at 39 weeks among low-risk nulliparous women are uncertain.

METHODS

In this multicenter trial, we randomly assigned low-risk nulliparous women who were at 38 weeks 0 days to 38 weeks 6 days of gestation to labor induction at 39 weeks 0 days to 39 weeks 4 days or to expectant management. The primary outcome was a composite of perinatal death or severe neonatal complications; the principal secondary outcome was cesarean delivery.

RESULTS

A total of 3062 women were assigned to labor induction, and 3044 were assigned to expectant management. The primary outcome occurred in 4.3% of neonates in the induction group and in 5.4% in the expectant-management group (relative risk, 0.80; 95% confidence interval [CI], 0.64 to 1.00). The frequency of cesarean delivery was significantly lower in the induction group than in the expectant-management group (18.6% vs. 22.2%; relative risk, 0.84; 95% CI, 0.76 to 0.93).

CONCLUSIONS

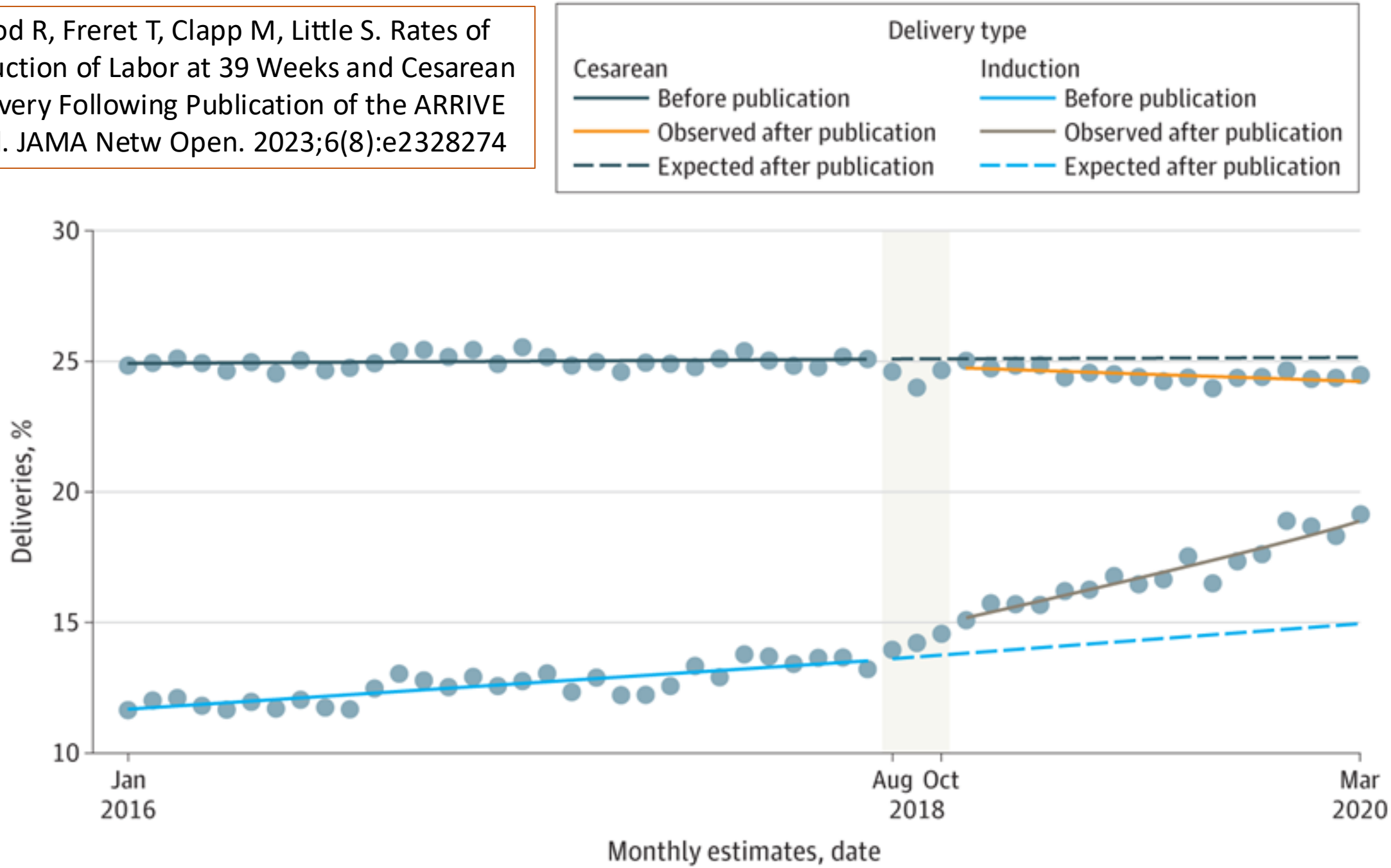
Induction of labor at 39 weeks in low-risk nulliparous women did not result in a significantly lower frequency of a composite adverse perinatal outcome, but it did result in a significantly lower frequency of cesarean delivery. (Funded by the Eunice Kennedy Shriver National Institute of Child Health and Human Development; ARRIVE ClinicalTrials.gov number, NCT01990612.)

The authors' affiliations are listed in the Appendix. Address reprint requests to Dr. Grobman at the Department of Obstetrics and Gynecology, Northwestern University, 250 E. Superior St., Suite 05-2175, Chicago, IL 60611, or at w-grobman@northwestern.edu.

*A list of other members of the Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal–Fetal Medicine Units Network is provided in the Supplementary Appendix, available at NEJM.org.

N Engl J Med 2018;379:513-23.
DOI: 10.1056/NEJMoa1800566

Wood R, Freret T, Clapp M, Little S. Rates of Induction of Labor at 39 Weeks and Cesarean Delivery Following Publication of the ARRIVE Trial. JAMA Netw Open. 2023;6(8):e2328274



Challenges . . .

- These studies have generated considerable debate
- Significant resource implications in applying these findings
- Health services need to develop consistent approaches to requests for IOL at 39 weeks without a specific indication
- Key is to avoid births **prior to** 39 weeks in the absence of a clear medical / obstetric indication

Migliorelli F, De Oliveira SS, Martínez de Tejada B. The ARRIVE Trial: Towards a universal recommendation of induction of labour at 39 weeks? Eur J Obstet Gynecol Reprod Biol. 2020 Jan;244:192-195.

Speaker

Mercy Health

Prof Lisa Hui is a maternal fetal medicine specialist at the Mercy Hospital for Women with special interests in prenatal screening and diagnosis. She is the hospital's Director of Genetics, a clinical academic in the Department of Obstetrics, Gynaecology and Newborn Health at the University of Melbourne, and group leader of Reproductive Epidemiology at the Murdoch Children's Research Institute. She is an active member of the International Society for Prenatal Diagnosis and an associate editor of its official scientific journal Prenatal Diagnosis.

Perinatal infections: an 2024 update for GPs

Professor Lisa Hui

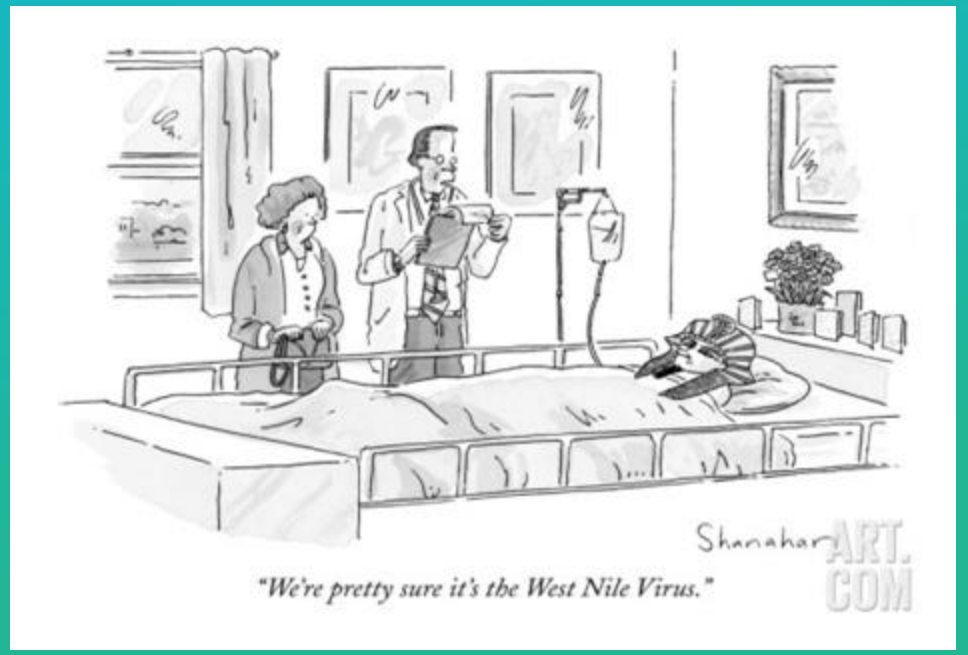
Maternal fetal medicine specialist

Mercy Hospital for Women

The Northern Hospital

University of Melbourne

Murdoch Children's Research Institute



THE UNIVERSITY OF MELBOURNE

murdoch children's research institute

mercy perinatal

kickstart for life

KidsHealth / Parents / Pregnancy Precautions: FAQs

Pregnancy Precautions: FAQs

1. Alcohol
2. Caffeine
3. Certain foods
4. Changing the litter box
5. Medicines
6. Recreational drugs
7. Smoking
8. Artificial sweeteners
9. Flying
10. Hair dyes
11. High-impact exercise
12. Household chemicals
13. Bug sprays
14. Lead
15. Overheating
16. Self-tanners
17. Sex
18. Tap water
19. Teeth whiteners
20. Vaccinations
21. X-rays

https://kidshealth.org/en/parents/pregnancy-precautions.html

Outline

1. CMV – most common congenital infection
2. Syphilis – current Australian epidemic
3. Parvovirus – European epidemic: coming soon to a school near you?

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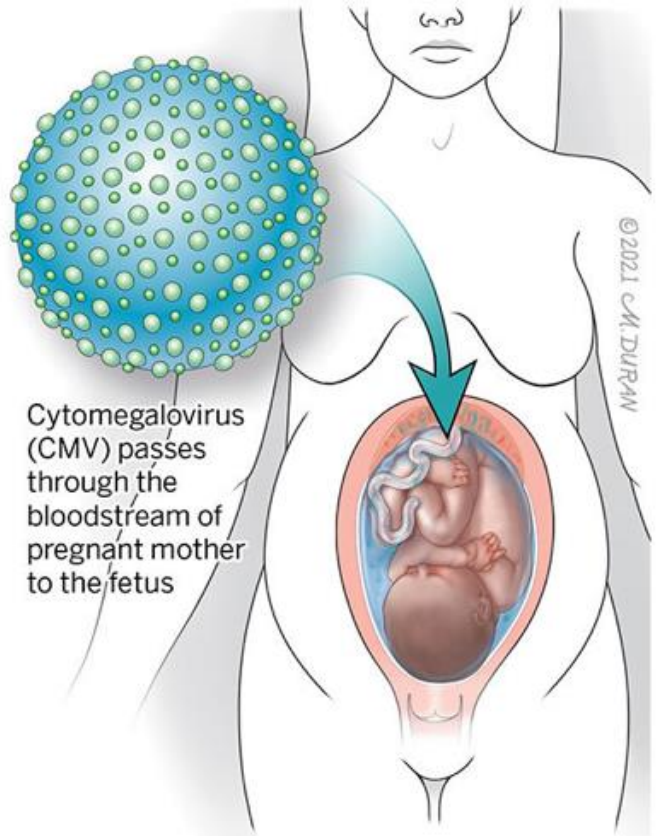
What is CMV?


CCMV Association Australia
July 9 ·
Cytomegalovirus (CMV) is the most common infectious cause of disabilities in newborn babies. Each year, 2000 babies are born in Australia with Congenital CMV. Of these, 400 will experience long term effects. That's 1 to 2 children born with disabilities from Congenital Cytomegalovirus every day in Australia alone.
MAMAMIA.COM.AU
'At 15 weeks pregnant, I was sick. It would have life-long implications for my son.'


Cytomegalovirus (CMV) passes through the bloodstream of pregnant mother to the fetus
©2021 CM.DURAN

Health burden of cCMV

- Prevalence of cCMV ~ 0.5% in HIC
- Leading acquired cause of sensorineural deafness, developmental disabilities,
- 1 in 10 Australian children with cerebral palsy have evidence of cCMV
- Prevention is in OUR hands!

Ssentongo JAMA Network 2021; Goderis 2014; Rawlinson 2017, Smithers-Sheedy 2017

Cytomegalovirus

- Herpes virus (HSV, VZV, EBV, CMV)
  - frequently asymptomatic
  - latency, reactivation/ shedding
- cCMV caused by maternal infection
  1. Primary infection
  2. Nonprimary infection
- Seroprevalence 50-60%

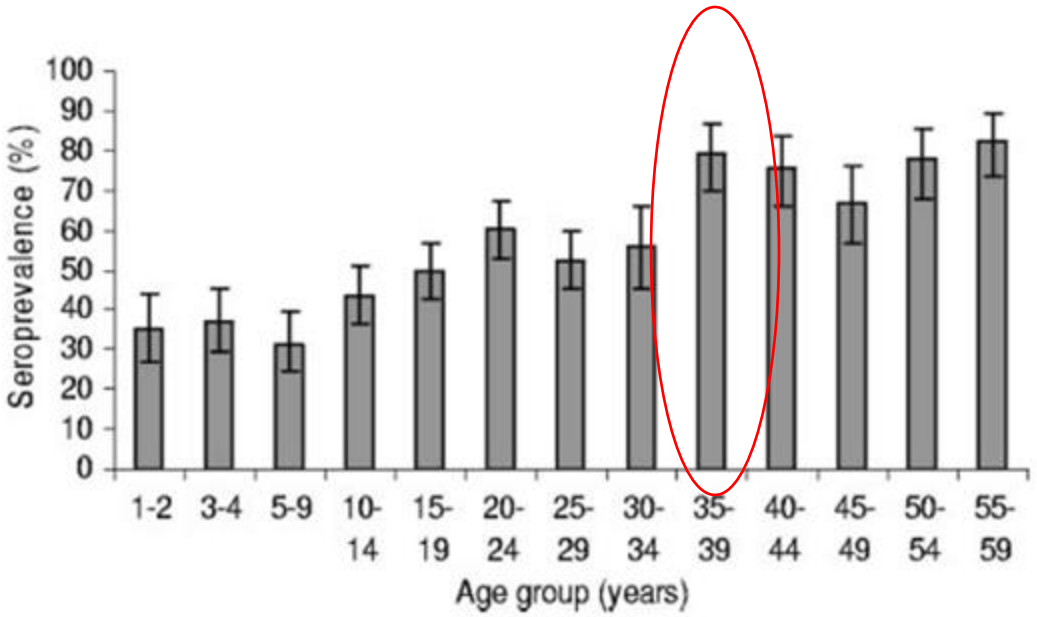


FIG. 3. CMV seroprevalence in females by age group in Australia.

Munro 2005, Seale 2006

How is CMV transmitted?

- Transmitted through contact with infected body fluids
  - Toddlers – heavy, prolonged shedding
- At risk:
  - parents with child <3ys
  - Childcare workers
- Health care workers same risk as general population (2-3% pa)

→ Reduction in contact with urine or saliva from young children is the most important preventative strategy to reduce infection in pregnancy

Prevention of Acquisition of Cytomegalovirus Infection in Pregnancy Through Hygiene-based Behavioral Interventions: A Systematic Review and Gap Analysis

Victoria Barber, PhD, Anna Calvert, MD,†‡ Tushna Vandrevala, PhD,* Caroline Star, BA,§ Asma Khalil, MD‡¶ Paul Griffiths, MD,‖ Paul T. Heath, MD,†‡ and Christine E. Jones, MD†‡***

- Seven studies included
- Results: preventative measures are
  - acceptable to pregnant women
  - can impact their behaviour
  - have the potential to reduce CMV in pregnancy

The Pediatric Infectious Disease Journal • Volume 39, Number 10, October 2020

Cerebral Palsy ALLIANCE

CMV Resource Hub

Easy ways to care

There are simple hygiene strategies to reduce the risk of CMV infection in pregnancy, which can also reduce the risk of other common illnesses like cold and flu. Proven ways to reduce the risk of transmitting CMV for pregnant women include:

Wash with care

Washing your hands for at least 15 seconds, especially after contact with urine or saliva of young children during activities like changing nappies, blowing noses, or handling children's toys, dummies.

Kiss with care

Avoiding contact with saliva when kissing a child – instead, try a kiss on the forehead.

Don't share

Not sharing food, drinks, cutlery, toothbrushes or dummies with young children.

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists

Excellence in Women's Health

Prevention of congenital cytomegalovirus (CMV) infection

Recommendation 1	Grade
All pregnant women and women trying to conceive, should be given information about CMV prevention as part of routine antenatal or prepregnancy care.	Consensus based recommendation[1]
Recommendation 2	**Grade**
Hygiene practices to reduce infection should be recommended to all pregnant women and women trying to conceive, regardless of their CMV serology status. While the greatest risk of mother to fetus transmission of infection (MTCT) occurs with maternal primary infection, congenital infection with long term complications occurs with similar levels of severity in primary and nonprimary (reactivation and/or reinfection) maternal infections.	Consensus based recommendation[1]

THE JOURNAL OF MATERNAL-FETAL & NEONATAL MEDICINE, 2017
https://doi.org/10.1080/14767058.2017.1344968

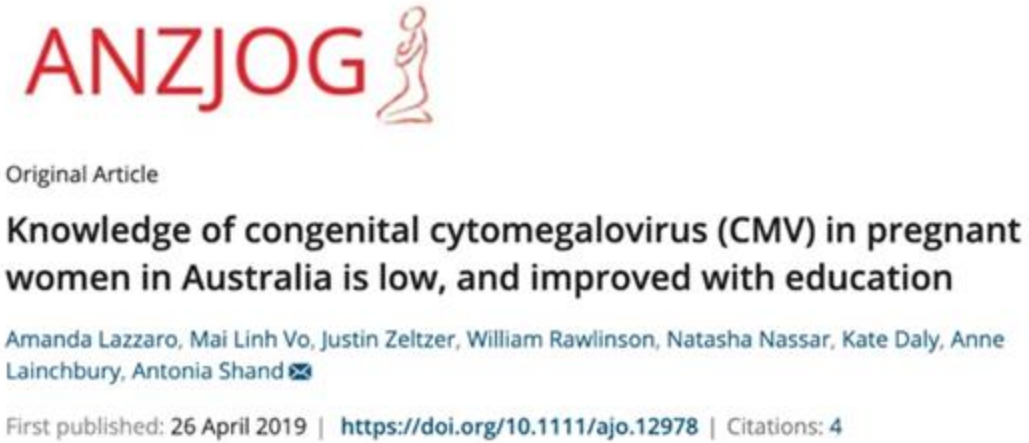
Taylor & Francis
Taylor & Francis Group

Check for updates

ORIGINAL ARTICLE

Cytomegalovirus (CMV) infection and pregnancy-potential for improvements in Australasian maternity health providers' knowledge

A. W. Shand[a,b], W. Luk[b], N. Nassar[a], L. Hui[c,d,e], K. Dyer[b] and W. Rawlinson[f,g]



ANZJOG

Original Article

Knowledge of congenital cytomegalovirus (CMV) in pregnant women in Australia is low, and improved with education

Amanda Lazzaro, Mai Linh Vo, Justin Zeltzer, William Rawlinson, Natasha Nassar, Kate Daly, Anne Lainchbury, Antonia Shand

First published: 26 April 2019 | https://doi.org/10.1111/ajo.12978 | Citations: 4

- 2015 survey of 774 O&Gs, GPs, midwives in NSW and VIC
  - < 10% routinely discussed CMV prevention with pregnant women
- Survey of 457 pregnant women in NSW
  - Only 1 in 6 had ever heard of CMV
  - 57% kissed their child on the mouth
  - 34% shared eating utensils ≥ 3 days/week
  - 23% rarely or never washed their hands after wiping a child's runny nose

2 min YouTube video on CMV

Video on cCMV evaluated in 218 Australian pregnant women

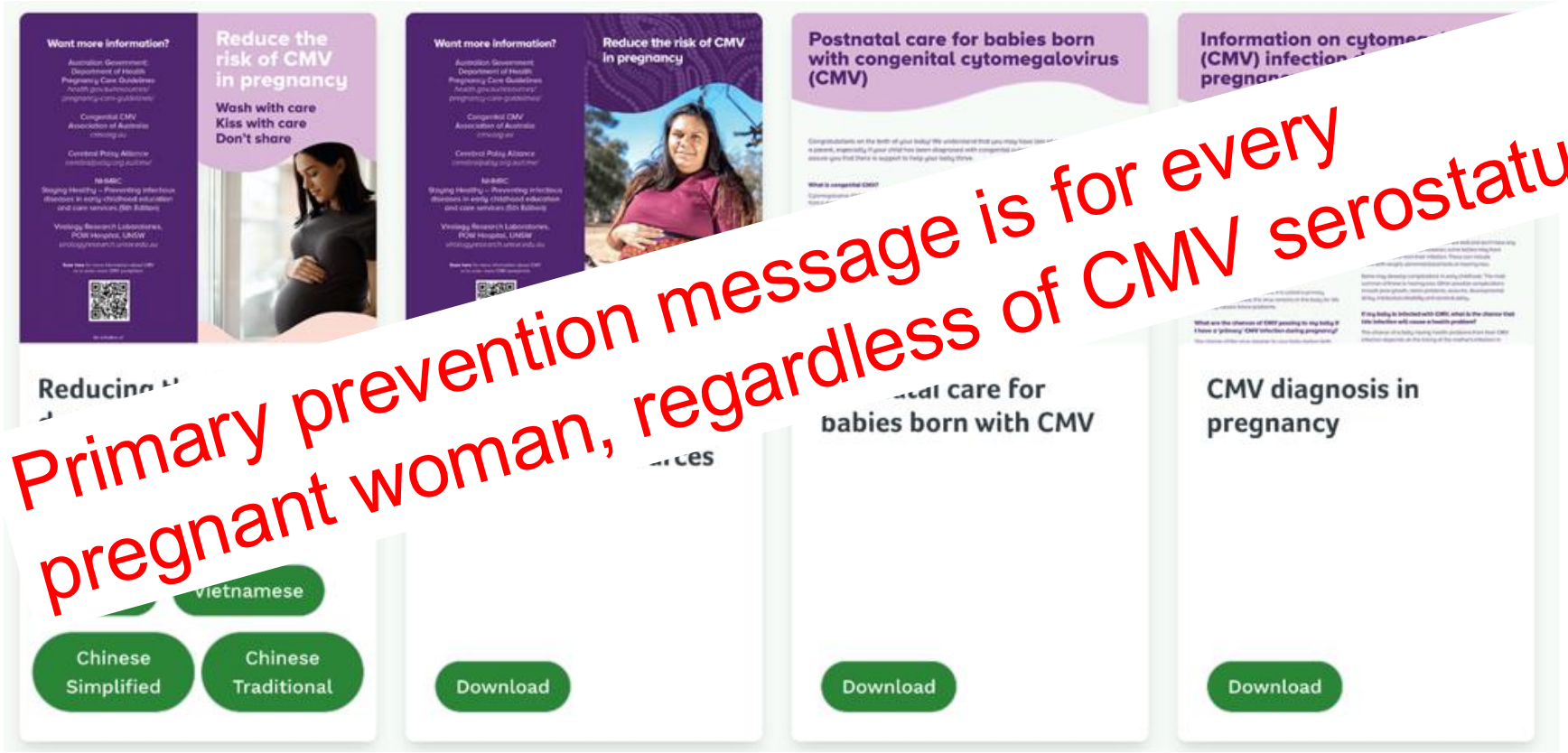
- 73% had not received CMV education
- Significantly improved knowledge scores and planned adherence to hygiene advice
- 81% felt ‘informed’
- 41% felt ‘worried’ (mainly because they did not receive this information by their healthcare provider)
- 98% felt the information was important to know

CMV virus 2.0. Cerebral Palsy Alliance
https://youtu.be/Bh6WgbGvTd8

CMV brochures and further information

Download these as pdfs and/or request free printed copies through our online form.

Order printed copies of information resources here



Primary prevention message is for every pregnant woman, regardless of CMV serostatus

https://cerebralpalsy.org.au/research/research-projects-priorities/cmv/

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists
Excellence in Women's Health

Prevention of congenital cytomegalovirus (CMV) infection

Recommendation 4

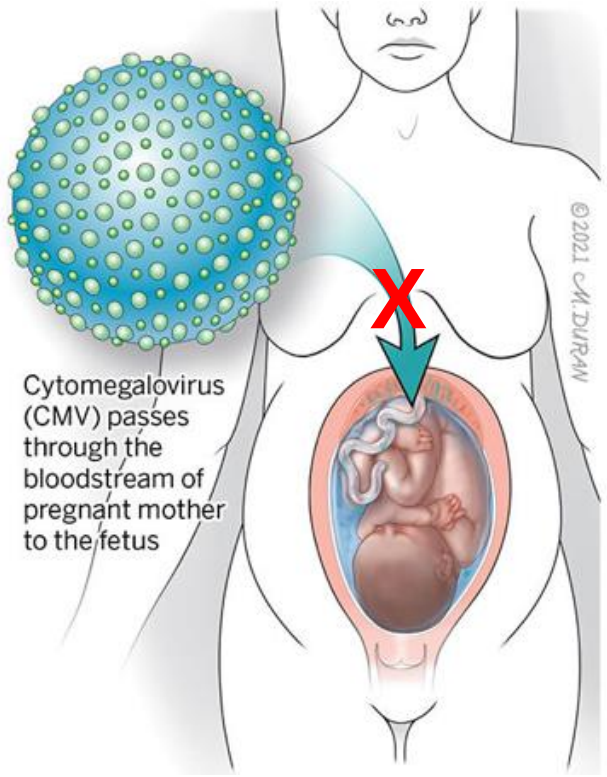
Universal routine serological screening for CMV in pregnancy is not recommended.

Recommendation 5

Pre-pregnancy or early pregnancy screening with CMV IgG may be considered for women who are high risk of infection (e.g. women caring for young children). Early determination of CMV serostatus may aid in distinguishing between primary infection and reactivation/reinfection during *pregnancy if clinically indicated*, but does not remove the need to follow recommended hygiene measures.

2023 Meta-analysis of valaciclovir treatment to prevent fetal infection

- Meta analysis of oral valaciclovir 8g/day in pregnant women with primary CMV infection acquired periconceptionally or during the first trimester
- VCV reduced the rate of
  - CMV positive amnio (a0R)=0.34
  - neonatal infection, a0R=0.30
  - termination of pregnancy due to CMV associated severe fetal findings aOR=0.23
- GA at the treatment initiation had correlation with all outcomes (ASAP, < 6 weeks of infection)
- Severe maternal side effects (acute renal failure) 2.1%.



Chatzakis C, et al. The effect of valacyclovir on secondary prevention of congenital cytomegalovirus infection, following primary maternal infection acquired periconceptionally or in the first trimester of pregnancy. An individual patient data meta-analysis. Am J Obstet Gynecol. 2023. doi: 10.1016/j.ajog.2023.07.022.

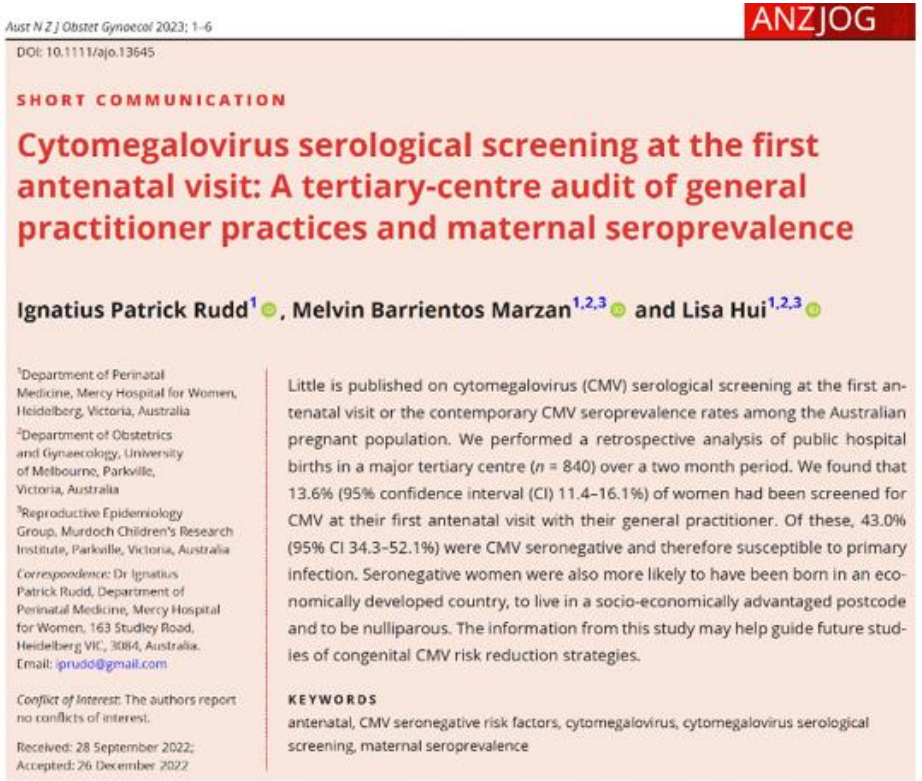
Consensus recommendation for prenatal, neonatal and postnatal management of congenital cytomegalovirus infection from the European congenital infection initiative (ECCI)

Marianne Leruez-Ville,[a,b,u,*] Christos Chatzakis,[c,d,u] Daniele Lilleri,[e,v] Daniel Blazquez-Gamero,[f,v] Ana Alarcon,[g] Nicolas Bourgon,[c] Ina Foulon,[h] Jacques Fourgeaud,[a,b] Anna Gonce,[i] Christine E. Jones,[j] Paul Klapper,[k] André Krom,[l] Tiziana Lazzarotto,[m,n] Hermione Lyall,[o] Paulo Paixao,[p] Vassiliki Papaevangelou,[q] Elisabeth Puchhammer,[r] George Sourvinos,[s] Pamela Vallely,[k] Yves Ville,[a,c,w] and Ann Vossen[t,w]

- CMV serology in the first trimester of pregnancy as early as possible followed in seronegative women by a retest every 4 weeks until 14-16 weeks (Grade A)
- We recommend the administration of oral valaciclovir at a dose of 8g/day in cases of with maternal primary infection in the periconceptional period or in the first trimester of pregnancy, as early as possible after the diagnosis and until the result of the CMV PCR in amniocentesis (Grade A)

How much CMV screening are GPs doing now?

- Audit of consecutive referrals to MHW over 2 months in 2020
- N= 840 women referred for antenatal care
- 114 (14%) had CMV serology with booking bloods
- 43% were CMV IgG neg
  - Associated with birth in an OECD country
  - Higher SES postcode
  - Nulliparous
- *Without any changes to current screening practice, 25 women/ month susceptible to primary infection*



Aust N Z J Obstet Gynaecol 2023; 1–6
ANZJOG
DOI: 10.1111/ajo.13645

SHORT COMMUNICATION

Cytomegalovirus serological screening at the first antenatal visit: A tertiary-centre audit of general practitioner practices and maternal seroprevalence

Ignatius Patrick Rudd[1], Melvin Barrientos Marzan[1,2,3] and Lisa Hui[1,2,3]

[1]Department of Perinatal Medicine, Mercy Hospital for Women, Heidelberg, Victoria, Australia
[2]Department of Obstetrics and Gynaecology, University of Melbourne, Parkville, Victoria, Australia
[3]Reproductive Epidemiology Group, Murdoch Children's Research Institute, Parkville, Victoria, Australia

Correspondence: Dr Ignatius Patrick Rudd, Department of Perinatal Medicine, Mercy Hospital for Women, 163 Studley Road, Heidelberg VIC, 3084, Australia.
Email: iprudd@gmail.com

Conflict of Interest: The authors report no conflicts of interest.

Received: 28 September 2022;
Accepted: 26 December 2022

Little is published on cytomegalovirus (CMV) serological screening at the first antenatal visit or the contemporary CMV seroprevalence rates among the Australian pregnant population. We performed a retrospective analysis of public hospital births in a major tertiary centre (n = 840) over a two month period. We found that 13.6% (95% confidence interval (CI) 11.4–16.1%) of women had been screened for CMV at their first antenatal visit with their general practitioner. Of these, 43.0% (95% CI 34.3–52.1%) were CMV seronegative and therefore susceptible to primary infection. Seronegative women were also more likely to have been born in an economically developed country, to live in a socio-economically advantaged postcode and to be nulliparous. The information from this study may help guide future studies of congenital CMV risk reduction strategies.

KEYWORDS
antenatal, CMV seronegative risk factors, cytomegalovirus, cytomegalovirus serological screening, maternal seroprevalence

ESE-CMV study

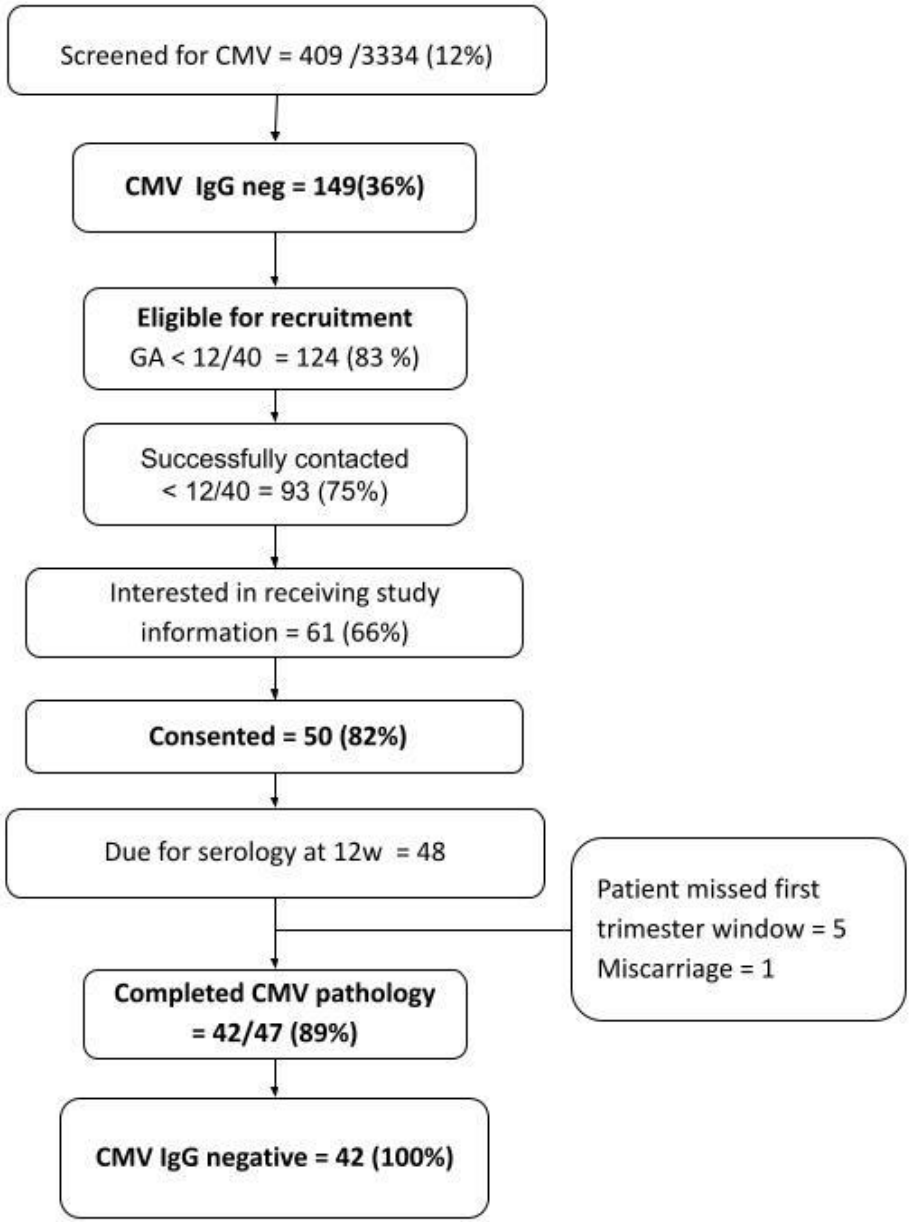
Education, Serology & Evaluation
to prevent congenital cytomegalovirus

Eligible: Women screened for CMV by their GP AND were CMV IgG negative

1. Education re: CMV risk reduction (hygiene)
2. Repeat serology at 12w

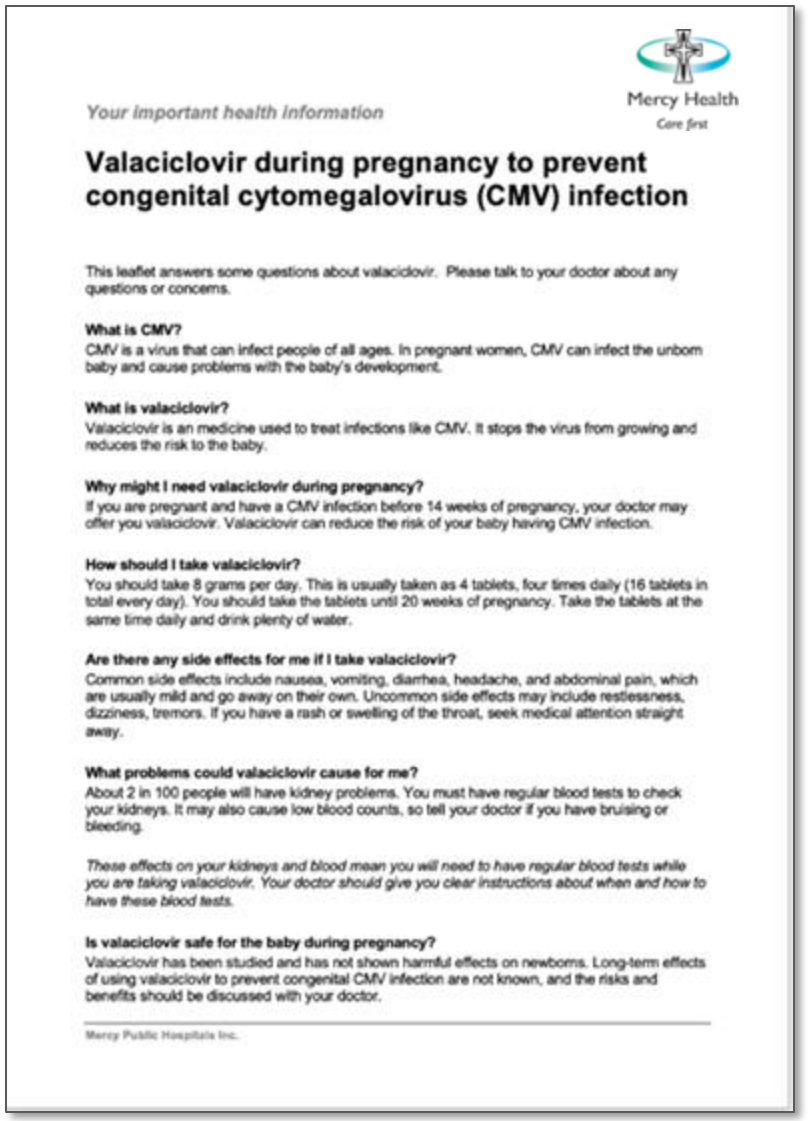
Results to date

- 82% uptake rate (n=50/61)
- 100% CMV neg at 12 weeks (42/42)
- No increase in anxiety
- >90% satisfied with participation



What care would we offer if CMV infection detected in first trimester?

- Urgent referral to perinatal clinic if seroconversion in first trimester
- VCV if they meet eligibility criteria of the RCT
  - Seroconversion in first trimester
  - Start valaciclovir < 14 weeks (ASAP)
  - Cease valaciclovir at 20 weeks
- FBE and EUC monitoring while on VCV
- Amniocentesis at 20 weeks
- Newborn CMV testing
- Paediatric follow up if infected



Mercy Health
Care first

Your important health information

Valaciclovir during pregnancy to prevent congenital cytomegalovirus (CMV) infection

This leaflet answers some questions about valaciclovir. Please talk to your doctor about any questions or concerns.

What is CMV?
CMV is a virus that can infect people of all ages. In pregnant women, CMV can infect the unborn baby and cause problems with the baby's development.

What is valaciclovir?
Valaciclovir is an medicine used to treat infections like CMV. It stops the virus from growing and reduces the risk to the baby.

Why might I need valaciclovir during pregnancy?
If you are pregnant and have a CMV infection before 14 weeks of pregnancy, your doctor may offer you valaciclovir. Valaciclovir can reduce the risk of your baby having CMV infection.

How should I take valaciclovir?
You should take 8 grams per day. This is usually taken as 4 tablets, four times daily (16 tablets in total every day). You should take the tablets until 20 weeks of pregnancy. Take the tablets at the same time daily and drink plenty of water.

Are there any side effects for me if I take valaciclovir?
Common side effects include nausea, vomiting, diarrhea, headache, and abdominal pain, which are usually mild and go away on their own. Uncommon side effects may include restlessness, dizziness, tremors. If you have a rash or swelling of the throat, seek medical attention straight away.

What problems could valaciclovir cause for me?
About 2 in 100 people will have kidney problems. You must have regular blood tests to check your kidneys. It may also cause low blood counts, so tell your doctor if you have bruising or bleeding.

These effects on your kidneys and blood mean you will need to have regular blood tests while you are taking valaciclovir. Your doctor should give you clear instructions about when and how to have these blood tests.

Is valaciclovir safe for the baby during pregnancy?
Valaciclovir has been studied and has not shown harmful effects on newborns. Long-term effects of using valaciclovir to prevent congenital CMV infection are not known, and the risks and benefits should be discussed with your doctor.

Mercy Public Hospitals Inc.

CMV IgG neg cohort (n=50)

Demographics

- 88% born in Australia, high SES
- 54% >8hrs contact per week with children < 3yrs

CMV awareness

- 44% unaware they were tested for CMV
- 42% had never heard of CMV before the study
- 44% did not have CMV results discussed with them
- 54% (n=27) had not received information on CMV prevention

Routine CMV screening: are we ready?

- Critical encounters occur in primary care
  - Education and resources for GPs
  - Ensure systems for recall / prompt referral
- Limitations of serology esp IgM testing
  - False positive IgM rates: CMV IgG only if screening at booking
- Ensure operational readiness
  - Multidisciplinary clinician education
  - Pathology lab preparation
  - Prompt clinical referral pathways
  - Equitable access to specialist care
- GP survey coming soon!

Take home message: CMV

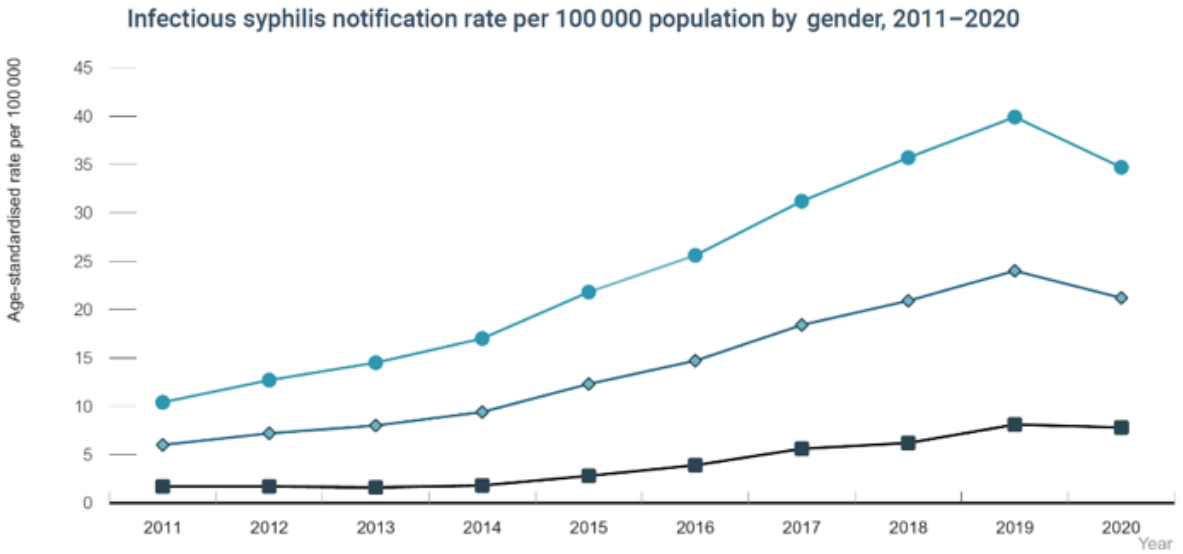
1. More common than toxoplasmosis or listeria!
2. Primary prevention with hygiene advice should be provided to all women at the first antenatal visit or before pregnancy
3. Routine serology is not currently recommended – but if suspected primary CMV in first trimester, refer urgently for valaciclovir treatment

Syphilis Case history

- 29yr G4P0 unbooked at MHW presented with preterm prelabour rupture of membranes at 28 weeks
  - No fetal heart on arrival
  - Spontaneous labour, delivery of stillbirth infant
  - Booking bloods from GP – NAD, syphilis negative
  - No other antenatal care
- Pathology of placenta: acute villitis, spirochetes visible on microscopy, syphilis PCR positive
- No postmortem on infant

Syphilis – what's up?

- Syphilis rising in many high income countries
- Notifications in Australian women of reproductive age have tripled from 5.2/100,000 women in 2015, to 16.2/100,000 women in 2019.
- Congenital syphilis notificationshave quadrupled from 4 notifications in 2015 to 17 cases in 2020.



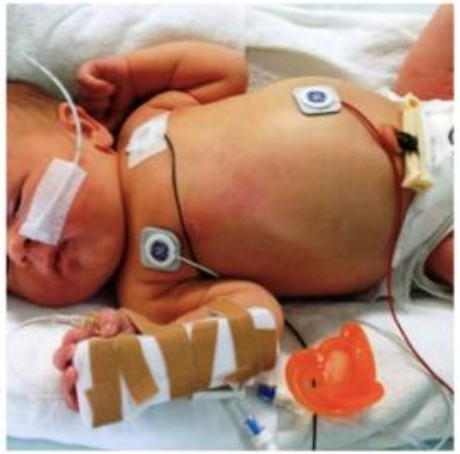
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Males	10.4	12.7	14.5	17.0	21.8	25.6	31.2	35.7	39.9	34.7
Females	1.7	1.7	1.6	1.8	2.8	3.9	5.6	6.2	8.1	7.8
Total	6.0	7.2	8.0	9.4	12.3	14.7	18.4	20.9	24.0	21.2

Source: Australian National Notifiable Diseases Surveillance System.

Congenital syphilis

- Untreated maternal syphilis can be passed on to a fetus during pregnancy
- Approximately 50% of women with untreated syphilis in pregnancy will have a miscarriage, stillbirth, preterm labour or a baby with severe physical and neurological disability





Aren’t we already testing everyone?

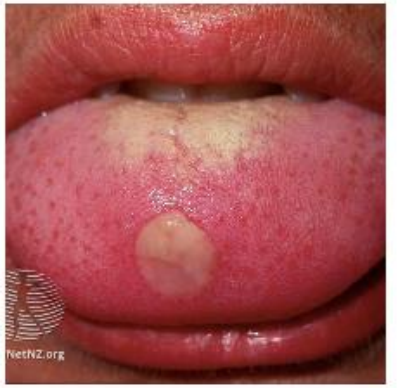
- Universal screening may fail if the pregnant person:
  - Doesn’t receive antenatal care
  - Doesn’t receive appropriate treatment
  - Tested negative at booking, but acquired syphilis during pregnancy
- Repeat testing is recommended for all patients considered to be at increased risk of syphilis infection.

Conduct repeat testing in late second trimester of pregnancy, or as risks arise:

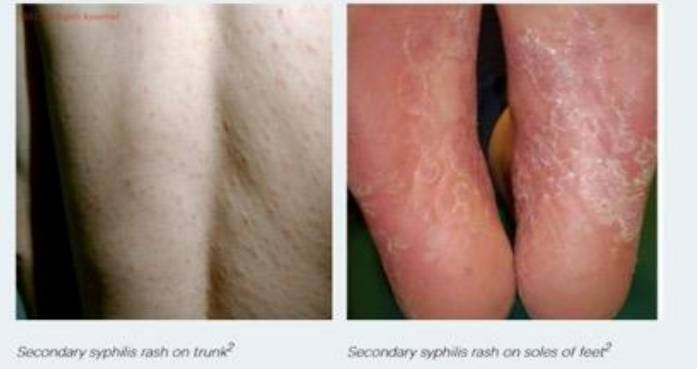
- male sexual partner who has sex with men
- sexual contact of a person with infectious syphilis
- partner(s) identify as Aboriginal and/or Torres Strait Islander, and/or they reside in an area of known high prevalence
- adolescent
- sexually transmitted infection within the previous 12 months
- engages in substance use during pregnancy
- partner(s) has sexual partners from high-prevalence countries

Revision – stages of syphilis

- Primary: ~ 3 weeks after infection
  - acute phase characterised by painless ulcer(s) (chancre) at site of inoculation +/- lymphadenopathy, heal without treatment,
  - May be painful if secondary infection: if you are taking a swab for HSV, test for syphilis as well!
- Secondary syphilis: 2-5 months after infection
  - Haematogeneous dissemination with generalized signs, symptoms (malaise)
  - Rash



Chancre on tongue[1]



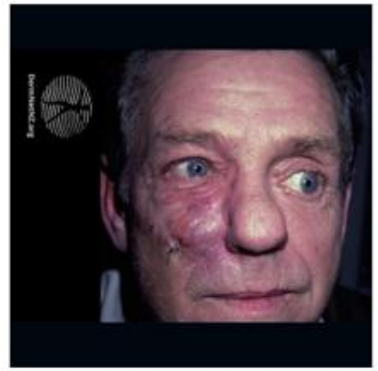
Secondary syphilis rash on trunk[2] *Secondary syphilis rash on soles of feet*[3]

Revision – stages of syphilis

- Latent = asymptomatic phase
- Positive syphilis serology with no clinical symptoms or signs and no evidence of adequate past treatment
  - Early latent < 2 years
  - Late latent > 2 years
  - Unknown duration
- Why does it matter?
  - Transmission risk: : late latent less infectious to sexual partners, but congenital infection still possible
  - Contact tracing
  - Treatment duration

Revision – stages of syphilis

- Tertiary syphilis: occurs many years after infection
- Inflammation – affects skin, bone, cardiovascular system
- Neuro manifestations – dementia, paresis, tabes dorsalis
- Can still result in mother to child transmission but not sexual transmission
- Rarely seen in Australia

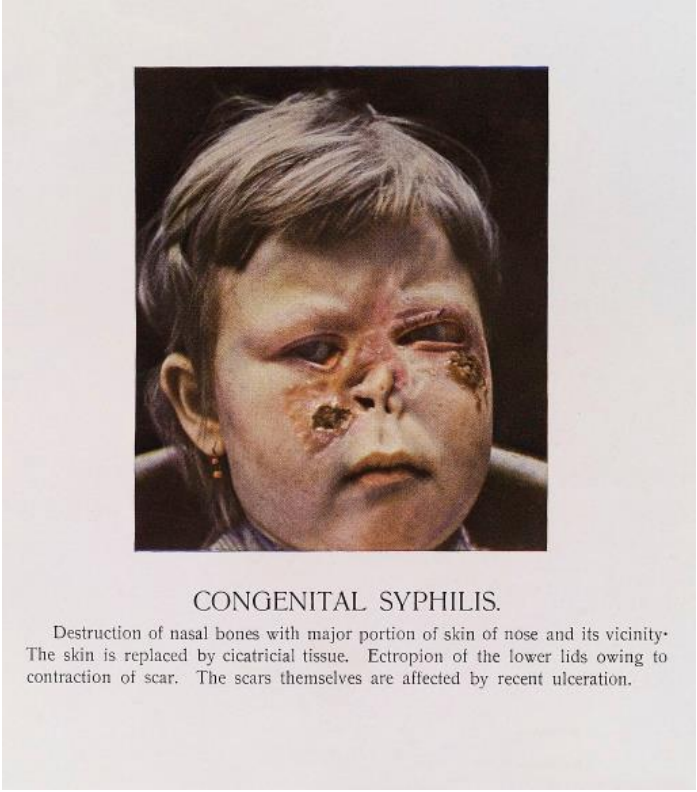


Gumma of tertiary syphilis[1]

Gummas of tertiary syphilis[1]

Congenital syphilis

- Mother-to-child transmission mainly occurs via transplacental infection
- Transmission rates
- primary and secondary syphilis: 70 to 100%
- Late latent syphilis: 10%
- T. pallidum is not transferred via breast milk but may occur during breastfeeding if the mother has an infectious lesion (eg a chancre) on her breast.

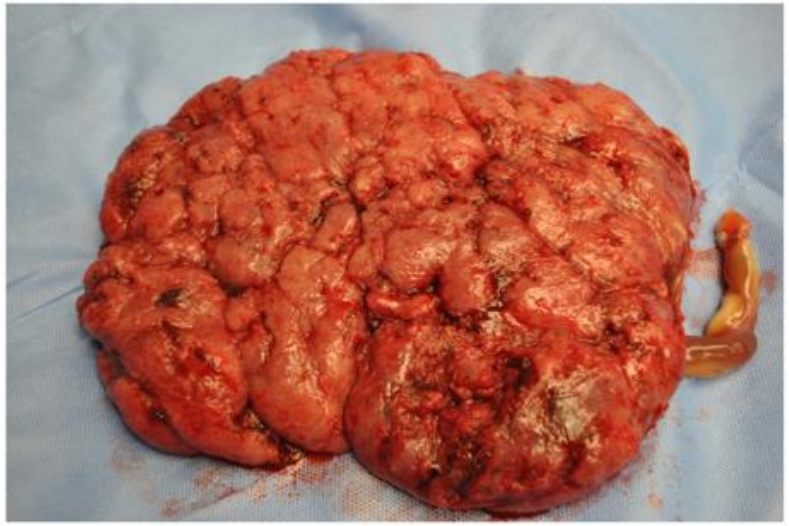


CONGENITAL SYPHILIS.

Destruction of nasal bones with major portion of skin of nose and its vicinity. The skin is replaced by cicatricial tissue. Ectropion of the lower lids owing to contraction of scar. The scars themselves are affected by recent ulceration.

Fetal impacts of syphilis

- Untreated early syphilis infection during pregnancy
  - Miscarriage or stillbirth (25%)
  - Preterm labour or low birth weight (13%)
- Once the treponemes enter the fetal blood circulation they can infect multiple organs. hepatitis, osteochrondritis, anaemia, interstitial keratitis, and neurological injury.
- Ultrasound: Hepatomegaly, splenomegaly, ascites, cardiomegaly and pericardial effusion, fetal anaemia



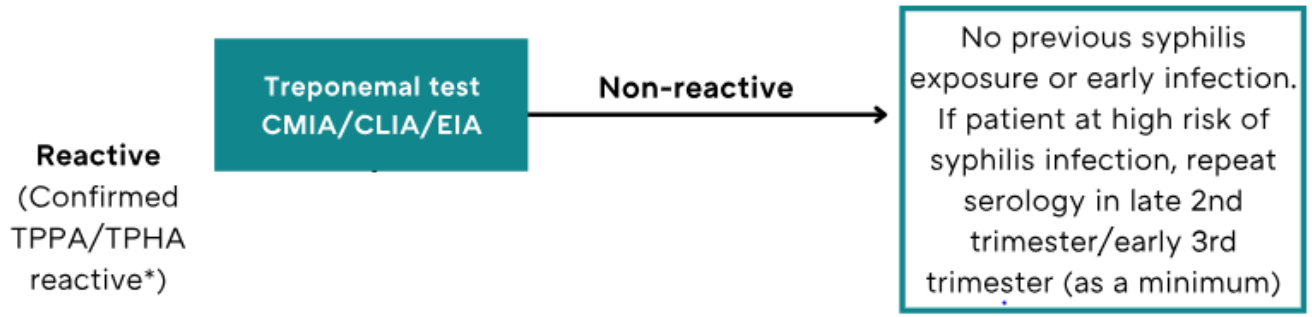
Rac et al. Congenital syphilis: A contemporary update on an ancient disease. Prenat Diagn. 2020 PMID: 32362058.

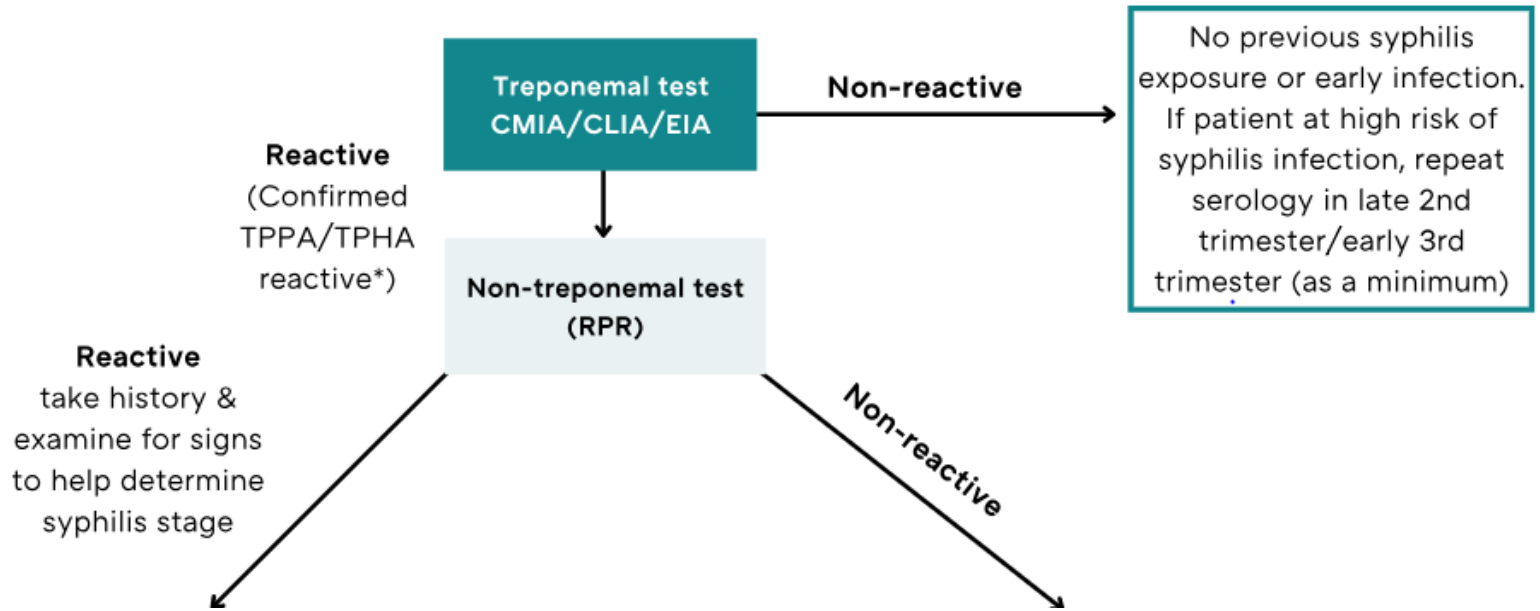
Newborn features of syphilis

- Most (> 85%) babies with congenital syphilis will be asymptomatic at birth and, if they do not receive treatment, will develop signs over the first 3 months of life.
- Some features do not develop until after the child is 2 years

Desquamating rash[8]

Hutchinson's teeth[9]


Treponemal test
CMIA/CLIA/EIA
Non-reactive
No previous syphilis exposure or early infection. If patient at high risk of syphilis infection, repeat serology in late 2nd trimester/early 3rd trimester (as a minimum)
Reactive
(Confirmed TPPA/TPHA reactive*)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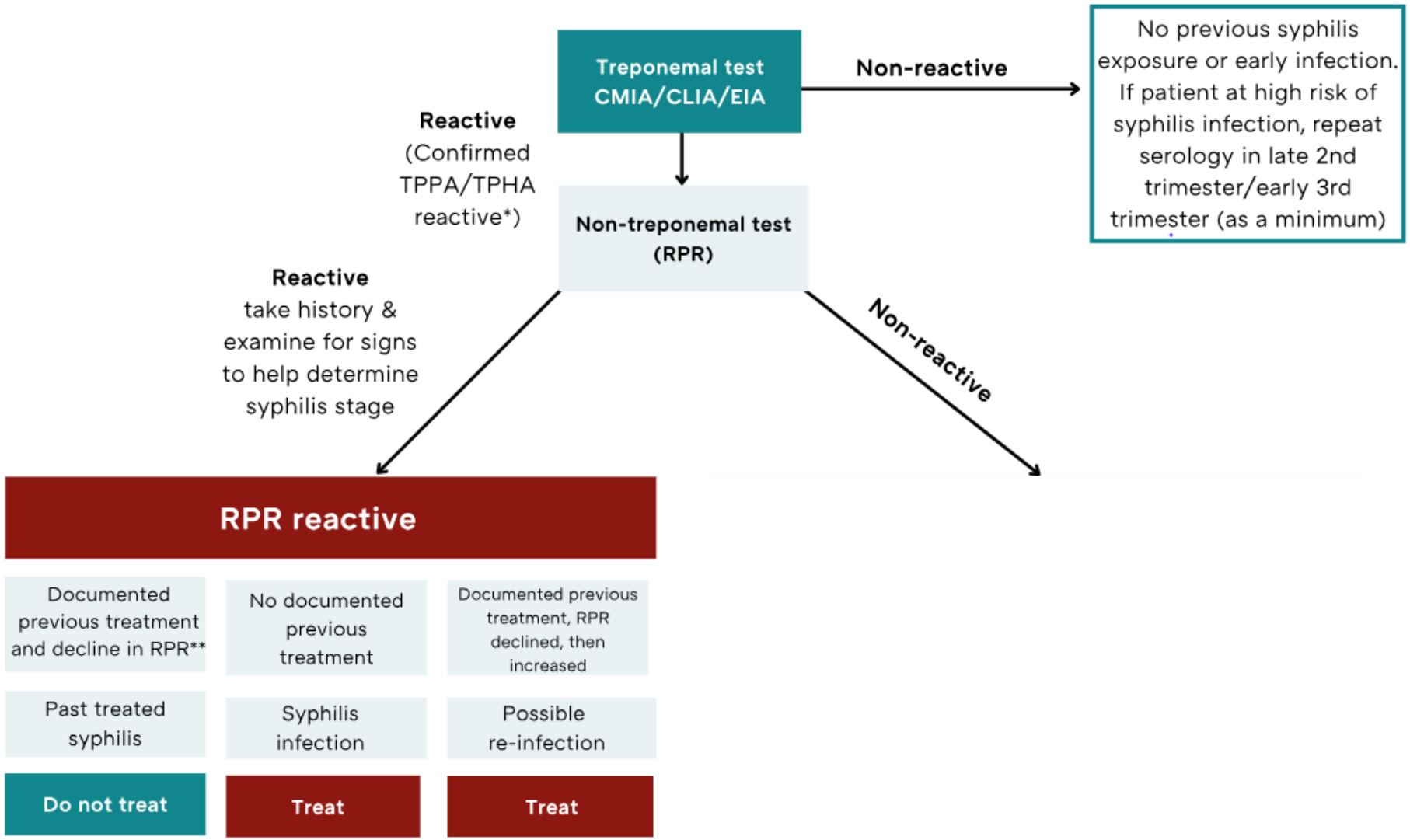
Reactive
(Confirmed TPPA/TPHA reactive*)
Non-treponemal test
(RPR)
Reactive
take history & examine for signs to help determine syphilis stage
Non-reactive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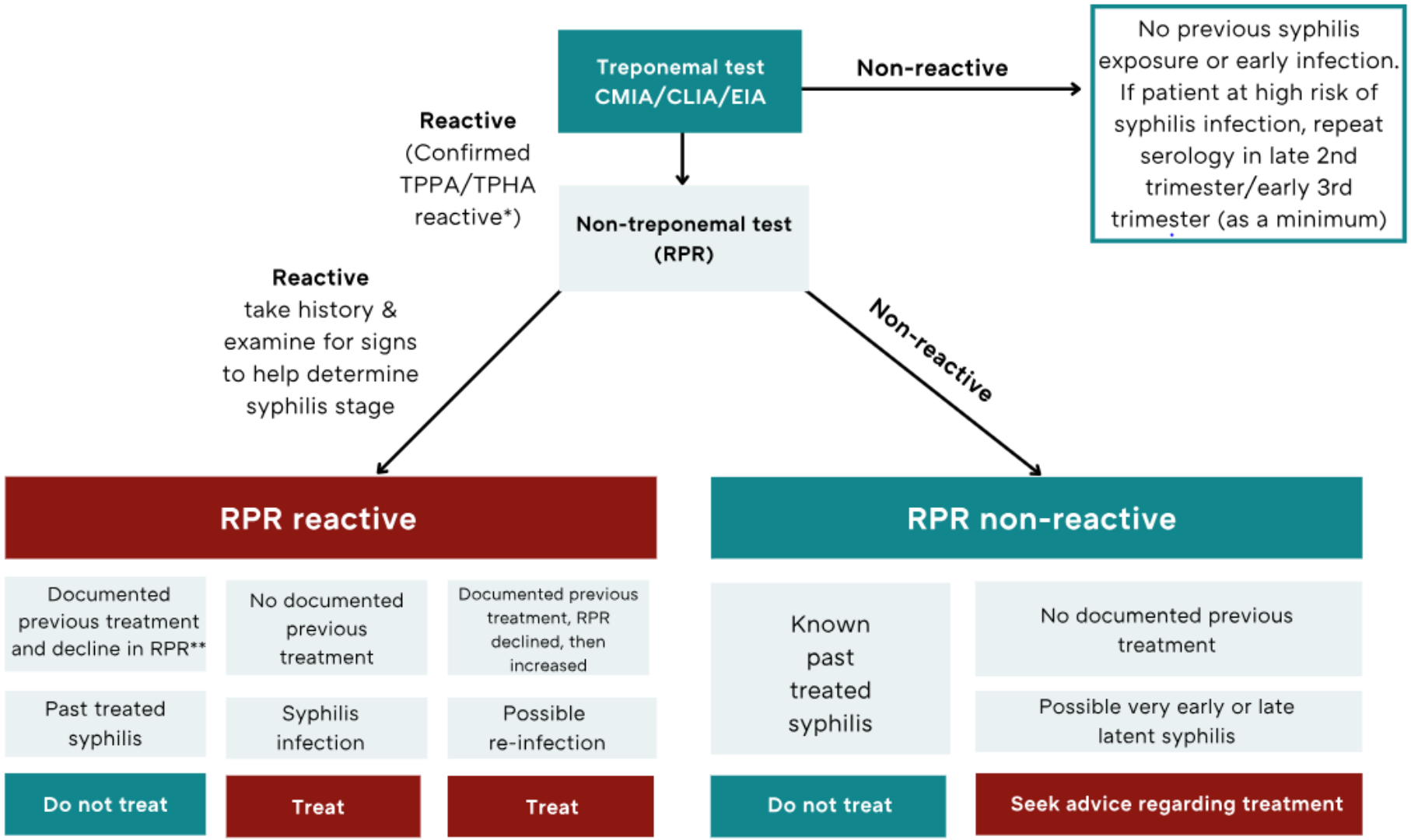
Reactive
(Confirmed TPPA/TPHA reactive*)
Non-treponemal test
(RPR)
Reactive
take history & examine for signs to help determine syphilis stage
Non-reactive
RPR reactive
Documented previous treatment and decline in RPR**
No documented previous treatment
Documented previous treatment, RPR declined, then increased
Past treated syphilis
Syphilis infection
Possible re-infection
Do not treat
Treat
Treat


Treponemal test
CMIA/CLIA/EIA
Non-reactive
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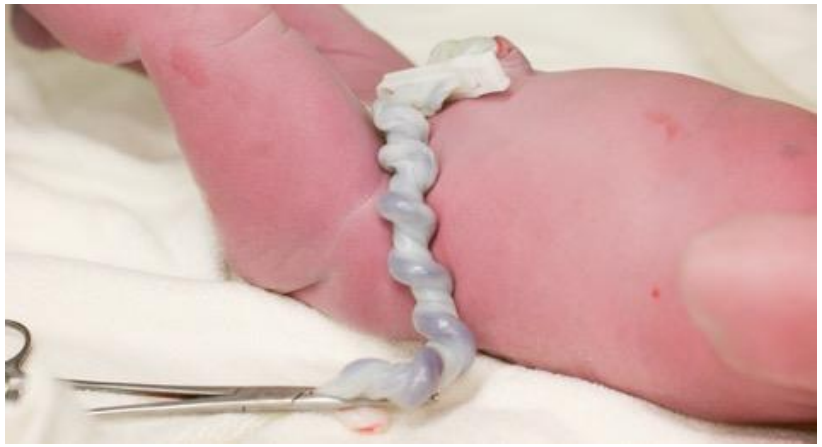
Reactive
(Confirmed TPPA/TPHA reactive*)
Non-treponemal test
(RPR)
Reactive
take history & examine for signs to help determine syphilis stage
Non-reactive
RPR reactive
RPR non-reactive
Documented previous treatment and decline in RPR**
No documented previous treatment
Documented previous treatment, RPR declined, then increased
Known past treated syphilis
No documented previous treatment
Past treated syphilis
Syphilis infection
Possible re-infection
Possible very early or late latent syphilis
Do not treat
Treat
Treat
Do not treat
Seek advice regarding treatment

Treatment of syphilis in pregnancy

- Late syphilis (latent syphilis >2 years or unknown duration):
  - Benzathine benzylpenicillin 1.8g (= 2.4 million units) IMI, once weekly for 3 weeks
  - *Late doses are not acceptable in pregnant patients. If a dose interval is more than 7 days, the treatment course should be recommenced*
  - *Treatment required > 4 weeks before birth*
- Early syphilis (primary, secondary or early latent syphilis):
  - Benzathine benzylpenicillin 1.8g (= 2.4 million units) IMI as a single dose

Prevention of congenital syphilis

- No known resistance to penicillin!
  - Penicillin allergic pregnant women should have desensitization and treatment
- The chance of a pregnant woman having a baby affected by congenital syphilis is:
  - 0.33% if treatment < 28 weeks
  - 2% if treatment after 28 weeks
  - Up to 15% if no treatment
- Newborn testing for syphilis IgM and RPR with parallel sample from mother
  - If the infant RPR titre > maternal RPR, raises a concern of congenital infection



What follow up do babies need?

- **Low risk** of congenital syphilis based on examination, results and adequate maternal treatment

→ follow up exam and serology q3m until RPR negative

- **High risk** of congenital syphilis due to inadequate maternal treatment

→ more extensive investigations, treated at birth and have more frequent repeat serology and examination.

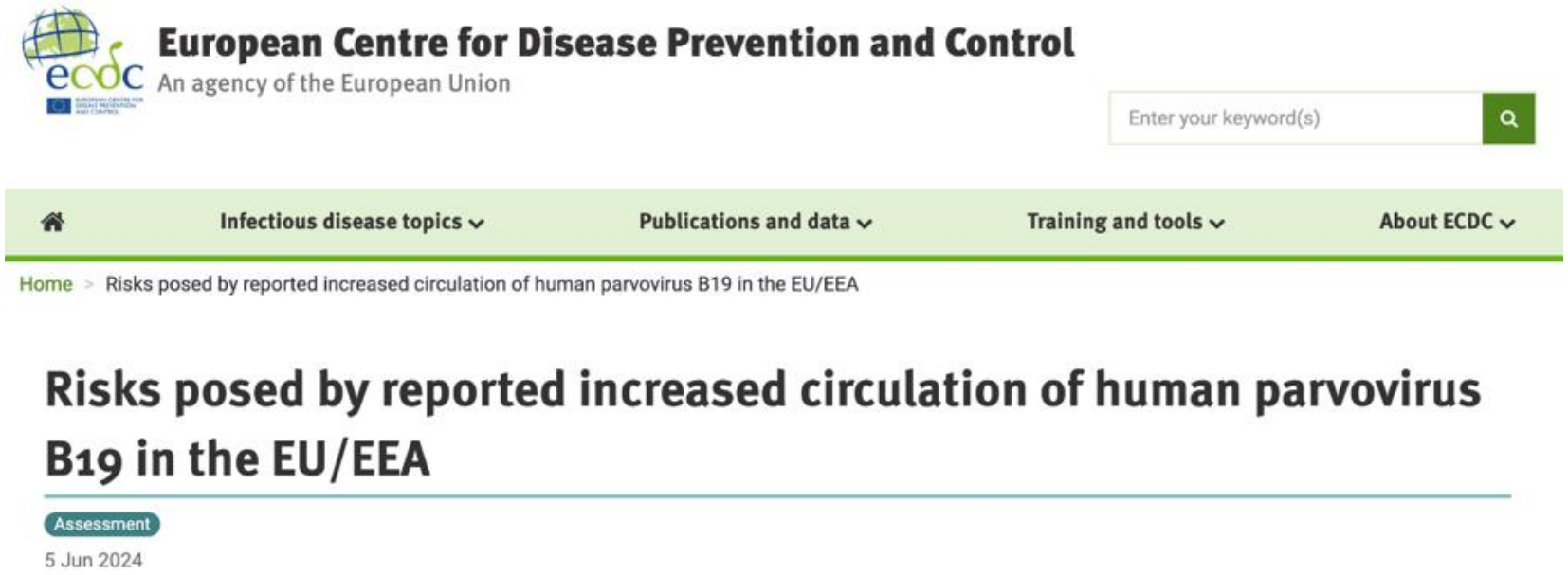
- All babies are usually referred to paediatric ID at RCH for follow up but if the discharge summary is unclear, please clarify!

Take home messages: syphilis

1. Congenital syphilis is back! Consider repeat serology in second and third trimester for high-risk patients
2. If you see an ulcer, think of syphilis!
3. Benzathine penicillin 2.4million units weekly for 3 doses is the only adequate treatment in pregnancy for late latent syphilis
4. Infants of treated mothers need follow up until RPR neg

Case history: parvovirus

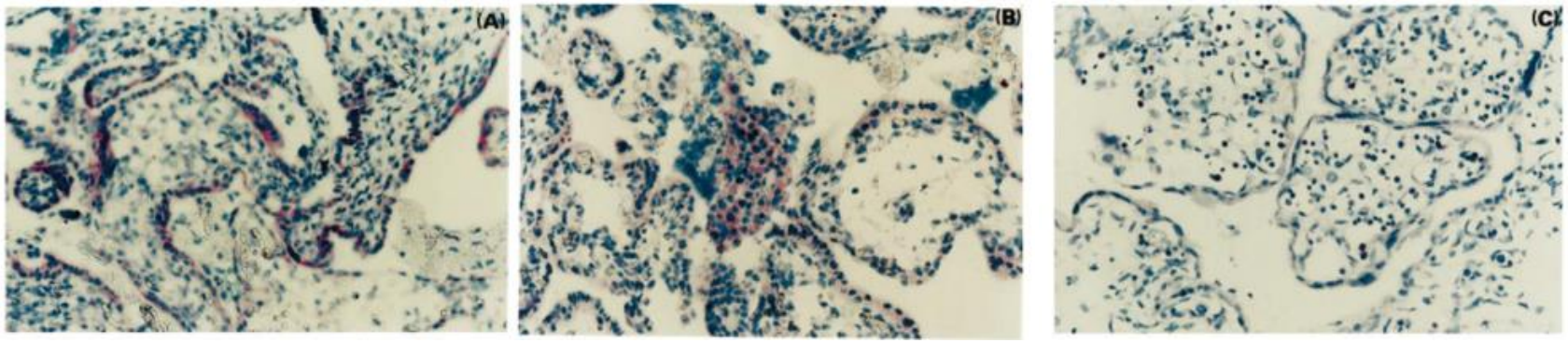
- 34yr, G2P1 referred from GP with documented seroconversion to parvovirus at 18 weeks
  - Child had clinical illness and diagnosed with parvovirus (‘slapped cheek’ rash and fever)
  - Mother - positive parvovirus IgG and IgM at 17 weeks gestation, retrospective testing of booking bloods were parvovirus IgM and IgG negative
- Commenced weekly ultrasound monitoring for fetal anaemia
- No evidence of fetal anaemia at 29w → continued routine obstetric care with uneventful pregnancy



- Highly contagious: droplet spread from nasal/oral secretions
- Outbreaks in schools and childcare centres with seasonal and endemic patterns
  - Epidemics every 3-6 years
  - Secondary attack rate during epidemics – 50% in susceptible children and 25% in susceptible teachers
- 30-50% of pregnant women are susceptible to infection (IgG neg)

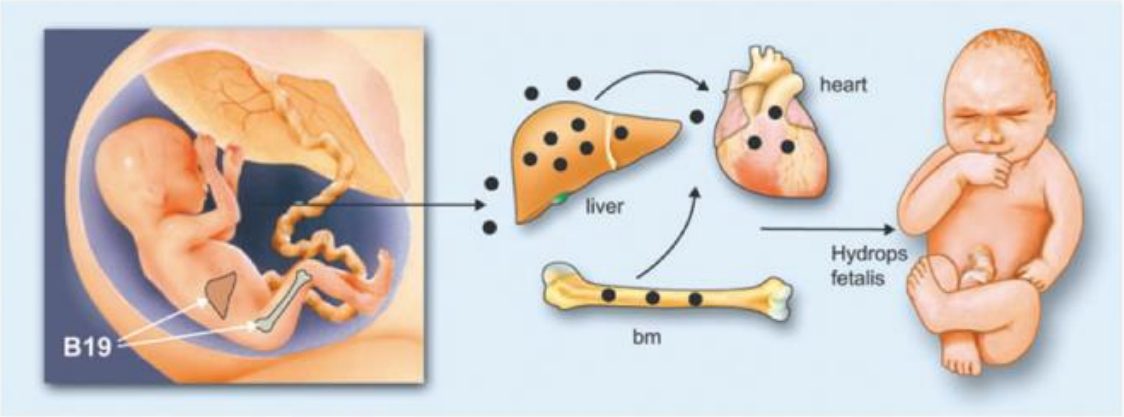
Transplacental infection

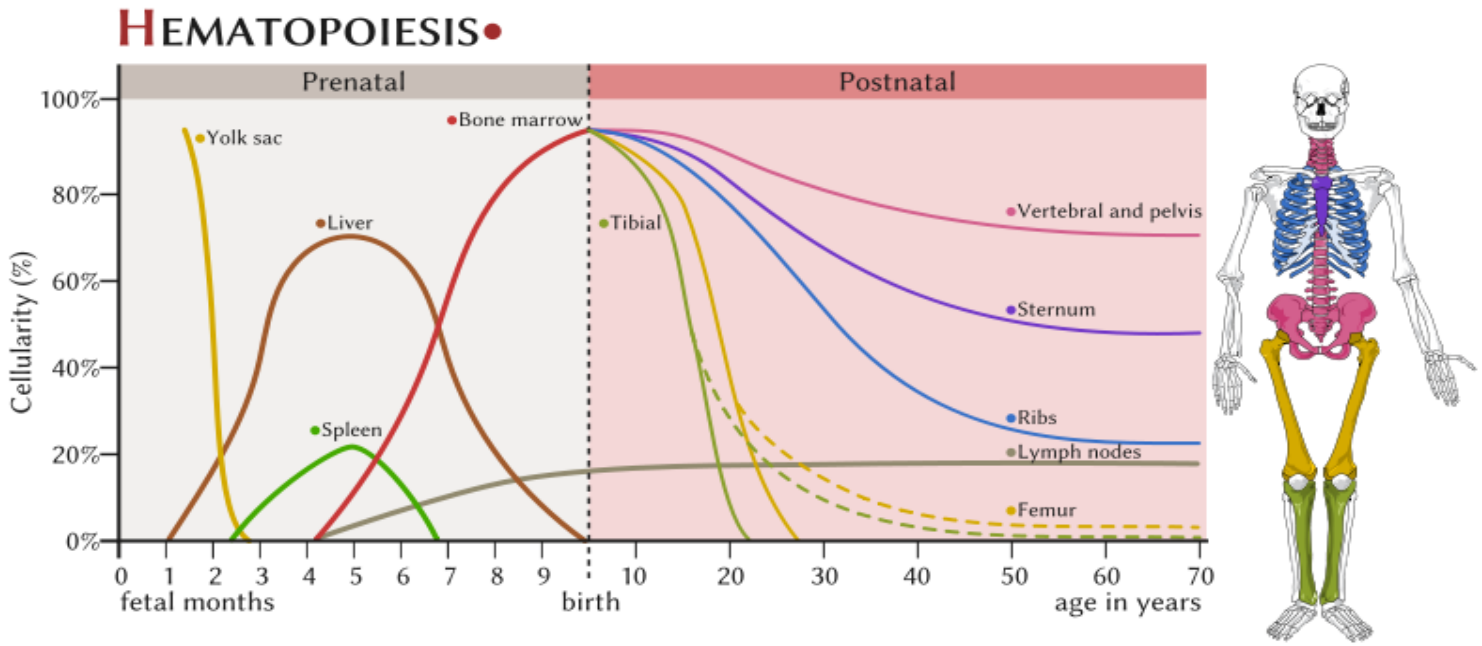
- Pregnancy does not affect natural history in the pregnant adult
- Fetal transmission in 25-50% of cases
  - > 90% of fetuses asymptomatic/unaffected
  - not teratogenic
- Viral receptor (P antigen) is expressed by villous trophoblast cells in gestation-dependent manner: highest in T1 and T2



Pathogenesis

- Requires mitotically active cell for viral replication
  - Viral receptor = P antigen on erythroid cells
  - Induces a DNA damage response causing cell cycle arrest
- Other tissue distribution
  - Myocytes, liver, placenta, megakaryocytes, endothelial cells
  - No active viral replication but toxic accumulation of NS1

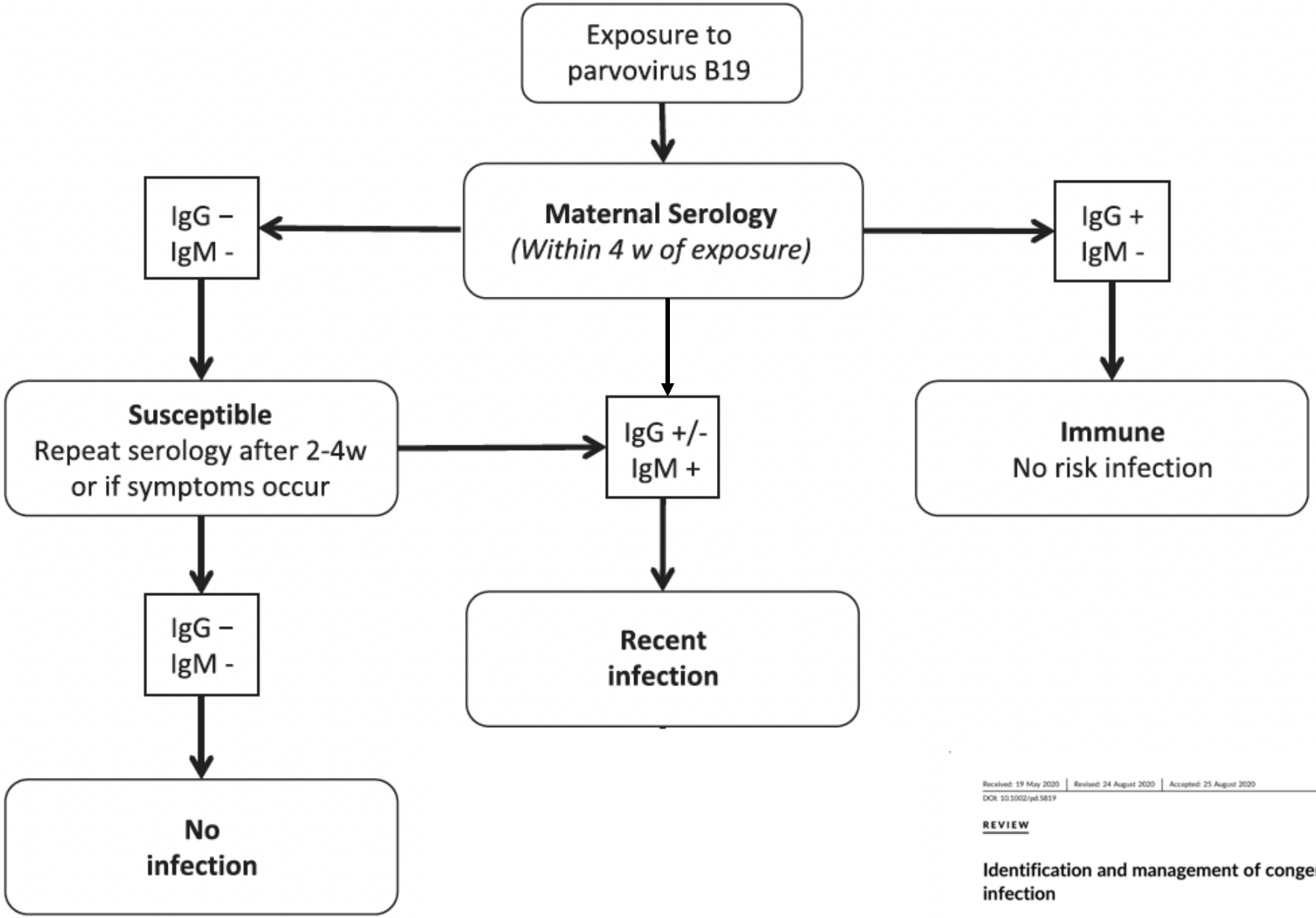




- Liver is primary haematopoietic organ 9-24 weeks
  - Red cell mass increases 34-fold in second trimester
  - Half-life of fetal red cells relatively short 45-70 days

→ Fetus is exquisitely vulnerable to any pause in haematopoietic production during this period

→ Highest risk period for fetal anaemia is 9-20 weeks



Received: 19 May 2020 | Revised: 24 August 2020 | Accepted: 25 August 2020
DOI: 10.1002/pd.5819

REVIEW

PRENATAL DIAGNOSIS WILEY

Identification and management of congenital parvovirus B19 infection

Lucy O. Attwood[1] | Natasha E. Holmes[1,2,3] | Lisa Hui[2,4,5,6]

Received: 19 May 2020 | Revised: 24 August 2020 | Accepted: 25 August 2020
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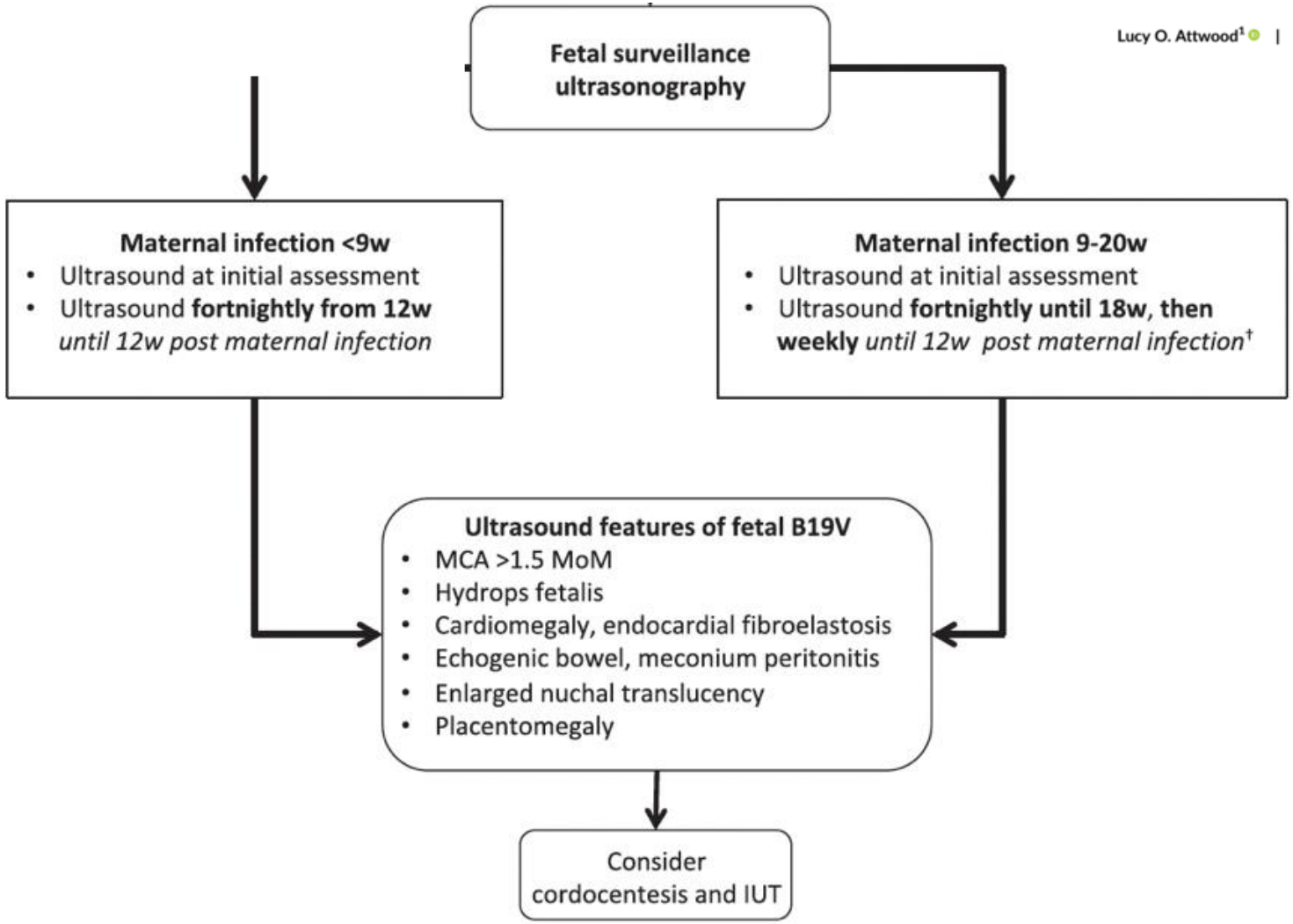
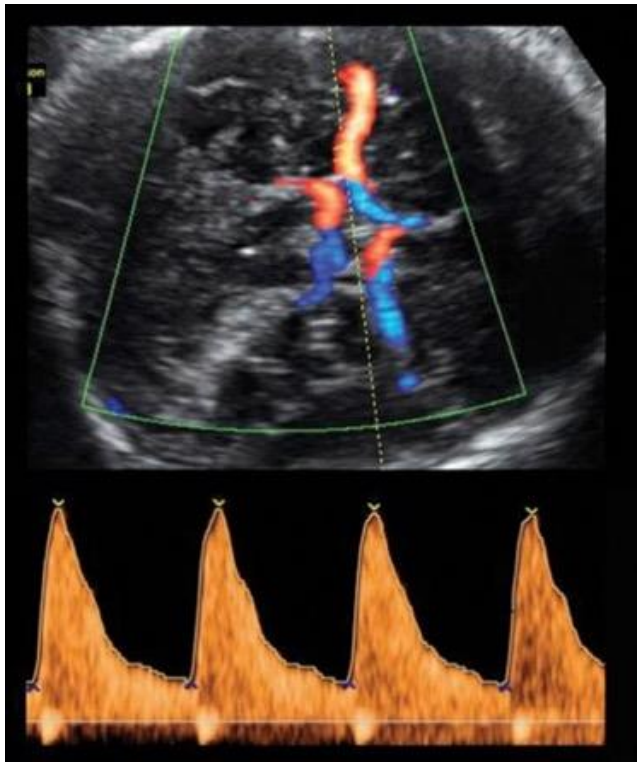


FIGURE 3 Evaluation and management of women exposed to parvovirus B19 during pregnancy. †If IUT is an option before 18 weeks, start weekly USS. Abbreviations—B19V: Parvovirus B19, w: weeks, MCA: middle cerebral artery, IUT: intrauterine transfusion

Ultrasound screening for fetal anaemia

- Middle-cerebral artery peak systolic velocity > 1.5 MoM
- Pericardial effusion, ascites, myocarditis

→ Fetal blood sampling and intrauterine transfusion



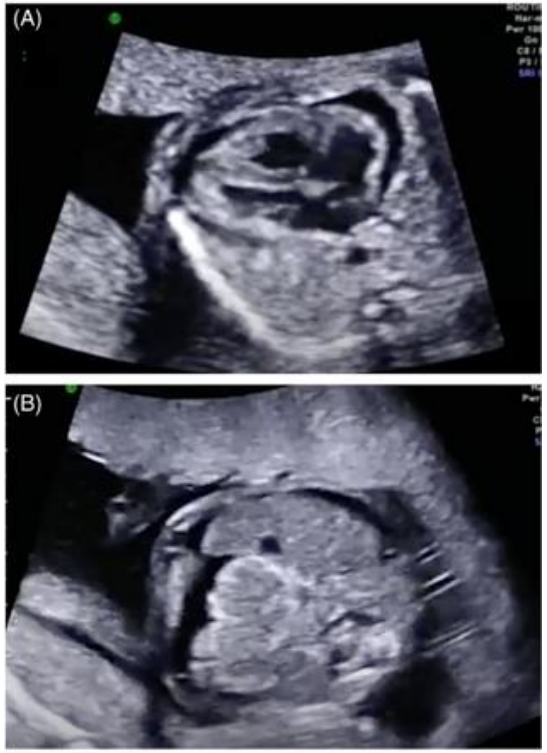
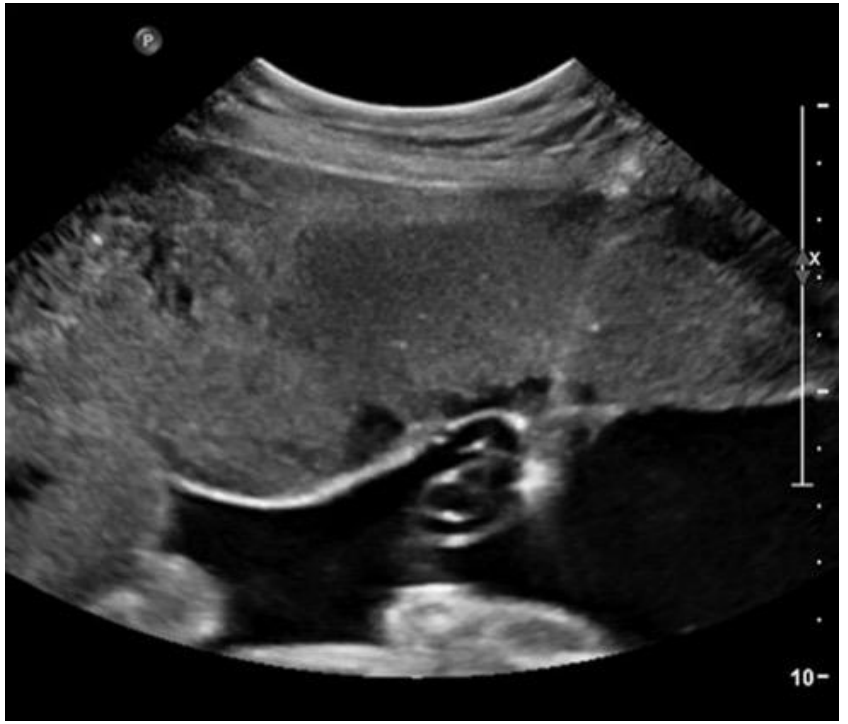


FIGURE 4 Fetus at 22 weeks gestation with hydrops due to parvovirus infection, exhibiting A, cardiomegaly and pericardial



Outcomes after fetal anaemia

- Dependent on presence of hydrops
  - Fetal loss after IUT 30% with hydrops vs 6% without hydrops
- Abnormal neurodevelopment in survivors
  - 10% after hydrops vs 0% without hydrops
- Testing for B19V in pregnancy is not recommended unless there is confirmed B19V exposure or diagnostic workup for fetal anaemia or hydrops is indicated

Take home message: parvovirus

1. Seasonal epidemics – think of parvovirus if a woman has a child or student with a compatible viral illness
2. Risk to fetus is only with maternal infection < 20 weeks
3. Good outcomes with intrauterine transfusion if treated before hydrops develops

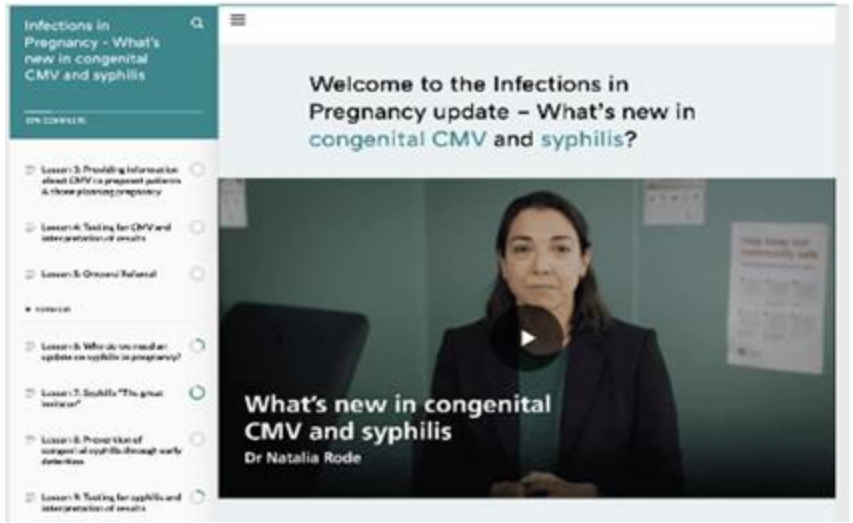
Take home message: CMV

1. More common than toxoplasmosis or listeria!
2. Primary prevention with hygiene advice should be provided to all women at the first antenatal visit or before pregnancy
3. Routine serology is not currently recommended – but if suspected primary CMV in first trimester, refer urgently for valaciclovir treatment

Take home messages: syphilis

1. Congenital syphilis is back! Consider repeat serology in second and third trimester for high-risk patients
2. If you see an ulcer, think of syphilis!
3. Benzathine penicillin 2.4million units weekly for 3 doses is the only adequate treatment in pregnancy for late latent syphilis
4. Infants of treated mothers need follow up until RPR neg

Further CME: RACGP CPD points



OR scan

- Free “Infections in Pregnancy” course https
- > 350 GPs have done the course
- 98% would recommend the course to others
- “Better than expected”
- “Pretty damn good”

Thank you!

- Free “Infections in Pregnancy” course https://praxhub.com
- CMV resources for your practice: https://cerebralpalsy.org.au/cmv/
- Patient CMV education video: https://www.youtube.com/watch?v=Bh6WgbGvTd8&feature=emb_logo

“Never, ever, think outside the box.”

Questions from the audience

HealthPathways Melbourne Overview

Shared Maternity Care Collaborative Workshops

8 October 2024

Pathways are written by GP clinical editors with support from local GPs, hospital-based specialists and other subject matter experts

- clear and concise, evidence-based medical advice
- Reduce variation in care
- how to refer to the most appropriate hospital, community health service or allied health provider.
- what services are available to my patients

HealthPathways – Shared Maternity Care

HealthPathways Melbourne

Relevant pathways:

- Antenatal - Second and Third Trimester Care
- Decreased Fetal Movements
- Hypertension in Pregnancy and Postpartum
- Sexual Health
- Skin Conditions (Rash and Itch) in Pregnancy
- UTI and Asymptomatic Bacteriuria in Pregnancy
- Varicella and Pregnancy

CPD Hours for HealthPathways Use

Referral pathways:

- Pregnancy Medical Conditions
- Acute Obstetric Referral or Admission (Same-day)
- Non-acute Obstetric Referral (> 24 hours)
- Early Pregnancy Assessment Service (EPAS)
- Pregnancy Booking
- Acute Infectious Diseases Referral (Same-day)
- Non-acute Infectious Diseases Referral (> 24 hours)
- Sexual Health Referrals
- Non-acute Sexual Health Referral (> 24 hours)
- Sexual Health Advice

Accessing HealthPathways

Welcome

This website is for health professionals only.

Sign in or register to request access.

Sign in or register

Get local health information, at the point of care

What is HealthPathways?

General enquiries

Terms and conditions

melbourne.healthpathways.org.au

info@healthpathwaysmelbourne.org.au

Health Service and Partner Updates

Mercy Health Update

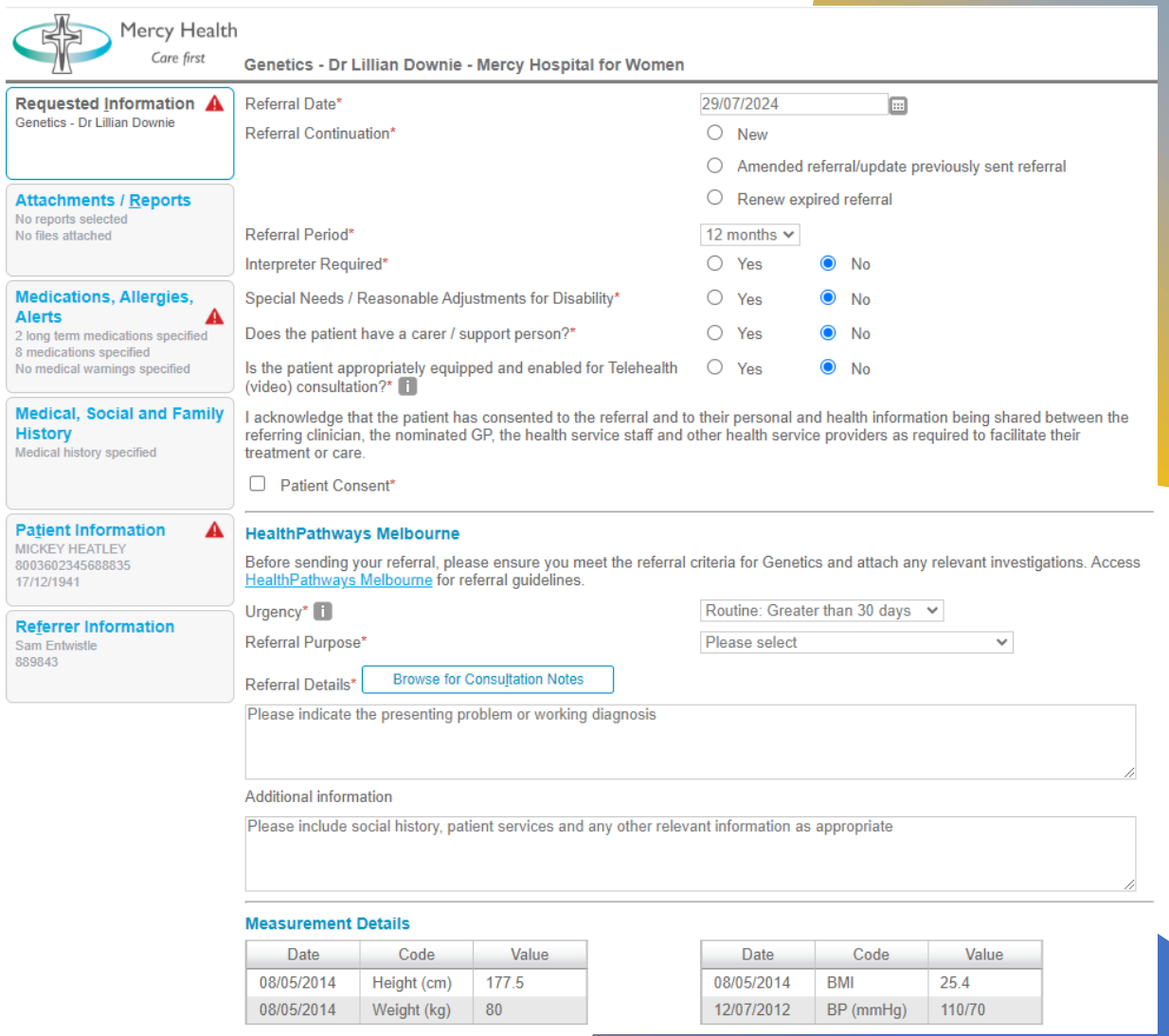
Mercy Health
Care first

Exciting things are coming to Mercy Hospital for Women!
Our first **GP speed dating event is** coming soon and the commencement of our newly established **Primary Care Liaison Advisory committee** EoI will be available in the coming weeks**.**

Stay up to date with all to come in Werribee Mercy Hospital.
You will receive information about the ED expansion, clinical information and education possibilities via the newsletter.

Please ensure you have signed up to our Primary Care Liaison **newsletter** via the Mercy Health, Primary Care Liaison webpage.

Mercy Health's preferred referral method for its Outpatient Specialist Clinics is via eReferrals, HealthLink SmartForms.
For more information visit our HealthLink eReferral infomation website



Western Health

Western Health Transition to HealthLink

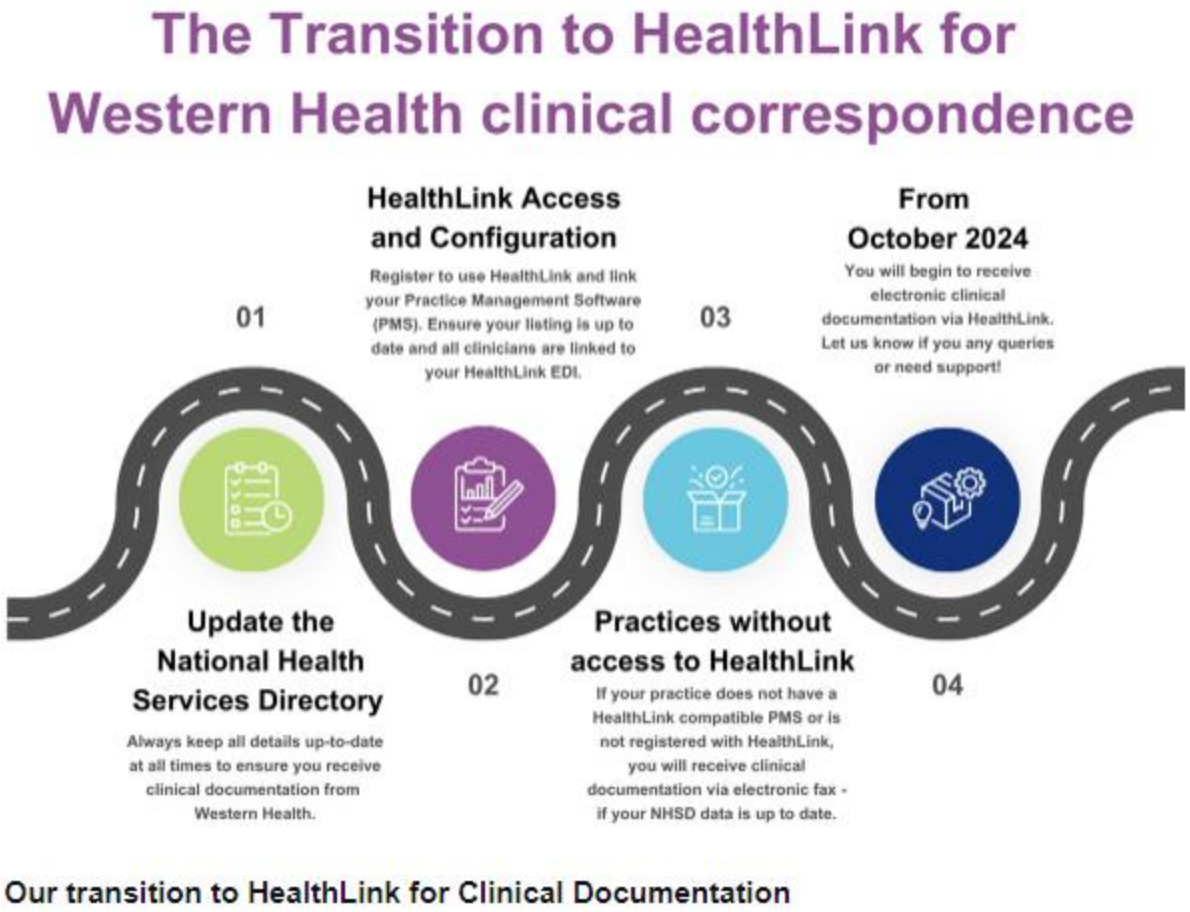
- Western Health (WH) is transitioning to HealthLink as our sole Secure Messaging Delivery (SMD) provider for clinical documentation.
- Starting in October 2024, all clinical correspondence for GPs will be sent through HealthLink, and our previous SMD provider, PulseNet, will be decommissioned.
- Our goal is to move all clinical correspondence for GPs to HealthLink by the end of 2024.
- For support with transitioning to HealthLink, please reach out to the Western Health GP Integration Unit:

gp@wh.org.au

or 03 8345 1735.

- For more information, visit https://www.westernhealth.org.au/HealthProfessionals/ForGPs

Western Health Transition to HealthLink



Royal Women's Hospital

Public Fertility Care & RACGP Victoria webinar

Causes of fertility, how to investigate, when to refer

Thursday 24 October 2024, 6 - 7pm

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

Subscribe to our quarterly GP News for updates

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

the women's
the royal women's hospital

phn
NORTH WESTERN MELBOURNE
An Australian Government Initiative

Perinatal mental health and psychotropic medicines in pregnancy

Tuesday 1 October 2024

Email: gp.liaison@thewomens.org.au

The content in this session is valid at date of presentation

https://www.youtube.com/watch?v=Z2NqxA2SBSs

PANDA – Perinatal Anxiety and Depression Australia

We provide Australia's only National Perinatal Mental Health Helpline, plus a range of digital supports for expecting and new parents, and the people who care for them.

PANDA National Helpline

1300 726 306
(weekdays 9am–7:30pm. Saturdays 9am-4pm AEST)

Free phone-based support for perinatal mental health and emotional wellbeing challenges

No Medicare required

Interpreters available

Follow-up support

PANDA
Perinatal Anxiety & Depression Australia

PANDA Programs & Services

We provide counselling, peer support and care coordination

Intensive Care & Counselling (funded in VIC & QLD)

Free secondary consultation service for healthcare providers

Resources to share with families in your care

Download or order free hardcopies of PANDA posters, factsheets, brochures via our website

Resources for First Nations families

Translated resources in over 40 community languages

panda.org.au

Online referral form

Access to free courses on PANDA Learning Hub

PANDA Mental Health Checklists

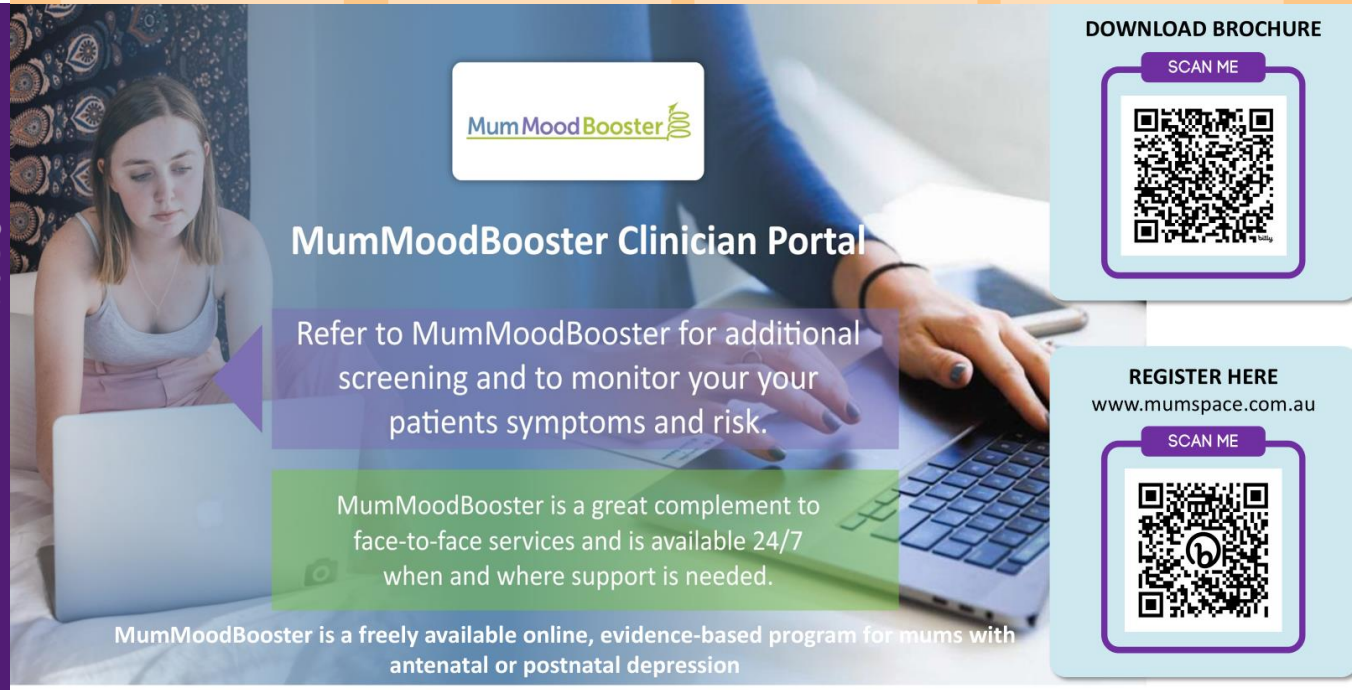
Real life stories

Resources for self-support, carers and healthcare providers

Survive and Thrive podcast

Psychotropic Prescribing in Perinatal Period

Dr Charles Su
CL Consultant Psychiatrist
Charles.su@thewomens.org.au



Increasing access to abortion health care in north east Melbourne

- A joint initiative to increase access to early medical abortion (EMA) in primary care settings in north east metro Melbourne
- Identified need for improved access in Hume, Whittlesea and Yarra Ranges LGAs
- Healthcare providers are encouraged to consider becoming a publicly list EMA provider, and/or providing patients with information other local services

To discuss becoming a listed EMA provider, or for further information, use the contact request form here

Project partners:

North Eastern Public Health Unit (NEPHU)
North Western Melbourne Primary Health Network
Women's Health in the North
Women's Health East
1800 My Options

Further information:

https://nephu.org.au/news-and-events/ema-access

https://www.1800myoptions.org.au/for-professionals/become-an-mtop-provider/

NEPHU NORTH EASTERN PUBLIC HEALTH UNIT

Session Conclusion

We value your feedback, let us know your thoughts.

Scan this QR code

You will receive a post session email within a week which will include slides and resources discussed during this session.

Attendance certificate will be received within 4-6 weeks.

To attend further education sessions, visit,

https://nwmphn.org.au/resources-events/events/

https://nwmphn.org.au/resources-events/resources/