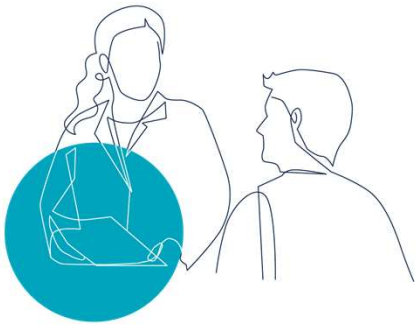
Crossing the Placenta: Integrating New Evidence Into Everyday Maternity Care

June 1, 2026 | 1830–2000 PT



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TERRITORIAL ACKNOWLEDGMENT

We acknowledge that UBC CPD is located on the traditional, ancestral and unceded territory of the Skwxwú7mesh (Squamish), xʷməθkwəy̓əm (Musqueam), and Sḵ̱ílwətaʔ/Selilwitulh (Tsleil-Waututh) Nations.

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What is your relationship to the territory or the land that you're on?

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FUNDING ACKNOWLEDGEMENT

Funding for this webinar has been provided by the Perinatal Community of Practice, an initiative of the Shared Care Committee and Joint Collaborative Committees.

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SharedCare Partners for Patients

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DR. KATHLEEN ROSS

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INTERESTED? STAY CONNECTED!

The Perinatal Community of Practice (CoP) works to unite physicians, midwives, and perinatal care providers across BC by equipping them with practical tools, skills, and resources. Through collaboration and knowledge, they work to advance culturally safe, high-quality care for all patients.

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Scan the QR code to stay informed about:

- Perinatal care forums and networking opportunities
- Educational webinars hosted with UBC CPD
- Project highlights

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LEARNING OBJECTIVES

1. Apply updated gestational diabetes screening, diagnosis and management guidance to support evidence-based maternity care.
2. Review updated guidelines for intrahepatic cholestasis of pregnancy, including interpreting bile acid thresholds, testing approaches, and management implications.
3. Identify and apply optimal cord management strategies, including cord milking and delayed cord clamping, for populations at risk of poor neonatal outcomes.
4. Identify appropriate resources to support patient-centred maternity care.

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DISCLOSURES

Speakers

- **Dr. Hayley Bos:** Received payments from Pfizer for presentations for local community advisory board for RSV vaccination. **These topics will not be discussed in this webinar.**
- **Dr. James Hayward:** nothing to disclose.
- **Dr. Tracy Monk:** Received payments from PathwaysBC as Medical Director. There is **no potential conflict of interest** between this funding and this webinar.
- **Dr. Kirsten Niles:** Received grant funding from CIHR. There is **no potential conflict of interest** between this funding and this webinar.
- **Dr. Kathleen Ross (moderator):** Received payments from College of Family Physicians of Canada, Pathways Patient Referral Association, Health Data Coalition and FHA Physician Quality Improvement. There is **no potential conflict of interest** between this funding and this webinar.

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DISCLOSURES

Planning Team

- **Dr. Bruce Hobson:** Has received funding from UBC CPD, Doctors of BC, PHSA, and several Divisions of Family Practice. There is **no potential conflict of interest** between this funding and this webinar.
- **Stephanie Din, Caldon Saunders** are employees of UBC CPD.

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UPDATES IN GESTATIONAL DIABETES

Hayley Bos, MD MPH FRSPC

OBGYN/MFM

Medical Director Perinatal, Island Health

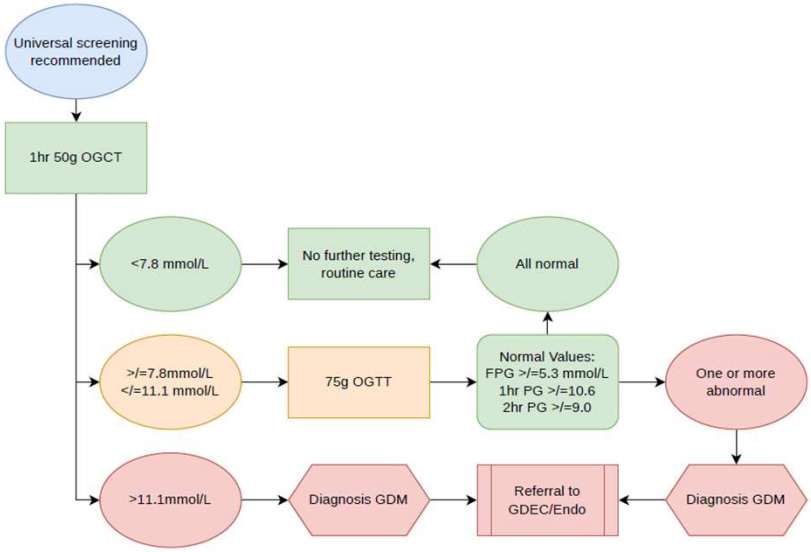
Department Head OBGYN, Island Health

CoChair, Communities of Practice - Perinatal

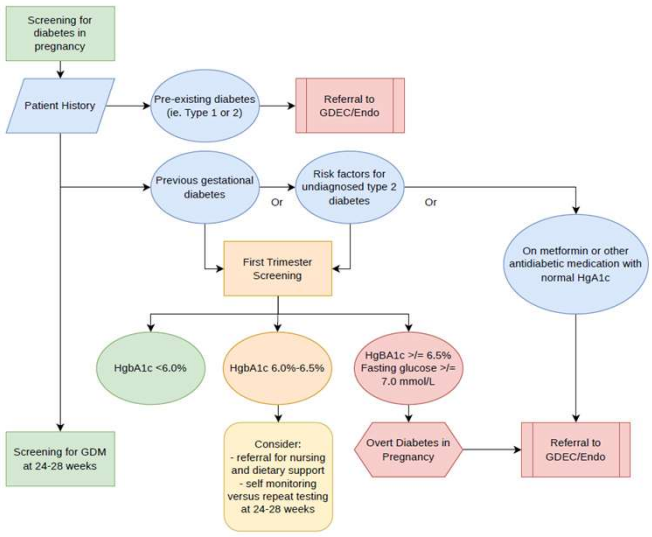
Objectives

- Review current screening approaches for GDM
- Review updated GDM classification framework
- Summarize management and treatment recommendations
- Identify implications for regional practice

Screening for Gestational Diabetes



Distinguishing GDM vs Pre-existing Diabetes



Core Management

- Glycemic targets
  - Fasting blood glucose <5.3 mmol/L
  - 1hr postprandial blood glucose <7.8 mmol/L
  - 2hr postprandial blood glucose <6.7 mmol/L
- Avoid restricting carbohydrates
- Ensure adequate protein intake
- Regular physical activity, including after meals

Monitoring & Evidence Considerations

- Serial growth assessment used in higher-risk GDM (Category 2/3)
- Ultrasound accuracy limited (±15%, reduced near term)
- No high-quality evidence supporting:
  - Routine serial ultrasounds
  - Standardized fetal surveillance protocols
- Key message:
  - Management and surveillance should be individualized
  - Guided by local resources and shared decision-making

Category 1 (Low Risk)

- Diet/lifestyle controlled
- No evidence of metabolic dysfunction
- Management:
  - Clinical follow-up only
  - No routine ultrasound or NST
  - No indicated early delivery for GDM

Category 2 (Moderate Risk)

- Well controlled with medication
  - Glucose in target >70-85% of time
- Monitoring:
  - Monthly growth ultrasound (from ~28 weeks or medication start
  - NSTs starting at 36 weeks (earlier if indicated)
- Delivery:
  - Recommend delivery at 39+0–39+6 weeks
  - No routine need for early induction or cesarean

Category 3 (Higher Risk)

Glycemic control incomplete (>15–30% out of target)

Management:

- Initiate/intensify pharmacologic therapy
- Increase monitoring frequency
- Watch closely for preeclampsia

Delivery:

Consider delivery at 37+0–38+0 weeks (due to metabolic instability)

Special Considerations

Decreasing insulin requirements:

- Not clearly associated with placental dysfunction
- Possible association with preeclampsia

Management:

- Assess for preeclampsia
- Consider initiating/continuing NST surveillance

Key message:

- Falling insulin needs alone ≠ indication for early delivery
- Delivery decisions should be based on overall clinical picture

Summary of GDM Classification & Management

GDM category	Serial fetal growth assessment	Fetal surveillance near term (36+ weeks)	Timing of delivery
Category 1: Nutrition- and exercise-treated GDM at target (Treat as normal)	Regular fundal height assessment	Recommend fetal movement awareness	Recommend instruction/delivery as per local post-date protocol for general obstetric population
Category 2: Medication-treated GDM at target (May benefit from OB consult)	Beginning after diagnosis, fetal growth ultrasound as indicated according to local protocol	Recommend fetal movement awareness and/or NST as indicated according to local protocol	Recommend induction/delivery at 39 to 39+6 weeks
Category 3: GDM with incomplete attainment of glycemic targets (Recommend OB/MFM consult)	Beginning after diagnosis, fetal growth ultrasound every 3 to 4 weeks until delivery	Begin NST surveillance in the third trimester. Frequency and method as indicated by clinical circumstances	Recommend induction/delivery starting at 38 weeks
GDM: gestational diabetes mellitus **OB:** obstetrician		**MFM:** Maternal Fetal Medicine **NST:** non-stress test	

Key implication: Classification should guide monitoring intensity and timing of delivery

Infants at Risk for Neonatal Hypoglycemia

- Risk mechanism:
  - Maternal hyperglycemia → fetal hyperinsulinemia
  - Post-delivery mismatch → hypoglycemia
- Prevention:
  - Optimize maternal glycemic control pre-delivery
  - Avoid corticosteroids after 34 weeks
  - Encourage early feeding
- Management:
  - Follow local monitoring protocols
  - Consider symptoms in addition to glucose levels
- Optional:
  - Antenatal colostrum expression (if no contraindications)

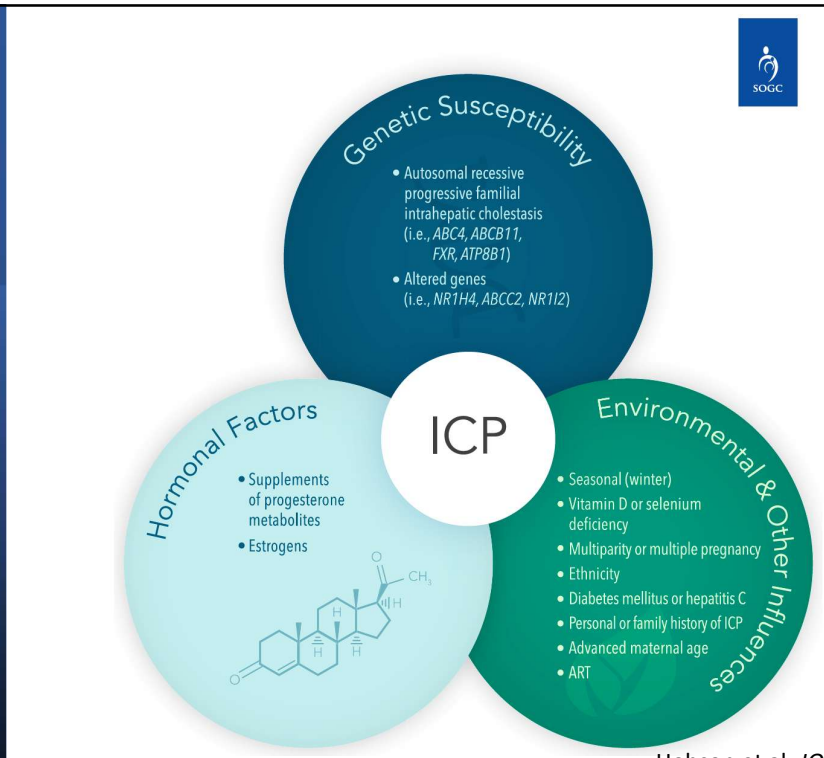
Intrahepatic Cholestasis in Pregnancy (ICP)

Dr. Kirsten M. Niles MD CM, PhD, FRCSC
Maternal Fetal Medicine, Fraser Health Authority
Clinical Associate Professor, Department of Obstetrics & Gynaecology, UBC

What is ICP in a nutshell?

- Hepatic disease unique to pregnancy
- Incidence 0.1% - 27% depending on the population in question
- Features:
  - Typically manifests in late-second or third trimester
  - **Pruritis** - particularly of the palms and soles
  - Elevated maternal bile acid levels
- Sequelae:
  - Birthing parent: significant pruritis, increased chance of preeclampsia and gestational diabetes
  - Fetus/neonate: Stillbirth, preterm birth, neonatal respiratory distress, neonatal intensive care unit admission

Etiology of ICP



Hobson et al, *JOGC* 2024

Previously available guidelines

	sMFM #53 (2021)	RCOG Greentop #43 (2022)
Bile acids (non-fasting)	>10 umol/L	>19 umol/L
Management	UCDA as first line treatment for symptoms	No routine treatment (limited benefit)
Fetal monitoring start	At a gestational age when delivery for fetal indications would be considered	Neither NST nor ultrasound surveillance recommended
Fetal monitoring frequency	Once or twice weekly	Not recommended
Delivery timing	Peak bile acid dependent: >100 umol/L: 36+0 weeks <100 umol/L: 36+0-39+0	Peak bile acid dependent: >100 umol/L: 35-36 weeks 40-99 umol/L: 38-39 weeks 19-39 umol/L: 39-40 weeks
Monitoring during labour	Continuous	Continuous if peak bile acid >100 umol/L

No. 452, August 2024

Guideline No. 452: Diagnosis and Management of Intrahepatic Cholestasis of Pregnancy

(En français : Diagnostic et prise en charge de la cholestase intrahépatique de la grossesse)

The English document is the original version; translation may introduce small differences in the French version.

This clinical practice guideline was prepared by the authors, reviewed by the SOGC Clinical Obstetrics Committee (2023), and approved by the SOGC Guideline Management and Oversight Committee (GMOC).

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J Obstet Gynaecol Can 2024;46(8):102618

https://doi.org/10.1016/j.jogc.2024.102618

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Disclosures: Statements were received from all authors. No relationships or activities that could involve a conflict of interest were declared by Dr. Sebastian Hobson, Dr. Marie-Ève Roy-Lacroix, and Dr. Bi Lan Wo. Dr. Elissa Cohen declares that she received payment or honouraria from Bayer for work associated with the Mirena intrauterine device and a scholarship from the Social Sciences and Humanities Research Council for her doctoral dissertation research. Dr. Shital Gandhi declares that she is the Treasurer for the North American Society for Obstetric Medicine. Dr. Venu Jain declares that he has received payment for expert opinions on medicolegal cases and has not yet given expert testimony. He also declares that he is on the SOGC Board of Directors and is a member of SOGC GMOC. Dr. Kirsten Niles declares that she is a member of the SOGC Clinical Obstetrics Committee and Regional Division Head of Obstetrics, Fraser

Identification of ICP

Symptoms:	Physical examination	Laboratory

• Pruritis: Primarily of palms and soles but may be "everywhere"
• May occur 3-4 weeks prior to elevation of bile acids
• Uncommon symptoms: nausea, fatigue, abdominal pain, pale stool or steatorrhea, dark urine, and malaise
	• Not typically associated with rash although may have excoriations and prurigo nodules from scratching
	• Jaundice 10-15%
	• Rare: encephalopathy, signs of liver failure
		• <u>Non-fasting bile acids > 19 umol/L</u>
		  • If initially normal, can be reassessed 2-4 weeks later
		  • Surveillance q2-4 weeks
		• Non-diagnostic but commonly present: Elevated serum aminotransferases

When atypical features are present, consider alternative diagnoses

Management of Maternal Symptoms

- Non-specific
  - Topical emollients
  - Antihistamines (hydroxyzine)
- Specific
  - Ursodeoxycholic acid (UDCA) (Ursodiol)
    - Bile acid that alters composition of total bile salts
    - Demonstrated improvement for pruritis and preterm birth with no impact on fetal sequelae
    - Starting dose: 10-15 mg/kg/d PO divided into 2-3 doses/day
    - Typical starting dose: 500 mg PO BID
    - Max dose: 20 mg/kg/d
  - Refractory cases should be referred to a specialist

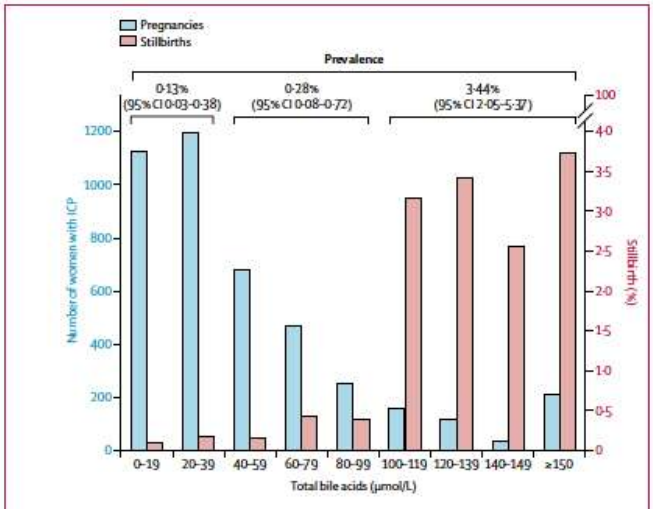
Management of Fetal/Neonatal Risks

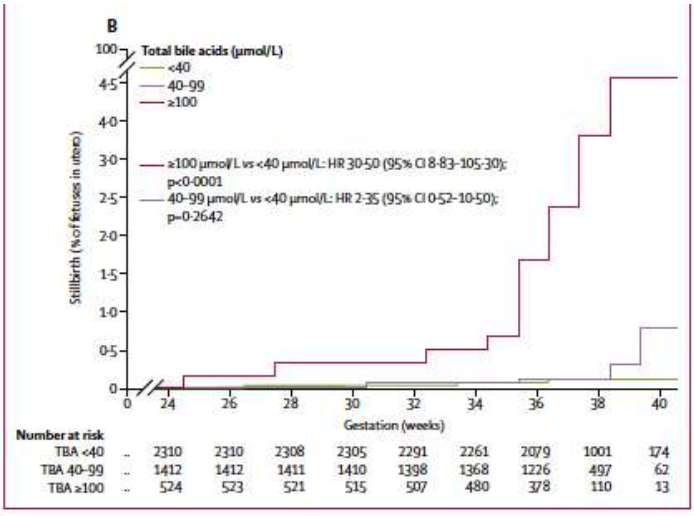
- Etiology of stillbirth not well understood
  - No association with fetal growth restriction or placental insufficiency
  - Associated with an acute event
    - Theories include placental vasospasm or sudden fetal cardiac event
  - Risk is positively associated with highest recorded bile acid level
- Fetal heart rate monitoring or ultrasound surveillance have not been shown to accurately identify fetuses at increased risk
  - Consider third trimester growth ultrasound to confirm no additional risk factors that would benefit from additional surveillance
- Delivery

A pragmatic guide to recommending iatrogenic birth based on highest non-fasting bile acid levels and associated risk of stillbirth compared to the general population risk

Reference: 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;393:899-909.

Highest reported bile acid level (µmol/L):	Recommended gestation for delivery:
≤19 (normal)	Routine care
20-39	39+0 – 39+6
40-69	38+0 – 38+6
70-99	36+0 – 37+6
≥100	By 36+0 week's gestation, or earlier in patients with comorbidities or other risks factors





Ovadia et al 2019, *Lancet*

What happens after?

- Symptoms and biochemical abnormalities should resolve within 1-2 weeks postpartum
  - May persist up to 4 weeks
  - If still present at routine post partum visit, consider specialist referral
- Individuals with ICP are at increased risk of future cholecystitis, cholelithiasis, pancreatic disease, goiter, and hypothyroidism
- 70-90% recurrence risk in future pregnancies

	sMFM #53 (2021)	RCOG Greentop #43 (2022)	SOGC Guideline #452 (2024)
Bile acids (non-fasting)	>10 umol/L	>19 umol/L	>19 umol/L
Management	UCDA as first line treatment for symptoms	No routine treatment (limited benefit)	UCDA for symptoms
Fetal monitoring start	At a gestational age when delivery for fetal indications would be considered	Neither NST nor ultrasound surveillance recommended	Serial NST and ultrasound not recommended 3rd trimester growth to ensure no other risk factors
Fetal monitoring frequency	Once or twice weekly	Not recommended	Not recommended
Delivery timing	Peak bile acid dependent: >100 umol/L: 36+0 weeks <100 umol/L: 36+0-39+0	Peak bile acid dependent: >100 umol/L: 35-36 weeks 40-99 umol/L: 38-39 weeks 19-39 umol/L: 39-40 weeks	Peak bile acid dependent: >100 umol/L: by 36 weeks 70-99 umol/L: 36-37+6 weeks 40-69 umol/L: 38-38+6 weeks 20-39 umol/L: 39-39+ 6 weeks
Monitoring during labour	Continuous	Continuous if peak bile acid >100 umol/L	Continuous

Take home points

- ICP is diagnosed with non-fasting total non-fasting serum bile acids > 19 umol/L
- Any atypical features or those presenting earlier in pregnancy should prompt consideration for other causes
- Medical therapy can be used to manage symptoms but does not impact fetal outcomes
- Fetal surveillance methods have no demonstrated benefit
- Delivery timing based on peak total serum bile acids
- Symptoms and biochemical abnormalities should resolve post delivery

Umbilical cord milking

DR. JAMES HAYWARD, MD, FRCSC

MATERNAL-FETAL MEDICINE, ISLAND HEALTH

CLINICAL ASSISTANT PROFESSOR, UBC

Objectives

Identify and apply optimal cord management strategies, including cord milking and delayed cord clamping, for populations at risk of poor neonatal outcomes.

Background – DCC Outcomes

Preterm infants

- Improves survival by 30%
- Reduces intraventricular hemorrhage and NEC
- Fewer transfusions
- Greater than benefits from corticosteroids

Term

- Improved hemoglobin, iron stores
- DCC greater than 60 seconds can increase risk of hyperbilirubinemia

Duration

- Greater than 60 seconds
- Some data that greater than 120 seconds may be required to provide mortality benefit

Background - Physiology

Autotransfusion of oxygenated blood

- Increases circulating blood volume and iron
- Can provide high oxygen concentrations during transition

Hemodynamics

- Immediate cord clamping causes abrupt change in blood pressure
- Immediate cord clamping can result in relative hypovolemia once lung vasculature dilates
- Delayed cord clamping gives time to accommodate blood volume
  - Animal data demonstrates DCC eliminates fluctuations in cardiac output and cerebral blood flow
- Total blood volume estimated at 15 mL/kg

Background - Umbilical Cord Milking

- Still provides autotransfusion of oxygenated blood
  - high oxygen levels for babies with hypoxemia
  - blood volume as lungs dilate
- Studies in term and near-term infants demonstrate improved physiologic parameters (heart rate, blood pressure, cerebral blood flow) and reduced anemia similar to DCC
- Studies in early preterm infants observed increased IVH
- Can be performed quickly, unlike DCC

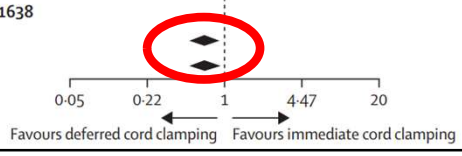
Clinical Care

DCC

Outcome:
Survival
less than 37w

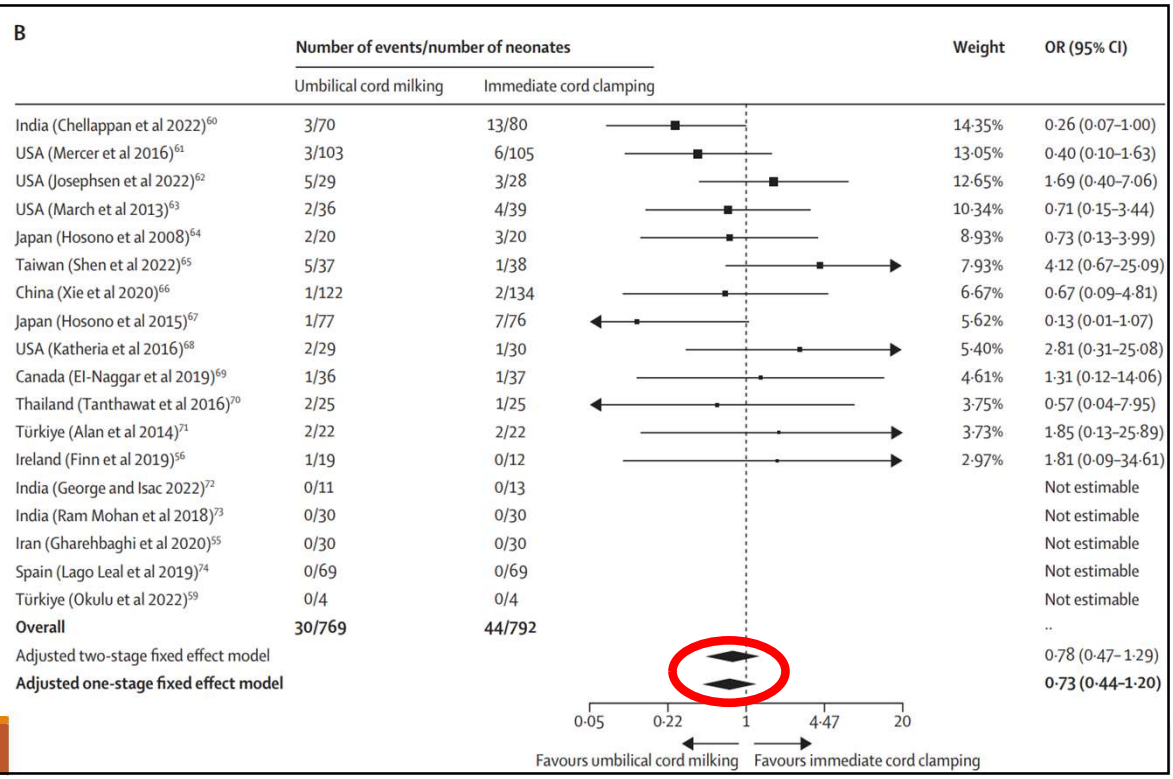
A

	Number of events/number of neonates		Weight	OR (95% CI)
	Deferred cord clamping	Immediate cord clamping		
Australia (Tarnow-Mordi et al 2017)[40]	54/808	74/807	57·54%	0·70 (0·48–1·01)
Egypt (Kamal et al 2019)[41]	16/105	23/105	13·68%	0·71 (0·33–1·53)
UK (Duley et al 2018)[42]	7/135	14/134	7·95%	0·37 (0·13–1·00)
India (Ranjit et al 2015)[43]	2/50	5/50	3·39%	0·42 (0·09–1·96)
USA (Backes et al 2016)[44]	4/18	4/19	3·17%	0·87 (0·18–4·26)
Spain (Garcia et al 2023)[45]	2/47	4/49	3·02%	0·68 (0·13–3·46)
USA (Oh et al 2011)[46]	3/16	3/17	2·83%	1·02 (0·19–5·52)
Egypt (Yunis et al 2021)[47]	4/30	3/30	2·45%	0·48 (0·08–2·93)
Spain (Gregoraci et al 2023)[48]	4/27	1/30	2·17%	2·98 (0·44–20·37)
India (Datta et al 2017)[49]	2/59	0/61	1·02%	4·70 (0·28–77·83)
Canada (Chu et al 2011)[50]	0/19	1/19	0·95%	0·36 (0·02–6·51)
India (Rana et al 2018)[51]	0/50	1/50	0·93%	0·33 (0·02–6·14)
Israel (Kugelman et al 2007)[52]	0/30	1/35	0·89%	0·37 (0·02–7·53)
China (Liu et al 2023)[53]	0/68	0/66		Not estimable
India (Sahoo et al 2020)[54]	0/21	0/26		Not estimable
Iran (Gharehbaghi et al 2020)[55]	0/30	0/30		Not estimable
Ireland (Finn et al 2019)[56]	0/14	0/12		Not estimable
Thailand (Ruangkit et al 2019)[57]	0/51	0/50		Not estimable
Thailand (Salae et al 2016)[58]	0/42	0/44		Not estimable
Türkiye (Okulu et al 2022)[59]	0/2	0/4		Not estimable
Overall	**98/1622**	**134/1638**		..
Adjusted two-stage fixed effect model				0·68 (0·51–0·90)
Adjusted one-stage fixed effect model				**0·68 (0·51–0·91)**



UCM

Outcome:
Survival
less than 37w



B

	Number of events/number of neonates		Weight	OR (95% CI)
	Umbilical cord milking	Immediate cord clamping		
India (Chellappan et al 2022)[60]	3/70	13/80	14·35%	0·26 (0·07–1·00)
USA (Mercer et al 2016)[61]	3/103	6/105	13·05%	0·40 (0·10–1·63)
USA (Josephsen et al 2022)[62]	5/29	3/28	12·65%	1·69 (0·40–7·06)
USA (March et al 2013)[63]	2/36	4/39	10·34%	0·71 (0·15–3·44)
Japan (Hosono et al 2008)[64]	2/20	3/20	8·93%	0·73 (0·13–3·99)
Taiwan (Shen et al 2022)[65]	5/37	1/38	7·93%	4·12 (0·67–25·09)
China (Xie et al 2020)[66]	1/122	2/134	6·67%	0·67 (0·09–4·81)
Japan (Hosono et al 2015)[67]	1/77	7/76	5·62%	0·13 (0·01–1·07)
USA (Katheria et al 2016)[68]	2/29	1/30	5·40%	2·81 (0·31–25·08)
Canada (El-Naggar et al 2019)[69]	1/36	1/37	4·61%	1·31 (0·12–14·06)
Thailand (Tanthawat et al 2016)[70]	2/25	1/25	3·75%	0·57 (0·04–7·95)
Türkiye (Alan et al 2014)[71]	2/22	2/22	3·73%	1·85 (0·13–25·89)
Ireland (Finn et al 2019)[56]	1/19	0/12	2·97%	1·81 (0·09–34·61)
India (George and Isac 2022)[72]	0/11	0/13		Not estimable
India (Ram Mohan et al 2018)[73]	0/30	0/30		Not estimable
Iran (Gharehbaghi et al 2020)[55]	0/30	0/30		Not estimable
Spain (Lago Leal et al 2019)[74]	0/69	0/69		Not estimable
Türkiye (Okulu et al 2022)[59]	0/4	0/4		Not estimable
Overall	**30/769**	**44/792**		..
Adjusted two-stage fixed effect model				0·78 (0·47–1·29)
Adjusted one-stage fixed effect model				**0·73 (0·44–1·20)**

Umbilical cord milking in non-vigorous infants: A cluster-randomized crossover trial

- Multicenter (US, Halifax and Edmonton, Poland)
- 35 to 42 weeks
- Non-vigorous: **Any** of poor tone, pallor, or lack of breathing at 15 seconds of life despite initial stimulation
- 85% of infants met all 3 criteria to qualify as “non-vigorous”

Results

01

Slightly better APGAR scores with milking group, unlikely clinically

02

Lower rate of requiring delivery room resuscitation (10% absolute risk reduction)

03

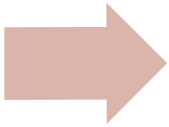
Significantly lower rate of moderate or severe HIE (1% vs 3%)

04

No difference in mortality or IVH; no difference in phototherapy

How to milk a cord

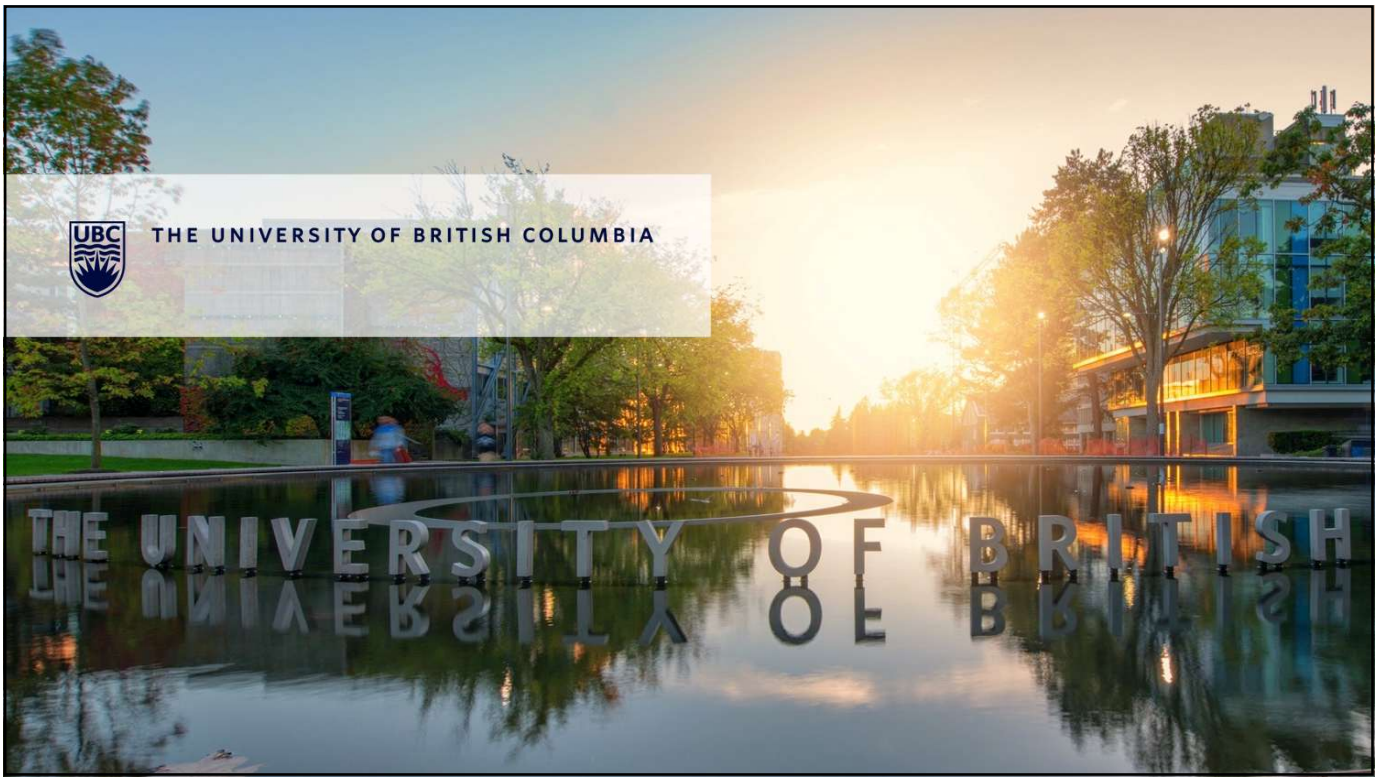
Infant placed at the level of the uterus



20cm of cord milked over 2 seconds, 4 times

Conclusions

- Delayed cord clamping is optimal for most infants, and is more beneficial for more preterm infants
- Umbilical cord milking provides most of the benefits of delayed cord clamping, faster, and should be considered when DCC cannot be safely performed
  - Target population: infants greater than 34 weeks with no respiratory effort and/or low tone at 15-30 seconds of life. UCM may reduce risk of hypoxia-related outcomes including encephalopathy.
  - Alternative populations: other contraindications to DCC e.g. maternal bleeding
  - Contraindication: Infants under 28 weeks (caution under 34 weeks)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