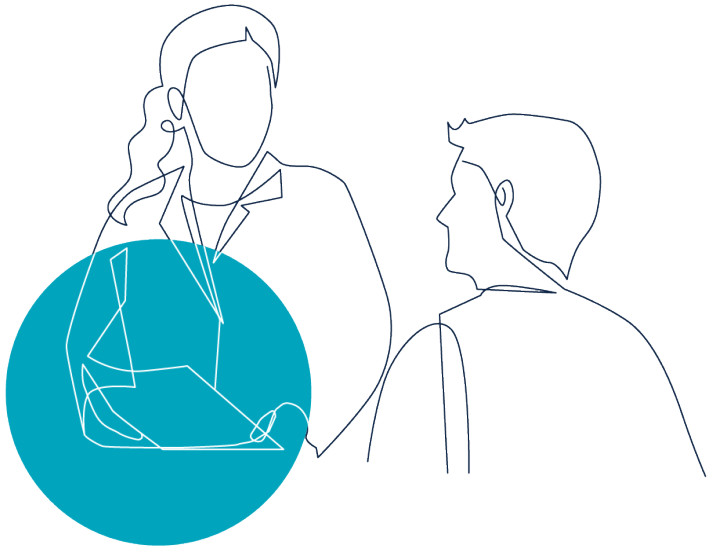
Much to do About Induction

March 6, 2025 | 1830–2000 PT



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LAND ACKNOWLEDGMENT

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

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

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Joint Collaborative Committees

DISCLOSURES

Speakers

- **Dr. Julie Robertson:** Nothing to disclose
- **Dr. Shelley Ross:** Has received funding from the Federation of Medical Women of Canada Pfizer related to RSV advocacy. There is **no potential conflict of interest** between this funding and this webinar.

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Planning Team

- **Dr. Bruce Hobson:** Has received funding from UBC CPD, Doctors of BC, PHSA, PainBC, Cowichan Valley Division of FP, Qathet Division of FP as a Medical Lead, Director, and Committee Member. There is **no potential conflict of interest** between this funding and this webinar.
- **Stephanie Din, Caldon Saunders:** Nothing to disclose

LEARNING OBJECTIVES

1. Describe the current evidence-based guidelines for the induction of labour (IOL).

2. Apply the current guidelines for IOL into practice.

3. Recognize and respond appropriately to 'red flags' when assessing the need for IOL.

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Much to Do About Induction

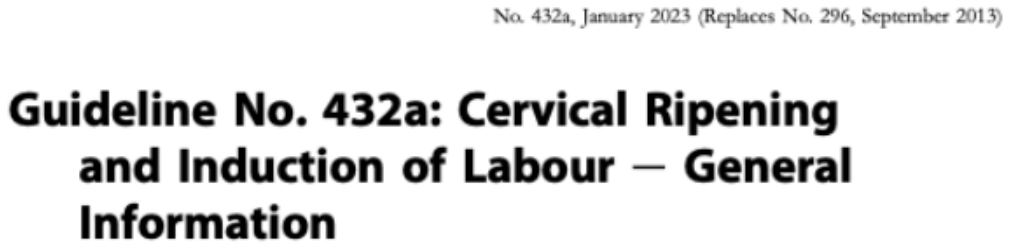
Julie Robertson

General principles

Induction of labour should be a shared decision

The decision to induce prior to 39 weeks should be carefully considered:

- Short-term NICU admission is 10% at 37 weeks vs. 3% at 39 weeks
- There is ongoing rapid brain development
- Continued lung maturation

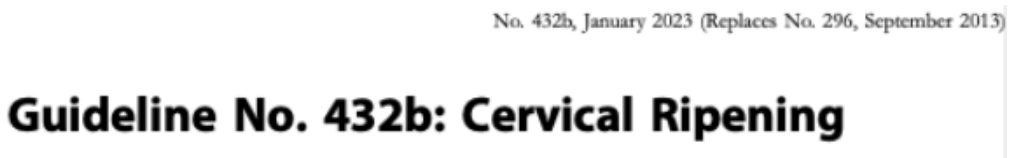


No. 432a, January 2023 (Replaces No. 296, September 2013)

Guideline No. 432a: Cervical Ripening and Induction of Labour — General Information

Best method for cervical ripening?

- Ripening should be offered when the modified Bishop score is less than 7
- Neither amniotomy nor oxytocin alone are effective cervical ripening agents
- The preferred method for ripening is a Foley balloon catheter
- If Foley is not possible, PGE1 or PGE2 can be used



Best combination of techniques?

Foley balloon is appropriate for outpatient use

Foley and prostaglandins can be used concurrently

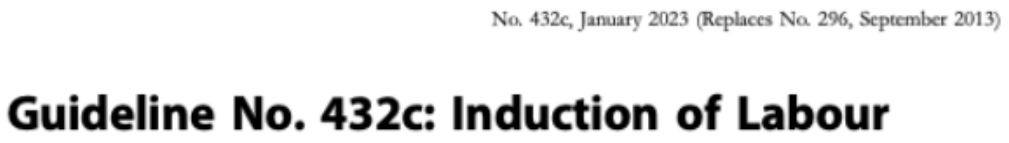
It is unclear whether Foley/oxy concurrently is superior to Foley followed by oxy

Once cervical ripening is achieved, best results are achieved using either oral misoprostol or oxytocin with early amniotomy

Misoprostol vs. oxytocin

- Oral misoprostol or oxytocin with amniotomy is the preferred method of induction of labour when the Bishop score is 7 or greater.
- Oral misoprostol is at least as effective as oxytocin, dinoprostone, and vaginal misoprostol, and in some cases superior.

Kerr RS, Kumar N, Williams MJ, et al. Low-dose oral misoprostol for induction of labour. Cochrane Database Syst Rev 2021; 6: CD014484.


No. 432c, January 2023 (Replaces No. 296, September 2013)

Guideline No. 432c: Induction of Labour

Misoprostol for induction of labour

- Several trials comparing sublingual, oral or vaginal misoprostol to oxytocin for TPROM found no difference in vaginal births within 24 hours, regardless of Bishop Score

- *Pourafi I, Shagafi N, et al. Induction of labour in term prelabour rupture of membranes: oxytocin versus sublingual misoprostol, a randomized controlled trial. JOGC 2018; 38: 167-71*
- *Lin MG, Nutharapaty FS, Carver Ar et al. Misoprostol for labour induction in women with term prelabour rupture of membranes: a meta-analysis. Obstet Gynecol 2015; 106: 593-601.*

Does misoprostol work?

2010 Cochrane Systematic Review:

- 121 trials comparing **vaginal misoprostol** for 3rd trimester cervical ripening or labour induction with placebo/no treatment, or other methods
- **Vs placebo:** misoprostol associated with reduced failure to achieve vaginal delivery within 24 hours **(RR 0.51, 95% CI 0.37-0.71)**
- Uterine hyperstimulation without FHR changes, was increased **(RR 3.52, 95% CI 1.78-6.99)**

Hofmeyr GJ, Gulmezoglu AM, Pileggi C. Vaginal misoprostol for cervical ripening and induction of labour. Cochrane Database Syst Rev 2010: CD000941.

Misoprostol v oxytocin

- 6 trials, 737 women, with and without ruptured membranes
- No difference in vaginal births in 24 h **(RR 1.12; 95% CI 0.95-1.33)**
- Reduction in c/s rate **(RR 0.67; 95% CI 0.50 - 0.90)**
- Uncertain effect on hyperstimulation with FHR changes **(RR 0.66; 95% CI 0.19-2.26)**

Kerr RS, Kumar N, Williams MJ et al. Low-dose oral misoprostol for induction of labour. Cochrane Database Syst Rev 2021; 6: CD014484.

Timing of induction – the ARRIVE trial

- Large, unmasked, multicentre trial from 2014-2017, in the US
- 3062 low-risk nulliparous patients randomly assigned to labour induction between 39+0 and 39+4, 3044 randomized to expectant management
- Compared a composite of perinatal death or severe neonatal complications between groups

Grobman WA, Rice MM, Reddy UM, et al. Labor induction versus expectant management in low-risk nulliparous women. N Engl J Med 2018; 379: 513-23.

ARRIVE trial

- No significant differences in neonatal composite outcome of neonatal mortality and severe perinatal morbidity (4.3% v 5.4%, RR 0.8, 95% CI 0.64-1.00)
- Cesarean delivery rate significantly lower in group undergoing elective induction of labour (18.6% v 22%, RR 0.84, 95% CI 0.76-0.93)
- Lower rates of gestational hypertension or preeclampsia (9.1% v 14.1%, RR 0.64, 95% CI 0.56-0.74)

Post-ARRIVE

- Conflicting results:
  - Cesarean section rate may be decreased or unchanged
  - However, conflicting results on maternal morbidity and neonatal morbidity and mortality
- Increased rates of induction of labour – strain on resources

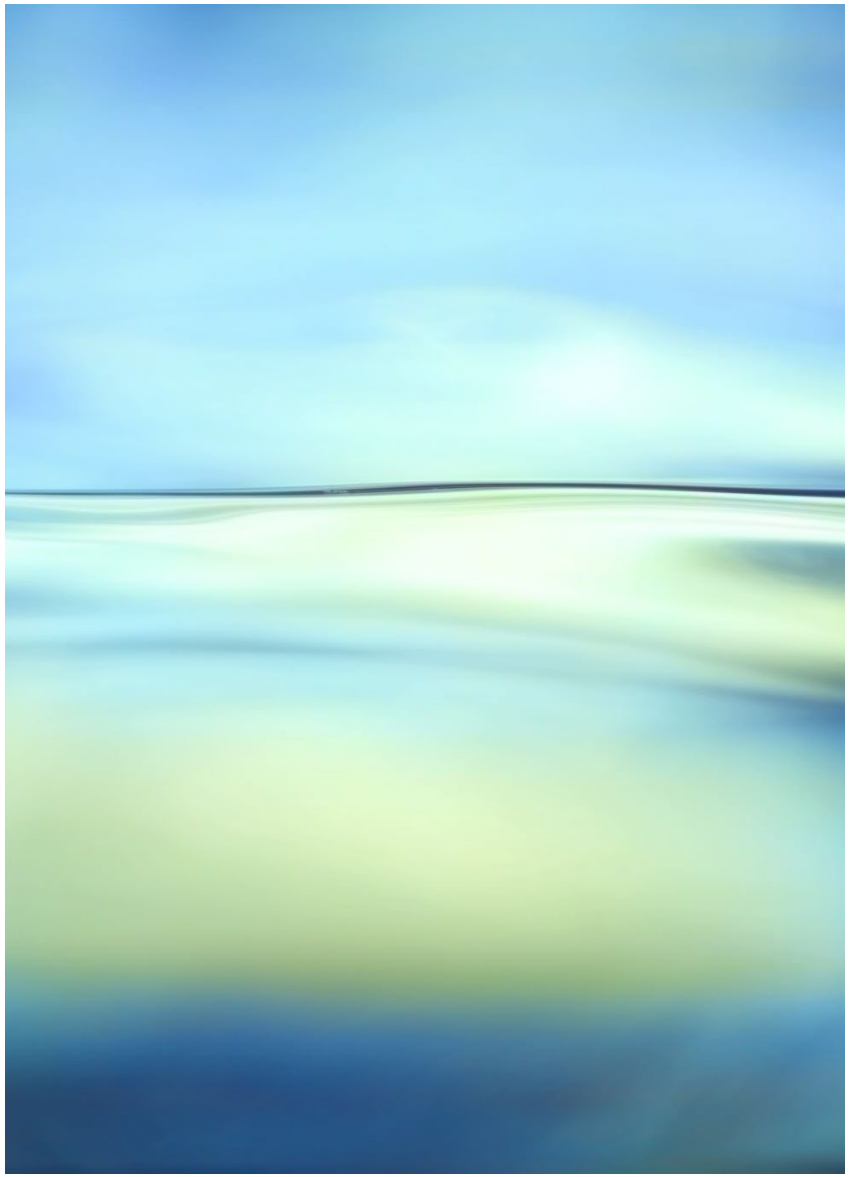
Recommendations post-ARRIVE

SOGC 2023

- ‘Routine elective induction of labour at 39 weeks gestation is not recommended. If requested, the provider should take into account patient preferences, local health care resources, and local cesarean delivery rates associated with induction’

ACOG January 2025

- ‘Patients should receive counseling regarding the potential benefits and risks of induction of labor at or beyond 39 weeks of gestation compared with expectant management’



Induction of labour with a previous c-section

SOGC 2019:

- TOLAC is recommended in women without contraindications to labour and vaginal birth, with a previous vaginal birth, and/or those who present in spontaneous labour

No. 382, July 2019 (Replaces No. 155, February 2005)
This consensus statement is the third in a 4-part series on labour and delivery.

No. 382-Trial of Labour After Caesarean

Induction of labour with a previous c-section

Table 5. VBAC and uterine rupture risk by type of induction[28]

IOL method	VBAC rate (95% CI)	Uterine rupture risk
Any IOL method	63% (58%–67%)	1.2% (0.9%–1.6%)
Mechanical method	54% (49%–59%)	Limited data
Oxytocin	62% (53%–70%)	1.1% (0.9%–1.5%)
PGE_2	63% (58%–69%)	2% (1.1%–3.5%)
Misoprostol	61% (27%–90%)	6%

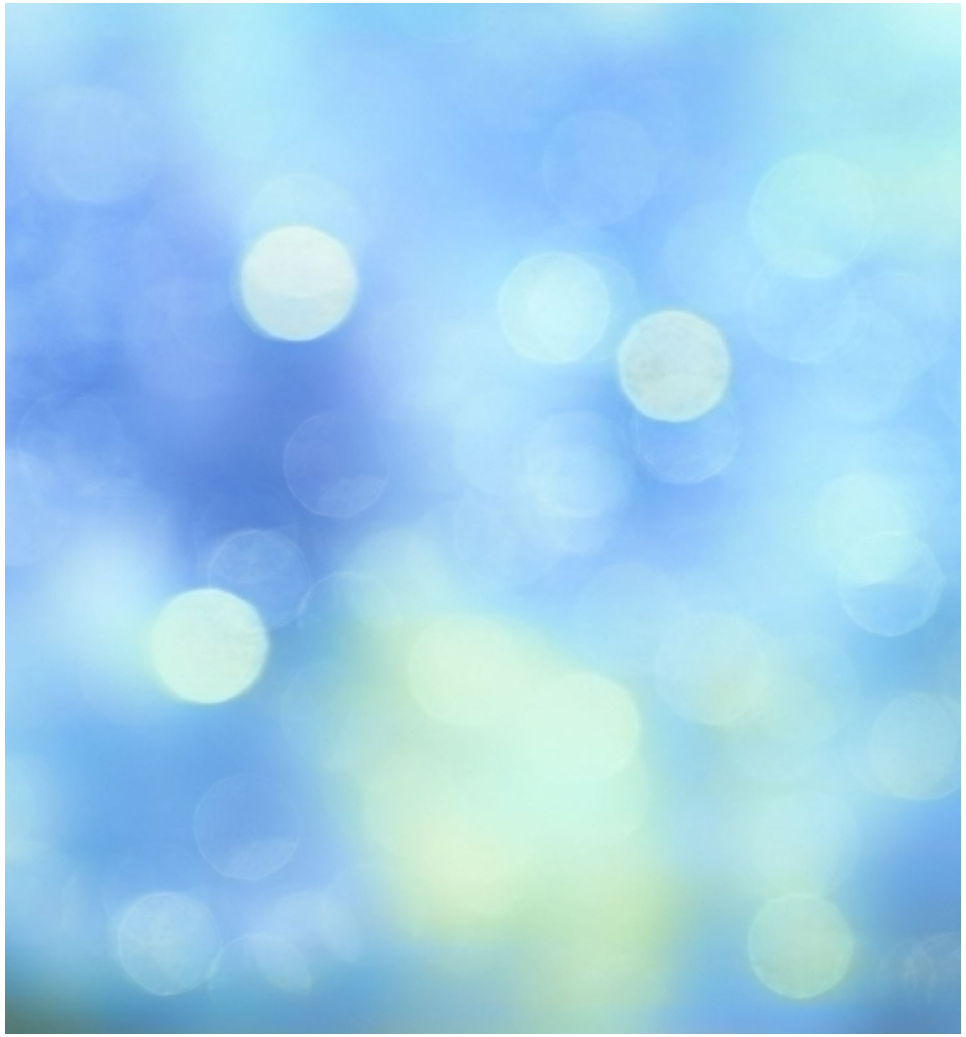
VBAC: vaginal birth after Caesarean; IOL: induction of labour; CI: confidence interval; PGE_2: prostaglandin E_2.

The pooled estimates on VBAC rate and risk of uterine rupture listed above are based on fair quality studies with small sample sizes and wide CIs and should be used as a guide only.

- Induction of labour is not contraindicated
- PGE1 and PGE2 not recommended
- Foley and oxytocin are acceptable

2016 Delphi consensus on fetal growth restriction

SGA:	Early-onset occurs before 32 weeks:	Late-onset > 32 weeks:
• Not a pathological condition • AC or EFW 3rd to 10th percentile • Normal umbilical artery Dopplers	• AC or EFW < 3rd percentile, or • AEDF/REDF, or • AC/EFW 3rd to 10th percentile with abnormal UA Doppler (high PI)	• AC or EFW < 3rd percentile, or 2 of: • AC/EFW < 10th percentile • AC/EFW crossing two quartiles • Abnormal UA Doppler (or CPR – not currently in use in BC)



Timing of delivery

- Delivery timing recommended by SOGC largely based on ISUOG (2020) and FIGO (2021)
- There will be exceptions
  - Reduced interval growth 35-37 weeks
  - Concurrent hypertension/preeclampsia (20%)

Lees CC, Stampalija T, Baschat A, et al. ISUOG Practice Guidelines: diagnosis and management of small-for-gestational-age fetus and fetal growth restriction. Ultrasound Obstet Gynecol 2020; 56: 298-312.

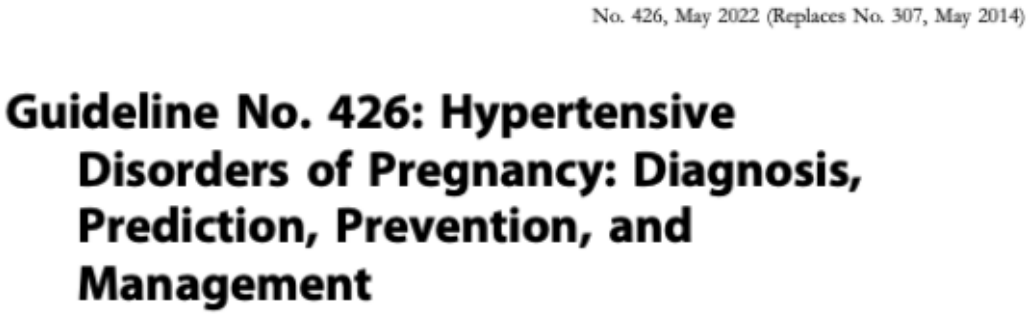
Melamed N, Baschat A, Yinon Y, et al. FIGO initiative on fetal growth: best practice advice for screening, diagnosis, and management of fetal growth restriction. Int J Gynecol Obstet 2021; 152(Suppl 1): 3-57.

Timing of delivery

- By 39 weeks if isolated SGA
  - AC/EFW 3rd to 10th with normal fluid and UA Dopplers
- By 37 weeks if isolated FGR
  - AC/EFW < 3rd percentile with normal fluid and UA Dopplers
- By 37 weeks if AC/EFW < 10th percentile and any of oligohydramnios, increased UA PI, preeclampsia

Hypertension and preeclampsia

- **Chronic hypertension:** Develops before pregnancy or at < 20 weeks
- **Gestational hypertension:** Hypertension that develops for the first time ≥ 20 weeks, without evidence of preeclampsia
- **Preeclampsia:** gestational hypertension with new proteinuria or one/more adverse conditions
- **Adverse condition:** maternal end-organ complication or evidence of uteroplacental dysfunction



Timing of delivery

Chronic Hypertension:

- Delivery recommended at 38+0 to 39+6

Preeclampsia:

- Expectant management until 34 weeks is reasonable
- At 34+0 to 35+6 weeks delivery decreases maternal risk but increases neonatal risk
- At 36+0 to 36+6 weeks delivery should be considered
- ≥ 37+0 weeks delivery is recommended

Gestational Hypertension:

- Diagnosed < 37 weeks: recommend delivery at 38+0 to 39+6
- Diagnosed > 37 weeks: delivery recommended

Macrosomia

Malin GI, Bugg GJ, Takwoinji Y et al. Antenatal magnetic resonance imaging vs ultrasound for predicting neonatal macrosomia: a systematic review and meta-analysis. BJOG 2016; 123: 77-88.

Macrosomia

2015 RCT compared IOL at 37 to 38+6 weeks gestation to expectant management to 41 weeks in pregnancies with an EFW > 95th percentile

Reduction in shoulder dystocia (RR 0.32; 95% CI 0.15-0.71) and neonatal fractures (RR 0.20; 95% CI 0.04-0.92)

Induction of labour group had lower birthweight but increased risk of phototherapy

Boulvain M, Senat M-V, Perrotin F, et al. Induction of labour versus expectant management for large-for-date fetuses: a randomised controlled trial. Lancet 2015;385:2600e5.

Current guidelines for macrosomia

SOGC 2022: There is insufficient data to recommend induction of labour at a specific gestational age for suspected fetal macrosomia

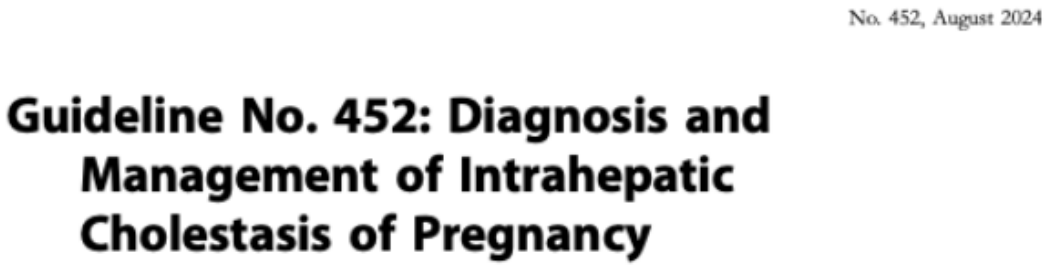
Cochrane 2023: Induction of labour for suspected fetal macrosomia results in lower mean birth weight, fewer birth fractures and shoulder dystocia, with no difference in cesarean birth rate or instrumental delivery

RCOG: Does not recommend inducing labour for suspected macrosomia in women without diabetes

Boulvain M, Thornton JG. Induction of labour at or near term for suspected fetal macrosomia. Cochrane Database of Systematic Reviews 2023, Issue 3.

IHCP

- Diagnosis of IHCP is based on non-fasting serum bile acids ≥ 20 µmol/mL
- Presence of pruritus alone is not sufficient for diagnosis
- Timing of delivery is based on the highest serum bile acid level



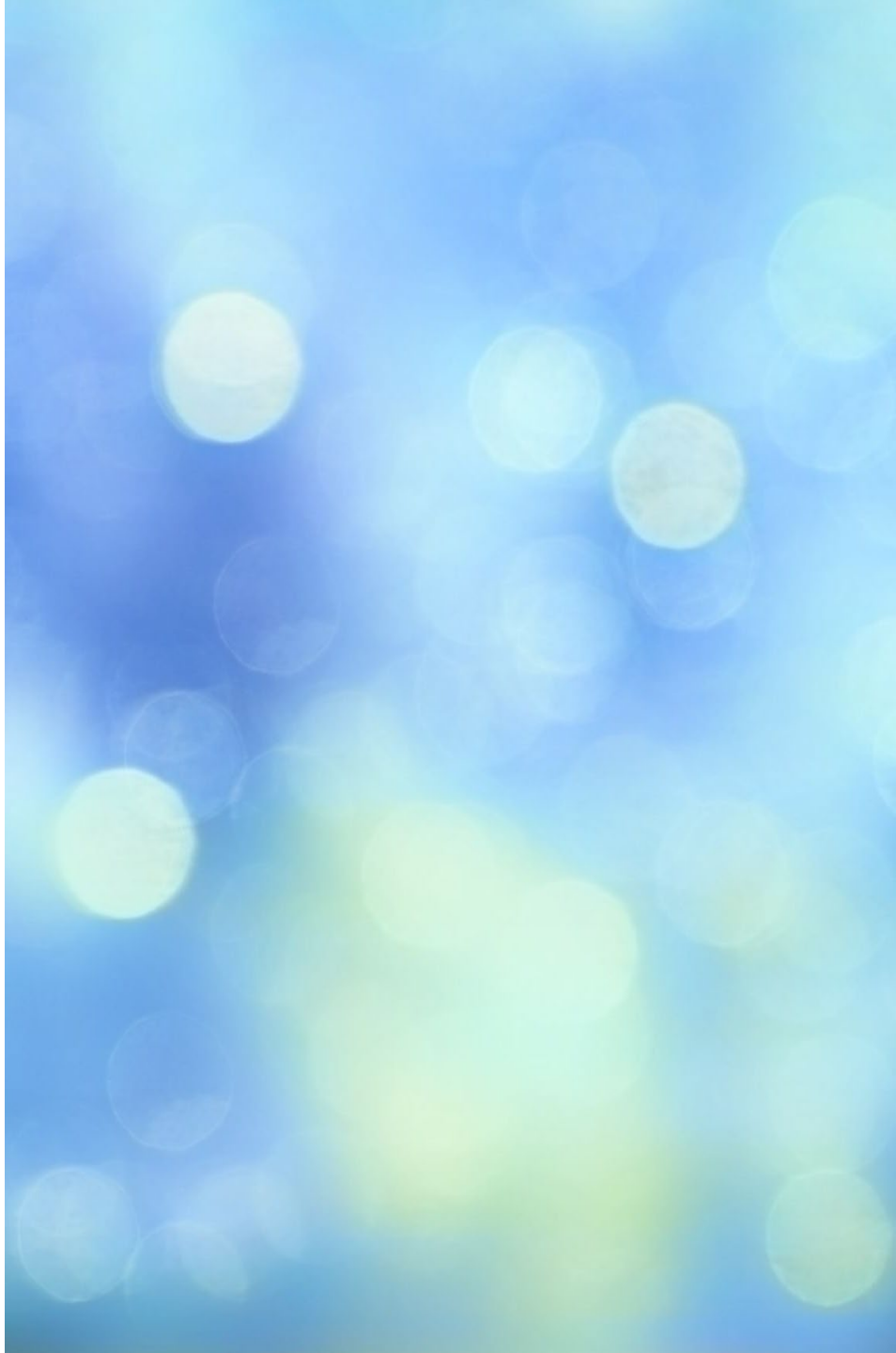
Timing of delivery for IHCP

Those with serum bile acids ≥ 100 µmol/mL have significantly increased risk of stillbirth

Decision for timing of delivery should be based on highest serum bile acid measurement in the pregnancy

2019 systematic review and meta-analysis:

Patients with ICP and bile acids ≥100 mmol/L had significantly increased risks of stillbirth with a risk of 3.43% and an OR of 30.50 (95% CI 8.83-105.30) ($P < 0.0001$) compared with baseline



SOGC recommendations

Based on highest-recorded non-fasting bile acid level:

- 20-39 µmol/L at 39 to 39+6 weeks
- 40-69 µmol/L at 38 to 38+6 weeks
- 70-99 µmol/L at 36 to 37+6 weeks
- ≥ 100 µmol/L by 36 weeks

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;393:899e909.

Conclusions

- Induction of labour is a shared decision.
- Generally, IOL prior to 39 weeks should be avoided unless the maternal or fetal condition warrants urgent early delivery.
- While there is strong/moderately strong evidence for the timing of delivery for some conditions, for others the evidence is conflicting, or not sufficient to make recommendations.