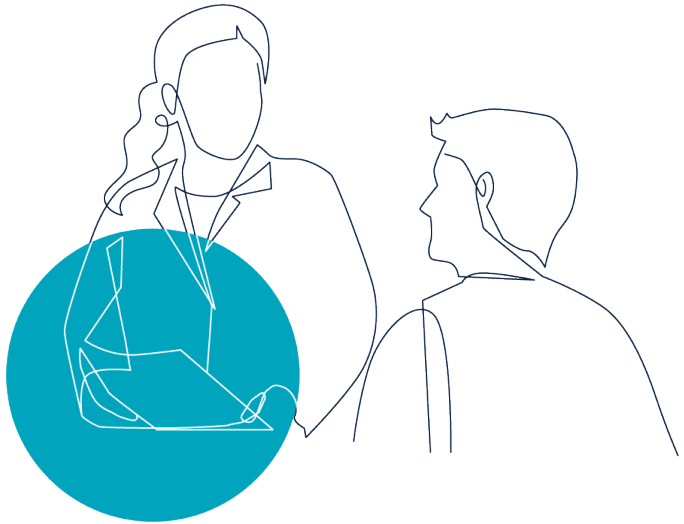
Centering Patients in Perinatal Care

June 3, 2025 | 1830–2000 PT



THE UNIVERSITY OF BRITISH COLUMBIA
Continuing Professional Development
Faculty of Medicine

LAND ACKNOWLEDGMENT

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

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

UBC CPD Medicine
CONTINUING PROFESSIONAL DEVELOPMENT

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.

UBC CPD Medicine
CONTINUING PROFESSIONAL DEVELOPMENT

SharedCare
Partners for Patients

JCC
Joint Collaborative Committees

LEARNING OBJECTIVES

1. Apply strategies to support and facilitate immediate skin-to-skin contact in the operating room following Cesarean delivery.

2. Integrate current vaccination guidelines into routine prenatal care to ensure timely and effective immunization of pregnant individuals.

3. Determine the most appropriate form, route and timing of iron supplementation during pregnancy based on individual patient needs and clinical evidence.

UBC CPD Medicine
CONTINUING PROFESSIONAL DEVELOPMENT

DISCLOSURES

Speakers

- **Dr. Tessa Chaworth-Musters:** Has received honoraria for speaking from UBC CPD. Is an employee of Provincial Health Services Authority. *Mitigating potential bias:* Peer review of slides prior to presentation.
- **Dr. Brian Conway:** Has received honoraria for presentations from Pfizer Canada. Has received honoraria for presentations, participated in advisory boards, and received funding for grants, research or clinical trials from AbbVie, Astra Zeneca, Gilead Sciences, GSK, Indivior Canada, Merck, Moderna, Sanofi Pasteur, Seqirus, and ViiV Healthcare. *Mitigating potential bias*: Dr. Conway will present fair-balanced literature-based information.
- **Cindy Barton, Dr. Anna Looker, Dr. Andrea Steyne & Dr. Julie Wood (moderator):** Nothing to disclose

UBC CPD Medicine
CONTINUING PROFESSIONAL DEVELOPMENT

DISCLOSURES

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.
- **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.
- **Stephanie Din, Caldon Saunders:** Are employees of UBC CPD.

UBC CPD
Medicine
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PROFESSIONAL
DEVELOPMENT

Skin-to-Skin for Caesarean Section: Within Five Minutes of Delivery and Continuously Throughout the Golden Hour

SQI SPREADING QUALITY IMPROVEMENT
Specialist Services Committee

Dr. Andrea Steyn, Anesthesiologist and
Cynthia Barton, Manager, Clinical Operations

Partners in Quality
Interior Health
SSC SPECIALIST SERVICES COMMITTEE

Land Acknowledgement

We would like to acknowledge that this project was completed in Penticton which is the traditional, ancestral, and unceded territories of the Syilx (Saay-ilks) Nation where we live, learn, collaborate, work together and welcome the next generation.

Disclosures

Relationships with commercial interests

Grants: None

Speakers Bureau/ Honoraria: None

Consulting Fees: None

Other: None

Spreading Quality Improvement

Salmon Arm - SLGH

Skin-to Skin in Under 5 minutes in the Operating Room and within 5 minutes of arrival in PAR

Penticton - PRH

To elevate practice by delivering skin-to-skin within 5 minutes of operative delivery and throughout the Golden Hour

Trail - KBRH

Skin-to-Skin in Under 5 minutes in the Operating Room and continuously throughout the Golden Hour.

Elevating Skin-to-Skin in Operative Deliveries

Dr. Andrea Steyn, Anesthesiologist
Cynthia Barton, Clinical Operations Director

Enhancing Maternal Baby Wellbeing Through Skin-to-Skin in Operative Births

Skin-to-Skin With Your Baby During Caesarian Section – What to Expect

PQI PHYSICIAN QUALITY IMPROVEMENT Specialist Services Committee | Interior Health | SQI SPREADING QUALITY IMPROVEMENT Specialist Services Committee

For more information about this project, please contact **SQI@interiorhealth.ca**

Thank you

Pregnancy: A unique Opportunity to Vaccinate

Brian Conway MD, FRCPC
Medical Director, Vancouver ID Centre
Adjunct Professor, Faculty of health Sciences
Simon Fraser University

SPEAKER DISCLOSURES

- Dr Brian Conway, MD, FRCPC

- Relationships with financial interests:
  - Grants/Research Support: AbbVie, Astra Zeneca, Gilead Sciences, GSK, Indivior Canada, Merck, Moderna, Sanofi Pasteur, Seqirus, and ViiV Healthcare
  - Speakers' Bureau/Honoraria: AbbVie, Astra Zeneca, Gilead Sciences, GSK, Indivior Canada, Merck, Moderna, Pfizer Canada, Sanofi Pasteur, Seqirus, and ViiV Healthcare
  - Consulting Fees: AbbVie, Astra Zeneca, Gilead Sciences, GSK, Indivior Canada, Merck, Moderna, Sanofi Pasteur, Seqirus, and ViiV Healthcare
  - Full editorial control of this presentation resides with ME! OK!!!!

Introduction

- Protects pregnant women from infections that may affect pregnancy outcome
- Protects infants (transplacental transfer of IgG) for 4-6 weeks after birth
- No theoretical risk of adverse fetal effects of non-live vaccines
- All live vaccine contraindicated

Recommended Vaccines During Pregnancy

- All routine Inactivated vaccines
- HPV vaccine contraindicated due to lack of data, but this may change
- Tdap: to be given ideally between weeks 27-32, but can be given in 2nd trimester
- Influenza vaccine: inactivated, at all stages of pregnancy
- MMR/varicella: contraindicated (live vaccines)

Recommended Vaccines During Pregnancy

- Other vaccines
  - mRNA COVID-19 vaccine
  - HBV (if non-immune and at risk; severe consequences of acute HBV in pregnancy)
  - HAV (if at risk; severe consequences of acute HAV in pregnancy)
  - Meningococcal vaccine (if outbreaks or asplenic)
  - Pneumococcal vaccine
  - Travel vaccines: yellow fever
- Household contacts
  - Influenza and to a lesser extent COVID

Maternal RSV vaccine approved in Canada

	RSVPreF (Abrysvo™)
Type of vaccine	Recombinant RSVPreF A and preF B (bivalent)
Adjuvanted?	No
Administration	Single dose, IM
RSV target(s)	RSV-A, RSV-B
Amount of antigen delivered per dose	60 mcg RSVPreF-A 60 mcg RSVPreF-B

IM, intramuscular; RSV, respiratory syncytial virus; RSVpreF, respiratory syncytial virus prefusion F.
Information derived from product monograph. J. S. McLellan et al. *Science* 340, 1113–1117 (2013).

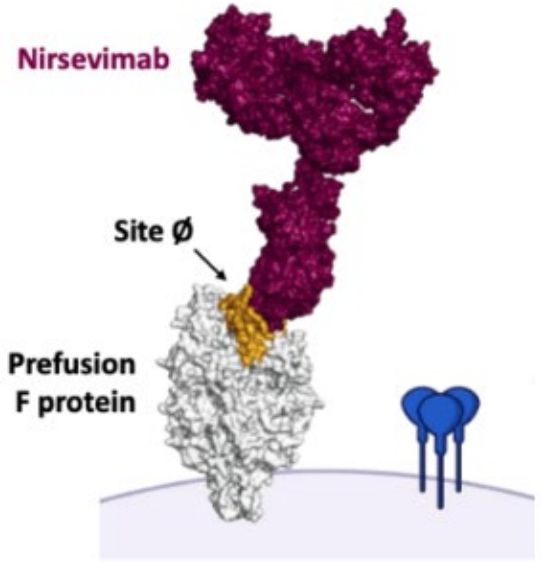
MATISSE: Primary endpoints, vaccine efficacy by cumulative days after infant birth[1,2]

	Maternal vaccine group (as randomized)[1,2]		
RSV-positive severe medically attended LRTI	RSVpreF 120 µg (N[a]=3495)	Placebo (N[a]=3480)	
Time interval	**Number of cases (%)**	**Number of cases (%)**	**Vaccine efficacy,[b] % (CI[c])**
90 days after birth	6 (0.2)	33 (0.9)	81.8 (40.6, 96.3)
120 days after birth	12 (0.3)	46 (1.3)	73.9 (45.6, 88.8)
150 days after birth	16 (0.5)	55 (1.6)	70.9 (44.5, 85.9)
180 days after birth	19 (0.5)	62 (1.8)	69.4 (44.3, 84.1)
RSV-positive medically attended LRTI			
Time interval	**Number of cases (%)**	**Number of cases (%)**	**Vaccine efficacy,[b] % (CI[c])**
90 days after birth	24 (0.7)	56 (1.6)	57.1 (14.7, 79.8)
120 days after birth	35 (1.0)	81 (2.3)	56.8 (31.2, 73.5)
150 days after birth	47 (1.3)	99 (2.8)	52.5 (28.7, 68.9)
180 days after birth	57 (1.6)	117 (3.4)	51.3 (29.4, 66.8)

CI, confidence interval; LRTI, lower respiratory tract illness; RSV, respiratory syncytial virus; RSVpreF, respiratory syncytial virus prefusion F.

[a]n=number of participants (at risk) in the specified group. These values were used as the denominators for the percentage calculations.[1,2] [b]Vaccine efficacy was calculated as 1-(P/[1-P]), in which P is the number of cases in the RSVpreF group divided by the total number of cases. The CI was adjusted using Bonferroni procedure and accounting for the primary end points results.[1,2] [c]99.5% CI for 90 days and 97.58% CI for 120/150/180 days; CI LB>20% for all time points. 1. Munjal I. Presented at: ACIP 2023; February 23, 2023; Atlanta, GA. 2. Kampmann B, et al. *N Engl J Med*. 2023;388(16):1451-1464.

Nirsevimab (Beyfortus™) monoclonal antibody



Inhibits conformational shift of preF protein, preventing viral membrane fusion

- Highly potent recombinant human IgG1 kappa monoclonal antibody (MAb)
- Targets highly conserved epitope on prefusion RSV F protein (site ø)
- Indicated for prevention of RSV lower respiratory tract disease in neonates and infants during their first RSV season, and children up to 24 months of age who remain vulnerable to severe RSV disease through their second RSV season
- Once per season fixed intramuscular dosing
- Flexible dosing: at birth or just prior to RSV season

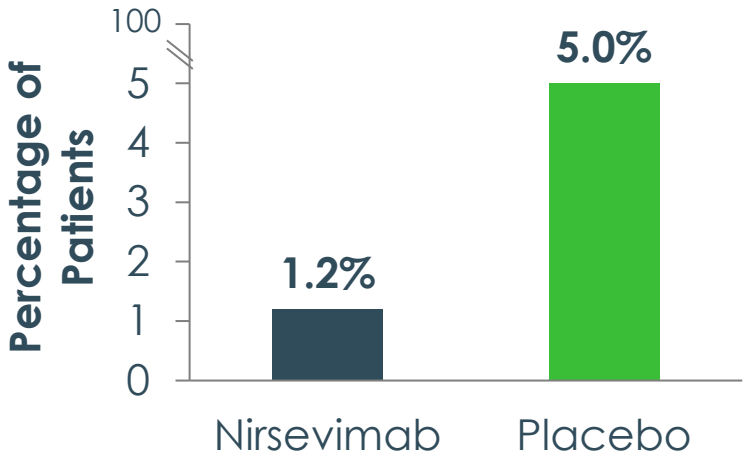
IgG1, immunoglobulin G1; MAb, monoclonal antibody; preF, prefusion F; RSV, respiratory syncytial virus.

AstraZeneca Canada. Beyfortus™ (nirsevimab) product monograph: April 19, 2023.

MELODY -
Primary and secondary efficacy endpoints

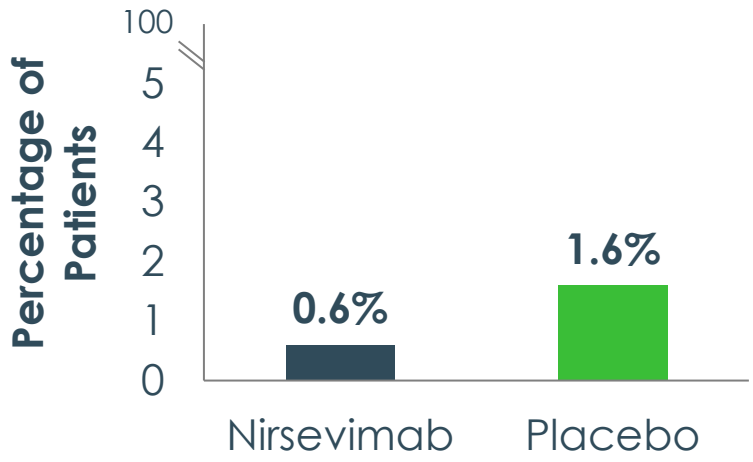
Primary endpoint:

Medically attended LRTI through Day 150
Efficacy, **74.5%** (95% CI 49.6 to 87.1; P<0.001)



Secondary endpoint:

Hospitalization for LRTI through Day 150
Efficacy, **62.1%** (95% CI -8.6 to 86.8; P=0.07)



CI, confidence interval; LRTI, lower respiratory tract infection.
Hammitt LL et al. *N Engl J Med* 2022;386(9):837-846; ClinicalTrials.gov NCT03979313 (accessed 31 October 2023).

What do the guidelines say?

Society of Obstetricians and Gynaecologists of Canada (SOGC) – Statement published July 18th, 2024:

1. **Clinicians should counsel pregnant patients about the risks of RSV infections in the newborn.**

2. **Maternal vaccination with RSVpreF and infant administration of nirsevimab are both effective in reducing the burden of RSV disease and hospitalization in newborns aged ≤6 months.**
   - *If both are available, nirsevimab is currently the 1st-line recommended option*
   - *If there is no expected supply of nirsevimab or if the pregnant patient declines infant immunization, maternal RSV vaccination should be offered between 32+0 and 36+6 weeks*

SOGC Statement on RSV Immunization to Prevent Infant RSV Infection, 18 July 2024. https://sogc.org/common/Uploaded%20files/Position%20Statements/SOGC%20Statement%20RSV_07182024_EN.pdf. Accessed 13 August 2024.

What do the guidelines say? (cont'd)

Society of Obstetricians and Gynaecologists of Canada (SOGC) – Statement published July 18th, 2024:

3 **Dual immunization of the newborn through administration of both maternal immunization during pregnancy with RSVpreF and infant monoclonal antibody has not been studied is not recommended.**

4 **At a healthcare systems level, SOGC supports the universal RSV infant immunization program recommended by the National Advisory Committee on Immunization (NACI).**

- *Provinces and territories should work to provide a universal program focusing on cost-effectiveness and equitable access for the most marginalized and remote populations*

SOGC Statement on RSV Immunization to Prevent Infant RSV Infection, 18 July 2024. https://sogc.org/common/Uploaded%20files/Position%20Statements/SOGC%20Statement%20RSV_07182024_EN.pdf. Accessed 13 August 2024.

Availability of Nirsevimab in British Columbia

Monoclonal antibodies were available for most infants in BC during the 2024-2025 RSV season. Currently, these medications are available only to certain infants and young children through the BC Infant Respiratory Syncytial Virus (RSV) Immunoprophylaxis Program, who meet specific criteria, such as:

- Young, premature babies with chronic medical conditions.
- Infants and young children with major heart or lung conditions.
- Infants living in some remote communities where healthcare access is more limited.
- **Cost:** These medications are free for children who are eligible through the BC RSV Immunoprophylaxis Program. They are not available for private purchase.

RSV vaccine for pregnant people in British Columbia

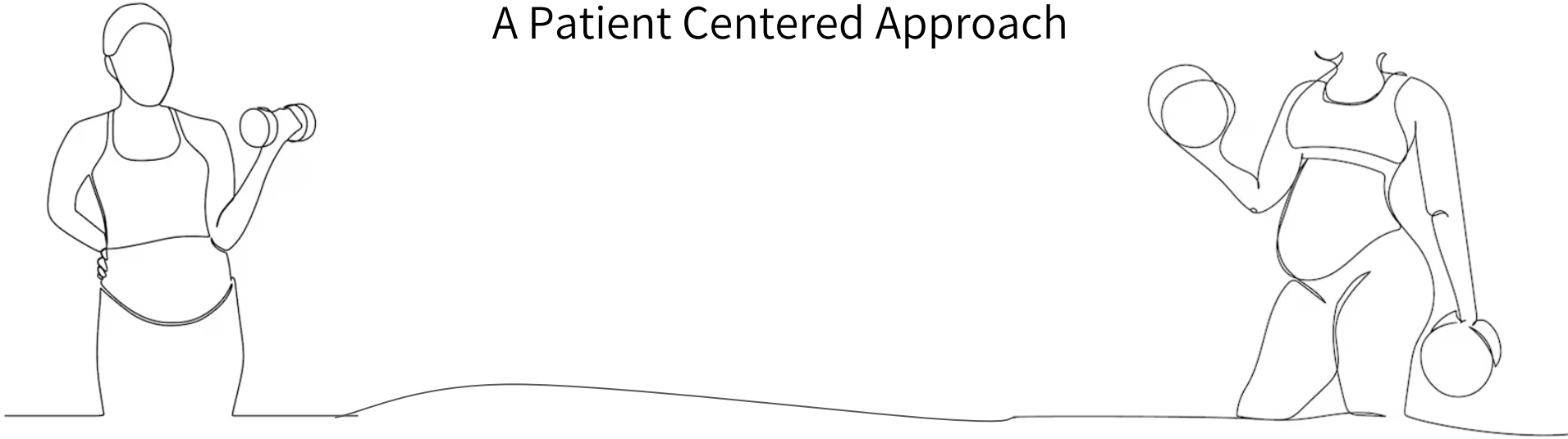
Timing: The vaccine is given just before or during the RSV season, between weeks 32 and the end of 36 weeks of pregnancy (up until 36 weeks and 6 days). For the best protection, it's important to get the vaccine at least two weeks before birth so the antibodies have enough time to reach the baby.

Safety: ABRYSVO™ is an inactivated (non-live) vaccine that is safe for pregnant people and their developing babies. It is the only vaccine approved for use in pregnancy that has been intentionally tested in pregnant people during clinical trials. Other RSV vaccines are not approved for use in pregnancy.

Cost: The vaccine is not free (it costs about $300) and can be purchased at select pharmacies.

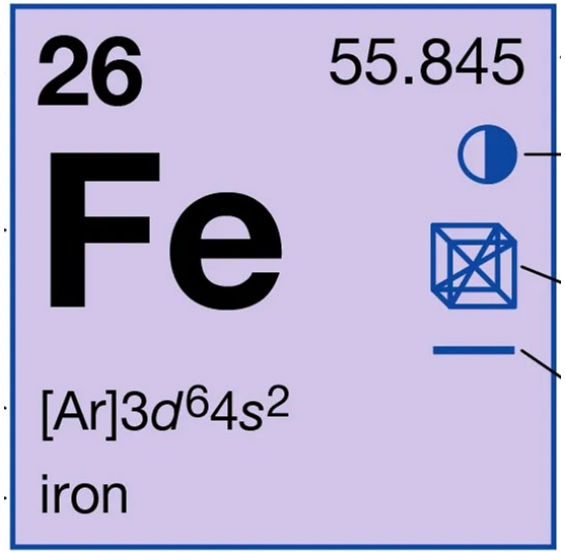
Pumping Iron in Pregnancy

A Patient Centered Approach



Centering patients in Perinatal Care - 3 June 2025

Tessa Chaworth-Musters



Disclosures:

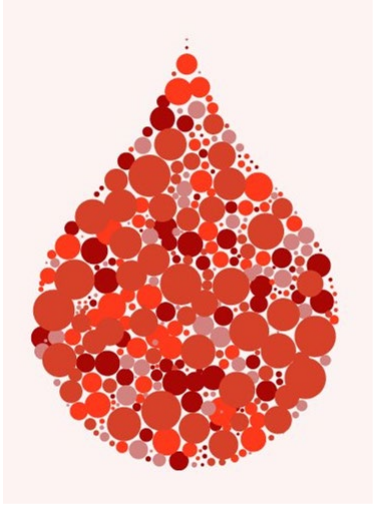
Relationships with Commercial Interests:

- Grants/Research Support: None
- Speakers Honoraria: UBC CPD
- Consulting Fees: None
- Employee: Provincial Health Services Association

Learning objectives

At the end of this talk, I hope you will be able to:

1. Define anemia & iron deficiency in pregnancy
2. Confidently prescribe oral iron
3. Determine when to consider IV iron in pregnancy
4. Distinguish between relevant IV iron preparations approved by Health Canada



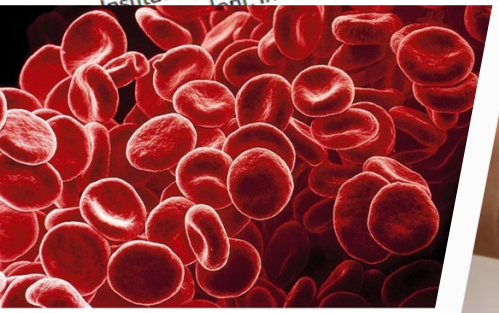
Anaesthesia 2021, 76 (Suppl. 4), 56–62

Review Article

The misogyny of iron deficiency

C. Dugan,[1] B. MacLean,[1] K. Cabolis,[2] S Abeysiri,[3] A. Khong,[4] M. Sajic[4] and T. Richards[5] on behalf of the Women's Health resear laborative*

1 PhD Student, 5 Professor, Division of Surge
2 PhD Student, 4 Senior Researcher, Depart
Institute of Neurology, London, UK
Toronto
Australia, Perth, Australia
niversity College London Quee
London, UK



News+

Why iron deficiency is more common – and more serious – than you think

Read now in **National Geographic**

Ontario's new iron deficiency guideli change lives: doctors

Changing minimum to 30 µg/l will mean earlier detection, treatm

Lane Harrison · CBC News · Posted: Sep 09, 2024 4:00 AM EDT | Last Updated:

The New York Times

More Than a Third of Women Under 50 Are Iron-Deficient

The condition can cause fatigue and other symptoms but is rarely tested for. Here's what to know.

Marta Monteiro

How do we define anemia & iron deficiency in pregnancy?

World Health Organization

Population	Haemoglobin concentration (g/L)			
	No anaemia	Mild anaemia	Moderate anaemia	Severe anaemia
Pregnancy				
First trimester	≥110	100–109	70–99	<70
Second trimester	≥105	95–104	70–94	<70
Third trimester	? ≥110	100–109	70–99	<70

Ferritin	<30	Deficiency
	30-50	Depletion
	>100	Normal stores

Non-pregnant adults
Unclear in pregnancy

Guideline on haemoglobin cutoffs to define anaemia in individuals and populations [Internet]. Geneva: World Health Organization; 2024.

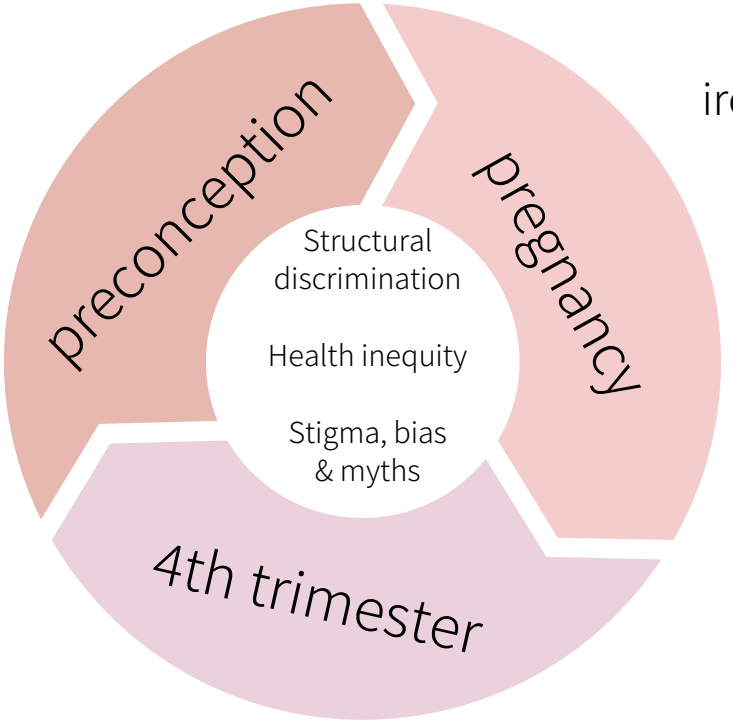
LISTED OUTCOMES ASSOCIATED WITH MODERATE/SEVERE (Hgb <100) MATERNAL ANEMIA

<u>Pregnancy</u>
Severe Maternal Morbidity
Blood transfusion
PPH - increased atony
Infection
Depression
C/S

<u>Newborn</u>
SGA
Low Birth Weight
Preterm delivery
Low APGAR (<5 at 1 min)
Fetal Distress
NICU Admission
Iron deficiency at birth

<u>Children</u>
?impaired
neurodevelopment

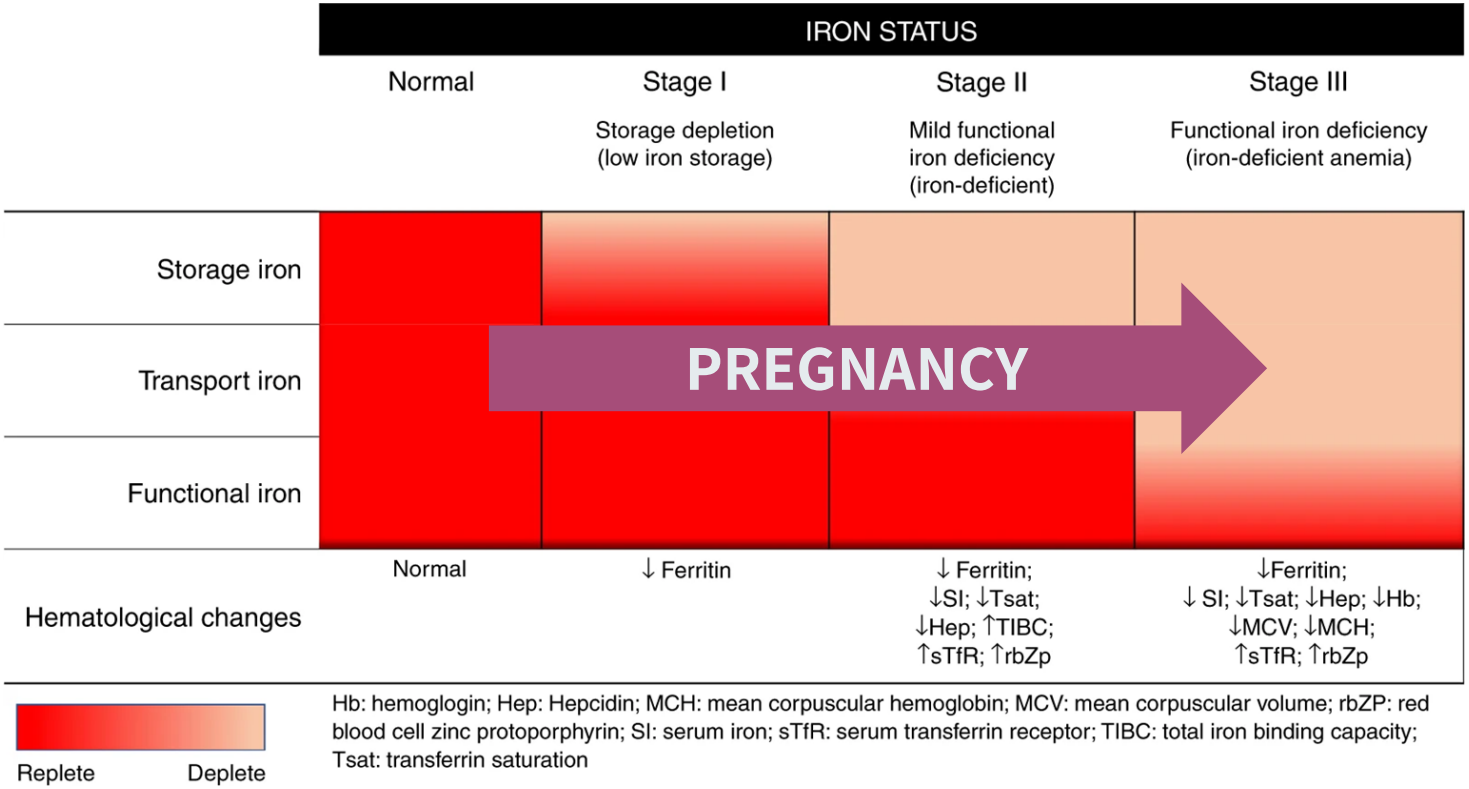
heavy menstrual bleeding
food insecurity
health literacy



iron requirements peak in third trimester

blood loss at delivery & breastfeeding

Tang GH, Sholzberg M. Iron deficiency anemia among women: An issue of health equity. Blood Rev. 2024 Mar; 64:101159.



Hb: hemoglogin; Hep: Hepcidin; MCH: mean corpuscular hemoglobin; MCV: mean corpuscular volume; rbZP: red blood cell zinc protoporphyrin; SI: serum iron; sTfR: serum transferrin receptor; TIBC: total iron binding capacity; Tsat: transferrin saturation

1st trimester more relevant that 3rd trimester iron deficiency for adverse outcomes

WHEN TO TEST

BC Ministry of Health & Perinatal Services BC
recommend screening **everyone** for iron deficiency if:
preconception, first trimester, breastfeeding or symptomatic.

WHEN TO START A DEDICATED IRON SUPPLEMENT

Ferritin <30
Discuss values for treatment if ferritin <50-100

Preconception, after nausea / vomiting resolves, with GDM screen, postpartum!

WHEN TO STOP

Continue treatment for minimum 3-6 months postpartum or until ferritin >100.

IRON SUPPLEMENTS
A guide for midwives

Oral iron supplements are available in a range of formulations. Amount of elemental iron (iron available for absorption) and rate of absorption varies by formulation. The table below lists elemental iron content for a selection of popular oral formulations and estimated cost of treatment at a standard therapeutic dose of 100 mg elemental iron per day.

Information in this handout is based on best available sources and is as complete as possible. Cost estimates are approximate and based on listed prices at major retailers (2015).

FERROUS SALTS — Inexpensive and well-absorbed, but associated with gastrointestinal side-effects. All formulations have similar rates of absorption and side effect profiles.

Formulation	Brand name / Manufacturer	Dose	Elemental iron/dose	Amt needed to reach 100 mg/day	One month treatment (100 mg/day) Quantity	Cost	Notes Other vitamins and minerals	Diet considerations
Ferrous Gluconate	Iron 50 mg Timed Release / Jamieson	50 mg	50 mg	2 capsules	1 bottle	$9.96	Enteric-coated	V
	Ferrous Gluconate / Life	306 mg	35 mg	3 tablets	1 bottle	$4.76	Enteric-coated	V GF LF SF
	Floradix Iron Tablet / Salus	~ 25 mg	10 mg	10 tablets	4 boxes	$82.46		V DF K
	Floradix / Salus	10 mL	10 mg	100 mL syrup	6 x 500 mL bottles	$239.94	B6, B12, C, riboflavin, thiamine	V DF K
	Floravit / Salus	10 mL	10 mg	100 mL syrup	12 x 250 mL bottles	$251.88	B6, B12, C, riboflavin, thiamine	V DF YF K
	Ferodan / Odan	5 mL	30 mg	15 mL syrup	2 x 250 mL bottles	$26.81		
Ferrous Sulphate	Spatone Pur-Absorb Iron / Nelsons Bach USA	50 mL	5 mg	20 liquid sachets	22 boxes	$706.93		GF LF
	Ferrous Sulfate / Life	300 mg	60 mg	2 tablets	2/3 bottle	$5.99	Enteric-coated	V GF LF SF
	Ferrotrate / Nutrichem	137 mg	27 mg	4 capsules	1 bottle	$23.19	C	V G GF SF
	Palafer / Valeant	300 mg	100 mg	1 capsule	1 package	$12.65		
	Palafer Cf Prenatal / Valeant	5 mL	100 mg	5 mL syrup	1.5 x 100 mL bottles	$22.19		
	Ferrous Fumarate / Life	300 mg	100 mg	1 capsule	1 package	$19.99	C, Folate	GF LF SF
Ferrous Fumarate	Euro-Fer / Euro-Pharm	300 mg	65.7 mg	2 tablets	2/3 bottle	$4.19		
	Iron Factors / Natural Factors	~ 300 mg	100 mg	1 capsule	1 bottle	$7.65		
			100 mg	3 capsules	1 bottle	$8.85	B12, C, folate, manganese	

FERRIC SALTS — Not as well-absorbed as ferrous salts.

Formulation	Brand name / Manufacturer	Dose	Elemental iron/dose	Amt needed to reach 100 mg/day	One month treatment (100 mg/day) Quantity	Cost	Notes Other vitamins and minerals	Diet considerations
Ferric Pyrophosphate	IRONsmart / Lorna Vanderhaeghe	~ 20 mg	15 mg	6 capsules	3 bottles	$58.47	folate, riboflavin	V G GF
	IRONsmart Liquid / Lorna Vanderhaeghe	5 mL	10 mg	50 mL syrup	3 x 500 mL bottles	$110.88		V G GF
	Ortho Iron / AOR	358 mg	30 mg	3 capsules	3 bottles	$112.47	B6, B12, C, folate, copper	V LF
	Hemoplex Liquid / Nu-Life	10mL	10 mg	100 mL syrup	6 x 100 mL bottles	$140.40	B6, B12, C, folate, thiamine, riboflavin, niacinamide	

V Vegetarian
VG Vegan
⊘V NOT vegetarian

ABBREVIATIONS
GF Gluten-free
DF Dairy-free
LF Lactose-free
SF Soy-free
WF Wheat-free
YF Yeast-free
K Kosher
H Halal

OTHER FORMULATIONS — Most are promoted as having fewer GI side effects than ferrous or ferric salts.

Formulation	Brand name / Manufacturer	Dose	Elemental iron/dose	Amt needed to reach 100 mg/day	One month treatment (100 mg/day) Quantity	Cost	Notes Other vitamins and minerals	Diet considerations
Chelated Iron / Iron Bisglycinate	Sisu Gentle Iron / Sisu	25 mg	25 mg	4 capsules	2 bottles	$16.28		V
	CanPrev Iron / CANPrev	~ 150 mg	20 mg	5 capsules	1 2/3 bottles	$39.98	B6, B12, C, folate, copper, magnesium	V G
	Mild Iron / Life	~ 100 mg	28 mg	4 capsules	1.3	$12.65	B12, C, folate	GF LF
	Easyiron / Platinum Naturals	~ 100 mg	18 mg	5 capsules	2.5 bottles	$90.60	B6, B12, C, folate	V DF
Carbonyl Iron	Iron Chelate / Natural Factors	25 mg	25 mg	4 capsules	1 1/3 bottles	$10.67		
Polysaccharide-Iron Complex	Ferro-C / Douglas Laboratories	~ 500 mg	27 mg	4 capsules	2 bottles	$35.98	B, B12, C, E, folate, riboflavin, thiamine, niacinamide	
Combinations	FeraMAX Powder / BioSyent Pharmat	1/4 tsp	15 mg	1.5 tsp powder	1.5 bottles	$44.99	Mix in liquids or soft foods	
(ferrous fumarate iron citrate iron bisglycinate iron malate iron bisglycinate ferrous succinate 250 mg liquid liver fractions)	FeraMAX Powder / BioSyent Pharmat	150 mg	150 mg	1 capsule	1/3 bottles	$21.30	Capsules may be opened & sprinkled on food	
	Hemoplex / Nu-Life	~ 800 mg	45 mg	2 capsules	0.5 bottle	$16.50	B6, B12, C, folate, calcium, cobalt, manganese, copper, niacinamide, iodine, riboflavin, zinc, thiamine	V GF LF K H
	Opti-Iron 25 / Nu-Life	~ 750 mg	25 mg	4 capsules	2 bottles	$35.98	C, copper, calcium	
Heme Iron	Enzymatic Therapy Ultimate Iron Complex / Nature's Way	~ 350 mg	25 mg	4 capsules	1 1/3 bottles	$21.92	B12, C, folate	
Heme Iron	Proferrin / Colorado Biolabs	11 mg	11 mg	9 tablets	3 bottles	$177.87	Derived from bovine hemoglobin	
	Blood Builder / MegaFood	~ 625 mg	26 mg	4 tablets	1 1/3 bottles	$57.32	Pesticide-free	
							B12, C, folate	⊘V
								VG GF SK K

Maximizing iron tolerability

Offer clients a lower starting dose (50-90 mg/day). Build to a her dose (100-200 mg/day) over five days OR offer two weeks er dose and test for response. Increase dose PRN.
n absorption is best when taken on an empty stomach, GI are reduced when taken with food.
fore bed may reduce GI upset.

Maximizing iron absorption

- Take 200 mg of vitamin C for 30 mg of iron. Vitamin C is often added to iron supplements, but rarely in amounts sufficient to aid iron absorption.
- Avoid calcium within one to two hours of taking iron supplements (dairy, antacids, or other supplements).
- Avoid coffee and black tea for one to two hours after taking iron.
- Avoid enteric-coated supplements. Enteric coating decreases GI side-effects but also interferes with absorption.

Prescribing iron

Writing a prescription for over-the-counter products like iron or prenatal vitamins may allow for coverage by extended benefits plans and the Ontario Drug Benefits Program.

Rx: Ferrous fumarate
200 mg
100 tabs
2X daily, between meals
Refill X2
midwife signature
registration #

. Pharm Lett. 2008;24(8.24):811. | Fei C. Iron deficiency anemia: a guide to oral iron supplements. Clinical Correlations. 2015. Available from: http://www.clinicalcorrelations.org/?p=6405. | mmitted. Iron Deficiency - Investigation and Management. British Columbia Medical Association, editor. British Columbia Ministry of Health Services, 2010. | Pavord S, Myers B, Robinson S, Allard idelines on the management of iron deficiency in pregnancy. Br J Haematol. 2012 Mar;156(5):588-600. | MIDIRS. Anemia in pregnancy, births and afterwards for professionals. 2010

Association of Ontario Midwives
Delivering what matters.

YOU HAVE IRON DEFICIENCY (AND YOU'RE PREGNANT)

01 What is Iron Deficiency?

Iron is an essential mineral that your body needs for growth and development. It is an important component of hemoglobin, a protein in red blood cells that transports oxygen around the body. When your body does not have enough iron, your hemoglobin levels can drop below normal, and your organs are unable to get the adequate amount of oxygen they require. This condition is known as **iron deficiency anemia**. It is the most common form of anemia. A lack of iron can lead to many symptoms and impair your ability to do normal daily activities.

02 Why is iron important during pregnancy?

Iron deficiency occurs in over 30% of pregnancies in Canada.

Symptoms of iron deficiency are often dismissed as normal pregnancy symptoms. Many patients are left untreated, which **increases the health risks for both mom** (heavy bleeding at delivery, need for blood transfusion) **and baby** (smaller size, preterm birth). There is even some information that it may have long-term effects on the baby's brain development.

03 Will eating more iron-rich foods help?

A dietary strategy works best for **prevention** rather than **treatment** of iron deficiency.

While eating an iron-rich diet can help to prevent iron deficiency anemia, an average person's intake of **dietary iron is not enough** to correct the condition once it has developed. There are two main sources of iron in our diets: animal (heme iron) and plant (non-heme).

Heme iron-containing foods	Lean red meat, chicken, fish, pork, shrimp
Non-heme iron-containing foods	Beans, leafy greens, dried fruits, eggs, wholemeal bread, iron-fortified breakfast cereals

The recommended daily intake of elemental iron in pregnant women is 27 mg per day.

04 What are my treatment options?

Iron deficiency can be treated.

Oral iron supplements, taken by mouth and absorbed through the digestive tract, are the first choice in treatment for most patients. Iron supplements are "over the counter" and do not require a prescription. There are many iron preparations available including pills, capsules, drops, and extended-release tablets (Table 1). If you have iron deficiency in pregnancy, prenatal vitamins **do not have enough iron** to correct the deficiency and an additional iron supplement will be required. Typically, adults will need to take between 60-120mg of elemental iron per day.

Intravenous (IV) iron infusion is an alternative treatment option to oral iron that can supplement iron at a much faster rate. **It is safe and effective in the second and third trimester and during breastfeeding.** It may be recommended by your doctor as an alternative option in cases where oral iron is not tolerated, not able to correct iron deficiency, or where iron is needed quickly (like close to the time of birth).

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Zhou GX, Shirreff L, Malinowski A, Walker M, Murji A.

Table 1: Some commonly recommended oral iron products

Oral Iron	Brand Name	Daily or alternate day dosing	Dose, mg	Elemental iron, mg/tab	Daily estimated cost*
Ferrous gluconate	Floradix®, Floravit®	1 - 2 tablets	300	35	$0.10
Ferrous fumarate	Palafer®, Eurofer®	1 tablet	300	100	$0.10

*Cost will vary depending on geographic location and subject to change.

05 How should I take my oral iron?

MAXIMIZE IRON ABSORPTION

Take your iron supplements on an **empty stomach** (preferably 1-2 hours before a meal) with vitamin C.

Vitamin C can be in the form of a supplement (250-500mg) or a citrus drink (e.g. orange juice).

AVOID CERTAIN FOODS AND MEDICATIONS

Avoid these **within 1 hour** of oral iron:

- Calcium
- Proton pump inhibitors (e.g. omeprazole, pantoprozole)
- Antacids (e.g. Tums, Gaviscon, famotidine)
- Thyroid medication
- Tea, coffee, milk
- Soy
- Eggs

WATER AND FIBRE

Consume lots of water and fibre with your iron to reduce constipation and cramping side effects. If you have constipation, try taking a laxative such as Senokot or PEG.

If the side effects of oral iron are very bothersome, you can try taking your iron supplement **EVERY OTHER DAY**.

06 What are the side effects of oral iron?

- Dark stools
- Stomach discomfort
- Nausea
- Diarrhea
- Constipation

Side effects can be lessened by:


Drinking lots of water


Increasing fibre in diet (e.g. Metamucil, bran, vegetables)


Taking iron before bedtime


Taking a stool softener


Changing to 'every other day' dosing

These side effects are bothersome but not dangerous.

07 What happens now?

It is recommended that you repeat your blood tests 2-4 weeks after the start of your iron supplement to ensure that you are responding to treatment. Once your hemoglobin and iron levels are normalized, you may need to take the iron supplement for another six months.

For more information, talk to your doctor.
Always consult with your doctor about the treatment plan that is right for you.

SCAN FOR ADDITIONAL RESOURCES

This material is intended for use by Canadian residents only. It is solely intended for informational and educational purposes. The information presented in these handouts is not to be used as a substitute for medical advice, independent judgement, or proper clinical assessment by a physician. The context of each case and individual needs differ between patients and this material cannot be applied without consultation with a trained doctor. This information handout is not intended for the diagnosis of health concerns or to take the place of the care of a medical professional. This material reflects the information available at the time of preparation.

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www.GYNQI.com

Lab based experiments vs clinical studies / “IRL”

Emphasis on overall adherence
→ avoid getting lost in the weeds

The best iron is the one taken

Considerations for parenteral iron:

- Advanced gestational age
- Moderate - severe anemia
- Symptomatic
- Malabsorption syndromes
    - active inflammatory bowel disease, gastric-bypass

Intolerant to oral iron despite optimization:

- 3x a week dosing
- formulation change
- start low & go slow
- take with food or at night

Persistent anemia despite good trial of oral iron (takes time in pregnancy!)

- don’t expect increase in ferritin

Relevant IV iron formulations : Health Canada

Name *Trade Name*	Iron Sucrose *Venofer*	Iron Isomaltoside / Ferric Derisomaltose *Monoferric*	Ferric Carboxymaltose *Ferinject* **Not yet on BC pharmacare formulary**
Max dose / visit	300mg	1500mg	1000 mg
Infusion time	2-4 hours	<90 mins	30-60 mins
Experience in Pregnancy	Extensively Published	Increasing >1600 doses in trial setting	Extensively Published
Points of Note	Unclear risk of harm in first trimester	Highest rates of hypersensitivity reactions	Hypophosphatemia in some populations
Product Monograph	“use in pregnancy when benefits outweigh risks”	use after >16 weeks GA if benefit outweigh risks	use after >16 weeks GA if benefit outweigh risks
Cost	$202.50 / 900mg 3 visits	$550 / 1000 mg 1 visit	TBD

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Points of note for IV iron preparations

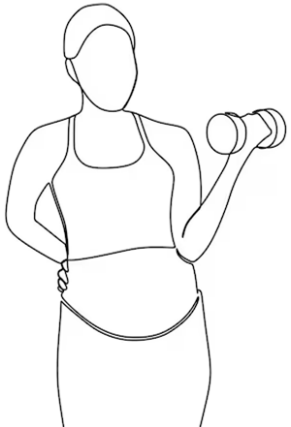
Iron Isomaltoside / Ferric Derisomaltose *Monoferric* Hypersensitivity Reaction (Fishbane)	Ferric Carboxymaltose *Ferinject* **Not yet on BC pharmacare formulary** Hypophosphatemia
<u>Trial data in pregnancy :</u> India (n=1454) 23.4% infusion-related reaction 8.9% required treatment 1.9% moderate/severe reaction 0.0% infusion related serious adverse event Denmark (n=100) Not published Stop infusion, monitor until symptoms resolve. Restart at 50% rate after >15 mins. Consider cetirizine or ondansetron.	<u>Trial data in pregnancy :</u> India (n=1451) 4.3% 2 weeks after infusion 2.5% 9 weeks after infusion Nadir at 1-2 weeks post infusion Clinical significance not clear **Routine screening not currently recommended in healthy pregnant patient receiving x1 dose** Identified risk factors in general population: - Ferritin <10 - Normal kidney function / body weight - Low baseline Phos - Repeat or high doses

Final thoughts…

We can (& should) improve hemoglobin and ferritin in everyone.

Start oral iron early - preconception! after nausea/vomiting!
& continue postpartum until replete.

Consider IV iron in pregnancy in setting of moderate/severe anemia,
especially at late GA or oral not tolerated.



It is unclear if the correction of
mild anemia or iron deficiency without anemia
improves perinatal outcomes.

QUESTIONS?

THANK YOU:
OBIM Team

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