Managing Early Pregnancy: What to know before you refer

Dr. Alice Tan and Dr. Akshay Verma
Mount Sinai Family Health Team
May 17, 2022

Conflicts of Interest

No conflicts of interest or disclosures to note

Acknowledgements

Sincere thanks to the following FM-OB physicians and our Registered Dietician for their support and guidance on this presentation:

Dr. Sabrina Kolker

Dr. Anne Biringer

Dr. Luke Bearss

Dr. Natalie Morson

Dr. Sakina Walji

Dr. Kristina Powles

Dr. Milena Forte

Lauren Rose

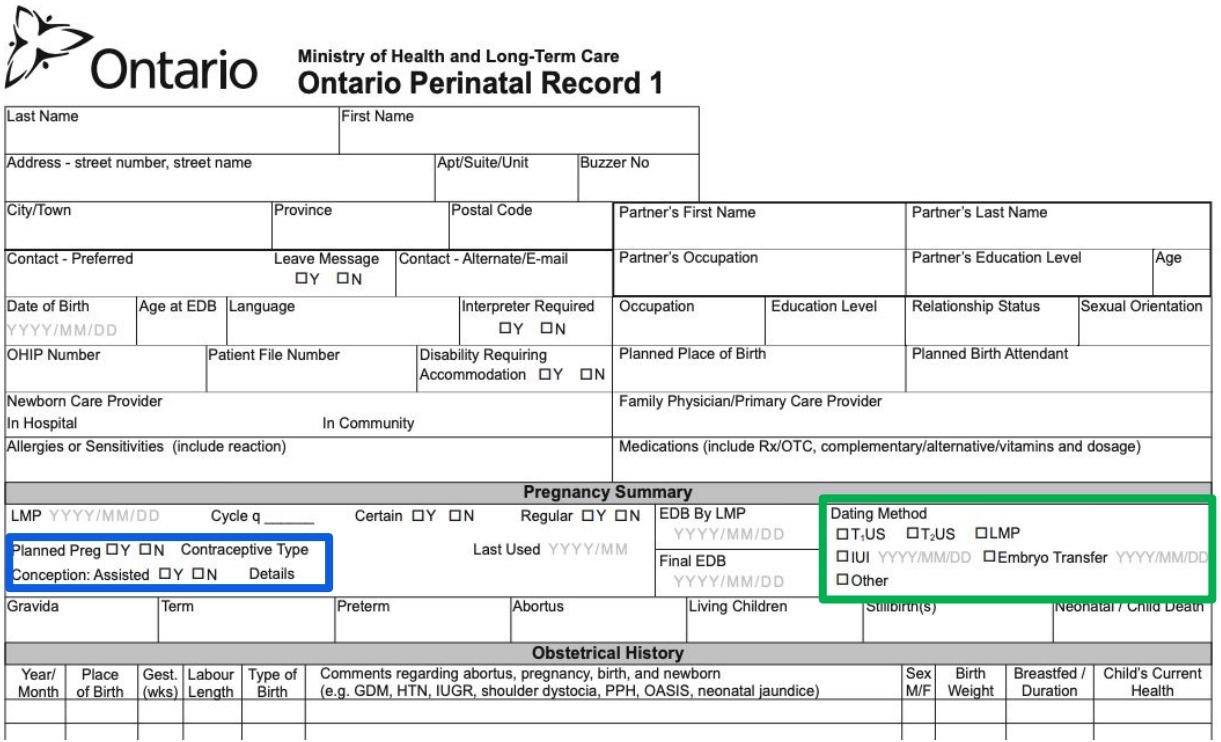
Agenda

1. Ontario Perinatal Record 2017
2. Folic Acid Supplementation
3. Placental Markers
4. TSH in First Trimester
5. Nausea/Vomiting in Pregnancy
6. Nutrition in Pregnancy
7. ASA for High Risk Patients
8. Adacel/Flu Immunizations
9. COVID-19 in Pregnancy
10. Exercise in Pregnancy
11. Iron Deficiency Anemia

Q&A Session

Ontario Perinatal Record - Page 1

1) Type of conception
2) Dating method



Ontario

Ministry of Health and Long-Term Care

Ontario Perinatal Record 1

Last Name	First Name	
Address - street number, street name	Apt/Suite/Unit	Buzzer No
City/Town	Province	Postal Code
Contact - Preferred	Leave Message ☐Y ☐N	Contact - Alternate/E-mail
Date of Birth YYYY/MM/DD	Age at EDB	Language / Interpreter Required ☐Y ☐N
OHIP Number	Patient File Number	Disability Requiring Accommodation ☐Y ☐N
Newborn Care Provider In Hospital / In Community		
Allergies or Sensitivities (include reaction)		

Partner's First Name	Partner's Last Name		
Partner's Occupation	Partner's Education Level	Age	
Occupation	Education Level	Relationship Status	Sexual Orientation
Planned Place of Birth	Planned Birth Attendant		
Family Physician/Primary Care Provider			
Medications (include Rx/OTC, complementary/alternative/vitamins and dosage)			

Pregnancy Summary

LMP YYYY/MM/DD Cycle q _____ Certain ☐Y ☐N Regular ☐Y ☐N

Planned Preg ☐Y ☐N Contraceptive Type

Conception: Assisted ☐Y ☐N Details

Last Used YYYY/MM

EDB By LMP YYYY/MM/DD

Final EDB YYYY/MM/DD

Dating Method

☐T_1US ☐T_2US ☐LMP

☐IUI YYYY/MM/DD ☐Embryo Transfer YYYY/MM/DD

☐Other

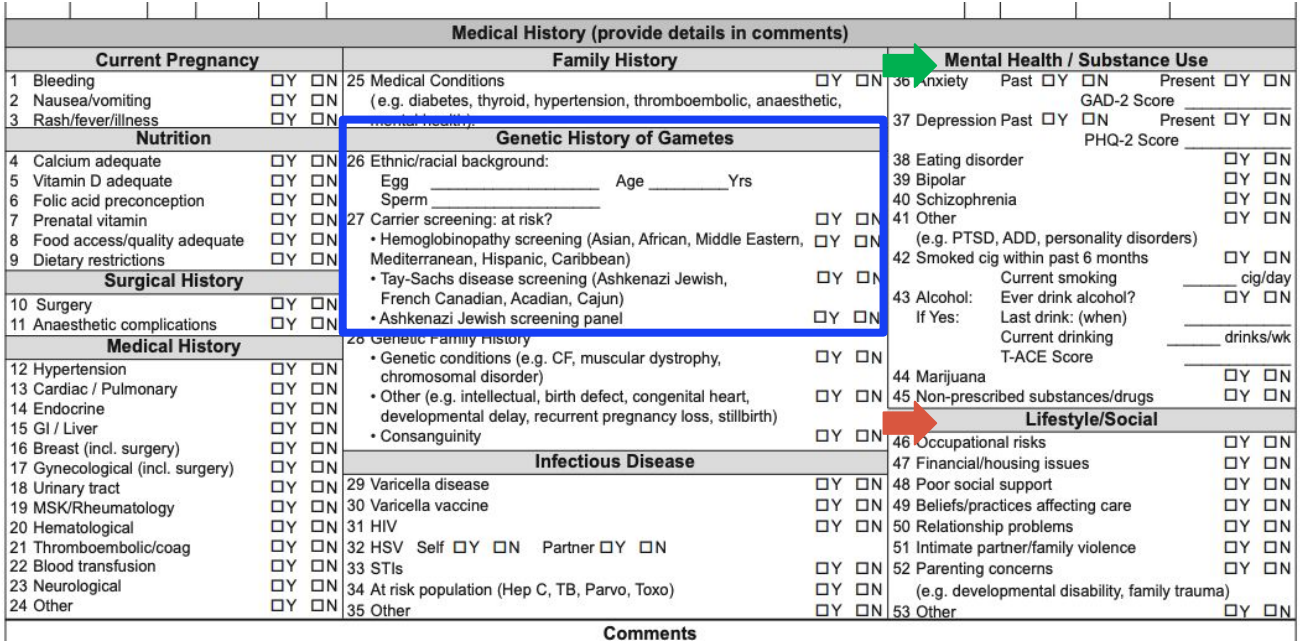
Gravida	Term	Preterm	Abortus	Living Children	Stillbirth(s)	Neonatal / Child Death

Obstetrical History

Year/ Month	Place of Birth	Gest. (wks)	Labour Length	Type of Birth	Comments regarding abortus, pregnancy, birth, and newborn (e.g. GDM, HTN, IUGR, shoulder dystocia, PPH, OASIS, neonatal jaundice)	Sex M/F	Birth Weight	Breastfed / Duration	Child's Current Health

Ontario Perinatal Record - Page 1

1) Genetic history of gametes
2) Mental health and substance use screening
3) Environmental and social factors impacting pregnancy



Medical History (provide details in comments)

Current Pregnancy
1 Bleeding ☐Y ☐N
2 Nausea/vomiting ☐Y ☐N
3 Rash/fever/illness ☐Y ☐N

Nutrition
4 Calcium adequate ☐Y ☐N
5 Vitamin D adequate ☐Y ☐N
6 Folic acid preconception ☐Y ☐N
7 Prenatal vitamin ☐Y ☐N
8 Food access/quality adequate ☐Y ☐N
9 Dietary restrictions ☐Y ☐N

Surgical History
10 Surgery ☐Y ☐N
11 Anaesthetic complications ☐Y ☐N

Medical History
12 Hypertension ☐Y ☐N
13 Cardiac / Pulmonary ☐Y ☐N
14 Endocrine ☐Y ☐N
15 GI / Liver ☐Y ☐N
16 Breast (incl. surgery) ☐Y ☐N
17 Gynecological (incl. surgery) ☐Y ☐N
18 Urinary tract ☐Y ☐N
19 MSK/Rheumatology ☐Y ☐N
20 Hematological ☐Y ☐N
21 Thromboembolic/coag ☐Y ☐N
22 Blood transfusion ☐Y ☐N
23 Neurological ☐Y ☐N
24 Other ☐Y ☐N

Family History
25 Medical Conditions ☐Y ☐N
(e.g. diabetes, thyroid, hypertension, thromboembolic, anaesthetic,

Genetic History of Gametes
26 Ethnic/racial background:
Egg _____ Age _____Yrs
Sperm _____
27 Carrier screening: at risk? ☐Y ☐N
• Hemoglobinopathy screening (Asian, African, Middle Eastern, Mediterranean, Hispanic, Caribbean) ☐Y ☐N
• Tay-Sachs disease screening (Ashkenazi Jewish, French Canadian, Acadian, Cajun) ☐Y ☐N
• Ashkenazi Jewish screening panel ☐Y ☐N
28 Genetic Family History
• Genetic conditions (e.g. CF, muscular dystrophy, chromosomal disorder) ☐Y ☐N
• Other (e.g. intellectual, birth defect, congenital heart, developmental delay, recurrent pregnancy loss, stillbirth) ☐Y ☐N
• Consanguinity ☐Y ☐N

Infectious Disease
29 Varicella disease ☐Y ☐N
30 Varicella vaccine ☐Y ☐N
31 HIV ☐Y ☐N
32 HSV Self ☐Y ☐N Partner ☐Y ☐N
33 STIs ☐Y ☐N
34 At risk population (Hep C, TB, Parvo, Toxo) ☐Y ☐N
35 Other ☐Y ☐N

Mental Health / Substance Use
36 Anxiety Past ☐Y ☐N Present ☐Y ☐N
GAD-2 Score _____
37 Depression Past ☐Y ☐N Present ☐Y ☐N
PHQ-2 Score _____
38 Eating disorder ☐Y ☐N
39 Bipolar ☐Y ☐N
40 Schizophrenia ☐Y ☐N
41 Other ☐Y ☐N
(e.g. PTSD, ADD, personality disorders)
42 Smoked cig within past 6 months ☐Y ☐N
Current smoking _____ cig/day
43 Alcohol: Ever drink alcohol? ☐Y ☐N
If Yes: Last drink: (when) _____
Current drinking _____ drinks/wk
T-ACE Score _____
44 Marijuana ☐Y ☐N
45 Non-prescribed substances/drugs ☐Y ☐N

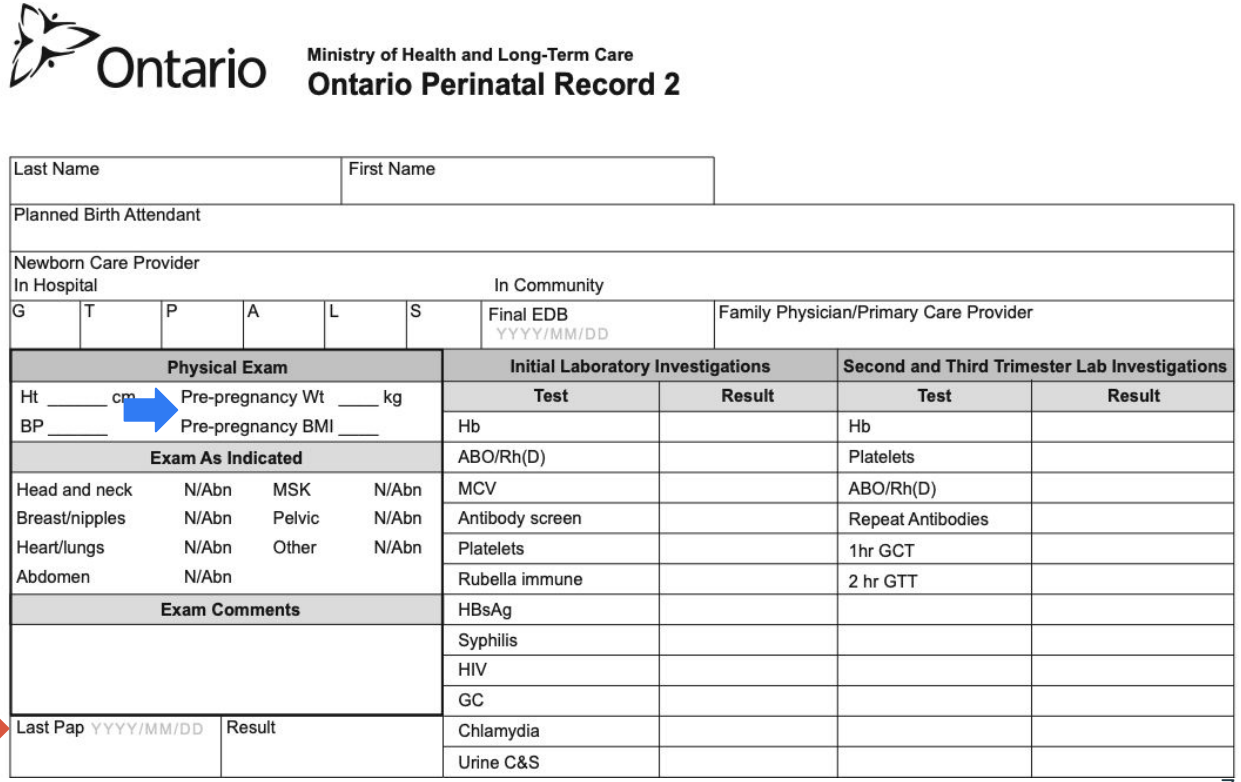
Lifestyle/Social
46 Occupational risks ☐Y ☐N
47 Financial/housing issues ☐Y ☐N
48 Poor social support ☐Y ☐N
49 Beliefs/practices affecting care ☐Y ☐N
50 Relationship problems ☐Y ☐N
51 Intimate partner/family violence ☐Y ☐N
52 Parenting concerns ☐Y ☐N
(e.g. developmental disability, family trauma)
53 Other ☐Y ☐N

Comments

(https://www.sickkids.ca/siteassets/care--services/for-health-care-providers/lab-testing-requisitions/carrier-screening-tay-sachs-requisition.pdf?fbclid=IwAR0cLo2iPWZ8jBj1XruxDQDNh6CUQehPEfepqcVah0a-4MLtYezkjLVoEGQ)

Ontario Perinatal Record - Page 2

1) Pre-pregnancy weight, BMI
2) Most recent Pap smear



Ontario

Ministry of Health and Long-Term Care

Ontario Perinatal Record 2

Last Name	First Name
Planned Birth Attendant	
Newborn Care Provider In Hospital In Community	
G T P A L S	Final EDB YYYY/MM/DD / Family Physician/Primary Care Provider

Physical Exam			
Ht _____ cm		Pre-pregnancy Wt ____ kg	
BP _____		Pre-pregnancy BMI ____	
Exam As Indicated			
Head and neck	N/Abn	MSK	N/Abn
Breast/nipples	N/Abn	Pelvic	N/Abn
Heart/lungs	N/Abn	Other	N/Abn
Abdomen	N/Abn		
Exam Comments			
Last Pap YYYY/MM/DD	Result		

Initial Laboratory Investigations		Second and Third Trimester Lab Investigations	
Test	**Result**	**Test**	**Result**
Hb		Hb	
ABO/Rh(D)		Platelets	
MCV		ABO/Rh(D)	
Antibody screen		Repeat Antibodies	
Platelets		1hr GCT	
Rubella immune		2 hr GTT	
HBsAg			
Syphilis			
HIV			
GC			
Chlamydia			
Urine C&S			

Ontario Perinatal Record - Page 2

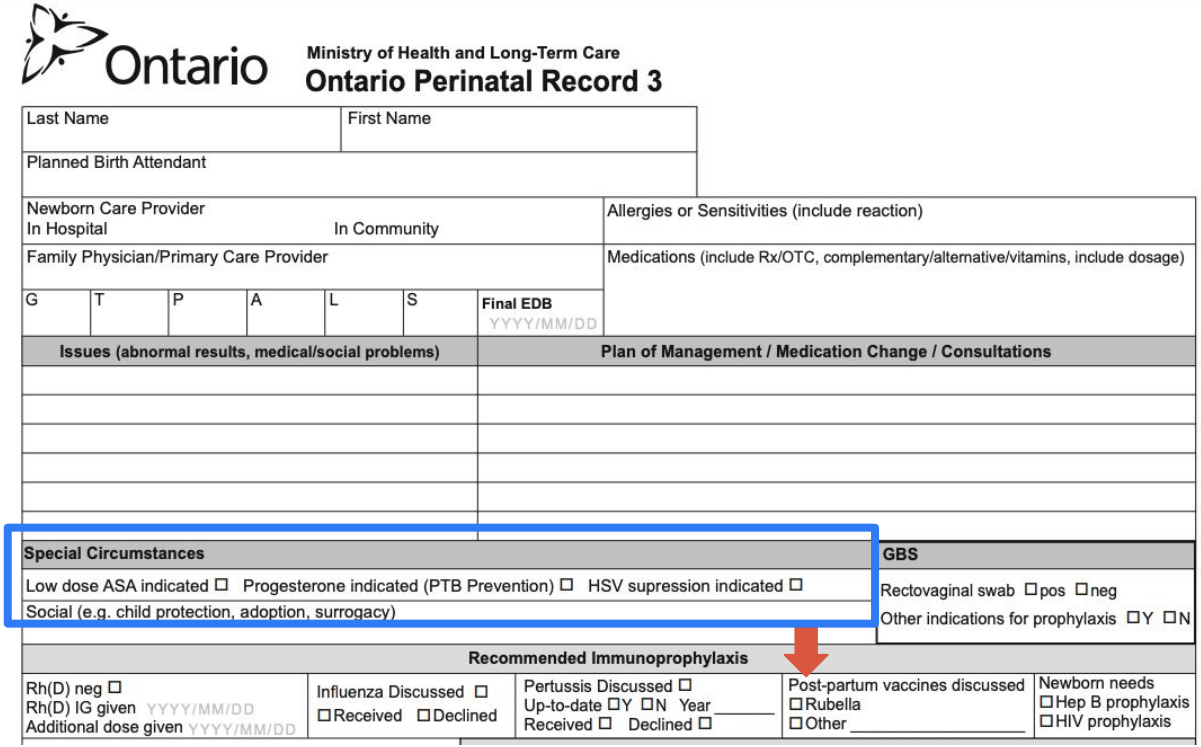
1) Ultrasound documentation of placental location

Prenatal Genetic Investigations			
Screening Offered ☐Yes ☐No	**Result**		**Result**
☐FTS (between 11-13+6wks)		CVS/Amnio Offered ☐Y ☐N	
☐IPS Part 1(between 11-13+6wks) ☐Part 2(between 15-20+6wks)		Other genetic testing Offered ☐Y ☐N	
☐MSS (between 15-20+6wks) ☐AFP (between 15-20+6wks)		NT Risk Assessment 11-13+6wk (multiples)	
Cell-free fetal DNA (NIPT) Offered ☐Y ☐N		Abnormal Placental Biomarkers	
No Screening Tests			
☐Counseled and declined Date YYYY/MM/DD		☐Presentation > 20+6wk NIPT offered ☐Y ☐N	Date YYYY/MM/DD

Ultrasound				
Date	**GA**	**Result**		
YYYY/MM/DD				
YYYY/MM/DD		NT Ultrasound (between 11-13+6 weeks)		
YYYY/MM/DD		Anatomy scan (between 18-22wks)	Placental Location	Soft Markers
YYYY/MM/DD				
YYYY/MM/DD				
YYYY/MM/DD				
YYYY/MM/DD				
YYYY/MM/DD				
YYYY/MM/DD				
YYYY/MM/DD				
YYYY/MM/DD				
YYYY/MM/DD			Genetic screening result reviewed with pt/client ☐	
YYYY/MM/DD			Approx 22 wks: Copy of OPR 1 & 2 to hospital ☐ and/or to pt/client ☐	

Ontario Perinatal Record - Page 3

1) Indications for ASA, progesterone, or HSV suppression
2) Tdap, postpartum rubella



Ontario

Ministry of Health and Long-Term Care

Ontario Perinatal Record 3

Last Name	First Name
Planned Birth Attendant	
Newborn Care Provider In Hospital In Community	Allergies or Sensitivities (include reaction)
Family Physician/Primary Care Provider	Medications (include Rx/OTC, complementary/alternative/vitamins, include dosage)

G	T	P	A	L	S	Final EDB YYYY/MM/DD

Issues (abnormal results, medical/social problems)	Plan of Management / Medication Change / Consultations

Special Circumstances	GBS
Low dose ASA indicated ☐ Progesterone indicated (PTB Prevention) ☐ HSV supression indicated ☐	Rectovaginal swab ☐pos ☐neg
Social (e.g. child protection, adoption, surrogacy)	Other indications for prophylaxis ☐Y ☐N

Recommended Immunoprophylaxis

Rh(D) neg ☐ Rh(D) IG given YYYY/MM/DD Additional dose given YYYY/MM/DD	Influenza Discussed ☐ ☐Received ☐Declined	Pertussis Discussed ☐ Up-to-date ☐Y ☐N Year _____ Received ☐ Declined ☐	Post-partum vaccines discussed ☐Rubella ☐Other _____	Newborn needs ☐Hep B prophylaxis ☐HIV prophylaxis

Ontario Perinatal Record 2017 - Page 4, 5

- Additional discussion topics to review:
  - Food/medication safety, infections, and pets
  - Recommended weight gain throughout pregnancy
  - VBAC counselling
  - Mental health
  - Contraception
- New postnatal care tool (page 5)

Folic Acid in Pregnancy

- Target DFE is **0.4 mg daily**
- Typical diet only includes 0.1-0.2 mg of folic acid
- Supplementation associated with decreased risk of NTD, hydrocephalus, facial clefts, urinary tract disease, and limb defects

General recommendation to start folic acid supplementation **3 months before conception and up to 6 weeks postpartum and/or the end of breastfeeding**

https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/fn-an/alt_formats/hpfb-dgpsa/pdf/pubs/folate-eng.pdf

Folic Acid Supplementation Guide

Low Risk	Moderate Risk	High Risk
No personal or family risk factors	• Previous NTD in 1st or 2nd degree relative • PMHx/FMHx of folic-acid sensitive congenital anomalies • Diabetes, GI malabsorptive conditions, advanced liver/kidney disease, EtOH overuse • Teratogenic medications	• Maternal or paternal NTD • Previous affected pregnancy
0.4mg (3 mo pre-conception to 6 wks PP or end of breastfeeding)	**1 mg** (3 mo pre-conception to 12 weeks GA) THEN **0.4 to 1 mg** (12 wks GA to 6 wks PP or end of breastfeeding)	**4 mg** folic acid (3 mo pre-conception to 12 wks GA) THEN **0.4 to 1 mg** folic acid (12 wks GA to 6 wks PP, or end of breastfeeding)

Types of Folic Acid Supplements

	Folic Acid Content	Examples*
OTC Multivitamins	0.4-0.6 mg	Jamieson
OTC Prenatal Multivitamins	0.4-2 mg	Materna: 0.6 mg Jamieson Prenatal: 1 mg Centrum Prenatal: 1 mg
Prescription Multivitamins	Up to 5 mg	PregVit: 1.1 mg PregVit Folic 5: 5 mg
Prenatal Folic Acid**	0.8-1 mg	Nature's Bounty: 0.8 mg

** pregnant patients should NOT take more than 1 daily dose of multivitamin to achieve desired folic acid dose - instead supplement multivitamin with folic acid tablets

Prenatal Screening - Counselling

Offer all choices for screening (not diagnostic), regardless of whether you think they can afford it

- Multiple marker screening
  - Enhanced first trimester screen (eFTS)
  - Maternal serum screen (MSS-Quad)
- Cell-free fetal DNA testing
  - Non-invasive prenatal test (NIPT)
  - Non-invasive prenatal screen (NIPS) / “Invitae”

Explain benefits, risks / shortcomings and alternatives

- Dating (>7 wk), NT (11+2 - 13+6wk), anatomy (~19-20wk) U/S are considered prenatal screening tests

Have a screening question

Genetic Screening - eFTS

eFTS: 11+2 to 13+3 wk GA

3-4 serum markers (PAPP-A, HCG, AFP, *PLGF*) + NT measurement + maternal age

Screens for T21, T18

Doesn't screen for NTD or spina bifida

Referral Cut-Off Values	Trisomy 21	Trisomy 18
NT > 3.5mm >1:350 risk = +ve screen	89% detection 7% false +ve rate	78% detection 0.2% false +ve rate

Genetic Screening - MSS-Quad

MSS-Quad: 14 - 20+6 wk

4 serum markers (AFP, HCG, uE3, inhibin-A) + maternal age

Screens for T21, T18

Doesn't screen for NTD or spina bifida

Referral Cut-Off Values	Trisomy 21	Trisomy 18
>1:200 risk = +ve screen (reduced to >1:350 risk during covid)	81% detection 5% false +ve rate	60% detection 5% false +ve rate

Genetic Screening - cfDNA

NIPT / NIPS: anytime after 9 or 10 wk

recommend NT U/S between 11+2 and 13+6 wk GA

Screens for T21, T18, T13, fetal sex, sex-chromosome aneuploidy, 22q11 deletion + microdeletion panel

No NTD or spina bifida

Trisomy 13	Trisomy 21	Trisomy 18
88% detection <0.1% false +ve rate	>99% detection 0.1% false +ve rate	95% detection <0.1% false +ve rate

Genetic Screening - cfDNA

OHIP-Funded NIPT	Private Pay - NIPT / NIPS
• Positive eFTS or MSS • Maternal age >40 at EDD • NT > 3.5 mm • Hx of T21, T18, T13 • Twin pregnancy	• Harmony (DynaCare) - $495 (+$200) • Panorama (LifeLabs) - $550 (+$195) • Invitae NIPS - US $99

N.B: Invitae takes ~2wks, sent to USA

Sex-Chromosome Aneuploidy and Microdeletion Panels

Sex-Chromosome Aneuploidy	Microdeletion Panels
Disorders of chromosome 23 ● 45X (Turner's) ● 47XXX (Triple X) ● 47XXY (Kleinfelter) ● 47 XYY (Jacob's)	● Small subset of very rare genetic conditions (e.g: DiGeorge, Prader-Willi, Langer-Giedion) ● 1:5,000 to 1:50,000 pregnancies ● High false positive rate Current recommendations do NOT support microdeletion screening

Failed or No-Call NIPT

Commonly due to insufficient fetal DNA

Possibly due to chromosomal abnormality (low likelihood)

Options:

- Repeat blood draw (free)
- Alternative screening (i.e: eFTS, MSS depending on GA)
- Referral to genetics counselor
- Invasive diagnostic testing

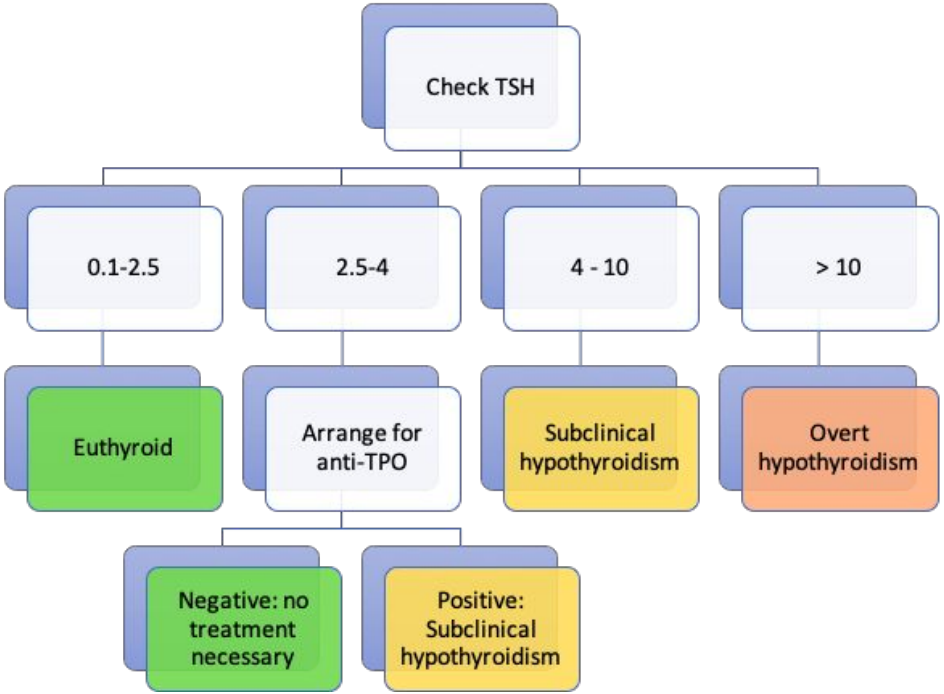
TSH Screening in Pregnancy

TSH screening in pregnancy recommended in:

- Maternal age >30 years, BMI > 40
- Personal or family history of thyroid dysfunction
- T1DM or other autoimmune disorder
- Previous head/neck radiation or thyroid surgery
- Hx pregnancy loss, preterm deliveries, or infertility
- Taking amiodarone/lithium, or recent iodinated contrast agent

https://pubmed.ncbi.nlm.nih.gov/10451459/
https://www.cadth.ca/sites/default/files/pdf/htis/2016/RB1038%20Thyroid%20Screening%20Final.pdf

TSH Management Algorithm



Subclinical Hypothyroidism: levothyroxine 25-50 mcg daily

Overt Hypothyroidism: levothyroxine 50-100 mcg daily

*** taken separately from PNV, separately from calcium and iron by 2 hours, and not within 1 hour of meal*

Monitor TSH and fT4:

- q4 weeks until 20 wks GA, *then*
- 1x between 26-32 wks GA

Target TSH = 0.1-2.5 through all trimesters ***2.5-4 if hx multiple miscarriages*

OB Medicine Handbook (2020) - Dr. Yayi Huang, Dr. Shital Gandhi

Pre-existing Hypothyroidism

Pre-Conception	Pregnancy Confirmed	Postpartum
Adjust LT4 with Target TSH < 2.5	**Increase LT4 by 30%** *** may require dose increase of 40-50% if prior thyroidectomy, ablation, or thyroid ca*	I**mmediately return to pre-pregnancy LT4 dosage** Repeat TSH at 6 weeks postpartum

Nausea and Vomiting in Pregnancy

Lifestyle Recommendations

Dietary

- Small, regular meals
  - Avoid having an empty stomach (also avoid being too full)
- Bland foods, salty foods and high protein foods
- Separate solids and liquids
- Avoid high fat or strongly odorous foods

Adequate sleep

Ginger 250mg PO QID PRN

Acupressure (P6 Nei Guan Point)

Nausea and Vomiting in Pregnancy

First-Line	Second-Line	Third-Line
• Vitamin B6 (pyridoxine) 10mg PO QID PRN • Diclectin 10mg (doxylamine 10mg + pyridoxine 10mg) PO TID PRN ○ Max 4 tablets / day (1-1-2 / 2-1-1 etc.)	• Dimenhydrinate (gravol) 50mg q4-6 PO / PR	• Metoclopramide 5-10mg q8h PO/IM • Chlorpromazine 10-25mg q4-6h PO, or 25-50mg q4h IM • Prochlorperazine 5-10mg q6-8h PO/PR/IM • Promethazine 12.5 - 25mg q4-6h PO/IM ☐ *Ondansetron 4mg TID*

Aspirin Use in Pregnancy

Major Risk Factors	Minor Risk Factors
• Antiphospholipid antibody syndrome • Chronic HTN (pre-pregnancy) • Pre-existing diabetes mellitus • Pre-eclampsia in a prior pregnancy • Prev. IUGR • Pre-pregnancy BMI >30 • Assisted reproductive technology	• Prior placental abruption • Multifetal pregnancy (twins, triplets) • Chronic kidney disease • Previous stillbirth • Maternal age > 40y • Nulliparity • Systemic Lupus Erythematosus / SLE

Start Aspirin in patients who have 1 major risk factor or ≥2 minor risk factors

Aspirin Use in Pregnancy

Benefits	Potential Risks
• Pre-eclampsia • Preterm Birth • Small for Gestational Age • Intrauterine Growth Restriction • Perinatal Mortality	• Bleeding (maternal) • Postpartum Hemorrhage • Fetal Intracranial Hemorrhage

Aspirin Use in Pregnancy

Aspirin dosed at 162mg daily

- Start between 12 - 16 weeks gestation
  - Latest can be started by 20 weeks
- Stopped around 36-38 weeks gestation (sometimes term)

Nutrition in Pregnancy - How Much to Eat?

- **1st trimester:** no extra calories
- **2nd-3rd trimester:** extra 350-450 kcal/day (extra 2-3 food guide servings)

Choose **quality (nutrient rich foods)**, not quantity!

Pre-Pregnancy BMI	Recommended Total Weight Gain During Pregnancy		Recommended weekly rate of weight gain (in 2nd/3rd trimester)
	kg	lbs	
BMI < 18.5	12.5 - 18	28 - 40	0.5 kg (1.1 lbs)
BMI 18.5 - 24.9	11.5 - 16	25 - 35	0.4 kg (0.9 lbs)
BMI 25.0 - 29.9	7 - 11.5	15 - 25	0.3 kg (0.6 lbs)
BMI > 30	5 - 9	11 - 20	0.2 kg (0.5 lbs)

http://www.hc-sc.gc.ca/fn-an/pubs/nutrition/guide-prenatal-eng.php
http://www.hc-sc.gc.ca/fn-an/nutrition/prenatal/ewba-mbsa-eng.php

Coffee and Tea

Pregnancy caffeine recommendation	Type	Caffeine Amount	Herbal Teas
Health Canada ≤ 300 mg/day **SOGC ≤ 2 cups/day** ACOG ≤ 200 mg/day	1 cup of brewed coffee (8 oz)	135-180 mg	**AVOID:** Chamomile, aloe, buckthorn bark, coltsfoot, comfrey, duck roots, juniper berries, labrador tea, lobelia, pennyroyal, sassafras, senna leaves **Safe in moderation (2-3 cups/day):** Citrus peel, orange peel, ginger root, peppermint, rose hip
	1 cup of instant coffee (8 oz)	75-105 mg	
	1 oz espresso	75 mg	
	1 oz black/green tea	30-80 mg	
	Energy drink (8 oz)	80-100 mg	
	1 oz dark chocolate	20-25mg	

https://www.unlockfood.ca/en/Articles/Caffeine/Facts-on-Caffeine.aspx#.VhatOFy4k_U
https://www.canada.ca/en/public-health/services/pregnancy/caffeine.html
https://www.albertahealthservices.ca/assets/info/nutrition/if-nfs-ng-pregnancy.pdf

Foodborne Illnesses

Pregnant individuals should AVOID:

- Raw or undercooked meat, eggs, seafood
- Unpasteurized products (ALL soft/semi-soft cheeses, raw milk, juices/ciders)
- Ready-to-eat meats (e.g. deli meats, refrigerated pâté, cold hot dogs)

- Raw sprouts (e.g. alfalfa, clover, radish, mung bean)
- Refrigerated smoked seafood
- Prepackaged or prepared fruit/vegetable salads

https://www.canada.ca/en/public-health/services/diseases/listeriosis/risk-listeriosis.html
https://www.unlockfood.ca/en/Articles/Pregnancy/Food-safety-during-pregnancy.aspx#.VvLF4pMrKcx
https://www.cfp.ca/content/60/4/334
https://www.acog.org/womens-health/faqs/listeria-and-pregnancy#:~:text=Listeriosis%20can%20cause%20mild%2C%20flu,do%20not%20have%20any%20symptoms.

Methylmercury in Fish

LIMIT to **< 150g per month**	RECOMMENDED to have **150g weekly**
• Tuna • Shark • Swordfish • Marlin • Orange roughy • Escolar • Canned albacore tuna < 300g/ month	• Salmon • Trout • Haddock • Sole • Pollock • Canned light tuna

https://mothertobaby.org/fact-sheets/methylmercury-pregnancy/
https://www.canada.ca/en/health-canada/services/publications/food-nutrition/prenatal-nutrition-guidelines-health-professionals-fish-omega-3-fatty-acids-2009.html

Important Nutrients in Pregnancy

Vitamin D3 400 - 1000 IU/day	Calcium 1000 mg/day	Folic Acid Min 400 mcg/day
Recommend supplement Sinai and Canadian Pediatric Society recommends 2000IU per day during COVID pandemic	**Recommend diet only** No additional benefit to supplement in normal calcium intake populations *** Consider increased need in teen pregnancy re: bone loss*	**Recommend PNV** Difficult to achieve via diet alone (ie: folate --> dark green leafy veggies, lentils, enriched flour products)

Unlockfood.ca

Prenatal Nutrition - Canada.ca

https://www.hamiltonhealthsciences.ca/wp-content/uploads/2019/08/VitaminDandPregnancy-trh.pdf

Important Nutrients in Pregnancy

Omega 3 300 mg EPA+DHA	Iodine 220 mcg/day	Iron 27 mg/day

Recommend diet first: 150g weekly of fatty fish (e.g. salmon, anchovies, herring, sardines, rainbow trout)

Second-line supplement:

< 3g/day likely safe; NO cod liver oil re: Vit A.

C/I: vaginal bleeding or coagulopathy or blood thinners; look for Natural Product Number (NPN) = HC approval, safe in pregnancy

Recommend PNV

Current PNVs have sufficient amount

Recommend diet first: Meat products are better absorbed, however fortified grains are source as well

Ferritin <30 ug/L in pregnancy = iron deficiency

Immunizations in Pregnancy - Tdap (Adacel)

Tdap vaccine helps to prevent pertussis in infants under 1 year (highest risk of infection and hospitalisation)

A study done between 2006-2015 found:

- Incidence = 71.2/100,000
- Hospitalization rate = 33.6/100,000
- Infants < 2 mo – 40.5% of special care unit admissions

NACI Tdap Update 2018

Immunizations in Pregnancy - Tdap (Adacel)

SOGC recommends Tdap for all pregnant women, between 27 - 32 weeks (ideally), irrespective of immunization history

- Can be given between 21-32
- Given even if they had Tdap within last 2 years
- Immunize partners, family members and caregivers at least 2 weeks before delivery

Immunizations in Pregnancy - Influenza

Pregnancy confers an increased risk of influenza-related morbidity and mortality

- Hospitalisation rates increase with increasing gestational age
- Evidence of adverse neonatal outcomes with maternal influenza in pregnancy

Vaccination provides significant benefits

- Reduces febrile influenza-like illness in pregnant women by ~30%
- Reduces proven influenza infection in infants up to 6 months by 63% (passive Ab transfer)

NACI Influenza Statement 2019-20
CMAJ Neonatal Outcomes after Influenza 2012

Immunizations in Pregnancy - Influenza

SOGC highly recommends inactivated or attenuated influenza vaccine (i.e: not the live intranasal vaccine) in pregnant and breastfeeding women

- Recommend all family members and caregivers receive influenza vaccine

COVID-19 Immunization in Pregnancy

COVID-19 vaccination is **recommended** during pregnancy in **any trimester and** while **breastfeeding**

- Any available COVID-19 vaccine can be used
- No longer need to wait before/after other vaccines

COVID-19 Immunization in Pregnancy

Fertility	Pregnancy	Breastfeeding
• No negative effect on sperm parameters, oocyte/follicular function, fertilization and embryo implantation	• Reduced maternal ICU admission, ventilation, and death • COVID-19 antibodies cross placenta as soon as two weeks post dose, with no crossing of mRNA content • No negative effect on pregnancy outcomes	• COVID-19 antibodies are detected in human breastmilk • COVID-19 mRNA not detected in human milk

COVID-19 Immunization in Pregnancy

US v-safe pregnancy registry published the following data:

- 85% of patients reported injection-site pain as the most frequent S/E
- Fatigue (26%), headache (16%), myalgia (9%), chills (3%) and fever (3%) were less frequent S/E

No statistically significant difference in rates of:

- Spontaneous abortion (treatment 12.6% vs. control 10-26%)
- Preterm delivery (treatment 9.4% vs. control 8-15%)
- SGA fetus (treatment 3.2% vs. control 3.5%)
- Congenital anomalies (treatment 2.2% vs. control 3.5%)
- Stillbirth (treatment 0.1% vs. control <1%)
- Neonatal death (treatment 0% vs. control <1%)

COVID-19 in Pregnancy

Maternal Consequences of COVID-19	Fetal Consequences of COVID-19
↑ risk of ICU admission, need for mechanical ventilation ↑ risk of pre-eclampsia ↑ maternal death	Modest ↑ risk of pre-term delivery 9x ↑ prevalence of low birth weight

COVID-19 Management in Pregnancy (Mount Sinai Hospital-specific):

- **If COVID +ve in 1st/2nd trimester:** serial growth US q4 weeks starting at 24 weeks
- **If COVID +ve past 24 wks GA:** growth US at recovery, and then serial growth US q4 weeks
- Inadequate data to recommend for/against IOL if mild COVID diagnosed at term

https://obgyn.utoronto.ca/sites/default/files/soon-obgyn_covid_slides_-_w_whittle.pdf

Exercise in Pregnancy

Joint SOGC and CSEP guidelines (2019) aims to elicit a cognitive shift in practitioners

"Prenatal physical activity should be considered a first-line **therapy for reducing** the risk of **pregnancy complications**, and enhancing maternal physical and mental health"

Exercise in Pregnancy

Target populations:

- Previously inactive patients
- GDM
- Overweight or obese (BMI > 25 kg/m2)

- *Maternal age > 35*

Benefits include reductions in:

- Excessive weight gain (32% RRR, CI 0.57 - 0.80)
- Gestational HTN (39% RRR, CI 0.43 - 0.85)
- Pre-eclampsia (41% RRR, CI 0.37 - 0.90)
- GDM (38% RRR, CI 0.52 - 0.75)
- LGA babies
- Urinary incontinence (50% RRR, CI 0.37 - 0.68)
- Depression (67% RRR, CI 0.21 - 0.53)
- Lumbo-pelvic pain severity
- Instrumental delivery (24% RRR, CI 0.63 - 0.92)

Dose-dependent response with bigger effect in previously sedentary women

Not associated with:

- Miscarriage
- Stillbirth or neonatal death
- Preterm birth (or PROM / PPROM)
- Induction of labour
- Low birthweight
- Neonatal hypoglycaemia
- Birth defects
- Birth complications

SOGC / CSEP Recommendations

150 minutes of moderate-intensity physical activity each week

- Spread over a minimum of 3 days
- Resistance training is recommended
- Consider yoga and/or gentle stretching
- Pelvic floor muscle training daily

Table 2 Absolute and relative contraindications to physical activity during pregnancy

Absolute contraindications	Relative contraindications
► Ruptured membranes, premature labour.	► Recurrent pregnancy loss.
► Unexplained persistent vaginal bleeding.	► History of spontaneous preterm birth.
► Placenta praevia after 28 weeks' gestation.	► Gestational hypertension.
► Pre-eclampsia.	► Symptomatic anaemia.
► Incompetent cervix.	► Malnutrition.
► Intrauterine growth restriction.	► Eating disorder.
► High-order multiple pregnancy (eg, triplets)	► Twin pregnancy after the 28th week.
► Uncontrolled type I diabetes, uncontrolled hypertension or uncontrolled thyroid disease.	► Mild/moderate cardiovascular or respiratory disease.
► Other serious cardiovascular, respiratory or systemic disorder.	► Other significant medical conditions.

SOGC/CSEP 2019

Iron Deficiency in Pregnancy

- Iron deficiency affects >30% pregnancies in Canada
- Recommend initial **CBC and ferritin** during 1st trimester, and repeat at 24-28 wks GA
  - Iron deficiency anemia if Hb:
    - < 110 in 1st trimester
    - < 105 in 2nd/3rd trimester
    - < 100 during postpartum period
  - Iron deficiency without anemia if ferritin < 30 ug/L

Iron deficiency and IDA in pregnancy. CMAJ 2021 July 26, doi: 10.1503/cmaj.210007

Iron Deficiency Anemia

Ensure taking iron-containing PNV daily

Counsel on iron-rich foods

Initiate ferrous iron supplement (40-100mg of elemental iron)

Counsel to take vitamin C on empty stomach if tolerated. Avoid taking with calcium, caffeine, fibre, PPI/antacids, levothyroxine

Repeat CBC q2-4 weeks until hemoglobin stabilizes. Continue iron until 6 weeks postpartum

Hb should rise 10g/L in 2 weeks, or 20g/L in 4 weeks

Iron Formulations

Oral

- Ferrous salts
- Polysaccharide iron complex
- Chelated iron

Parenteral

- Iron sucrose
- Ferric derisomaltose

Table 1: Oral and parenteral iron preparations*

Generic name	Brand name	Daily or alternate day dosing	Dose, mg	Elemental iron, mg/tab	Daily estimated cost, $†
Oral iron					
Ferrous gluconate	Floradix, Floravit	1 to 2 tabs	300	35	0.10
Ferrous sulfate	Ferodan, Ferrotrate	1 tab	300	60	0.20
Ferrous fumarate	Palafer, EuroFer	1 tab	300	100	0.25
Ferrous bisglycinate	Ferrochel, CanPrev	1 tab	25	25	0.30
Polysaccharide iron complex	Feramax	1 tab	150	150	0.75
Heme iron polypeptide	OptiFerA, Proferrin	2 to 3 tabs	398	11	2.40
Parenteral iron					
Iron sucrose	Venofer	200–300 mg in a single dose over 2 h§		—	375
Ferric derisomaltose‡	Monoferric	500–1500 mg in a single dose over 30 to 60 min§		—	450–900

Iron deficiency and IDA in pregnancy. CMAJ 2021 July 26, doi: 10.1503/cmaj.210007

Parenteral Iron (~$200)

Indications	Contraindications
First-line: Gastric bypass/resection, or receiving TPN Hb < 80 at any point of pregnancy Hb < 90 and symptomatic Planned surgery in < 4 weeks, with Hb < 120 > 34 wks GA Second-line: Failure of oral iron therapy	1st trimester of pregnancy Previous IV iron hypersensitivity Myelodysplasia Aplastic anemia Leukemia (acute/chronic) Myelofibrosis Polycythemia rubra vera
Risks of IV iron include iatrogenic hemosiderosis (e.g. excessive IV therapy), hypersensitivity reactions, and hypotension	
Generally 300 mg	

Thank you!
Please provide your feedback:

Survey Link:
https://dfcmutorontoca.qualtrics.com/jfe/form/SV_bHQxnckrLwSirYy

BOOK RELEASE
SUMMER 2022

FOLLOW
US ON TWITTER

@TEACHPERINATAL