Contemporary Topics in Early Antenatal Care

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Conflict of Interest

Relationship with financial sponsors:

- Grants/research support: *None*
- Speakers Bureau/Honoraria: *Salus Global (MORE^{OB}); facilitation of MORE^{OB} patient safety program*
- Consulting Fees: *None*
- Other: *None*

This program has not received financial support or in-kind support from any organizations.

Poll Everywhere

What percentage of your time is spent practicing obstetrics?

- < 25%
- 25-50%
- > 50%
- I don’t practice obstetrics
- I’m a medical resident or medical student

What provinces are you watching from?

- Insert provinces

Learning Objectives

By the end of this activity, participants will be able to:

1. Recommend doses of folic acid according to risk of neural tube defects
2. Describe barriers to obtaining treatment for substance use in pregnancy
3. Review the management of substance use, particularly smoking and marijuana use
4. Describe the most appropriate method to estimate due date

Learning Objectives

5. Offer screening for aneuploidy and neural tube defects (NTD)
6. Recommend ASA for the prevention of pre-eclampsia to at-risk patients
7. State the appropriate time frame for prescribing ASA
8. Describe the role of vaginal progesterone in the prevention of pre-term birth

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for

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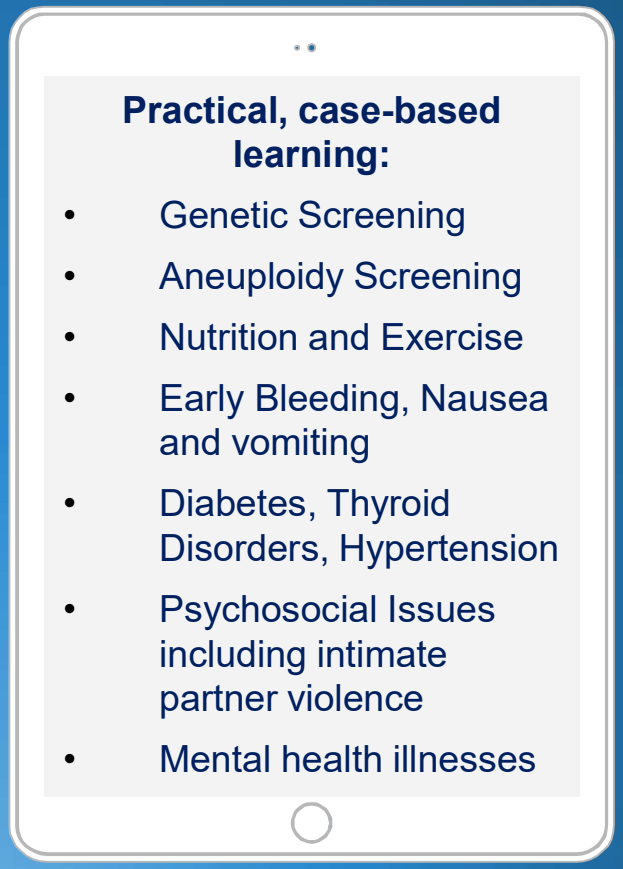


1.

FOLIC ACID

Poll Everywhere

[Insert case] What dose would you recommend for this patient? Answers:

- Folic acid 0.4mg
- Folic acid 1.0mg
- Folic acid 4.0mg
- Unsure

Wilson RD et al. JOGC 2015; 37(6): 534-549.

Folic Acid

- Important role in the prevention of neural tube defects (NTD)
- Prevents oral clefts and heart defects
- Diet in folate-rich foods recommended for all women
- Amount of folic acid recommended depends on risk of NTD

	RISK FACTORS	DAILY FOLIC ACID SUPPLEMENT
Low Risk for NTD	No personal history or family risk for NTD or folic-acid sensitive birth defects* in either parent	**Folic acid 0.4mg daily** • 2-3 months pre-conception • Throughout pregnancy • Continued for 6 weeks postpartum (or as long as breastfeeding)

Wilson RD et al. JOGC 2015; 37(6): 534-549.

Folic Acid

	RISK FACTORS	DAILY FOLIC ACID SUPPLEMENT
Moderate Risk for NTD	• Personal history of folate sensitive anomalies* • Family history of NTD in first- or second-degree relative • Maternal Type 1 or 2 diabetes • Teratogenic medications • GI malabsorption	**Folic acid 1.0mg daily** • At least 3 months before conception • until 12 weeks gestation **Then, folic acid 0.4 to 1.0mg daily** • For remainder of pregnancy • 6 weeks postpartum (or as long as breast-feeding):

* Heart defects, oral facial clefts, urinary tract anomalies

Wilson RD et al. JOGC 2015; 37(6): 534-549.

Folic Acid

	RISK FACTORS	DAILY FOLIC ACID SUPPLEMENT
High Risk for NTD	• Personal NTD history • Previous pregnancy affected by NTD • Genetic father with a personal history of NTD or a previous pregnancy affected by NTD	**Folic acid 4.0mg daily** • Minimum 3mo before conception until 12 weeks gestation Then, **folic acid 0.4 to 1.0mg daily** • For remainder of pregnancy • Six weeks postpartum (or as long as breast-feeding)

2.

SUBSTANCE ABUSE

Substance Use During Pregnancy

Past and current use of tobacco, alcohol, marijuana, illicit drugs and prescription drugs should be discussed with all pregnant patients, whether addiction is an issue or not.

More than 1 in 10 Canadian women report smoking or drinking alcohol during pregnancy.

1-2% report using marijuana but the rate of drug use may be higher

Circumstances to consider when offering comprehensive care:

- Mental health disorders
- History of trauma or current abuse
- Financial challenges
- Inadequate social support
- Concerns about child protective services

Ordean A et al. SOGC Clinical Practice Guidelines 349: Substance Abuse in Pregnancy. Oct 2017.

Substance Use During Pregnancy

Pregnancy may be a barrier to obtaining treatment:

- Stigma in relation to substance use in pregnancy
- Unable to access inpatient treatment due to family responsibilities
- Unable to attend counselling or treatment due to lack of childcare
- Fear of children taken by child protective services

Pregnancy can be a motivator to reduce or stop substance use because of the possible effects on the fetus.

Management of Substance Abuse

Society of Obstetricians and Gynaecologists of Canada

Harm-reduction: reducing drug-related harm without complete cessation of drug use

World Health Organization

Brief interventions: short education & counselling as part of routine care

- Setting goals, problem solving triggers, information about adverse effects of substance

Other Techniques

SBIRT (Screening, Brief Intervention, and Referral to Treatment)

Motivational Interviewing

Smoking Cessation Alternatives

- **Counselling and advice** can reduce smoking rates
- **Nicotine Replacement Therapy** (gum or lozenge): recommend only if counselling unsuccessful; more effective with CBT
- **Bupropion and varenicline:** limited safety data, not recommended
- **E-cigarettes:** insufficient data to support recommendations; vapour potentially harmful

Ordean A et al. SOGC Clinical Practice Guidelines 349: Substance Abuse in Pregnancy. Oct 2017.

MARIJUANA

- Next to alcohol, the most commonly used drug during pregnancy
- Recreational or occasional use
- Patient should be made aware of the potential effects & advised to reduce or stop marijuana use during pregnancy
- Can be safely stopped
- Avoid use during breastfeeding as THC remains in breast milk for several days

EFFECTS OF MARIJUANA USE IN PREGNANCY

INFANTS

Reduced self quieting ability

Increased fine tremors

Altered sleep patterns

Easily startled

CHILDREN

Disturbed sleep

Behavioural problems including aggression, hyperactivity, inattention

OLDER CHILDREN & ADOLESCENTS

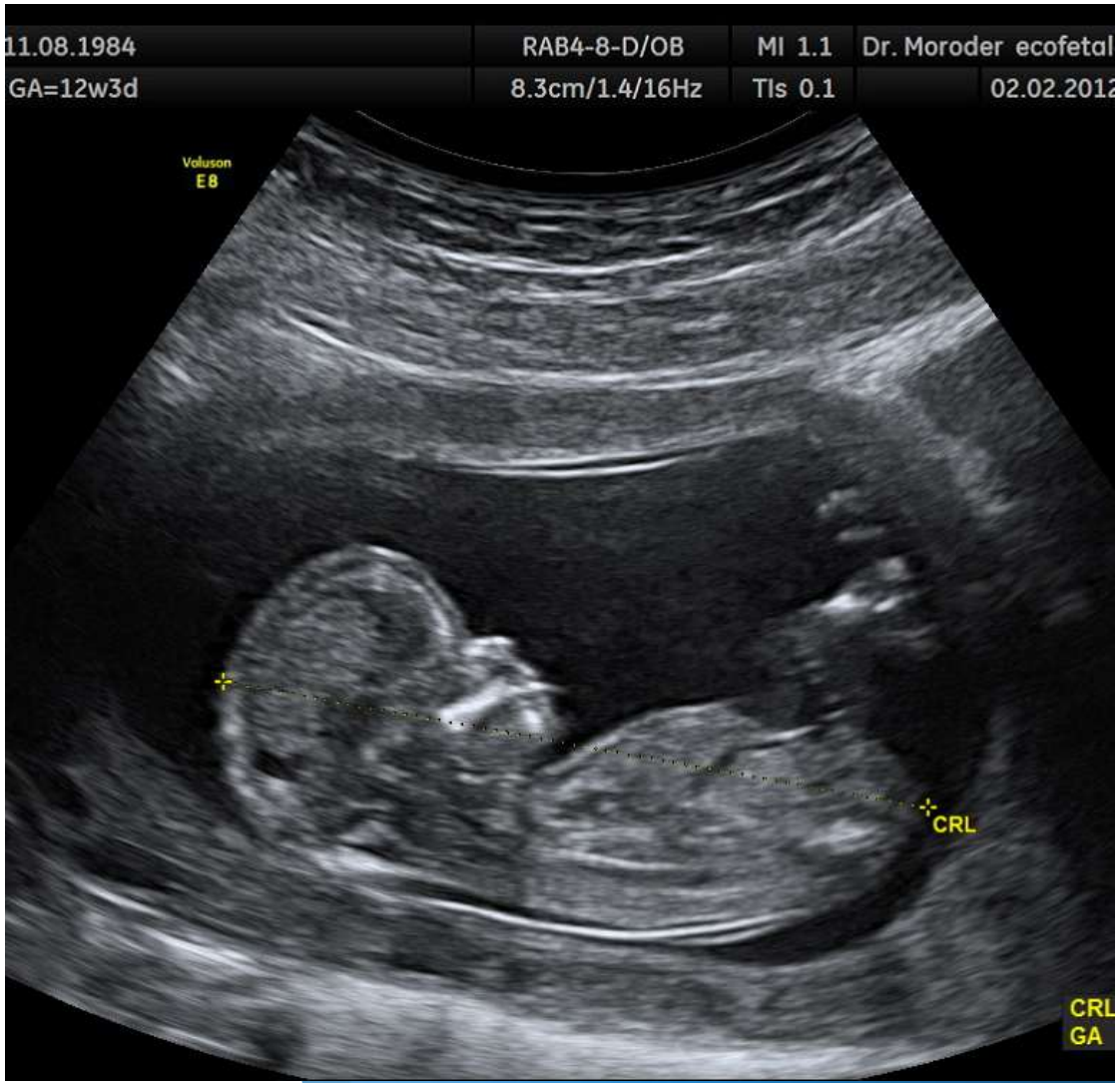
Reduced executive functioning

Advise pregnant patients that withdrawal from cannabis can cause irritability, insomnia, anxiety and anorexia

Ordean A et al. SOGC Clinical Practice Guidelines 349: Substance Abuse in Pregnancy. Oct 2017.

3.

ESTIMATING DUE DATE



Establishing Due Date

- Ultrasound are more accurate for dating than last menstrual periods
- Offered at 8-13 weeks
- Confirms viability, gestational age, chorionicity of multiples, early anatomic assessment and nuchal translucency
- Should be offered to women who do not wish to screen for Down syndrome or other fetal conditions
- Ultrasound dating enables more accurate timing of maternal blood tests for pregnancy management

Butt K, Lim K et al. JOGC 2014; 36(2); 171-181.

Establishing Due Date

- Crown rump length (CRL) should be used for gestational age when ≥ 10mm
- Appropriate from 7 to 12-14 weeks, or 10mm-84mm
- If offered at 7 weeks and CRL < 10mm, scan is not considered accurate; repeat warranted
- If > 14 weeks or CRL > 84mm, multiple biometric parameters are used to estimate gestational age
  - Biparietal diameter, head and abdominal circumference, femur length

Butt K, Lim K et al. JOGC 2014; 36(2); 171-181.

Establishing Due Date – Other options

Second trimester anatomy scan

- 18-22 weeks (or 20-22 wks if obese)
- Used to determine gestational age if ultrasound of limited availability
- Recommended regardless of whether first trimester ultrasound performed

Maternal history

- When ultrasound declined, estimate due date using maternal history and symptoms
- Dating criteria may assume regular cycles, mid-cycle ovulation, and correct recall of LMP→ accurate estimation of gestation age difficult

Butt K, Lim K et al. JOGC 2014; 36(2); 171-181.

4.

SCREENING FOR ANEUPLOIDY AND NEURAL TUBE DEFECTS

Screening For Aneuploidy and Neural Tube Defects

All pregnant patients should be:

- Offered screening for aneuploidy and neural tube defects (NTD)
- Made aware of the benefits and risks of screening
- Informed that screening cannot definitively diagnose fetal conditions
- Offered detailed screening for NTD at 18-20 week ultrasound if they have declined screening for aneuploidy

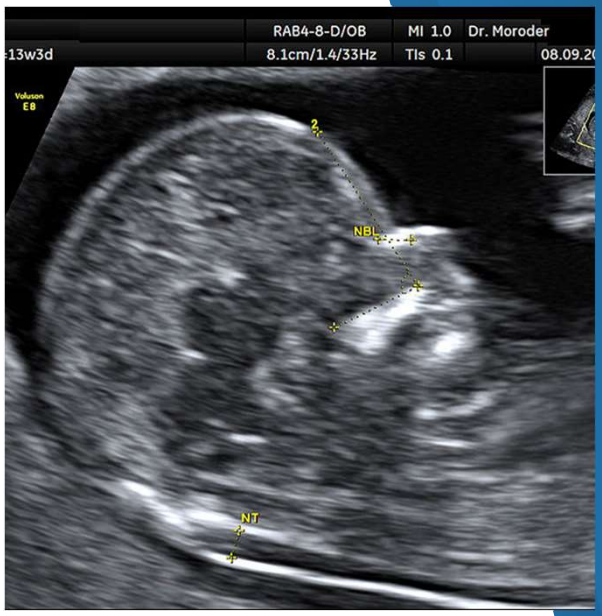
Nuchal Translucency (NT)

- Performed between 11 and 13+6 weeks
- Measurement ≥ 3.5mm associated with ↑ risk of several fetal conditions
- Referral for genetic counselling and/or diagnostic testing and detailed second trimester ultrasound required
- SOGC supports use of NT even when not used for aneuploidy screening given its utility to screen for other anomalies

Down's syndrome
Congenital heart disease
Fetal malformation
Anencephaly
Single gene disorders

Nuchal Translucency - Considerations

- Used in combination with biochemical markers and maternal age to estimate risk of fetal anomalies
- Not used as an independent test
- Not used when cell-free DNA testing (or NIPT) is used
- Must be performed by a certified sonographer or sonologist
- Not available in all areas because of limited access to sites with a certified sonographer or sonologist



Poll Everywhere

Is nuchal translucency available to patients in your area of practice?

- Yes
- No
- Not sure

Options for Aneuploidy Screening

- Most Canadian provinces had funded Aneuploidy screening
- It is important to be knowledgeable of your provincial program
- Some options which include serum +/- NT testing:
  - **First trimester biochemistry/first trimester serum screen**
  - **First trimester screening (FTS)**
  - **Enhanced first trimester screening (eFTS)**
  - **Serum integrated prenatal screening (SIPS)**
  - **Integrated prenatal screening (IPS)**
  - **Maternal serum triple screen**
  - **Quad screening**

Benefit and Risks of Screening for Aneuploidy and NTD

Test Interpretation

- Non-diagnostic
- Negative screens can provide reassurance
- Negative screen is not a guarantee that fetus is not affected
- Positive screen may cause anxiety and difficult emotions

Impact on Patient

- Positive screening can cause conflicting feelings about diagnostic tests
- Some pts may not wish to pursue diagnostic test after a positive screen

Benefits and Risks of Screening for Aneuploidy and NTD

After a positive screen

- Further screen with NIPT provides more accurate assessment of risk of fetal anomaly but not diagnostic

- Invasive testing can provide definitive diagnosis but carries risk*

Parent planning

- Prenatal diagnosis can allow for optimizing prenatal care and follow up

- Enables parents to plan and prepare; make informed decisions about terminating/continuing pregnancy

* Pregnancy loss associated with amniocentesis 0.5-1.0%; with chorionic villous sampling 0.5-1.0%

SOGC Clinical Practice Guidelines: Prenatal Diagnosis: Maternal and Fetal Risks and Benefits. Jul 2015

Poll Everywhere

Do you have access to NIPT/cfDNA for your patients?

- Provincially funded under certain circumstances
- Not provincially funded, but private coverage available for some patients
- Not available in my area currently
- Not sure

Non-Invasive Prenatal Testing (NIPT)

What is it?

- Blood test analyzes cell-free fetal DNA circulating in maternal blood
- Screens for chromosomal and genetic conditions, including aneuploidy
- Used from 10 weeks onward

Who to Screen?

- For women who request
- An option for women whose pregnancies are at increased risk of T21, 18 or 13
- Should be used with caution in twin pregnancies → less validation data for twin pregnancies

NIPT: A Screening Test

- Very effective screen from 10 weeks onward
- Considered a screening test, not a diagnostic test
  - cfDNA originates mainly from placenta which may have a chromosomal abnormality not shared with fetus
- Confirmation with diagnostic testing such as CVS or amniocentesis required
- SOCG recognizes that NIPT may become a diagnostic test in future, but stresses it is currently a screening test

No irrevocable obstetrical decision should be made based on NIPT alone without confirmatory invasive diagnostic testing such as amniocentesis.

Kim C et al. Cochrane Review, 2017: CD007223.
Audibert F et al. JOGC 2017; 39(9): 805-817.

NIPT - Availability

Availability varies across the country

- BC, ON, NS, PEI, Yukon and Nunavut
  - fund NIPT under specific circumstances based on results of other screening tests or maternal history
- Most other provinces are considering, requesting or planning NIPT funding
- May be available as a private service
- Availability is/will be changing rapidly.

NIPT – Product Considerations

In some cases, the test produces no result because the blood sample did not contain enough cfDNA.

- more common in obese patients, or when the test is done too early.

NIPT is offered by different companies and vary:

- Some offer detection of microdeletions
- SOGC: lack of peer-reviewed validation and low incidence makes the positive predictive value of microdeletion tests very low

Second Trimester Ultrasound

- Should be offered to all pregnant women at 18-22 weeks
- Maternal anatomy to be screened include cervix, uterus, and adnexa.
- Abnormal maternal anatomy can affect the pregnancy and delivery (i.e.. short cervical length indicates increased risk of preterm labour)

Second Trimester Ultrasound

Detailed second trimester ultrasound scan is now the primary screening test for open neural tube defects and other fetal structural abnormalities

Ultrasound results also include:

- gestational age
- fetal number
- position of placenta
- amniotic fluid volume
- fetal anatomy, including detailed fetal intracranial and spinal assessment for open NTD

Wilson RD et al. JOGC 2014; 36(10): 927-939.
Cargill Y et al. JOGC 2017; 39(8): e144-9.

Anatomy Scan Interpretation

With the exception of increased nuchal translucency, detection of soft markers for aneuploidy risk on a second trimester scan is not considered clinically relevant and does not warrant further testing in patients whose first trimester screening indicated low risk for aneuploidy.

Audibert F et al. JOGC 2017; 39(9): 805-817.

When should fetal anatomy scan be offered earlier in pregnancy?

Early fetal anatomy scan at 13 to 16 weeks can be considered for women at high risk for fetal anomalies:

- previous pregnancy affected by an anomaly
- family history of hereditary disorders
- high risk based on markers or nuchal translucency scan
- exposure to teratogens
- infection with risk of fetal transmission.

How does obesity affect ultrasound scan?

- Obesity may affect visualization of fetal anatomy on ultrasound scan.
- Visualization may be improved if second trimester scan is performed/repeated later.
- Obese women in whom a transabdominal scan might be technically challenging may also have an anatomy scan at 13 to 16 weeks.
  - Routine scan at 18 to 22 weeks still warranted

5.

VAGINAL PROGESTERONE and ASA IN PREGNANCY

Poll Everywhere

Aspirin may be recommended to selected pregnant patients to prevent which of the following?

- Intrauterine growth restriction: yes
- Miscarriage no
- Pre-eclampsia; Yes
- Preterm birth perhaps

Acetylsalicylic Acid (ASA) in Pregnancy

Indication for ASA

When started before 16 weeks gestation, ASA reduces the incidence of preeclampsia and intrauterine growth restriction in women at high risk

Which patients?

- History of pregnancy-induced HTN
- Preeclampsia in previous pregnancy
- Multi-fetal gestation
- IVF pregnancy
- Chronic hypertension
- Type 1 or 2 diabetes
- Chronic kidney disease
- Autoimmune disease (e.g. SLE, antiphospholipid syndrome)

Committee on Obstetric Practice and Society for Maternal-Fetal Medicine. Obstet Gyne 2018; 132 (1): e44-52.

ASA is also recommended for women with any combination (2 or more) of the following risk factors:

- Nulliparity
- Interpregnancy interval of more than 10 years
- Obesity (BMI over 35 at first visit)
- Older maternal age (over 35y)
- Family history of preeclampsia
- Personal history factors (e.g. low birth weight, small for gestational age)

Start ASA 162mg PO QHS between 12-16 weeks gestation and continue to at least 34 weeks.

Romero R et al. Am J Obstet Gynec 2018; 218(2): 161-80.

Vaginal Progesterone

- May be used to prevent preterm birth (PTB) in women;
  - with previous preterm birth, without a shortened cervix, or
  - with short cervix of ≤ 20mm when ≤24 wks
- Improves perinatal outcomes (e.g. respiratory distress syndrome, low birth weight, admission to NICU)
- Exact mechanism unknown: progesterone has anti-inflammatory effects; also modulates processes implicated in cervical ripening
- Example dose: vaginal progesterone 200mg daily from 16-24 to 36 weeks gestation

Early Referral

Patients with risk factors for preterm labour (esp.<34 wks), second trimester loss or short cervix require early referral for monitoring

Interventions for prevention of preterm labour:

- Smoking cessation
- Screen for bacterial vaginosis at 16w gestation
- Cervical length assessment
- Vaginal progesterone if cervical length < 2.5

Conclusions

- Folic acid doses determined based on the patient's risk category
- Treatment for substance use can be challenging during pregnancy but pregnancy can be a motivator to reduce/stop use
- Ultrasound is the most accurate method to estimate due date
- All patients should be offered screening for aneuploidy after discussion of risks and benefits
- Screening tests like NIPT require further diagnostic testing
- Recommend ASA to women at risk of preeclampsia and start before 16 weeks gestation
- Vaginal progesterone can decrease preterm birth in women with a history of preterm birth short cervix < 20mm on ultrasound

Questions from our viewers

You can find me at @username & user@mail.me – Dr. Ehman, please insert if you wish or you can delete this part