Common Issues in Prenatal Care

We are seeking an author or author group to write a manuscript for this edition of *FP Essentials*™ that will update family physicians about common issues in prenatal care. This edition will cover four topics:

1. Antepartum fetal surveillance
2. First trimester bleeding
3. Gestational diabetes
4. Fetal growth restriction

The main text of the manuscript should be approximately 10,000 words in length, divided into four sections of approximately 2,500 words each with an abstract of 200 words maximum for each section. In addition, there should be key practice recommendations, a maximum of 15 tables and figures), suggested readings, and a single reference list with up to 200 references to provide support for all factual statements in the manuscript.

The edition should focus on what is new in each topic and should answer the key questions listed for each section. Each section should begin with an illustrative case, similar to the examples provided, with modifications to emphasize key points; each case should have a conclusion that demonstrates resolution of the clinical situation. The references here include information that should be considered in preparation of this monograph. However, these references are only a useful starting point.

Needs Assessment: Family physicians provide care across the life span and in multiple settings. In many areas of the country, family physicians provide a significant amount of care for pregnant women, including deliveries. Even family physicians who do not provide pregnancy care still treat pregnant women for other medical issues and care for women before and after pregnancies.

Section 1: Antepartum Fetal Surveillance

Example case: *BK is a 27-year-old woman who is pregnant for the first time. She has no chronic medical conditions; other than some first trimester morning sickness, she has felt well during the pregnancy. She currently is at 29 weeks' gestation based on first trimester ultrasonography. Today, she appears worried. When you ask what she is concerned about, she tells you that she has not felt the baby move as much today and yesterday, and she wonders if that is normal. She asks if "my baby is okay."*

Key questions to consider:

- What is antepartum fetal surveillance, and what modalities are used?
- What fetal physiology is evaluated with those testing modalities? How are alterations in normal physiology reflected in test results?
- What are the indications for antepartum fetal surveillance? Is one modality (or group of modalities) preferred in specific circumstances? How often is surveillance recommended? When should it be initiated or discontinued?
- Has the use of antepartum fetal surveillance improved outcomes compared with no surveillance? Are there potential harms due to false-positive findings with fetal surveillance; if so, what are they, and how common are they?
- What is the normal range for fetal heart rate? Does it vary by gestational age? What should be done if it is outside the normal range?
- What is a fetal movement assessment, or kick count? Should pregnant women be instructed to perform them; if so, when? What constitutes an abnormal result, and what is the appropriate follow-up if the assessment is normal or abnormal?
- Do fetal movement assessments alter outcomes?
- How is a contraction stress test (CST) performed, and when is it indicated? What is the appropriate follow-up for positive, negative, equivocal, and unsatisfactory findings?
- How is a nonstress test (NST) performed, and when is it indicated? What is the appropriate follow-up for reactive and nonreactive findings?
- What are the categories in a biophysical profile (BPP)? How is a BPP performed and when is it indicated? How does a modified BPP differ from a regular BPP? What is the role of a BPP when CST or NST results are not reassuring?
- What is the role of umbilical artery Doppler velocimetry in antepartum fetal surveillance? How are normal and abnormal values determined. What is the appropriate follow-up for normal and abnormal results?
- How does the discovery of oligohydramnios affect management?

Initial references to consider:

- American College of Obstetricians and Gynecologists. Committee Opinion No. 828: indications for outpatient antenatal fetal surveillance. *Obstet Gynecol*. 2021;137(6):e177-e197.
- Ota E, da Silva Lopes K, Middleton P, et al. Antenatal interventions for preventing stillbirth, fetal loss and perinatal death: an overview of Cochrane systematic reviews. *Cochrane Database Syst Rev*. 2020;(12):CD009599.

- American College of Obstetricians and Gynecologists. Practice Bulletin No. 229: antepartum fetal surveillance. *Obstet Gynecol*. 2021;137(6):116-e127.
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- Herrera CA, Heuser CC, Branch DW. Stillbirth: the impact of antiphospholipid syndrome? *Lupus*. 2017;26(3):237-239.
- Zafman KB, Bruck E, Rebarber A, Saltzman DH, Fox NS. Antenatal testing for women with preexisting medical conditions using only the ultrasonographic portion of the biophysical profile. *Obstet Gynecol*. 2018;132(4):1033-1039.
- Muglu J, Rather H, Arroyo-Manzano D, et al. Risks of stillbirth and neonatal death with advancing gestation at term: a systematic review and meta-analysis of cohort studies of 15 million pregnancies. *PLoS Med*. 2019;16(7):e1002838.
- Dashe JS, Pressman EK, Hibbard JU. SMFM Consult Series #46: evaluation and management of polyhydramnios. *Am J Obstet Gynecol*. 2018;219(4):B2-B8.
- Bellussi F, Po' G, Livi A, et al. Fetal movement counting and perinatal mortality: a systematic review and meta-analysis. *Obstet Gynecol*. 2020;135(2):453-462.
- Alfirevic Z, Stampalija T, Dowswell T. Fetal and umbilical Doppler ultrasound in high-risk pregnancies. *Cochrane Database Syst Rev*. 2017;(6):CD007529.

Section 2: First Trimester Bleeding

Example case: *XL is a 32-year-old woman who has been trying to conceive for the past 9 months. She tells you that she took a home pregnancy test over the weekend because she missed her menstrual period. It was positive, as were three subsequent tests. It has been 6 weeks since her last menstrual period, and this morning she noticed some spotting after using the bathroom. She reports no constitutional symptoms, abdominal pain, or pelvic pain. She wants to know if she is pregnant and if the spotting means she is going to "lose the baby."*

Key questions to consider:

- What is the incidence of bleeding in the first trimester of pregnancy?
- What are the different causes of first trimester bleeding? What are the risk factors for each type of first trimester bleeding?
- What complications are associated with first trimester bleeding for the current pregnancy, and what is the rate of fetal loss? Are there any interventions that can reduce these risks?
- Are any drugs or chronic medical conditions associated with an increased risk of first trimester bleeding?
- What is the recommended evaluation for women who present with first trimester bleeding? Do all women require ultrasonography or laboratory studies? Should the evaluation be done in the office, in an emergency department, or on an obstetrical unit?
- What is the recommended management for first trimester bleeding based on the cause, including miscarriage, ectopic pregnancy, and subchorionic hemorrhage? When is expectant management appropriate, and when is it not? Can family physicians manage this? When is referral or an interventional procedure required?
- Is there a role for pelvic rest or bed rest in women with first trimester bleeding, and does it change or improve outcomes?
- When do women with first trimester bleeding who are rhesus negative require administration of anti-D immunoglobulin? Does the dose depend on the cause of the bleeding?
- Are there any nonpregnancy complications associated with first trimester bleeding?
- What counseling is recommended for women with first trimester pregnancy loss? What is the risk that this will occur with future pregnancies? When is a genetics consultation indicated?

Initial references to consider:

- American College of Obstetricians and Gynecologists. Practice Bulletin No. 150: early pregnancy loss. *Obstet Gynecol*. 2015;125(5):1258-1267.
- American College of Obstetricians and Gynecologists. Practice Bulletin No. 191: tubal ectopic pregnancy. *Obstet Gynecol*. 2018;131(2):e65-e77.
- American College of Obstetricians and Gynecologists. Practice Bulletin No. 181: prevention of Rh D alloimmunization. *Obstet Gynecol*. 2017;130(2):e57-e70.
- Whitworth M, Bricker L, Mullan C. Ultrasound for fetal assessment in early pregnancy. *Cochrane Database Syst Rev*. 2015;(7):CD007058.

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- de Jong PG, Kaandorp S, Di Nisio M, Goddijn M, Middeldorp S. Aspirin and/or heparin for women with unexplained recurrent miscarriage with or without inherited thrombophilia. *Cochrane Database Syst Rev*. 2014;(7):CD004734.
- Chan DMK, Cheung KW, Ko JKY, et al. Use of oral progestogen in women with threatened miscarriage in the first trimester: a randomized double-blind controlled trial. *Hum Reprod*. 2021;36(3):587-595.
- Souizi B, Akrami R, Borzoee F, Sahebkar M. Comparison of the efficacy of sublingual, oral, and vaginal administration of misoprostol in the medical treatment of missed abortion during first trimester of pregnancy: a randomized clinical trial study. *J Res Med Sci*. 2020;25:72.
- DeVilbiss EA, Naimi AI, Mumford SL, et al. Vaginal bleeding and nausea in early pregnancy as predictors of clinical pregnancy loss. *Am J Obstet Gynecol*. 2020;223(4):570.e1-570.e14.
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- Lin T, Chen Y, Cheng X, Li N, Sheng X. Enoxaparin (or plus aspirin) for the prevention of recurrent miscarriage: a meta-analysis of randomized controlled studies. *Eur J Obstet Gynecol Reprod Biol*. 2019;234:53-57.

Section 3: Gestational Diabetes

Example case: *LB is a 35-year-old woman who comes to your office for an initial prenatal visit. She has no concerns today. You estimate the gestational age to be 14 weeks based on first trimester ultrasonography. This is her third pregnancy. The first pregnancy was uneventful, but LB was diagnosed with gestational diabetes during the second pregnancy, which was 3 years ago. She was able to control blood glucose through diet and insulin, and the delivery was uneventful. She wants to know if she is going to have gestational diabetes with this pregnancy, and what steps she can take to prevent having to take insulin.*

Key questions to consider:

- How common is gestational diabetes during pregnancy? How does this compare with the incidence of type 1 diabetes and type 2 diabetes in women of childbearing age?
- What are the risk factors for gestational diabetes? Are any of the risk factors modifiable? Have any interventions been shown to reduce the incidence of gestational diabetes?
- What maternal and fetal complications are associated with gestational diabetes?
- How is gestational diabetes distinguished from preexisting but undiagnosed type 2 diabetes in pregnancy? What are the indications for testing for type 2 diabetes in pregnancy? When and how should this be done?
- What are the screening recommendations for gestational diabetes, including who, when, and how to screen, and confirmation testing? Are there different recommendations from different organizations, such as the American College of Obstetricians and Gynecologists (ACOG) and the U.S. Preventive Services Task Force (USPSTF)?
- What additional testing is recommended for women diagnosed with gestational diabetes throughout pregnancy?
- What is the role of lifestyle modifications in the management of gestational diabetes? How effective are they?
- When should glucose monitoring and medical treatment be instituted? Is insulin always the preferred choice? What is the role of oral hypoglycemic drugs? What are the glucose goals?
- What additional antenatal surveillance testing should be obtained during pregnancy?
- How is the optimal timing of delivery determined for women with gestational diabetes?
- What special considerations should be taken during labor and delivery? How is gestational diabetes managed postpartum? What considerations should be taken for infants born to women with gestational diabetes?
- Are there long-term risks associated with gestational diabetes? When and how should women be screened for these conditions?
- What percentage of women with gestational diabetes subsequently will develop type 2 diabetes? How often and with what method should patients with a history of gestational diabetes be screened for type 2 diabetes?

Initial references to consider:

- Davidson KW, Barry MJ, Mangione CM, et al. Behavioral counseling interventions for healthy weight and weight gain in pregnancy: US Preventive Services Task Force recommendation statement. *JAMA*. 2021;325(20):2087-2093.
- Bogdanet D, O'Shea P, Lyons C, Shafat A, Dunne F. The oral glucose tolerance test—is it time for a change? A literature review with an emphasis on pregnancy. *J Clin Med*. 2020;9(11):3451.
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- Zhang Y, Xiao CM, Zhang Y, et al. Factors associated with gestational diabetes mellitus: a meta-analysis. *J Diabetes Res*. 2021;2021:6692695.
- Coustan DR, Dyer AR, Metzger BE. One step or two step testing for gestational diabetes: which is best? *Am J Obstet Gynecol*. 2021:S0002-9378(21)00556-1.
- Davitt C, Flynn KE, Harrison RK, Pan A, Palatnik A. Current practices in gestational diabetes mellitus diagnosis and management in the United States: survey of maternal-fetal medicine specialists. *Am J Obstet Gynecol*. 2021:S0002-9378(21)00552-4.
- Concepción Zavaleta MJ, Coronado Arroyo JC, Zavaleta Gutiérrez FE, Concepción Urteaga LA. Gestational diabetes during COVID 19 pandemic: major problem is diagnosis. *Diabetes Metab Syndr*. 2021:S1871-4021(21)00133-8.
- Schiattarella A, Lombardo M, Morlando M, Rizzo G. The impact of a plant-based diet on gestational diabetes: a review. *Antioxidants (Basel)*. 2021;10(4):557.
- Society of Maternal-Fetal Medicine Publications Committee. SMFM statement: pharmacological treatment of gestational diabetes. *Am J Obstet Gynecol*. 2018;218(5):B2-B4.
- American College of Obstetricians and Gynecologists. Practice Bulletin No. 190: gestational diabetes mellitus. *Obstet Gynecol*. 2018;131(2):e49-e64.

Section 4: Fetal Growth Restriction

Example case: *YH is a 29-year-old woman who is pregnant with her second child. She is 30 weeks' estimated gestational age by the last menstrual period and first trimester ultrasonography. The pregnancy, including laboratory test results, has been normal so far. However, when you measure the fundal height today, it is 26 cm. She asks you if that means that the baby is not growing properly and what she should do.*

Key questions to consider:

- How is fetal growth restriction defined? Is it the same thing as intrauterine growth restriction? Are there different types of fetal growth restriction?
- How often is fetal growth restriction diagnosed in the United States?
- What are the risk factors for fetal growth restriction, including preconception conditions and conditions that develop during pregnancy?
- Are there any interventions that have been shown to reduce the incidence of fetal growth restriction?
- What complications, including intrauterine and intrapartum, are seen more commonly with fetal growth restriction?
- Is routine screening for intrauterine growth restriction recommended? Does this change if there are risk factors for fetal growth restriction or a history of fetal growth restriction in a previous pregnancy?
- Can fetal growth restriction be diagnosed on physical examination? How much weight should women gain during pregnancy? What is the role of routine fundal height measurements, how often are they done, and why are they not always done?
- What is the recommended management if fetal growth restriction is detected? Does the management depend on the type of fetal growth restriction?
- Are additional screening tests recommended if fetal growth restriction is detected?
- How often should growth be measured and monitored if fetal growth restriction is diagnosed?
- What is the role of umbilical artery Doppler velocimetry in evaluating and monitoring fetal growth restriction?
- When should women with fetal growth restriction be scheduled for delivery? Are there any special precautions or interventions needed during labor if fetal growth restriction is present? Are there long-term risks to infants delivered early because of suspected fetal growth restriction?
- What long-term growth or developmental complications are seen in children born with fetal growth restriction? How should they be monitored?

Initial references to consider:

- Behrendt N, Galan HL. Fetal growth in multiple gestations: evaluation and management. *Obstet Gynecol Clin North Am*. 2021;48(2):401-417.
- Fung C, Zinkhan E. Short- and long-term implications of small for gestational age. *Obstet Gynecol Clin North Am*. 2021;48(2):311-323.

- Damhuis SE, Ganzevoort W, Gordijn SJ. Abnormal fetal growth: small for gestational age, fetal growth restriction, large for gestational age: definitions and epidemiology. *Obstet Gynecol Clin North Am*. 2021;48(2):267-279.
- Sharma D, Shastri S, Sharma P. Intrauterine growth restriction: antenatal and postnatal aspects. *Clin Med Insights Pediatr*. 2016;10:67-83.
- Rotshenker-Olshinka K, Michaeli J, Srebnik N, et al. Recurrent intrauterine growth restriction: characteristic placental histopathological features and association with prenatal vascular Doppler. *Arch Gynecol Obstet*. 2019;300(6):1583-1589.
- McCowan LM, Figueras F, Anderson NH. Evidence-based national guidelines for the management of suspected fetal growth restriction: comparison, consensus, and controversy. *Am J Obstet Gynecol*. 2018;218(2S):S855-S868.
- Lewandowska M. Maternal obesity and risk of low birth weight, fetal growth restriction, and macrosomia: multiple analyses. *Nutrients*. 2021;13(4):1213.
- Combs CA, Castillo R, Webb GW, Del Rosario A. Impact of adding abdominal circumference to the definition of fetal growth restriction. *Am J Obstet Gynecol MFM*. 2021;3(4):100382.
- Figueras F, Caradeux J, Crispi F, Eixarch E, Peguero A, Gratacos E. Diagnosis and surveillance of late-onset fetal growth restriction. *Am J Obstet Gynecol*. 2018;218(2S):S790-S802.e1.
- Selvrathnam RJ, Wallace EM, Wolfe R, Anderson PJ, Davey MA. Association between iatrogenic delivery for suspected fetal growth restriction and childhood school outcomes. *JAMA*. 2021;326(2):145-153.
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- Eroğlu H, Tonyalı NV, Orgul G, et al. Is ProBNP a new marker for predicting intrauterine growth restriction? *Z Geburtshilfe Neonatol*. 2021;225(2):125-128.
- American College of Obstetricians and Gynecologists. Practice Bulletin No. 227: fetal growth restriction.*Obstet Gynecol*. 2021;137(2):e16-e28.