CHAPTER 3

Care of the Pregnant Woman with Prenatal Conditions

Midwives support women with pregnancy-related conditions and complications through prompt identification and initiation of treatment of these concerns to ensure the best possible outcome for mother and baby. Midwives accept pregnancy as a normal physiologic condition while retaining a healthy respect and awareness of problems and complications that can develop. This overarching perspective is one of the reasons women seek midwifery care (Parry, 2008). During evaluation for potential or developing conditions, the midwife actively engages the woman in discussion and decisions regarding care of herself and her unborn baby. The ability to anticipate problems in pregnancy is an essential component of skilled midwifery practice.

Among the hallmarks of midwifery care are advocacy for informed choice, shared decision making, and the right to self-determination (American College of Nurse–Midwives [ACNM], 2012). Although the woman may have limited or no control over the development of problems during her pregnancy and may feel threatened when they arise, the midwife can enhance the woman's sense of control by presenting options in the areas where choice is possible. Respect for each woman's needs is especially important when an unexpected problem develops and requires active intervention.

Many women look to their midwife for a balanced view of developing problems, diagnostic evaluation and treatment recommendations, and the anticipated outcomes of treatment options. Women can simultaneously choose to be active participants in their healthcare decisions and expect their midwife to clearly recommend a course of action. Recommendations are based on the midwife's judgment of what constitutes best care for this mother and her fetus based on the presenting problem and the woman's specific situation. At times, the midwife's recommendations can run contrary to either the woman's preferences or standard hospital-based expectations for maternity care. A clear, focused, and confidently presented midwifery plan of care, accompanied by a sound rationale backed by evidence-based resources, can be helpful in providing guidance to the woman who hesitates at an indicated intervention, or in promoting understanding among providers in the medical setting where the midwife may be pressured to intervene without a clear indication.

Several common infections with implications for pregnancy are addressed in this chapter, however, there are many pathogens with potential for causing harm in pregnancy. The effects of an infection for the woman and fetus vary with gestational age at time of exposure and with the virulence of the infecting agent. Microbes with antibiotic resistance or no known

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treatment are emerging. Pandemics are a concern; globalization and increased travel and trade within and between countries have resulted in the rapid spread of infectious disease (see Zika Virus text box). To reduce the burden of infectious disease in pregnant women, midwives use an integrated approach, combining awareness of emerging infections, health promotion, disease prevention, and treatment.

Midwifery care for women experiencing problems during pregnancy forms a continuum from minimal intervention to maximum intervention. The skilled midwife can move along this continuum in either direction, understanding that appropriate midwifery, medical, or obstetric intervention should always serve the mother's and baby's needs and be congruent with best evidence and midwifery philosophy of care.

Zika virus: An emerging pandemic

As this text goes to press, Zika virus is emerging as a serious global health concern for pregnant women. The World Health Organization believes this current outbreak, which began in Brazil in 2015, will spread to the majority of the Americas including the continental United States, by the end of 2016. Currently, outbreaks are occurring in many areas including South America, Central America, Mexico, the Caribbean, and in the Commonwealth of Puerto Rico, the U.S. Virgin Islands, and American Samoa.

The Zika virus is spread by the *Aedes aegypti* and the *Aedes albopictus* mosquito, aggressive daytime biters common in the Americas, and the same mosquito species that are vectors for dengue, chikungunya, and yellow fever viruses. Sexual transmission of Zika virus can occur, although there is limited data about the risk. Only 1 in 5 people infected will have symptoms, which include acute onset of low-grade fever, maculopapular rash, arthralgia and nonpurulent conjunctivitis. If symptomatic, the illness is usually mild, lasting for several days to a week. The incubation period is uncertain but is thought to be from several days to several weeks.

The Zika virus can be transmitted from a pregnant mother to her fetus anytime during pregnancy. Infection during pregnancy is associated with congenital microcephaly and other brain lesions in the newborn and possibly with Guillain–Barré syndrome in infected individuals. The CDC (2016) has issued interim guidelines for the screening, diagnosis, and management of women at risk for the Zika virus. Currently, pregnant women who meet the following criteria should be tested for the Zika virus:

- Pregnant women presenting with clinical illness consistent with Zika virus disease during or within 2 weeks of travel to areas with ongoing Zika virus transmission
- Asymptomatic pregnant women who have traveled to or live in areas with ongoing transmission of Zika virus (at the first prenatal visit with follow-up testing mid-second trimester)
- Pregnant women with partners who test positive for Zika virus or who have traveled to areas with ongoing Zika virus transmission

Maternal serum testing for Zika virus includes reverse transcription-polymerase chain reaction (RT-PCR) testing for symptomatic women with onset of symptoms during the previous week. Virus-specific immunoglobulin M (IgM) and plaque-reduction neutralizing antibody testing should be performed an specimens collected ≥4 days after onset of symptoms. For asymptomatic women who have traveled to an area with an ongoing outbreak, RT-PCR testing can be done 2–12 weeks after return. Diagnosis by serologic testing can be challenging, and clinicians should contact local or state health department for assistance with arranging testing and interpreting results. Cases of Zika virus are reportable to local or state health departments.

Women who test positive or have inconclusive Zika virus test results should be offered serial fetal ultrasounds to monitor fetal anatomy and growth every 3–4 weeks. Collaboration with a maternal–fetal medicine specialist is recommended. Testing is recommended immediately after birth, including histopathologic examination of the placenta and umbilical cord, testing of frozen placental tissue and cord tissue for Zika virus RNA, and testing of cord serum.

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As there is no vaccine and no antiviral treatment, prevention is the primary strategy to reduce Zika virus-associated adverse perinatal outcome. All travelers to or residents of areas with ongoing Zika virus transmission should be advised to strictly follow steps to avoid mosquito bites. These include the following:

- Applying Environmental Protection Agency (EPA)-registered insect repellents: those containing DEET, picaridin, and IR3535 are safe for use during pregnancy when used in accordance with the product label
- Reducing skin exposure by wearing long-sleeved shirts and pants
- Wearing permethrin-treated clothing
- Sleeping in air-conditioned, screened rooms
- Preventing mosquito entry into the house with intact screens and closed doors

Sexual transmission of Zika virus is of particular concern during pregnancy. Current information about possible sexual transmission of Zika is based on several case reports. Men with a pregnant partner should use a condom or abstain from sex (vaginal intercourse, anal intercourse, fellatio) for the duration of the pregnancy if they have visited, or live in, an area where mosquitos are spreading the Zika virus.

The knowledge and management of Zika infection is evolving. The clinician is encouraged to check the CDC websites regularly for updates at http://www.cdc.gov/zika/hc-providers/index.html

Sources:

Centers for Disease Control and Prevention. (2016). Zika virus: For health professionals. Retrieved from http://www.cdc.gov/zika/hc-providers/index.html

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World Health Organization. (2016). Zika virus. Retrieved from http://www.who.int/topics/zika/en/

CARE OF THE PREGNANT WOMAN WITH ABDOMINAL PAIN

Key Clinical Information

Many women will experience self-limited periods of abdominal pain due to the normal physiologic changes during pregnancy. Examples of physiologic etiologies of abdominal pain in pregnancy include round ligament pain, constipation, and heartburn. Medical complications such as appendicitis and cholecystitis can prove challenging to diagnose during pregnancy because symptoms of these conditions can mimic normal pregnancy discomforts. During pregnancy, the incidence of appendicitis ranges from 1 in 1,000 to 1 in 5,000 women, whereas the incidence of cholecystitis during pregnancy is approximately 1 in 1,000 women (Abbasi, Patenaude, & Abenhaim, 2014). Timing of abdominal pain in relation to gestational age provides key information to diagnose trimester-specific conditions such as ectopic pregnancy or preterm labor. A detailed history and exam are essential to narrow the various differential diagnoses of abdominal pain in pregnancy. Abdominal pain associated with vaginal bleeding is addressed in a separate section later in this chapter.

History and Chart Review: Components of the History to Consider

- Age, GP TPAL
- Gestational age
- Review of prior ultrasound findings
- Location of pain
  - Lower abdomen
  - Upper abdomen
  - Radiating pain
    - Radiates to the scapula or flank with cholecystitis (Angelini & LaFontaine, 2013).
  - Central, left- or right-sided

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- Onset and duration
- Characteristics
  - Sharp, dull, aching
  - Constant, colicky
  - Mild, severe
- Associated symptoms
  - Fatigue
  - Fever
  - Syncope
  - Visual changes
  - Headache
  - Nausea and vomiting
  - Anorexia/loss of appetite
  - Constipation
  - Diarrhea
  - Gas/bloating
  - Blood in stool or changes in stool color
  - Vaginal bleeding
  - Dysuria
  - Urinary urgency
  - Pruritis
  - Blood in urine or changes in urine color
- Diet history
  - Timing of pain in relation to meals or empty stomach
  - Pain associated with types of food
    - Consider cholecystitis when pain occurs after high-fat meals
  - Overall quality of diet, diet recall
  - Pica
- Bowel activity and changes
- Relieving and exacerbating factors such as activity, specific movement, food intake
- Recent travels or household exposures
- History of previous abdominal surgeries
- Recent trauma
  - Domestic violence or sexual assault history

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including pulse, temperature, and blood pressure (BP)
- General appearance: level of distress
- Fetal evaluation as appropriate to GA
- Pain scale rating
- Skin
  - Jaundice
  - Pallor
  - Diaphoresis
- Abdominal exam
  - Bowel sounds
  - Muscle tone; diastasis; umbilical hernia
  - Presence of rigidity
  - Pain location
  - Assess rebound tenderness and muscle guarding
- Murphy's sign
  - Palpation of costal margin
  - Right upper quadrant (RUQ) pain with inhalation
  - Gasp or breath "catching": positive result
  - Suggestive of gallbladder disease
- McBurney's point assessment
  - ⚠ The majority of pregnant women with appendicitis present with right lower quadrant pain (Angelini & LaFontaine, 2013); however, the appendix moves superiorly and laterally as gestation progresses. Therefore, pain or tenderness on exam may not necessarily be limited to the right lower quadrant.
- Costovertebral angle (CVA) tenderness
- Pelvic exam
  - Speculum exam
    - Look for cervical dilation or products of conception (POC) in the first trimester
  - Bimanual exam for cervical motion tenderness, adnexal tenderness, or mass/enlargement
- Suprapubic tenderness

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Abdominal pain
- Acute cholecystitis
- Cholecystitis, unspecified
- Cholelithiasis
- Appendicitis
- Gastroesophageal reflux disease (GERD)
- Pancreatitis
- Other gastrointestinal (GI) disorders such as Crohn disease, ulcerative colitis, or celiac disease
- Dietary intolerance
- Hernia

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- Bowel obstruction
- Peptic ulcer
- Acute cystitis
- Nephrolithiasis (kidney stone)
- Spontaneous abortion (SAB)
- Ectopic pregnancy
- Adnexal mass or torsion
- Musculoskeletal causes

Screening and Diagnosis: Tests and Procedures to Consider

- Ultrasound
  - Uterus
  - Abdomen
  - Gallbladder
- Consider magnetic resonance imaging (MRI) if ultrasound is negative or inconclusive
- Serial quantitative human chorionic gonadotropin (hCG) in early first trimester
- Urinalysis and culture
- 24-hour urine collection if preeclampsia or HELLP suspected
- Complete blood count (CBC) with differential: white blood cell (WBC) elevation, left shift
- Liver enzyme panel (note: alkaline phosphatase is normally elevated in pregnancy)
- Serum amylase and lipase
- Nonstress test (NST) in third trimester
- Possible endoscopy or laparoscopy

Providing Treatment: Therapeutic Measures to Consider

- For pathologic diagnoses
  - Analgesia
  - Intravenous (IV) fluids, electrolytes
  - Antibiotics, as indicated
  - Antispasmodics, as indicated
  - Bowel rest, as indicated
  - Surgery
- See the following sections in this chapter:
  - Care of the Pregnant Woman with Vaginal Bleeding, First Trimester
  - Care of the Pregnant Woman with Vaginal Bleeding, Second and Third Trimesters
  - Care of the Pregnant Woman with Hypertensive Disorders
  - Care of the Pregnant Woman with Preterm Labor
- For less severe or physiologically normal diagnoses, see the following sections in Chapter 2:
  - Care of the Pregnant Woman with Round Ligament Pain
  - Care of the Pregnant Woman with Heartburn
  - Care of the Pregnant Woman with Constipation

Providing Treatment: Integrative Therapies to Consider

(University of Maryland Medical Center, 2014)

- According to diagnosis
- For expectant management of cholelithiasis
  - Reduction or avoidance of saturated fats and refined carbohydrates
  - Fiber-rich foods
  - Adequate fluids
  - Green tea for antioxidant effects
  - Cleanse the gallbladder
    - Oatmeal, pears, beets, dandelion greens, flax seed and meal
    - Milk thistle herb capsules
    - Olive oil and lemon juice flush

Providing Support: Education and Support Measures to Consider

- Reassurance of normalcy with physiologically normal diagnoses
- Information and support during workup
- Supportive presence if surgical intervention is needed
  - Surgery can be delayed until after pregnancy for non-acute conditions, such as mild cholelithiasis
  - Surgery can be performed for acute conditions during pregnancy, such as appendicitis

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Findings and significance
  - Recommendations for continued care
- As required for normal diagnoses

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Medical service for
  - Significantly elevated WBCs
  - Abnormal liver or pancreatic enzymes

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  - Abnormal or inconclusive ultrasound findings
  - Suspected GI disorder such as Crohn's disease or ulcerative colitis
  - Suspected problem requiring surgical intervention
  - ⚠ Emergent situation or acute abdomen
  - Diagnostic uncertainty
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH ANEMIA

Key Clinical Information

Diagnosis and classification of anemia in pregnancy are complicated by physiologic expansion of blood volume in relation to red blood cell (RBC) mass (Lee & Okam, 2011). However, iron-deficiency anemia due to dietary deficiencies is the most common form of anemia in pregnant women. The prevalence of iron-deficiency anemia among pregnant women in the United States is estimated to be 18% (Cantor, Bougatsos, Dana, Blazina, & McDonagh, 2015). In developing countries, prevalence is significantly higher; globally the prevalence is estimated to be 41.8% (de Benoist, McLean, Egli, & Cogswell, 2008). Low socioeconomic status has a strong correlation with the development of anemia (Bencaiova, Burkhardt, & Breymann, 2012). Anemia affects the oxygenation of both mother and fetus and can result in diminished fetal growth, maternal exhaustion and increased susceptibility to infection, prematurity, and delayed infant psychomotor and cognitive development (Haider et al., 2013). Mild physiologic anemia is common during the second and third trimesters of pregnancy due to expanded plasma volume; however, actual anemia can develop during this time since pregnancy iron demands are high. Prompt diagnosis, treatment, and follow-up of anemia, along with attention to the overall nutritional status of the mother, are critically important for ensuring fetal well-being and for optimizing maternal health before the onset of labor.

History and Chart Review: Components of the History to Consider

- Age, GP TPAL
- Ethnicity/race
  - 🌍 Women of African, Mediterranean, Asian descent at higher risk for hemoglobinopathies
- Gestational age
- Interconceptional spacing
- Current hemoglobin and hematocrit (H&H)
- Presence of anemia-related symptoms
  - Fatigue
  - Irritability
  - Dizziness
  - Headache
  - Sore tongue
  - Pica (see Care of the Pregnant Woman with Pica in Chapter 2)
  - Dyspnea
  - Palpitations or tachycardia
- Usual dietary patterns
  - General nutrition
  - Dietary iron sources
  - Prenatal vitamin and supplement use
    - Most prenatal vitamins have 30 mg elemental iron
    - Additional iron supplement use
- Use of over-the-counter (OTC) medications
  - Antacids and calcium supplements reduce iron absorption in the gut
- Potential causes of anemia (Goonewardene, Shehata, & Hamad, 2012)
  - Tobacco use
  - History of closely spaced pregnancies
  - Blood loss
    - Bleeding hemorrhoids
    - Trauma
    - Heavy menses
  - Chronic illness
    - Tuberculosis
    - HIV/AIDS
  - Malabsorption syndromes
    - Hookworms
    - Schistosomiasis
    - Bariatric surgery
  - Living in higher altitudes
  - Eating disorder such as anorexia nervosa (Linna et al., 2014)
  - Abnormal hemoglobin synthesis
    - Thalassemia
    - Sickle cell disease
    - Glucose-6-phosphate dehydrogenase (G6PD)
    - Malaria

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- Higher risk for thalassemia or sickle cell anemia
  - African, Italian, Greek, Middle Eastern, and Asian descent
  - Family history of thalassemia or sickle cell disease

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including pulse and blood pressure (BP)
- Fetal evaluation as appropriate to gestational age (GA)
- Affect and energy level
- Glossitis
- Pallor of skin and mucous membranes
  - Inspect oral mucosa
  - Inspect conjunctival mucosa
- Brittle, spoon-shaped nails
- Examination for potential causes of anemia
  - Bruising
  - Bleeding

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Physiologic anemia of pregnancy
- Iron-deficiency anemia
- Pica
- Other anemia
  - B_{12} deficiency (pernicious)
  - Hemolytic
  - Sickle cell
  - Thalassemia
  - G6PD
  - Folate-deficiency anemia

Screening and Diagnosis: Tests and Procedures to Consider

- Complete blood count (CBC) with indices in simple iron-deficiency anemia
  - Microcytic
  - Hypochromic
  - Serum ferritin: decreased
  - Total iron-binding capacity: increased
- If iron-deficiency anemia is ruled out, consider the following based on history:
  - Folate level
  - B_{12} level
  - G6PD
  - Hemoglobin electrophoresis
- Stool for occult blood, ova, and parasites
- See **Table 3-1** for criteria for diagnosing anemia in pregnancy.

Providing Treatment: Therapeutic Measures to Consider

(Brucker & King, 2017; University of Maryland Medical Center, 2013a)

- Iron-replacement therapy for hemoglobin less than 11 g/dL or low serum ferritin
  - 60–120 mg elemental iron daily
  - Iron salts
    - Ferrous sulfate (Feosol, Slow Fe)
      - 65 mg elemental iron
      - 1 PO TID
    - Ferrous gluconate (Fergon, Fertinic)
      - 27 mg elemental iron
      - 2 PO BID
    - Ferrous fumarate (Feostat, Chromagen)
      - 35 mg elemental iron in 325-mg tablet
      - 300–600 mg/day in divided doses

Table 3-1 Criteria for Diagnosing Anemia in Pregnancy

PREGNANT WOMEN	HEMOGLOBIN (g/dL)	HEMATOCRIT (%)
First trimester	<11.0	<33.0
Second trimester	<10.5	<32.0
Third trimester	<11.0	<33.0

Source: CDC, 2011.

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    - Polysaccharide iron complex (Niferex 150)
        - 150 mg elemental iron
        - 1–2 capsules PO daily
- Floradix iron liquid
    - 2 tsp BID
    - Vegetarian liquid formula
    - Causes less gastrointestinal (GI) upset than do iron salts
- Continue supplementation through 3 months postpartum
- Consider intermittent iron supplementation to improve tolerance as well as absorption (Pena-Rosas, De-Regil, Dowswell, & Viteri, 2012)
- Intramuscular (IM) or intravenous (IV) Imferon for severe or recalcitrant anemia
    - Can cause anaphylactic reaction
    - Use with caution and following consult
- Increase high-iron food sources (see Appendix B)

Providing Treatment: Integrative Therapies to Consider

(Romm, 2010; University of Maryland Medical Center, 2013a)

- Chlorophyll: liquid or capsule
    - Can stimulate red blood cell (RBC) production
    - Increases in H&H are often seen in 2 weeks
- Blackstrap molasses
    - 1 Tbs daily
    - A source of iron, B vitamins, and minerals, and a gentle bowel stimulant
- Spirulina (blue-green algae)
    - 1 tsp daily
- Gentian
    - Commonly used in Europe
    - Promotes iron absorption
    - Solution of 1 tsp powder to 3 cups water; take 1 Tbs 30 minutes prior to meals
- Dried nettle leaf infusion
    - Can stimulate RBC production
- Alfalfa: capsule or liquid
- Cast-iron cookware
    - Nonenamel surface
    - Adds elemental iron

Providing Support: Education and Support Measures to Consider

- Physiologic nature of anemia in pregnancy
- Pica can decrease iron absorption
- Iron supplementation recommendations
    - Dosages
    - Separate supplement from the following sources:
        - Meals (unless GI upset occurs)
        - Calcium intake
        - Fiber cereals and supplements
        - Other supplements (e.g., prenatal vitamins)
    - ⚠ Keep prenatal vitamins and iron supplements away from children
        - Iron toxicity can occur with overdose
    - For best absorption, take the following steps:
        - Take with vitamin C or water
        - Take at bedtime
        - Avoid caffeine and black teas with supplement
    - Common side effects
        - Gastrointestinal upset, constipation, or diarrhea
        - Nausea
        - Heartburn
        - Black stools
        - GI symptoms occur in 10–20% of those taking iron supplements (Pena-Rosas et al., 2012).
    - Management of common side effects
        - Increase fluids, daily dietary fiber, and activity
        - Try extended release tablets or plant-based liquid supplement (Cancelo-Hidalgo et al., 2013)
        - Daily stool softener
        - Take supplement with food or at bedtime
        - Lower dose of iron

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
    - Anemia physiology
    - Agreed-upon treatment and management plan
    - Rebuilding of iron stores after pregnancy
    - Interconceptional child spacing
- Return for care
    - Repeat H&H 4–6 weeks after initiating therapy
    - Add indices for persistent anemia if no improvement occurs

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Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Dietitian services for high-iron foods
- Social services
  - Women, Infants, and Children (WIC) program
  - Food stamps
  - Local food pantry
  - Smoking cessation programs
- Medical service
  - For abnormal indices or elevated serum ferritin
  - For anemia resistant to conventional therapy
  - For concern regarding cause of anemia
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN EXPOSED TO CYTOMEGALOVIRUS

Key Clinical Information

Cytomegalovirus (CMV) is a herpes virus with the ability to remain dormant within the body for life, similar to Epstein–Barr virus and varicella zoster virus. Approximately 50–80% of adults in the United States have had CMV infection (Center for Disease Control and Prevention [CDC], 2010a). CMV is the most common viral infection in newborns in the United States, with approximately 30,000 new cases occurring each year (CDC, 2010a).

Most women who contract CMV during pregnancy do not transmit the infection to the fetus. While most newborns with prenatally acquired infection will not be affected by the disease, long-term effects such as hearing loss or mental and physical developmental disabilities occur in approximately 20% of infants born with congenital infection (Revello et al., 2014). Most women have had an asymptomatic CMV infection prior to childbearing; however, 4 in 10 childbearing women will not have had a CMV infection before becoming pregnant. Maternal immunity does not prevent reoccurrence, and maternal antibodies do not prevent fetal infection. The risk of CMV-related complications in infants born to women infected 6 months or more before conception is very low (CDC, 2010a).

Primary transmission of CMV occurs through person-to-person contact such as kissing, through mucosal absorption of CMV-infected urine or saliva, or through contact with fomites handled by infected individuals. Because infected infants and children can shed the virus in body fluids, CMV is more commonly found in day care settings, where diaper changes and handling of children's toys can facilitate the pathogen's transmission. Low socioeconomic status is associated with an increased risk for CMV infection (Dowd, Palermo, & Aiello, 2012).

Universal laboratory screening of pregnant women for CMV infection is not currently recommended. Instructing pregnant women on avoiding CMV infection by thorough correct hand washing techniques and avoiding potential contact is prudent. Although CMV can be passed through breastmilk, exposure to the virus through breastfeeding usually result in no clinical illness. Pregnant women with symptoms of mononucleosis, such as chronic fatigue and persistent fever, should be evaluated for CMV infection.

History and Chart Review: Components of the History to Consider

- Current gestational age (GA)
- Employment history
- History of recent outbreak with close contact
  - Preschool teachers
  - Pediatric care workers
  - Women with infants or pre-school-age children in day care
- Presence of symptoms
  - Fever and chills
  - Malaise
  - Headache
  - Fatigue
  - Sore throat
- Most infected people are asymptomatic

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including temperature
- Fetal evaluation as appropriate to GA
- Evaluate for the following:
  - Hepatosplenomegaly
  - Lymphadenopathy
  - Arthralgia

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Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Cytomeglovirus
- Other human herpes virus
- Other viral diseases complicating pregnancy

Screening and Diagnosis: Tests and Procedures to Consider

- Viral culture or polymerase chain reaction (PCR) testing
  - Urine, saliva, or throat swab specimens
  - Testing is expensive and not widely used
- Serologic testing
  - IgM and IgG antibody linked to CMV (enzyme-linked immunosorbent assay [ELISA])
  - IgG avidity assay tests antibody maturity and provides for better detection of primary CMV infection
  - Compare acute-phase and convalescent-phase serum samples for diagnosis
  - Seroconversion of CMV-specific IgG is diagnostic for primary infection
- Amniotic fluid testing offered to women positive for primary CMV infection
  - Negative testing does not always exclude fetal infection

Providing Treatment: Therapeutic Measures to Consider

- No standard treatment available for CMV infection is currently available in the United States
- CMV-specific hyperimmunoglobulin has been reported to reduce perinatal transmission during pregnancy (Hamprecht et al., 2014)

Providing Treatment: Integrative Therapies to Consider

- Herbs for immune system support following exposure: Echinacea, elderberry, garlic, lemon balm
- Symptomatic treatment: rest, fluids
- Stress-reduction techniques: breathing techniques, yoga, guided imagery, journaling

Providing Support: Education and Support Measures to Consider

- Reassurance
  - Most maternal infections do not result in fetal infection
  - Later-gestation infection typically does not result in any fetal problems
- Explanation of lab testing and diagnosis
- Potential for fetal compromise with infection
  - Can have no effect, or
  - Possible developmental deficits

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Testing choices and management plan
- For women with primary CMV infection
  - Ultrasound evaluation for fetal effects such as microcephaly, ascites, and oligohydramnios
  - Other fetal surveillance as clinically indicated
  - Pediatric evaluation and follow-up after birth

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Obstetric services
  - Maternal infection with CMV
  - Fetus with evidence of fetal growth restriction (FGR) or anomaly
- Pediatric services for long-term follow-up
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH FEMALE GENITAL CUTTING

Key Clinical Information

Female genital cutting (FGC) is "the partial or total removal of the female external genitalia or other injury to the female genital organs for cultural or other non-therapeutic reasons" (World Health Organization [WHO], 2014). FGC may range from a superficial cutting of the genitals with no removal of flesh, to infibulation, in which the clitoris, labia minora and majora are removed and the orifice is sewn closed, leaving a narrow opening for menstruation and urination (Reedy & King, 2015; United Nations Children's Fund [UNICEF], 2013). FGC affects over 125 million girls and women, primarily in 29 African and Middle Eastern countries, and an estimated 228,000 girls and women in the United States (UNICEF, 2013). FGC is typically performed on girls ranging in age from infancy to 13 years. Reasons given

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for the practice of FGC include ensuring virginity/monogamy, cleanliness (removal of "unclean genitalia") and beauty, marriage eligibility, creating a shared experience, and religious associations, although FGC is not mandated by any known religious practice. FGC is internationally recognized as a harmful practice with immediate and long-term physical and emotional sequela, as well as a violation of girls and women's rights and integrity (Perron et al., 2013).

Women with FGC can experience adverse perinatal complications, including obstructed labor, fetal distress, perineal tears and wound infections, and postpartum hemorrhage and sepsis. Nonobstetric complications can include urinary tract infections (UTIs), dysuria, infertility, dyspareunia, and menstrual abnormalities (WHO, 2014). Women with FGC are also at higher risk of human immunodeficiency virus (HIV) and hepatitis infection when the procedure is not performed with sterile instruments (Simpson, Robinson, Creighton, & Hodes, 2012). There are no health benefits to FGC.

All women from communities practicing FGC should be asked about this during routine care. In caring for a woman with FGC, it is very important that the midwife consider the woman's attitude toward her own body and the impact of her family and culture on her decision making regarding her FGC. Careful attention toward adequate open and sensitive communication regarding reproductive health and maternity care and choices for the woman with FGC is essential.

History and Chart Review: Components of the History to Consider

- Age
- FGC history
  - Use value-neutral terminology such as "Have you been cut or circumcised?"
  - Country of origin
  - Age at time of FGC
  - Perception/memory of personal FGC
  - Description of FGC (typing)
- Reproductive history
  - GP TPAL
  - Menstrual status
  - Vaginal birth or cesarean
  - Pelvic exam/cervical cytology history
  - Prior history of defibulation and type of repair
- Sexual history
  - Acceptability of discussing sexuality
  - Woman's perception of sexual satisfaction
  - Dyspareunia
- Number of lifetime partners
- History of the following conditions:
  - Urinary tract infections
  - Dysmenorrhea
  - Perinatal complications
- Cultural beliefs
  - Personal emotions and attitude toward FGC and its effects on her body, life, and labor
  - Family and partner attitudes toward FGC
- Special considerations for the infibulated woman
  - Pregnancy/childbearing plans
  - Attitudes toward deinfibulation
- Deinfibulate during pregnancy or in labor
- Thoughts about repair following birth

Physical Examination: Components of the Physical Exam to Consider

(Simpson et al., 2012)

It is important that the healthcare provider maintain a nonjudgmental attitude during the physical examination. The following factors should be taken into account while doing the pelvic examination:

- The appearance of FGC is widely variable
- FGC is generally categorized by the types shown in **Figure 3-1**
- A pediatric speculum may be necessary for exam
- Note the following:
  - Diameter of the vaginal introitus
  - Size of vaginal introitus
  - Character and degree of vulvar scar tissue
  - Perineal tissue elasticity

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

Female genital cutting, specify status

Screening and Diagnosis: Tests and Procedures to Consider

- Urine culture to screen for asymptomatic bacteriuria (ASB)
- Screening for HIV and hepatitis B and C

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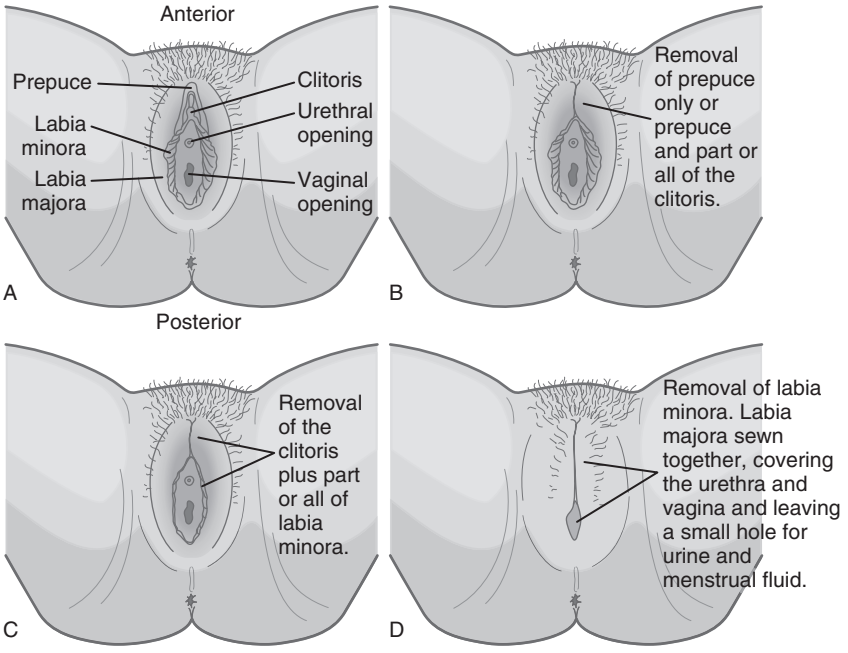

Figure 3-1 Types of Female Genital Cutting

Providing Treatment: Therapeutic Measures to Consider

- www Care of the perineum of a pregnant/laboring woman with Type I or Type II FGC
  - Similar for women without FGC
  - Special consideration given to minimizing invasive exams
- Care of the perineum of a pregnant/laboring woman with Type III FGC
  - Offer deinfibulation in the second trimester of pregnancy
  - Consider an anterior episiotomy at the time of birth

Providing Treatment: Integrative Therapies to Consider

- The woman may have experienced this as trauma or as a cultural norm
  - Explore her perceptions
  - Consider somatic response sequelae
- Perineal massage (prenatal or intrapartum)
- Warm compresses
- Expectant "hands-off" management of second stage

Anterior Episiotomy

A midline upward incision is made immediately prior to the birth of the baby to open the scar tissue, thereby allowing the birth to occur. The tissues are separated using a curved clamp or the provider's fingers, with care taken to protect the urinary meatus from injury. The birth is conducted as usual. The repair focuses on hemostasis of scar tissue and allowing for physiologic passage of urine and menstrual flow. It is critical to engage in discussion with the woman about her anatomical and cultural goals of repair after anterior episiotomy. For cultural reasons, some women prefer to have a portion of the incision reapproximated. Limited reapproximation of the superior aspect of the incised tissue can be performed for the health of the woman, such as anatomic and cosmetic repair, within the limits posed by law. The remainder of the incision edges are oversewn for hemostasis. Women should be advised about expected changes in urine stream, menstrual flow, and vaginal intercourse after deinfibulation.

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Providing Support: Education and Support Measures to Consider

Provide information about the following issues:

- Deinfibulation during pregnancy, or during labor
- Management of FGC before and after birth
- Exploration of plans and possible family pressure for FGC for female newborns
- Discussion of legal issues surrounding FGC in the United States and other countries
- Counseling regarding changing social norms and declining rates of FGC in countries with high prevalence (UNICEF, 2013)
- Medical or cultural interpreter services as necessary to ensure clear communication

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - The type of FGC
  - Any complications experienced as a result, and subjective symptoms reported
  - Some refugee women request medical documentation of their FGC when seeking asylum in the United States
  - The woman's preference for management of her FGC
  - Referral for second-trimester deinfibulation

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Obstetric or surgical services
  - For deinfibulation under anesthesia prior to pregnancy or in second trimester
  - For complex laceration repair
- Culturally appropriate mental health services or support groups for women experiencing emotional repercussions of FGC
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH FETAL DEMISE

Key Clinical Information

Early pregnancy loss before 20 weeks' gestation is considered a spontaneous or missed abortion, or miscarriage, whereas after 20 weeks' gestation it is considered a fetal death or stillbirth. In many cases, the cause of fetal demise is unable to be determined. Some fetal or placental conditions are clearly incompatible with life, whereas other fetal loss may be related to maternal illness, genetics, medical conditions such as diabetes and hypertension, or unknown factors. It is estimated that at least half of early pregnancy losses are due to chromosomal abnormalities (American College of Obstetrician Gynecologists [ACOG], 2015). Genetic investigation and counseling can be useful for exploring potential causes of fetal demise, particularly for the woman with a history of recurrent losses.

Fetal demise can occur at any stage of pregnancy and diagnosis can occur during a routine prenatal care visit. Every midwife should have a plan in place to quickly determine fetal status when viability is in question. No matter when in pregnancy a loss occurs, a common response is for the mother to wonder what she did wrong. Depression and anxiety are common sequelae for women after perinatal loss. Acknowledgment of the loss, emotional support, and grief counseling are important components of care to parents. Women who experience a stillbirth in their first pregnancy are at higher risk of stillbirth in a subsequent pregnancy, even when no specific cause can be found (Lamont, Scott, Jones, & Bhattacharya, 2015).

History and Chart Review: Components of the History to Consider

- Gestational age (GA)
  - Regression of signs of pregnancy
    - Decreased or absent breast tenderness
  - Reduction in prior pregnancy symptoms
  - Absence of fetal heart tones
    - By expected GA
    - When previously heard
  - Absence of fetal activity
- Vaginal bleeding or discharge
- Back pain or cramping
- Precipitating event(s), if any
  - Idiopathic—no precipitating event
  - Acute illness or exposure
  - Accident, trauma or abuse
  - Substance use
- Medication and herb use

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- Risk factors for stillbirth
  - Infection
  - Smoking
  - Exposure to environmental toxins
  - Maternal age extremes
  - Multiple gestation
  - Body mass index (BMI) >30
  - Race: Black women's risk of stillbirth is twice that of White women
  - Maternal disorders, such as diabetes, hypertension, renal disease, and lupus
- Current emotions of self, partner, and significant others
- Current coping mechanisms
- Review birth and surgical history

Physical Examination: Components of the Physical Exam to Consider

- Maternal vital signs
- Abdominal exam
  - Fundal height for GA less than expected
  - Uterine tenderness
  - Absence of fetal heart tones and fetal movement
- Pelvic examination
  - Boggy or inert feeling to uterus
  - Palpation of buckled fetal skull
  - Cervical status/Bishop score

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Intrauterine fetal death
- Missed abortion
- Ectopic pregnancy
- Blighted ovum
- Pseudocyesis
- Hydatidiform mole

Screening and Diagnosis: Tests and Procedures to Consider

(Silver & Draper, 2011)

- Maternal blood work
  - Serial quantitative human chorionic gonadotropin (hCG) results
  - Complete blood count (CBC)
  - Kleihauer–Betke test
  - Hemoglobin A_{1c}
  - Rapid plasma reagin (RPR)/Venereal Disease Research Laboratory (VDRL)
  - Serum/urine toxicology screen
  - Lupus screen
  - Parvovirus B19 IgG and IgM
- Weekly testing in expectant management
  - Prothrombin time (PT), partial thromboplastin time (PTT)
  - Fibrinogen, fibrin degradation products
  - Platelets
- Ultrasound
  - Absent fetal heart beat (verified by two examiners)
  - Overlapping of fetal cranial bones: Spalding's sign
  - Presence of gas in fetal abdomen: Robert's sign
- Fetal evaluation (ACOG, 2009)
  - Cord blood
  - Placenta to pathology for gross and microscopic examination
  - Placental cultures
  - Fetal x-rays and autopsy with consent of parents
- Fetal karyotype and genetic testing with consent and if indicated
  - Anomalies
  - Family history
  - Recurrent fetal losses

Providing Treatment: Therapeutic Measures to Consider

(Jordan, Engstrom, Marfell, & Farley, 2014; Nanda, Peloggia, Grimes, & Lopez, 2006)

- Acknowledge emotional trauma
  - Loss is emotionally difficult; range of reactions from shock to overt grief
  - Provide care by midwife with preestablished relationship when possible
- Expectant management
  - First-trimester loss often completed within 14 days without intervention
  - Optimal use reserved for first trimester (ACOG, 2015)
  - Observe for onset of the following conditions:
    - Fever
    - Disseminated Intravascular Coagulation (DIC)—slight increased risk in late term

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pregnancy after 4 weeks of retained products of conception (POC)
    - Rupture of membranes (ROM) or labor
    - Bleeding: 2 maxi pads per hour for several hours can be normal (ACOG, 2015)
- Medical Management
  - Misoprostol 800 µg vaginally or 600 µg PO with repeat dose as needed after 3 hours (first-trimester loss)
    - Provide sufficient pain medication
    - Follow-up ultrasound or β-hCG within 7–14 days
    - >80% success rate by 7–10 days, often sooner
    - Surgical uterine evacuation or expectant management if unsuccessful
- Surgical dilatation and evacuation (D&E) in early pregnancy
- Induction of labor
  - Laminaria, Foley, or Cook catheter
  - Oxytocin or prostaglandin induction after 24–28 weeks' gestation

Providing Treatment: Integrative Therapies to Consider

- Natural remedies may be used to stimulate labor
  - Can be ineffective before 32 weeks' gestation
  - Blue/black cohosh infusion or tincture
  - Castor oil

Providing Support: Education and Support Measures to Consider

(Jordan et al., 2014)

- Breaking the news
  - Midwife should be present for ultrasound when fetal heart tones not heard in office
  - Diagnosis of loss given in a private room without delay, ideally with a support person present
    - Give factual information in compassionate tone
    - Acknowledge loss
  - Allow sufficient time to process and make choices regarding birth options
- Discuss cause of death if known
- Options for birth (expectant, medical, surgical options)
  - Discussion regarding labor initiation and time frame for decisions
    - Maternal preferences
    - Parameters for consultation
    - Therapeutic measures to initiate labor
    - Pain management options
  - Location for birth
  - Anticipated course of events and expectations for bleeding, pain, and management
- Care of the baby's body
  - Varies with GA and elapsed time since demise
  - Family time and cultural practices
  - Autopsy or testing
  - Burial, cremation, or hospital disposal
- Funeral or memorial service
- Postpartum period
  - Lochia
  - Lactation suppression
  - Rh-immune globulin (RhIG) if indicated
  - Rubella if nonimmune
- Grief
  - Support groups and community resources
  - Review stages of grief
  - Provide anticipatory guidance on range of expected emotions
  - Encourage family support

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Clinical findings
  - Maternal and family response
  - Course of labor and birth
  - Fetal anomalies, if any
  - Examination and testing of fetal remains
  - Care and arrangements for the fetus
  - Placental disposition
  - Planned follow-up
- Follow-up care
  - Weeks 1–2
    - Phone, home, or office visit
    - Debrief with the woman regarding the events of the death and birth
    - Results of any testing
    - Evaluation of emotional status
  - Weeks 2–6
    - Postpartum physical examination
    - Evaluation of emotional status
    - Initiation of birth control as needed
    - Support and referrals as needed

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Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Midwifery leadership: Midwives can provide continuity of care and support during labor and birth to women with a fetal demise.
- Social support services
  - Grief counseling
  - Support groups
- Obstetric service
  - ⚠ Evidence of disseminated intravascular coagulation (DIC), ectopic, or molar pregnancy
  - Woman who prefers surgical D&E in early pregnancy loss
  - Recurrent pregnancy loss
  - Induction of labor as indicated by the following:
    - Midwifery practice parameters
    - Maternal preference or condition
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH GESTATIONAL DIABETES

Key Clinical Information

Gestational diabetes mellitus (GDM) is defined as carbohydrate intolerance and increased insulin resistance first recognized in pregnancy. The prevalence of GDM varies widely depending on diagnostic criteria and population studied. Approximately 4–9.2% of all pregnant women in the United States are diagnosed with GDM (DeSisto, Kim, & Sharma, 2014), and rates are increasing as more women delay childbirth and the rate of obesity continues to rise. The carbohydrate intolerance of GDM presents on a continuum ranging from mild to severe, with maternal and fetal effects increasing with the degree of carbohydrate intolerance. Potential problems that can occur in women with GDM are primarily related to the fetus/infant and include fetal macrosomia, secondary to elevated levels of circulating glucose resulting in increased fetal insulin and fat deposition, low blood sugar, and neonatal jaundice.

There is no consensus on screening timing, methods, diagnostic criteria, or management, although some common practices are used. Some proposed screening criteria have the potential to increase the diagnosis of GDM by more than 50%, resulting in overtreatment (Cundy, Ackermann, & Ryan, 2014; Kalter-Leibovici et al., 2012). All pregnant women should be screened for GDM by history, clinical risk factors, or by serum testing. Currently, the American College of Obstetrician Gynecologists (ACOG) recommends that the 50-g 1-hour oral glucose tolerance test (OGTT) be used for serum screening, followed by a 100-g 3-hour OGTT to diagnose GDM. Some clinicians may screen, diagnose, or manage GDM outside these guidelines yet still remain within the boundaries of common care practices. Glucose threshold criteria vary between 130 and 140 mg/dL and should be selected based on the risk of the population served.

Approximately 85% of women diagnosed with GDM will maintain euglycemia with appropriate diet therapy and moderate exercise. Other women will require oral hypoglycemics or insulin therapy. Daily attention to diet is imperative to provide sufficient nutrients for fetal growth and reduce postprandial hyperglycemia. Keeping a food and blood glucose testing diary can be very helpful for making dietary recommendations that are culturally and financially reasonable. Exercise increases glucose uptake and insulin sensitivity and has been found to be as effective as insulin for some women, making exercise an important component of GDM management (Mottola, 2008).

History and Chart Review: Components of the History to Consider

- Age, GP TPAL
- Gestational age
- Symptoms of gestational diabetes
  - Often asymptomatic
  - Glycosuria
  - Size larger than appropriate for dates
  - Polyuria
  - Polydipsia
  - Loss of energy
- Risk factors for gestational diabetes
  - Maternal age >25 years
  - Body mass index (BMI) >30
  - Prior history of glucose intolerance
  - Previous infant weighing >4,000 g
  - Previous unexplained fetal demise
  - Polyhydramnios
  - Previous birth of a child with a congenital anomaly
  - Polycystic ovarian syndrome

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- Family history of diabetes in a first-degree relative
- Ethnicity-related risk factors for type 2 diabetes
  - Black American
  - Alaskan Native
  - Hispanic American
  - Native American
  - South or East Asian
  - Indian
  - Middle Eastern
  - Pacific Islander

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including weight, height, and BMI
- Weight-gain pattern and total to date
- Serial fundal height measurements
- Estimated fetal weight (EFW) in third trimester
  - EFW methods include provider palpation, maternal perception, and birth history
  - Ultrasound often used to estimate fetal weight
    - Ultrasound has low sensitivity and specificity, often significantly overestimates fetal weight, and increases risk for unnecessary cesarean (Melamed, Yogev, Meizner, Mashiach, & Ben-Haroush, 2010; Scifres et al., 2015)

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Gestational diabetes
- Diabetes mellitus
- Polyhydramnios

Screening and Diagnosis: Tests and Procedures to Consider

- Dip urinalysis for glucose
- First-visit or first-trimester serum screening for women at risk for type 2 diabetes/gestational diabetes
- Selective Screening: serum screening may be omitted for low-risk women who meet all of the following criteria in **Table 3-2** (Langer, 2015), *or*
- Universal serum screening for gestational diabetes in asymptomatic women between 24 and 28 weeks' gestation
  - One-hour glucose challenge test (50 mg glucose)
    - Plasma glucose >130–140 mg/dL is suspicious for gestational diabetes
    - Three-hour oral glucose tolerance as diagnostic test when 1-hour screen is elevated
  - Random plasma glucose >200 mg/dL is diagnostic of gestational diabetes
  - Fasting plasma glucose >126 mg/dL is diagnostic of gestational diabetes
  - One-step screening and diagnosis: blood draws after fasting, and at 1 and 2 hours after 75 mg oral glucose load
- Diagnosis: one elevated blood levels in one-step testing (**Table 3-3**) or at least 2 elevated levels with 3-hour glucose tolerance test (**Table 3-4**)
- Ongoing maternal laboratory assessment: hemoglobin A_{1c}

Table 3-2 Screening for Gestational Diabetes

LOW RISK: SERUM TESTING NOT REQUIRED	AVERAGE RISK: SCREEN AT 24–28 WK'S GESTATION	HIGH RISK: SCREEN AS SOON AS POSSIBLE
Member of ethnic group of low prevalence*	Those women who are not at low or high risk	Obese (BMI ≥30)
No known diabetes mellitus (DM) in a first-degree relative		Prior history of GDM
Age <25 yr		Glycosuria
Normal BMI		First-degree family history of DM
No history of abnormal glucose metabolism		Member of high-risk-prevalence group*
No history of prior poor obstetrical outcome		Prior history of stillbirth

*High-prevalence groups: Black Americans, Hispanic Americans, East Asians, Indian, Middle Easterners, Pacific Islanders, and Native Americans.

Data from ACOG, 2013a; ADA, 2015.

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Table 3-3 One-Step Testing Diagnostic Criteria for Gestational Diabetes: 75-mg Two-Hour Screen and Diagnosis

TIME OF SAMPLE	CRITICAL LEVEL (mg/dL)
Fasting	≥92
1 h	≥180
2 h	≥153

If one or more values meet or exceed the target level, GDM is diagnosed.

This method is recommended by the American Diabetes Association, though it is not yet widely used in the United States.

Data from International Association of Diabetes and Pregnancy Study Group. (2015). Gestational Diabetes Mellitus Screening Using the One-Step Versus Two-Step Method in a High-Risk Practice. http://clinical.diabetesjournals.org/content/32/4/148.full.pdf+html

Table 3-4 Three-Hour Oral Glucose Tolerance Test (OGTT) Diagnostic Criteria for Gestational Diabetes

TIME OF SAMPLE	CRITICAL LEVEL NATIONAL DIABETES DATA GROUP (NDDG) (mg/dL)	CRITICAL LEVEL CARPENTER AND COUSTAN (mg/dL)
Fasting	≥105	≥95
1 h	≥190	≥180
2 h	≥165	≥155
3 h	≥145	≥140

  - Normal range: 4.0–8.2%
  - Less than or equal to 6% preferable in pregnancy
  - Self-monitored blood glucose
- Monitor for preeclampsia: increased incidence in the presence of gestational diabetes mellitus (GDM)
- Ultrasound for fetal anomalies and fetal growth as indicated

Providing Treatment: Therapeutic Measures to Consider

- Regular exercise (American Diabetes Association, 2015; Halse, Wallman, Newnham, & Guelfi, 2014)
  - Aerobic exercise improves blood glucose control and effects may be comparable to insulin in some women
  - 150 minutes per week or 30 minutes most days of the week of walking, swimming, bike riding, or dancing
  - Walking for 15 minutes after meals improves glycemic control (Deguchi et al., 2015)
  - No exercise in fasting state
  - Give woman written prescription for exercise
- Dietary therapy
  - Caloric intake by weight, ranging from 2,200 to 2,400 kcal/day
  - Six small meals daily
    - Three meals and three snacks
    - Complex high-fiber carbohydrates: 40–50% of diet
    - Fat: 30–40%
    - Protein: 20%
- Self-monitored blood glucose (American Diabetes Association, 2015)
  - Fasting glucose <95 mg/dL
  - 1-hour postprandial glucose <140 mg/dL 1 hour after start of meal
  - 2-hour postprandial glucose <120 mg/dL 1 hour after start of meal
- Oral hypoglycemics (Brucker & King, 2017; Carroll & Kelley, 2014)
  - Are more convenient for women and require less intensive use instruction
  - Use of oral hypoglycemics is increasing; however, optimal medication and dosing not determined
  - Metformin
    - Most commonly used oral hypoglycemic
    - Starting dose 500 mg PO daily, increasing by increments of 500–850 mg, up to 2,500 mg daily as indicated by blood glucose levels
  - Glyburide
    - Use after first trimester
    - Starting dose 2.5–5 mg PO once or twice daily up to 20 mg daily
- Insulin therapy
  - Initiate when fasting blood sugar (FBS) and or 2-hour postprandial levels continue to be elevated with oral hypoglycemic
  - Consult for use, recommended types of insulin, and dosages
  - Titrate to maintain glycemic control

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Providing Treatment: Integrative Therapies to Consider

(University of Maryland Medical Center, 2013b)

- High-fiber diet
- Stress-reduction strategies such as yoga, meditation, mindful awareness
- Herbs
  - Fenugreek
  - American ginseng
  - Cinnamon ¼ to ½ tsp daily

Providing Support: Education and Support Measures to Consider

- www Diabetic education and diet therapy—the cornerstone of management
- Diabetic education
  - About GDM
  - Effects of GDM on pregnancy
  - Reassurance of expected normal pregnancy progression and outcome with stable euglycemia
  - Dietary recommendations
    - Instruct in complex carbohydrate foods
    - Sample menus of three small meals and three snacks per day
    - Importance of not skipping meals
  - Physical activity recommendations and rationale
  - Medication instruction as needed
  - Daily home glucose monitoring
    - Ideal frequency not established
    - Glucometer with memory and log book to bring to each visit
    - Four to 7 times per day until glycemic control is established
      - ➤ Fasting
      - ➤ 1 or 2 hours after start of meals
      - ➤ Bedtime
    - Daily self-monitoring may be reduced once glycemic control is established
- ⚠ Call with warning signs and symptoms
  - Recurrent pattern of abnormal blood glucose values
  - Decreased fetal movement
  - Signs and symptoms of hypoglycemia, such as dizziness and shaking
- Risks and benefits of options for pregnancy and birth care

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Physiologic basis of GDM
  - Psychological adjustment to diabetes diagnosis
  - Mutually agreed-upon treatment and plan of care
  - Long-term implications of this diagnosis
    - Risk for future pregnancies
    - Risk for development of later onset of diabetes
- Prenatal follow-up
  - Maternal and fetal evaluation
  - Blood glucose follow-up
    - Evaluate results at each visit
    - Periodic laboratory testing for validation of the following:
      - ➤ Home monitoring results
      - ➤ Glycemic control
    - Medication use
- Fetal assessment (ACOG, 2013a)
  - Method and initiation timing depend on the individual woman and her level of glycemic control
  - No evidence of benefit for women in glycemic control
  - Practice varies according to local standards and can include the following:
    - Fetal kick counts beginning approximately 34–36 weeks' gestation
    - Nonstress test
    - Biophysical profile (BPP)
  - Ultrasound for estimated fetal weight (EFW) and growth discrepancies as indicated
  - Ultrasound to detect anomalies for women diagnosed with GDM in the first trimester
- Labor and birth plan
  - With well-controlled blood glucose and no other problems, wait until 40 weeks' gestation before considering induction of labor (ACOG, 2013a)
  - Consider induction before 40 weeks' gestation for the following circumstances:
    - Woman on insulin therapy
    - Fetal macrosomia >4,500 g
    - Poor or marginal control
    - Abnormal fetal surveillance test results
    - Co-occurring preeclampsia

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  - Plan for the woman to give birth at a facility with newborn special care available
    - Anticipate respiratory distress syndrome (RDS)
    - EFW >4,500 g: Cesarean may decrease the likelihood of brachial plexus injury in the infant (ACOG, 2013a)
  - Plan for pediatric care at birth
- Postpartum follow-up
- Most women return to euglycemia quickly after birth
  - Self-monitor FBS and 2-hour postprandial blood sugar for several days
    - Evaluate as soon as possible for diabetes mellitus in the presence of either of the following conditions:
      - FBS >120 mg/dL
      - Two-hour postprandial blood sugar >160 mg/dL
  - Two-hour 75-g oral glucose test at 6 weeks postpartum
  - Interconceptional risk reduction
    - Achievement of normal BMI
    - Diet and exercise improvements
  - Blood glucose checked every 3 years

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Diabetes services
  - Certified diabetic educator
  - Registered dietitian or nutritionist
  - Specialized diabetes clinic
  - Diabetic support groups
- Social services, as indicated
- Exercise classes, personal trainer
- Medical, obstetric, or pediatric services
  - Gestational diabetes not controlled by diet
    - Initiation of oral hypoglycemic agents or insulin
    - Ongoing medication dosage requirements
  - Fetal macrosomia, fetal growth restriction (FGR), or anomalies
  - Newborn care at birth
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH HEPATITIS

Key Clinical Information

Hepatitis includes a range of viral illnesses that may be transmitted via blood or body fluids. Vertical transmission of hepatitis B, C, E, and G can occur during pregnancy. Without neonatal immunization shortly after birth, as many as 90% of infants born to hepatitis B–infected mothers will become infected (American College of Obstetrician Gynecologists [ACOG], 2007a). Infected infants can become chronic carriers or can develop significant illness. Infected women can present with acute illness, or they can be chronic carriers who are asymptomatic and able to transmit infection (Center for Disease Control and Prevention [CDC], 2012). Postpartum follow-up of women with hepatitis is an important but often neglected area of care (Chang et al., 2015).

History and Chart Review: Components of the History to Consider

- See Care of the Woman with Hepatitis in Chapter 7
- Gestational age
- Immunization status—hepatitis A and B
- Presence of risk factors for hepatitis A (CDC, 2012)
  - Recent travel to high-prevalence area
  - Sexual contacts
  - Household contacts or caregivers
  - Intravenous (IV) and other drug use
  - Clotting factor disorders
- Presence of risk factors for hepatitis B (CDC, 2012)
  - Healthcare professional
  - Hemodialysis patients
  - IV drug use
  - Sexual contacts, multiple sex partners
  - Sexually transmitted infections (STIs)
  - Household contacts
  - Employment in prison system or facility for developmentally delayed
  - International travelers or immigrants from high-prevalence areas
- Presence of risk factors for hepatitis C (CDC, 2012)
  - IV drug use, ever
  - Sexual contacts

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  - HIV-positive women
  - Hemodialysis patients
  - Blood or organ recipient before 1992
  - Evidence of liver disease
- Additional potential exposure to hepatitis
  - Body tattoos
  - Ingestion of raw shellfish
  - International travel
  - Day care workers
  - Immigrants from the following regions:
    - Asia
    - Africa
    - Pacific Islands
    - Haiti
    - Middle East
    - Eastern Europe
- Presence, onset and duration, and severity of symptoms
  - Malaise and lethargy
  - Fever and chills
  - Right upper quadrant pain
  - Jaundice
  - Nausea and vomiting
  - No symptoms: At least half of all initial hepatitis B virus (HBV) infections are asymptomatic

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including weight
- Examine for evidence of jaundice
  - Skin
  - Mucous membranes
  - Sclera
- Abdominal exam: palpate and percuss
  - Liver and spleen margins
  - Note any elicited right upper quadrant pain

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Hepatitis A
- Hepatitis B
- Hepatitis C
- Cholestasis of pregnancy
- Cholelithiasis

Screening and Diagnosis: Tests and Procedures to Consider

- Hepatitis B surface antigen (HBsAg) screen for all pregnant women
- Hepatitis A and C screen for those at risk
  - Recent immigrants from or travelers to high-risk countries: Central and South America, rural Mexico
- Hepatitis C screen for those at risk
- Liver function tests
  - Elevation occurs during acute phase (CDC, 2015a)

Providing Treatment: Therapeutic Measures to Consider

- Illness must run its course
- Supportive therapy for woman
- Consider immunization series
  - For at-risk noninfected women
  - Can be administered during pregnancy
  - Hepatitis B
  - Hepatitis A

Providing Treatment: Integrative Therapies to Consider

(Natural Medicines, 2015b)

- Herbs for immune support
  - Milk thistle tea
  - Dandelion tea, tincture or capsule
  - Turmeric
  - Green tea
- Adequate rest

Providing Support: Education and Support Measures to Consider

(CDC, 2015a)

- Provide information about hepatitis
  - Transmission, prevention, and self-care
    - Refrain from sharing household items such as toothbrushes and razors
    - Other family members should be tested for hepatitis B and vaccinated if nonimmune
    - Cover cuts and skin lesions
    - Use of condoms
    - Emphasize abstinence from alcohol consumption

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    - Consult a healthcare provider before taking any over-the-counter (OTC) medications
    - Hepatitis B is not transmitted by kissing, hugging, coughing, food, water, or casual contact
  - Vaginal birth is recommended; cesarean is reserved for standard indications
  - Preterm birth risk is increased with acute hepatitis B infection; educate regarding warning signs
  - Medication recommendations for infant
    - Significant reduction in hepatitis B fetal transmission with immunoglobulin injection after birth
  - Breastfeeding (CDC, 2015a; Cui-ping, Lan-lan, & Tang, 2014)
    - Not contraindicated for hepatitis A, B, C, or E unless woman is taking antiviral therapy
- Discussion regarding the following topics:
  - Options for care of self and infant
  - Location for birth
    - Preparation for appearance of healthcare personnel at birth, wearing personal protective equipment (PPE)
  - Parameters for referral

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Findings and condition
  - Transmission prevention
  - Risks to self and fetus/infant
  - Mutually agreed-upon plan of care
- Return for care
  - Per routine for hepatitis carrier
  - Weekly for acute phase of infection
    - Periodic liver function tests
    - Fetal evaluation with acute illness
  - Plans for hepatitis care in the postpartum period (Chang et al., 2015)
- Administer medications to infant born to hepatitis B–positive mother
  - Hepatitis B immune globulin: 0.5 mL intramuscular (IM) in anterior thigh within 12 hours of birth
  - Three-dose hepatitis B vaccine
    - Engerix-B 10 mg/0.5 mL
    - Recombivax HB 5 mg/0.5 mL
    - IM in anterior thigh, shortly after birth
    - Repeat in 1 and 6 months

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Infectious disease, medical or obstetric services
  - Acute hepatitis, any type
  - Hepatitis C, D, E, F, or G to hepatitis specialist
  - May be reportable to state or local health department
- Pediatric care provider consultation when maternal infection present
  - Before birth
  - Collaborative plan for newborn care
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH HERPES SIMPLEX VIRUS

Key Clinical Information

The overall seroprevalence of herpes simplex 2 virus (HSV 2) infection in the United States has decreased or remained stable in the last several decades, with non-Hispanic Black women experiencing a disproportionately high incidence of herpes (Fanfair et al., 2013). Genital herpes infections are not limited to HSV 2. An estimated 80% of new genital herpes infections are attributed to HSV 1—especially in adolescents and young adults, and most individuals with HSV exposure are unaware of the infection (American College of Obstetrician Gynecologists [ACOG], 2007b; Fanfair et al., 2013). As it is one of the most common sexually transmitted infections (STIs) and has the potential for perinatal transmission, herpes poses an important health problem in pregnancy. Approximately 5% of pregnant women report a history of genital herpes with an estimated 30% of childbearing-aged women testing positive for HSV 2 (ACOG, 2007b). The risk of infection in the fetus or infant with exposure to HSV varies with the incidence of primary versus secondary infection in the mother. When primary genital HSV 2 infection occurs during pregnancy, the perinatal transmission rate may be as high as 60% (Phillippi, 2015). This condition should be differentiated from a nonprimary genital infection with a first outbreak of lesions. With secondary, or recurrent, genital HSV 2 infection during pregnancy, the perinatal transmission rate diminishes to 3% or less (ACOG, 2007b).

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Three categories of neonatal disease are distinguished: localized disease of the skin, eye, and mouth; central nervous system disease; and disseminated disease. The mother may be asymptomatic in as many as 80% of instances in which the infant is infected (ACOG, 2007b).

History and Chart Review: Components of the History to Consider

- Gestational age
- Sexual history
- Previous history
  - Genital or oral herpes
  - Other STIs
- Duration and quality of present symptoms
  - Location and number of vesicular lesions
    - Oral
    - Genital
  - Prodromal and overt symptoms
    - Pain, burning
    - Tingling or buzzing sensation
    - Dysuria
    - Discharge
- Primary infection is associated with the following symptoms:
  - Fever
  - Headache
  - Malaise
  - Myalgia

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including temperature
- Fetal evaluation as appropriate to gestational age
- Physical evaluation with emphasis on the following:
  - Oral examination
  - Inguinal lymph nodes
    - Enlargement
    - Tenderness
  - External genitalia, buttocks, and pelvic region
  - Characteristic lesions
    - Vesicles
    - Shallow ulcers
    - Edema
- Speculum examination
  - Presence of other STI symptoms
  - Cervical lesions or discharge
  - Cervical or uterine motion tenderness
  - Inspect external genitalia and vaginal vault for lesions at onset of labor

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- HSV infection
- Other STIs such as chancroid, syphilis
- Genital trauma
- Vulvar disorders

Screening and Diagnosis: Tests and Procedures to Consider

(Center for Disease Control and Prevention [CDC], 2015)

- Cell culture and polymerase chain reaction (PCR) for HSV with identification of HSV type if positive
  - Negative culture or PCR does not indicate absence of HSV infection
- Type-specific HSV 1 and/or HSV 2 serum testing for HSV IgG antibody titer
  - Documents primary versus nonprimary first-episode versus recurrent infection
  - Useful if the woman is asymptomatic and her sexual partner has a history of HSV
  - Repeat in 7–10 days
- Other STI testing, especially HIV screening

Providing Treatment: Therapeutic Measures to Consider

(ACOG, 2007b; Ural, 2015)

- Antivirals appear to be safe for use during pregnancy, with more data available on Acyclovir than other drugs (Brucker & King, 2017)
- Suppression therapy used for women with
  - More than nine recurrences per year
  - Primary outbreak in pregnancy
- Valacyclovir hydrochloride (Valtrex)
  - Primary outbreak
    - 1 g PO 2 times per day for 7–10 days
  - Recurrent outbreak
    - 500 mg PO 2 times per day for 3 days

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  - Begin medication within 24 hours of first symptoms
  - For suppressive therapy at 36 weeks' gestation until birth
    - For women with active recurrent HSV
    - 500 mg PO daily 2 times per day
- Acyclovir (Zovirax)
  - Primary outbreak
    - 400 mg PO 3 times per day for 5 days
  - Recurrent outbreak
    - 400 mg PO 3 times per day for 5 days OR
    - 800 mg PO 2 times per day for 5 days
    - Repeat treatment as needed
    - Begin medication within 24 hours of first symptoms
  - Suppressive therapy at 36 weeks' gestation until birth
    - For women with known HSV
    - 400 mg PO 3 times per day
- Acetaminophen (Tylenol) for pain relief

Providing Treatment: Integrative Therapies to Consider

(Romm, 2010)

- L-Lysine (Romm, 2010)
  - 1 g PO daily for prevention of outbreaks
  - 1 g PO TID during an outbreak
- Dietary recommendations
  - Include foods high in lysine
    - Chicken, turkey, fish
    - Milk, yogurt, cheese
    - Cooked beans and soybeans
    - Eggs
  - Avoid foods high in arginine
    - Chocolate, coffee, cola
    - Peanuts, cashews, pecans, almonds
    - Sunflower and sesame seeds
    - Oatmeal
    - Coconut
    - Gelatin
- Lemon balm and echinacea root tea, two to four cups daily
- Echinacea
  - Use to prevent outbreaks
  - Tincture up to 30 drops daily
  - Tablets/capsules 250–100 mg daily for 2 weeks
- Topical lemon balm cream: reduces lesion pain
- Topical tea tree essential oil
- Topical aloe vera: may reduce lesion healing time

Providing Support: Education and Support Measures to Consider

- Information about HSV infection
- Potential effects of infection on the following:
  - Pregnancy
  - Anticipated location for birth
  - Newborn health
  - Labor and birth plans
  - Potential for cesarean with prodromal symptoms or visible lesions at onset of labor
- Discussion of the following topics:
  - Treatment options
  - Labor and birth options
  - Maternal preferences
  - Partner safety (see Care of the Woman with Herpes Simplex Virus in Chapter 7)
    - Abstain from sexual activity when prodromal symptoms or lesions are present
    - HSV 2 partner transmission is reduced during suppressive treatment with oral antiviral medication
    - Transmission can occur in the absence of prodromal symptoms or lesions
    - Male latex condoms reduce genital herpes transmission
- Rest and comfort measures
  - With initial outbreak
  - To enhance immune response

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Findings and test results
  - Fetal/neonatal risks
  - Outbreak monitoring
  - Mutually agreed-upon treatment plan
- Return for care
  - Per routine with history of herpes
  - For culture and/or serum testing with active lesion
  - Primary herpes
    - If symptoms persist for more than 10 days
    - If symptoms worsen or evolve
      - ➤ Stiff neck
      - ➤ Unremitting fever
      - ➤ Inability to urinate

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- Labor care
  - Vaginal birth is recommended if the mother does not have any active lesions or prodromal symptoms of vulvar pain or burning
    - Active lesion remote from genital region: occlusive dressing applied
    - Limit cervical exams
    - Limit use of scalp electrode or intrauterine pressure catheter (IUPC)
  - Cesarean is recommended if the mother has active genital lesions or prodromal symptoms of vulvar pain or burning
    - Before ROM
    - As soon as possible with prelabor rupture of membranes (PROM)
    - May delay with preterm premature rupture of membranes (PPROM) for steroid therapy
- Breastfeeding is encouraged unless active lesions are present on the breast

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Infectious disease services
  - For symptoms of herpes meningitis
- Obstetric and neonatal services
  - Confirmation of initial/primary infection during pregnancy, especially when during third trimester
  - For interdisciplinary labor and birth planning
    - Presence of active lesions
    - Potential for cesarean
    - For pediatric follow-up after HSV exposure
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH HIV

Key Clinical Information

Universal screening of pregnant women for HIV infection is recommended as early as possible during pregnancy. Some women can feel threatened by the thought of HIV testing; all women should be notified that HIV testing is included in the standard prenatal testing profile, and the woman's decision should be documented when she declines HIV testing (opt-out testing) (Center for Disease Control and Prevention [CDC], 2015b). A few states require HIV-specific pretest counseling and documentation of informed consent prior to screening. Early screening allows for prompt confirmation of the HIV diagnosis through follow-up testing and administration of antiretroviral (ARV) medication, which can decrease the incidence of perinatal transmission of the infection from 13 to 25% to less than 2% (CDC, 2015b). All HIV-infected pregnant women should receive combination antiretroviral therapy (cART) to reduce perinatal transmission. Vertical transmission can be reduced in infants who reach term and are appropriate weight for the stage of gestation. Decisions regarding route of birth are based on HIV RNA levels at the time of labor, as well as standard considerations. Women should be counseled that HIV infection can put them at higher risk of surgical complications of cesarean (Department of Health and Human Services [HHS], 2015). Women who test negative yet are at risk for HIV infection should be retested in the third trimester. Breastfeeding is contraindicated where access to safe breastmilk substitutes and clean water is assured (CDC, 2015b). Optimal care of the HIV-infected pregnant woman requires coordinated care between HIV specialists, maternity care providers, and supportive services (National Institutes of Health [NIH], 2015).

History and Chart Review: Components of the History to Consider

- Gestational age
- Presence of current symptoms
  - Malaise
  - Fever
  - Cough
  - Skin lesions
- History of HIV infection
  - Date of diagnosis
  - Prior medical care and medication regimens
  - Stability of disease
- Reproductive health and sexual history
  - Previous HIV testing
  - Number of sexual partners
  - Self and/or partner(s)
    - Sexual practices
    - Sexually transmitted infections (STIs)
    - Substance use, intravenous (IV) drug use
    - Blood transfusions
  - Abnormal cervical cytology

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- History of opportunistic infections, such as pneumocystis carinii pneumonia

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including temperature
- Head, eyes, ears, nose, oral exam, and throat (HEENOT)
  - Fundoscopic exam
  - Oral examination for thrush or lesions
- Skin lesions
- Respiratory system
  - Cough
  - Adventitious breath sounds
  - Shortness of breath
  - Night sweats
- Liver margins
- Lymph nodes
  - Characteristics of enlarged nodes
  - Location(s) of enlarged nodes
- Pelvic examination
  - Internal or external lesions
  - Symptoms of STIs

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Pregnancy, concurrent with
  - HIV/AIDS
  - Asymptomatic HIV infection state
  - Other STIs

Screening and Diagnosis: Tests and Procedures to Consider

(NIH, 2015)

- Rapid HIV test
- HIV enzyme-linked immunosorbent assay test
- HIV Western blot test
- Antiretroviral (ARV) drug-resistance testing

Providing Treatment: Therapeutic Measures to Consider

(NIH, 2015)

- New-onset ARV therapy
  - Consider delay of therapy onset until after first trimester unless needed for maternal health
    - Diminishes drug-related teratogenicity
    - Improves adherence once early nausea has passed
  - Use current facility guidelines for medication regimen
  - Management of side effects is important to maximize adherence
- Established cART therapy: Do not discontinue upon pregnancy diagnosis
- Initiation of other therapies based on diagnosis
- CD4 T lymphocyte and plasma HIV RNA levels monitored
  - 2–4 weeks after initiating or changing medication regimen until RNA levels undetectable
  - Every 3 months or as noted in facility protocol
- First-trimester ultrasound to confirm gestational age
- Second-trimester ultrasound anatomy scan with informed consent
  - Limited data are available on the effects of combined therapy on the fetus
- Screen for other STIs
- Scheduled cesarean at 38 weeks' gestation for women with the following conditions:
  - HIV RNA copies >1,000/mL near time of birth
  - Unknown HIV RNA copies near time of birth
- Scheduled cesarean *not* recommended as prevention of perinatal transmission in women receiving cART with HIV RNA copies <1,000 mL
  - Low rate of transmission in this group
  - Higher risk of postoperative complications in HIV-positive women

Providing Treatment: Integrative Therapies to Consider

- Supportive measures
- Most immune-stimulating herbs are not recommended
- Cautious use of herbals/homeopathic remedies for the following indications:
  - Appetite stimulation
  - Skin integrity
  - Emotional and spiritual balance

Providing Support: Education and Support Measures to Consider

- Provide information, listening, and discussion on the following topics:
  - HIV and AIDS

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- Prevention and transmission
- Benefits of testing
- Viral load evaluation and significance
  - Perinatal transmission
  - Potential effects on the baby
- Medication and treatment options
  - ARV medication (for self and/or baby)
    - Benefits
    - Risks
    - Side effects
    - Alternatives

- Lifestyle issues
  - Encourage use of the following measures:
    - Abstinence or consistent condom use
    - No sharing of needles
    - Smoking cessation
  - Breastfeeding is contraindicated where safe breastmilk donors or substitutes are available
- Advocate for access and coordination of medical services

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Informed consent for testing
  - Laboratory results
  - Maternal response to
    - Diagnosis
    - Treatment recommendations
  - Woman's preferences
  - Consultations and referrals
  - Anticipated location for birth
- Follow-up care
  - Review psychological adjustment to HIV diagnosis
  - Coordinate testing with primary care provider/site
  - Pediatric consult for newborn care and follow-up
  - Register all cases of ARV drug use with the CDC Antiretroviral Pregnancy Registry: http://www.apregistry.com
  - Observe for side effects of medications
    - Can cause hepatic toxicity
    - Can mimic HELLP syndrome
  - Antiviral drug-resistance testing
- Return visits
  - As indicated by prenatal course and gestation
  - For support and continuity during specialist care
  - Plan for postpartum care and ongoing HIV care

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Social support services
  - Support groups
  - Mental health referrals
  - Victim advocacy groups
  - Clean needle programs
  - Substance abuse treatment options
- Obstetric and medical services
  - For all newly diagnosed HIV-positive women
  - For coordination of ARV regimen
  - For HIV-positive women with the following conditions:
    - Onset of infection
    - Decrease in CD4 cell counts
    - Significant medication side effects
- Midwifery leadership: participation in interdisciplinary care coordination and communication to facilitate treatment and indicated care during pregnancy
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH HYPERTENSIVE DISORDERS

Key Clinical Information

In the United States, hypertensive disorders are the most common causes of medical complications in pregnancy, affecting 2–10% of all pregnancies (Cunningham et al., 2014). Hypertension in pregnancy can be chronic (from any cause that predates pregnancy); can arise during pregnancy, labor, or postpartum (gestational hypertension or preeclampsia); or can represent preeclampsia superimposed on chronic hypertension. Of the various hypertensive disorders, preeclampsia—either alone or superimposed on chronic hypertension—is the most dangerous. It can lead to complications such as eclampsia and HELLP syndrome and is one of the leading causes of maternal mortality in both the developed and developing

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world. Differential diagnosis can be challenging because hypertension during pregnancy can present with a wide array of symptoms. Onset of clinical signs and symptoms suggesting gestational hypertension and/or preeclampsia should prompt careful evaluation. Laboratory testing is the most reliable way to assess a woman's potential for development of gestational hypertension. Women who have hypertension during pregnancy are at increased risk for pulmonary edema, myocardial infarction, stroke, and renal failure during the current pregnancy, as well as heart disease later in life. When a diagnosis of preeclampsia is made, it is now categorized as "with or without severe features," rather than "mild" or "moderate." Additionally, the diagnosis of preeclampsia no longer requires the detection of high levels of proteinuria (American College of Obstetrician Gynecologists [ACOG], 2013b). There is a positive relationship between the severity of hypertension and an increased risk for adverse outcomes. Prompt evaluation, diagnosis, and treatment improves the likelihood of the pregnancy resulting in a healthy mother and healthy baby and increases the potential for a vaginal birth.

History and Chart Review: Components of the History to Consider

- Gestational age
- Fetal activity as appropriate to gestational age
- Presence, onset, and duration of symptoms (see **Table 3-5**)

Table 3-5 Hypertensive Disorders of Pregnancy

HYPERTENSIVE DISORDER	DIAGNOSTIC CRITERIA	SIGNS AND SYMPTOMS
Chronic hypertension	BP ≥140/90 mild; BP ≥170/110 severe Two or more BP elevations at least 4 h apart	Blood pressure ≥140/90 mm Hg before pregnancy or before 20 wk's gestation No proteinuria
Gestational hypertension	Systolic ≥140 mm Hg *OR* Diastolic ≥90 mm Hg Two readings at least 4 h apart within 1 wk of each other	BP elevation occurs after 20 wk's gestation without other signs or symptoms of preeclampsia or preexisting hypertension
Preeclampsia	Systolic ≥140 mm Hg *OR* Diastolic ≥90 mm Hg Two readings at least 4 h apart, with either: Proteinuria ≥1+ by dipstick testing on two occasions, protein-to-creatinine ratio ≥0.3 d, or ≥300 mg in a 24-h urine collection *OR* In the absence of proteinuria, new onset of any of the following systemic findings: 1. Thrombocytopenia (platelet counts <100,000 μL) 2. Renal insufficiency (i.e., creatinine >1.1 mg/dL or twofold increase in creatinine in the absence of underlying renal disease) 3. Abnormal liver function (i.e., hepatic transaminase levels twice normal) 4. Pulmonary edema 5. Cerebral or visual symptoms	Hypertension occurs after 20 wk's gestation And commonly after 35 wk's gestation

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HYPERTENSIVE DISORDER	DIAGNOSTIC CRITERIA	SIGNS AND SYMPTOMS
Preeclampsia with severe features	May include any of the following: 1. Systolic ≥160 mm Hg or Diastolic ≥110 mm Hg at two readings at least 4 h apart after period of bedrest 2. Thrombocytopenia (platelet counts <100,000 μL) 3. Impaired liver function defined as either otherwise unexplained right-upper-quadrant-epigastric pain unresponsive to medications, or hepatic transaminase levels twice as normal 4. Progressive renal insufficiency as defined above 5. Pulmonary edema 6. New-onset cerebral or visual disturbances	Often associated with significant proteinuria of ≥5 g in 24 h Oliguria (<500 mL in 24 h) Hemoconcentration
Preeclampsia superimposed on chronic hypertension		Symptoms of preeclampsia after 20 wk's gestation in a woman with chronic hypertension, such as acute onset proteinuria Associated with significantly higher adverse maternal–fetal–neonatal outcomes
Eclampsia		Grand mal seizure(s) Fetal distress Placental abruption
HELLP syndrome (HELLP = **H**emolysis, **E**levated **L**iver enzymes and **L**ow **P**latelet count); often associated with preeclampsia but also may occur independent of preeclampsia		Epigastric pain, nausea, and vomiting General malaise Abnormal coagulation profile (low fibrinogen, prolonged prothrombin time, prolonged partial prothrombin time) Hemolysis of red blood cells Elevated liver enzymes (AST, ALT, LDH) Low platelets (<100,000 μL)

Data from Obstetrics & Gynecology, Vol. 122, No. 5, November 2013. http://www.acog.org/~/media/Districts/District%20VIII/HypertensionPregnancy.pdf?dmc=1&ts=20140527T0350044350

- ⚠ Persistent severe headache
- Pain in the epigastric area
- Visual disturbances

Evaluate for factors associated with preeclampsia:

- Nulliparity
- 🌍 Black American or Asian race
- Prior history of preeclampsia
- Family history of hypertension or preeclampsia in a first-degree relative
- Obesity
- Maternal age <18 years or >35 years
- Multifetal gestation
- New partner
  - Exposure to partner's sperm for 6 months or more may protect against preeclampsia
  - Maternal immunologic rejection of partner's sperm is one theory of etiology
- Hydatidiform mole
- Fetal hydrops
- Preexisting medical disorders
  - Essential hypertension
  - Diabetes mellitus
  - Collagen vascular disease

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  - Renal vascular disease
  - Antiphospholipid disease
  - Cardiovascular disease
  - Thrombophilias
  - Sickle cell disease
  - Dyslipidemia
- Evaluate for chronic hypertension risk factors
  - Age >35 years
  - Family history of chronic or gestational hypertension
- Social factors that may contribute to gestational hypertension
  - Poor nutrition
  - Tobacco use
  - Alcohol use
  - Excessive sodium intake
  - Current vasoactive drug use
    - Nasal decongestants
    - Cocaine
- Presence, onset, and durations of symptoms

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including blood pressure (BP) and weight
- Weight: patterns of gain
- BP evaluation
  - Two occasions at least 4 hours apart
    - Working diagnosis obtained with 2 BP readings at one visit
  - Allow a rest period between BP readings after the following circumstances:
    - Anxiety
    - Pain
    - Smoking
    - Exercise
  - Equipment of correct size should be used
  - Sitting position used for each BP
  - Arm should be supported at the level of the heart
  - Serial BP readings during labor
- Evaluation of extremities
  - Presence or absence of edema
  - Deep tendon reflexes: patellar—3+ indicates CNS irritability
- Abdominal examination
  - Fetal heart rate (FHR)
  - Fundal height and estimated fetal weight (EFW) for evaluation of fetal growth
  - Liver margins
  - Epigastric pain
- Fundoscopic examination
  - Papilledema
  - Vasoconstriction
  - Arteriovenous nicking
- Monitor pulmonary status
- Pelvic exam: Bishop score for induction planning

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Gestational hypertension without significant proteinuria
- Preeclampsia
- Preeclampsia with severe features
- Transient hypertension
- Essential hypertension
- Pregnancy-induced hypertension (PIH) superimposed on chronic hypertension
- HELLP syndrome
- Elevated BP without diagnosis of hypertension

Screening and Diagnosis: Tests and Procedures to Consider

- Baseline preeclampsia laboratory testing for women with chronic hypertension and those at high risk
- Note: Normal ranges may vary by laboratory
  - Proteinuria by dipstick (normal ≤ +1) or protein/creatinine ratio (normal range < 0.3; Hirshberg, Draper, Curley, Sammel, & Schwartz, 2014)
  - Congo red dot urine test (Rood et al., 2016)
  - Hematocrit (normal range: 10.5–14 g/dL)
  - Platelet count (normal range: 130,000–400,000/mL)
  - Liver function tests
    - Aspartate aminotransferase/serum glutamic-oxaloacetic transaminase (AST/SGOT; normal range: 0–35 IU/L)
    - Alanine aminotransferase/serum glutamic-pyruvic transaminase (ALT/SGPT; normal range: 5–35 IU/L)
    - Lactate dehydrogenase (LDH; normal range: 0–250 IU/L)
- Coagulation studies
  - Fibrinogen
  - Prothrombin time (PT), partial thromboplastin time (PTT)

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- Renal function tests
  - Serum uric acid (normal range: 1.2–4.5 mg/dL)
  - Serum albumin (normal range: 2.5–4.5 g/dL)
  - Serum creatinine (normal range: 1.0 mg/dL)
  - Blood urea nitrogen (BUN; normal range: 7–25 mg/dL)
  - 24-hour urine for protein and creatinine
    - Initiate based on symptoms, clinical presentation, or when dip urinalysis indicates protein
    - Analysis of the first 4 hours for protein-to-creatinine ratio of a 24-hour collection
    - Reasonable rule-out test for proteinuria >0.3 g/day (Côté et al., 2008)
- Fetal evaluation
  - Fetal kick counts daily
  - Nonstress test (NST) and biophysical profile (BPP): at diagnosis
  - Frequency determined by clinical condition and gestational age
    - Biweekly is the typical schedule
    - Amniotic fluid index (AFI)
    - EFW: should be above the 10th percentile for gestational age
  - With change in maternal condition
- Ultrasound
  - At diagnosis
  - Schedule as indicated by maternal and fetal condition
    - Amniotic fluid index
    - Fetal growth evaluation

Providing Treatment: Therapeutic Measures to Consider

- For women at moderate to high risk for preeclampsia
  - Increase calcium intake: 1,500–2,000 mg PO daily (Sibai & Cunningham, 2009)
  - Low-dose aspirin therapy (ACOG, 2013b; Bujold et al., 2010)
    - Start 12–16 weeks' gestation
    - 50–150 mg PO daily
    - Reduces risk of fetal growth restriction (FGR), preterm birth, and hypertension
    - Benefits of reducing preeclampsia outweigh risk in pregnancy
- Consider hospitalization
  - Upon initial diagnosis to determine severity and progression
  - When restricted activity is not possible at home
  - When the woman shows progressive signs and symptoms
- Medications reserved for women
  - Already taking an antihypertensive medication at the onset of pregnancy
  - With sustained BP >160 mm Hg systolic
  - With sustained BP >95 mm Hg diastolic

Outpatient medications (Brucker & King, 2017; Raio, Bolla, & Baumann, 2015)

- Methyldopa (Aldomet)
  - Chronic hypertension
  - Longest safety record in pregnancy
  - Starting dose is 250 mg PO 2–3 times per day in the first 48 hours, then 500–2,000 mg/day in 2–3 divided doses
  - Can increase dose every 2 days as needed
- Labetalol (Trandate)
  - Used for chronic hypertension during pregnancy and lactation
  - Starting dose is 100 mg PO BID in the first 48 hours up to 1,200 mg/day
  - Can increase dose by 100 mg every 2 days
  - ⚠ Do not use in women with asthma or congestive heart disease
- Nifedipine ER (Procardia)
  - Used for hypertension during pregnancy and lactation
  - 30–60 mg PO daily, up to 120 mg/day
- Inpatient medications for severe preeclampsia
  - Hydralazine
  - Nifedipine
- $MgSO_4$ therapy
  - 4–6 g bolus, slow intravenous (IV)
  - Followed by 2 g/hr IV or 5 g 50% $MgSO_4$ intramuscular (IM) q4h
    - Titrated to renal output and reflexes
  - Monitor
    - BP
    - Therapeutic $MgSO_4$ level: 5–9 mg/dL
    - Reflexes
    - Intake and output
  - Calcium gluconate at bedside

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- Avoid
  - Angiotensin-converting enzyme inhibitors
  - Angiotensin II receptor agonists
  - Atenolol (β-blocker)
  - Thiazide diuretics
- Indications for consideration of induction or cesarean (ACOG, 2013b)
  - Women at 37 0/7 weeks gestational age or more
    - Mild gestational hypertension
    - Preeclampsia without severe features
  - Women at 34 0/7 weeks gestational age or more
    - Severe preeclampsia
    - Unstable maternal or fetal condition
  - Women at less than 34 0/7 gestational age weeks gestation
    - Indications for corticosteroid therapy and deferred delivery
      - ➤ Preterm prelabor rupture of membranes
      - ➤ Spontaneous labor
      - ➤ Low platelet count (<100,000)
      - ➤ Abnormal liver enzymes (2 × normative values)
      - ➤ FGR (<5th percentile)
      - ➤ Severe oligohydramnios (AFI <5 cm)
      - ➤ Reversed end-diastolic flow on umbilical artery Doppler studies
      - ➤ New-onset or increasing renal dysfunction
    - Indications for corticosterioid therapy and immediate delivery
      - ➤ Uncontrolled severe hypertension
      - ➤ Disseminated intravascular coagulation
      - ➤ Pulmonary edema
      - ➤ Eclampsia
      - ➤ Abruptio placentae
      - ➤ Abnormal fetal surveillance results
      - ➤ Intrapartum fetal demise
  - Anesthesia considerations
    - Epidural is preferred technique for regional anesthesia
    - Labile BP is a relative contraindication to spinal anesthesia
    - Edema can make endotracheal intubation more difficult

Providing Treatment: Integrative Therapies to Consider

(Romm, 2010)

Supportive care is provided in addition to, not in lieu of, standard care measures.

- Increase periods of rest in calm environment
  - Left lateral positioning
- Garlic
  - Inhibits platelet aggregation and inflammation
  - 800 mg PO daily
  - Discontinue 3 weeks before due date
- Cramp bark tincture
- Hawthorn berry tincture
  - Best for chronic hypertension
  - Infusion: one cup daily
  - Tincture: 15 drops TID
- Chlorophyll liquid or capsules
- Stress-reduction techniques: breathing techniques, yoga, guided imagery, journaling

Providing Support: Education and Support Measures to Consider

- Discussion with woman and family regarding the following topics:
  - Diagnosis
  - Treatment options and recommendations
- Home care: preeclampsia
  - Adequate diet
  - Rest periods throughout the day
  - Daily fetal movement counting
  - Home BP monitoring
  - Home urine protein by dipstick
  - Daily weights
  - Call the healthcare provider in the event of
    - Elevation of BP
    - Proteinuria
    - Significant weight increase
- ⚠ Indications for immediate care
  - Decreased fetal movement
  - Epigastric pain
  - Visual disturbances, scotomata
  - Severe headache unrelieved by acetaminophen

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  - Return to the clinician's office every 2–3 days
  - Hospitalization or induction if symptoms worsen
- Potential need for the following measures:
  - Hospitalization or more frequent prenatal visits
  - Obstetric consultation/referral
  - Induction of labor or planned cesarean
  - Change in planned location for birth
  - Pediatric care at birth
  - Newborn special care after birth

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Condition and recommended treatment plan
  - Parameters for consultation and referral
  - Maternal response to changes in pregnancy or birth plans
  - Update the plan of care weekly or as indicated
- Continued assessment for preeclampsia in women with the following conditions:
  - Gestational hypertension
  - Chronic hypertension
- Increased frequency of office visits (biweekly)
  - Fetal surveillance testing
  - Maternal evaluation/laboratory values
  - Consider hospitalization in the following circumstances:
    - Inability of the mother to follow the clinician's recommendations
    - Signs and symptoms indicating a worsening maternal or fetal condition

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Obstetric services
  - For chronic hypertension in pregnancy
  - With diagnosis of severe preeclampsia
  - Suspicion of HELLP syndrome
  - Signs and symptoms of worsening maternal or fetal condition
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH LOW GESTATIONAL WEIGHT GAIN

Key Clinical Information

Optimal weight gain during pregnancy is based on the woman's prepregnant body mass index (BMI) and age (see Appendix B). Low weight gain can indicate the presence of medical problems. More commonly, however, minimal weight gain occurs secondary to inadequate nutrition, which can be related to the woman's psychosocial situation, such as poverty, food insecurity, substance use, or mental illness, or result from poor food choices. Women with a history of anorexia or bulimia can have difficulty maintaining adequate intake to support growth of a healthy baby. Weight gain is a gross marker for the nutritional status of the mother, and it is a factor in body image issues for many women. A woman's body undergoes remarkable changes during pregnancy; she should be helped to appreciate the beauty of such changes. The focus of diet counseling is on making healthy food choices from a variety of whole foods in appropriate portions. In most cases, appropriate weight gain follows from an adequate nutritious diet.

History and Chart Review: Components of the History to Consider

- Age
- GP TPAL
- Gestational age
- Review of gestational dating parameters
- Review of BMI and weight-gain pattern to date
- Nutritional assessment (see Appendix B)
  - 24-hour diet recall
  - Appetite, taste for food
  - Preferred diet and portion size
  - Food sources available
  - Budget available for food
- ⚠ Assessment for eating disorders
  - Use of enemas and laxatives
  - Eating in secret
  - Binge eating
  - Self-induced vomiting after eating
- Assessment for depression and anxiety
- Physical health issues
  - Activity level and general metabolic rate
  - Involvement in athletics and exercise frequency

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- Presence of related symptoms
  - Nausea and vomiting
  - Constipation, diarrhea
  - Abdominal pain
  - Pica
- Medical/surgical history
  - Presence of maternal illness or infection
  - Gastrointestinal and malabsorption disorders
  - Bariatric surgery
  - Hyperthyroidism
  - Hepatitis
  - Anemia
  - Malnutrition
  - Eating disorders
- Emotional and spiritual health issues
  - Family and personal support for pregnancy
    - Education level
    - Social living conditions and financial resources
    - Physical or emotional abuse
  - Stress levels and coping skills: physical response to stress
  - Other mental health issues
- Tobacco, alcohol, or substance use

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including height and weight
- BMI and body fat distribution
  - Adult BMI charts for women >18 years
  - Adolescent BMI-for-age charts for women <18 years
- Abdominal examination
  - Fundal height
    - For gestation
    - Fundal height growth curve
  - Bowel sounds
  - Palpation of abdomen
- Dental/oral evaluation: can indicate frequent vomiting due to eating disorder
  - Caries
  - Abscess

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Low weight gain in pregnancy
- Intrauterine fetal growth restriction (FGR)
- Malnutrition in pregnancy

Screening and Diagnosis: Tests and Procedures to Consider

- Calculate the BMI-specific recommended weight gain (Institute of Medicine [IOM], 2009)
- Laboratory testing
  - Toxicology
    - Suspected substance use
    - Lead poisoning
  - Thyroid-stimulating hormone (TSH)
  - Serum albumin
  - Hepatitis screen
- Fetal kick counts
- Ultrasound for evaluation of the following:
  - Gestational age assessment in the first and early second trimester
  - Interval fetal growth
  - Evidence of FGR
  - Amniotic fluid index
- Screen for perinatal mood and anxiety disorders

Providing Treatment: Therapeutic Measures to Consider

- Prenatal vitamin and mineral supplement PO once daily
- Diet and nutrition counseling
  - Normal-weight women need 300 extra calories per day while pregnant
  - Explore suitable food choices and increased food intake
    - Adequate protein, fat, and carbohydrates
    - Culturally acceptable foods
    - Use of additional dietary supplements as needed
- Consider hospitalization in the following circumstances:
  - Malnutrition
  - Hyperemesis gravidarum
  - Anorexia or bulimia
  - Significant mental illness

Providing Treatment: Integrative Therapies to Consider

- Mindful eating for nourishment of body and baby

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- Dietary supplements
  - Smoothies
  - Energy bars
- Herbal appetite stimulants
  - Can be combined for flavor and effectiveness
  - Alfalfa, 500 mg daily (avoid with lupus or allergies to pollen)
  - Dandelion root tea, one cup BID (avoid with history of gallstones)
  - Hops tea, one to two cups daily
  - Chamomile tea, one to two cups daily

Providing Support: Education and Support Measures to Consider

- Provide information about the following topics:
  - Weight-gain and fetal growth pattern
  - Maternal and fetal nutrient needs from the maternal diet
  - Examples of high-calorie, nutrient-dense foods
  - Anticipated fetal weight gain for gestation
    - FGR infants
    - Constitutionally small infants
- Fetal kick counts
- ⚠ Warning signs
  - Decreased fetal movement
  - Signs and symptoms of preeclampsia
- Potential effect on the following issues:
  - Planned location for birth
  - Need for pediatric care at birth
- Importance of the following considerations:
  - Fundal/fetal growth over weight gain
  - Maternal and fetal well-being
  - Dietary needs during pregnancy
    - Small frequent meals
    - Balanced selection of food choices
    - Adequate caloric intake
- Excessive- or rapid-weight-gain risks
  - Increased maternal insulin resistance
  - Postpartum or future obesity
- Provide support
  - Develop the plan of care with the woman
  - Address concerns of the woman and her family

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Clinical findings and their significance
  - Maternal concerns and barriers to adequate nutrition
  - Mutually agreed-upon plan of care
- Reevaluate weekly or biweekly
  - Diet review
  - Interval fetal growth
  - Signs and symptoms of preeclampsia
- Parameters for consultation or referral

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Midwifery leadership: evaluating and addressing nutritional
- Nutritional counseling: Refer to nutritional services or a registered dietitian as needed
- Social services referral
  - Enroll the family in a supplemental nutrition program, such as the Women, Infants, and Children (WIC) program
  - Refer to local food assistance programs
  - Evaluate for social and financial instability, such as housing and food insecurity
- Obstetric/pediatric services
  - For persistent poor weight gain accompanied by the following:
    - Delayed fetal growth
    - Preeclampsia
  - For transfer of care or change in planned location of birth
- Medical or mental health services
  - Evidence of malnutrition
  - Suspected or documented eating disorder
  - Suspected or documented mental health issues
  - Suspected or documented medical illness
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH MULTIFETAL GESTATION

Key Clinical Information

Midwives will occasionally diagnose multifetal gestation during the provision of prenatal care. The incidence of multifetal gestation has increased 76% between 1980 and 2009, with an incidence of approximately 32 per 1,000 live births (Martin et al., 2015). A combination of factors contributed to

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this, with the two most significant contributors being the use of assisted reproduction technologies (ART) and advanced maternal age at the time of conception. The widespread use of early pregnancy dating ultrasound has increased early detection of multifetal gestation. Early prenatal evaluation focuses on determining chorionicity (shared or separate placentation) and screening for fetal complications. Appropriate determination of chorionicity is important for risk determination, prenatal monitoring, genetic counseling, and care during invasive procedures. For example, monochorionic twins are at risk for congenital anomalies, twin-to-twin transfusion syndrome (TTTS), discordant growth, and early preterm birth (Julio, Santana, & Cecchino, 2015). Monochorionic monoamniotic twins are at increased risk of cord entanglement. Later prenatal care concentrates on identifying and managing preterm birth, growth restriction, maternal complications, and planning for birth.

Midwives provide prenatal care to women with twin gestation in some settings while women with higher order multifetal gestations are referred for sub-specialty care. Common discomforts of pregnancy are often magnified for women with multifetal gestation. Adequate nutrition and weight gain is crucial to meet the significant demands for fetal growth and development while maintaining maternal health. Women with multifetal gestation are at higher risk for complications such as anemia, preeclampsia, gestational diabetes, preterm birth, and fetal growth restriction (FGR) and typically require additional prenatal assessment and monitoring.

The average gestational age for twin birth is 35.3 weeks (Martin et al., 2015). Vaginal birth is possible for many twin pregnancies; vertex/vertex is the most common presentation of twins, although nonvertex presentations occur more frequently than in singleton births. For those midwives attending women with twin gestation during labor and birth, a means to provide access to obstetric and pediatric care is an essential component of quality care.

History and Chart Review: Components of the History to Consider

- LMP, estimated date of birth (EDB), gestational age
- GP TPAL
- Contributing factors for multifetal gestation
  - Family history of multifetal gestation
  - Personal history of multifetal gestation
  - Use of fertility drugs
  - Use of in vitro fertilization (IVF) or other assisted reproduction technologies
- Pregnancy history suggestive of multifetal gestation
  - Elevated human chorionic gonadotropin (hCG) levels in the first trimester
  - Nausea and vomiting during this pregnancy
    - Often more severe due to rapidly rising hCG levels
  - Maternal perception of fetal movement
    - Women may report feeling movement sooner and more often
- Multifetal pregnancy complications include increased incidence of the following conditions:
  - Fetal anomalies
  - Spontaneous abortion
  - Maternal anemia
  - Preeclampsia
  - Preterm labor
  - Preterm prelabor rupture of membranes
  - Polyhydramnios
  - Placental abruption
  - Postpartum hemorrhage
- Psychosocial status
  - Occupational history
  - Living situation
  - Social and financial support
  - Response to multifetal gestation
- Nutritional status and habits
- Total weight gain to date

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, especially BP
- BMI and weight-change patterns
- Fetal evaluation appropriate to gestational age
  - Fundal height measurement
    - Size larger than dates, especially noticeable in the second trimester
  - Fetal heart tones
    - Multiple distinct heart rates heard simultaneously, separate from maternal pulse
  - Leopold maneuvers: Do not substitute ultrasound for careful palpation!
    - Multiple small parts
    - Three or more fetal poles
    - Fetal lie, presentation, and position

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Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Twin gestation
  - Twin gestation, monoamniotic, monochorionic
  - Twin gestation, diamniotic, monochorionic
  - Twin gestation, diamniotic, dichorionic
- Multifetal gestation

Screening and Diagnosis: Tests and Procedures to Consider

- Initial ultrasound evaluation before 14 weeks for
  - Confirmation of multifetal gestation and fetal number
  - Gestational age
  - Placenta(s) and membranes to determine zygosity, chorionicity, and amnionicity
  - Interval growth: note discordant growth
  - Anomalies
    - Increased incidence in multifetal gestation
  - Cervical length evaluation by ultrasound
    - Obtain baseline to predict possibility to preterm birth (PTB) in asymptomatic women with twins
    - <22 mm at 18–24 weeks' gestation is predictive of PTB (Bricker, 2014)
- Routine prenatal laboratory testing and
  - Glucose screening soon after diagnosis; if negative, repeat early in the 24–28 weeks' gestation testing window
  - Baseline preeclampsia lab panel soon after diagnosis
  - Repeat H&H in third trimester

Providing Treatment: Therapeutic Measures to Consider

- Nutritional counseling and support (Goodnight & Newman, 2009; Institute of Medicine [IOM], 2009)
  - Normal BMI gain 36–54 lb total
  - Overweight BMI gain 31–50 lb total
  - Obese BMI gain 25–42 lb total
  - Intake of 3,500 calories per day divided into three meals and two snacks
    - 175 g protein, 350 g CHO, 156 g fat per day for women of normal BMI
  - Daily micronutrient intake for women with twin pregnancy
    - Calcium: 2,000–5,000 mg
    - Vitamin D: 1,000 IU
    - Folate: 1 mg
    - Iron: 30 mg
    - ω-3 Fatty acids: 300–500 mg docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA)
- Maternal surveillance: at heightened risk for anemia, preeclampsia, and preterm labor
- Antepartum fetal surveillance
- Serial ultrasound assessment (Morin & Lim, 2011)
  - Every 3–4 weeks after 20 weeks' gestation for dichorionic twins
  - Every 2–3 weeks after 16 weeks' gestation for monochorionic twins
  - Evaluation for complications of multifetal gestation
    - Intrauterine growth restriction
    - Abnormal amniotic fluid index (AFI)
    - Discordant fetal growth
    - Fetal anomalies
    - Monoamniotic twins
  - Non-stress testing (NST)
  - Biophysical profile
- Genetic counseling and testing options
- Birth timing depends on chorionicity, presence of complications, and woman's preference
- There is no evidence to support the use of the following modalities (Bricker, 2014):
  - Cervical cerclage
  - Bed rest
  - Hospitalization
  - Home uterine activity monitoring
- Selective fetal termination
  - A consideration with high-order multifetal gestation and in vitro fertilization (IVF)
  - Poses ethical dilemmas
- Specialized multifetal clinics for prenatal care

Providing Treatment: Integrative Therapies to Consider

- Stress-reduction strategies
- Modification of employment responsibilities
- Increased rest throughout the day, especially as pregnancy advances

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Providing Support: Education and Support Measures to Consider

- Provide information about the following topics:
  - Weight-gain and fetal growth pattern
  - Maternal and fetal nutrient needs from the maternal diet
  - Examples of high-calorie, nutrient-dense foods and sample meal plans
  - Monitoring methods and rational for potential problems such as gestational diabetes mellitus (GDM), preeclampsia, preterm birth, fetal growth disorders
  - Team approach to care
  - Options for labor and birth care: increased likelihood of need for intervention
  - Postpartum care and support, care of 2 or more newborns

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Nutritional counseling
  - Prenatal care and fetal surveillance and monitoring plan
  - Anticipatory guidance
    - Common discomforts
    - Increased prenatal visit schedule starting in mid–late second trimester
    - Preparation for birth to occur prior to 40 weeks' gestation
    - Signs and symptoms of preterm labor
    - Planned location and additional personnel for birth
    - Increased possibility of cesarean section
  - Increased frequency of prenatal visits
    - By gestational age
    - As indicated by results of testing
    - In the presence of any complicating factors
- Identification of risk factors
  - Problem list
  - Update the plan as changes occur
- Begin postpartum care planning in prenatal period
- Reevaluate as indicated by condition

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Nutritional services or a registered dietitian as needed
- Social services referral as indicated
  - Supplemental nutrition program, such as the WIC program
  - Higher risk for depression
- Perinatology or obstetric services
  - For the woman with multifetal gestation per the midwife's scope of practice
  - For the woman with multifetal gestation with complications
    - Maternal complications
    - Fetal complications
  - Triplet or greater multiple pregnancy
- Lactation consultant in third trimester
- Neonatology or pediatric services
  - Presence of prenatal complications
  - Immediate newborn care at birth
  - Have skilled teams ready to respond for each baby and the mother
- Support services
  - Doula care, especially postpartum
  - Mothers of twins support group
  - Grief support group for pregnancy losses
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WHO IS OBESE

Key Clinical Information

Obesity, defined as having a body mass index (BMI) that exceeds 29.9, became the most common complication in pregnancy during the last three decades. BMI is determined using pregravid weight and this BMI calculation is used to determine risk and gestational weight-gain recommendations. Approximately one in four reproductive-age women in the United States currently meets the BMI criterion for obesity. More than one third of U.S. adults are obese, with non-Hispanic Blacks having the highest age-adjusted rates of obesity (47.8%), followed by Hispanics (42.5%), non-Hispanic Whites (32.6%), and Asians (10.8%; Center for Disease Control and Prevention [CDC], 2015c).

There is an exponential increase in prenatal complications as BMI increases, including neural tube defects, gestational diabetes, hypertensive disorders of pregnancy, prolonged

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pregnancy, induction of labor, cesarean, and stillbirth. Elevated risk continues in the postpartum period with mothers at risk for postpartum hemorrhage, endometritis, deep vein thrombosis (DVT), delayed lactogenesis II, and early weaning (Anstey & Jevitt, 2011). Babies born to women who are obese have an increased risk of childhood obesity (CDC, 2015c).

Obesity has many contributing factors such as living in impoverished neighborhoods where food insecurity prevails and where there is little access to fresh, nutritious foods or safe physical activity. Excess eating can be learned behavior associated with emotional triggers. Stress and sleep deprivation increase insulin resistance, stimulation hormones that increase appetite, and weight retention. Type 2 diabetes, hypertension, and heart disease are co-morbid conditions frequently associated with obesity.

Ideally, women should lose excess weight before starting a pregnancy; however, most clinicians will need to guide women through risk-reducing choices during pregnancy, labor, and the postpartum period. Women who begin a pregnancy with a BMI ≥30 are likely to gain weight beyond the Institute of Medicine (IOM) prenatal weight-gain guidelines. However, weight gain during pregnancy is important, even in obese women (American College of Obstetrician Gynecologists [ACOG], 2013c). In fact, assisting obese women achieve a healthy amount of weight gain through diet and lifestyle modification is an important goal during prenatal care to reduce the risk of complications during delivery and postpartum.

When excess weight gained prenatally is not lost in the postpartum period, obesity is exacerbated (IOM, 2009; Jevitt, 2014). Midwives can aid women in preventing excess prenatal weight gain and facilitating postpartum weight loss as vital components of preventative health care. Women who lose as little as 5–10 lb postpartum through lifestyle changes can lower their risk of type 2 diabetes by 30–60% (National Heart, Lung, and Blood Institute [NHLBI], 2013).

History and Chart Review: Components of the History to Consider

- Gestational age
- GP TPAL
- Maternity history
  - Weight-gain pattern in prior pregnancies and their outcomes
  - Newborn weight
  - Gestational diabetes
  - Preeclampsia or hypertension
- Health history
  - Birth weight
  - Thyroid disease
  - Hypertension
  - Heart disease
  - Lipid disorders
  - Polycystic ovary disease
  - Mental health history
    - Depression
    - Bulimia
    - Psychiatric medications associated with weight gain (Nihalani, Schwartz, Siddiqui, & Megna, 2011)
- Family history
  - Obesity
  - Diabetes
  - Hypertension
  - Heart disease
- Reproductive history
  - Infertility
  - Prior pregnancy loss
  - Gestational diabetes
  - Gestational hypertension
  - Preeclampsia
  - Prolonged pregnancy
  - Stillbirth
  - Macrosomia
  - Operative vaginal birth
  - Shoulder dystocia
  - Cesarean
  - Wound dehiscence
  - Weight gain and loss after prior pregnancy
  - Breastfeeding ease and duration
  - Prior infant with neural tube defect
- Nutrition and eating habits
  - Usual intake and food preparation
  - Therapeutic diets (e.g., MyPlate diet for type 2 diabetes, low-glycemic diet)
  - Vitamin and mineral supplementation
  - Participation in food assistance programs
  - Prior attempts at weight management or weight loss
- Food resources assessment

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- Sleep disorders (see Care of the Woman: Promoting Restorative Sleep in Chapter 8)
  - Less than 7 hours nightly increases insulin resistance
  - Sleep apnea associated with BMI ≥36
- Physical activity
  - Usual daily activity
- Additional risk factors for gestational diabetes (see Care of the Pregnant Woman with Gestational Diabetes in Chapter 3)
- Body image and overall self-image

Physical Examination: Components of the Physical Exam to Consider

- Vital signs
  - Blood pressure (BP) (assure that cuff is correct size for arm girth)
  - Pulse
- Height—measure with stadiometer
- Weight and body fat distribution
  - Prepregnancy weight (often unknown or estimated)
  - Weight at first prenatal visit
- Calculate BMI based on prepregnancy weight
  - Class 1 obesity: BMI 30–34.9
  - Class 2 obesity: BMI 35.0–39.9
  - Class 3 obesity: BMI 40+
- Thyroid
- Nipples
  - Sufficiently everted for infant latch
- Adipose deposition
  - Can require extra-long vaginal speculum
  - Observe for candidosis and intertrigo in skin folds
  - Abdominal examination: pannus may impede accuracy of palpation and ultrasound and delay hearing fetal heart tones with handheld doppler to 14–16 weeks' gestation
  - Can increase fundal height measurement
- Fetal evaluation as appropriate for gestational age
- Measure weight at each prenatal visit
  - Have scale in private area
  - Have woman weigh self on same scale in office and report weight
  - Have bariatric scale for women whose weight exceeds 300 lb
  - Consider visits every 2 weeks if weight gain is rapid and woman needs extra support

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Obesity complicating pregnancy
- Nutritional deficiency, unspecified
- Excessive weight gain in pregnancy
- Low weight gain in pregnancy
- Thyroid disease
- Undiagnosed diabetes
- Medications, such as paroxetine or clozapine promoting excess weight gain

Screening and Diagnosis: Tests and Procedures to Consider

- Thyroid function screening with thyroid-stimulating hormone level
- Hemoglobin and hematocrit
  - Excess caloric intake does not guarantee adequate nutrition
  - Sufficient iron indicates adequate protein in diet
- Not recommended to assess lipids in pregnancy or lactation
  - Levels are physiologically elevated
  - Lipids are fuel for fetus and necessary component of breastmilk
- In women with no preexisting diabetes
  - One-hour oral glucose tolerance test (OGTT) at first prenatal visit
  - If 1 hour normal at first prenatal visit, rescreen at 26–28 weeks
- In women with prior gestational diabetes or current type 2 diabetes
  - Assess HgA1c at first prenatal visit
    - Normal value <6%
  - Offer early neural tube defect screening
  - Ultrasound for nuchal translucency 11–12
    - May need to be delayed 1–2 weeks if abdominal adiposity limits ultrasound visualization
- Ultrasound for verification of uterine size and gestational age
  - Periodic ultrasound may be needed to monitor serial uterine growth

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- Assess urine dip for glucose and protein at every visit due to the increased risk for gestational diabetes and preeclampsia
- Screening for depression: The Edinburgh Depression Scale is valid for use in pregnancy

Providing Treatment: Therapeutic Measures to Consider

- At first prenatal visit
  - Give gestational weight-gain recommendations based on BMI
  - Discuss personalized risk counseling based on overall risk assessment
- Folic acid 0.4–4.0 mg PO daily during first trimester to lower risk of fetal neural tube defects
- Maternal schedule adjustment to achieve a minimum of 7 hours of sleep nightly
- Nutritional counseling and support
  - Review typical intake and note areas for change
  - Plan target weight gain based on IOM recommendations
    - Obesity Classes 1–4, total prenatal gain of 11–20 lb
    - With change to healthier food choices, women with BMI > 30 can lose weight instead of gain weight
      - ➤ Advise women to avoid weight loss during pregnancy
  - Add in 300 calories per day after 16 weeks' gestation when needed for adequate caloric intake
  - Same macro and micronutrient needs as other pregnant women
- Best food choices
  - Nonstarchy fruits and vegetables: apples, grapes, broccoli
  - Complex carbohydrates: whole grains, high-fiber foods, nuts, beans, and peas
  - Lean proteins
  - Low-fat dairy products
- Reduce intake of refined carbohydrates, sugars, saturated fats, and processed foods
- Reduce intake of high-glycemic-index foods such as peas, potatoes, corn, and rice
- Focus on portion control
- Drink water, watch for calories in fluid intake
- No weight management (diet) drugs are used during pregnancy
- Women with prior bariatric surgery
  - Supplement with B_{12} 25–100 µg PO daily titrated according to serum levels
  - Assess levels every 4–6 weeks
- Provide prescription for increased activity
  - Walking 30 minutes per day and increasing the amount of time devoted to this activity; can be divided into segments each day
  - Low-impact aerobics
  - Water aerobics
  - Yoga
  - Recommend log, app, or electronic activity bracelet to record her daily activity
- Teach signs and symptoms of deep venous thrombosis (DVT)
- Birth place discussion: The increased risks associated with obesity should be considered when determining environment for birth
- Labor environment
  - Availability of bariatric labor beds, chairs, and surgical tables
  - Induction and augmentation of labor more common when BMI exceeds 30
  - Frequent position changes and mobility
  - Central adiposity may increase difficulty of external fetal monitoring
- Postpartum
  - Be prepared for postpartum hemorrhage
  - Use alternating compression stockings post–cesarean
  - Use heparin prophylaxis when BMI exceeds 40 or other DVT risk factors exist
  - Early ambulation
- Breastfeeding assistance
- Anesthesia consult in labor for vaginal birth after cesarean (VBAC) or induction

Providing Treatment: Integrative Therapies to Consider

- Additives that have been shown inconsistently to lower blood glucose, probably through decreased insulin resistance
  - Cinnamon (½ tsp per day sprinkled on food; Hlebowicz, Darwiche, Bjorgell, & Almer, 2007)

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  - Fenugreek
  - Chromium
- Additives that inconsistently have been shown to lower blood glucose, probably through decreased intestinal absorption
  - Psyllium capsules or drink
  - High-fiber foods
- Stress-reduction therapies, such as guided imagery, mindfulness, and biofeedback, may assist in decreasing stress-related eating behaviors
- Validate the woman's value and beauty as a person
- Reinforce her healthy lifestyle choices; acknowledge the ongoing struggle

Providing Support: Education and Support Measures to Consider

- Use appropriate language such as the actual BMI number instead of broader terms such as "morbid obesity"
- Be sensitive to providing respectful and honest care, as obese women often encounter judgmental attitudes from healthcare providers (Nyman, Asa, Prebensen, & Flensner, 2010)
- Provide positive feedback for diet and activity changes
- Goal is fetal and maternal health, not cosmetics
- Use principles of motivational interviewing
  - Woman has advantages in maintaining health as well as decreasing risks
  - Woman determines goals and designs plan with guidance from clinician
- Help the woman brainstorm
  - Obtaining more nutritious food
  - Methods for limiting intake quantity
  - Achievable physical activity
  - Different types of stress reduction
- Encourage family involvement and social support as desired

Follow-up Care: Follow-up Measures to Consider

- Document and discuss (Jevitt, 2009)
  - BMI and serial weight and fundal heights
  - Woman's personal goals and weight gain advised
  - Glucose screening results
  - Offer anomaly serum and ultrasound screening
  - Nutritional counseling and referrals
  - Teaching done on signs and symptoms of DVT
- Plan for postpartum weight loss
- Return for care
  - Per routine for prenatal care
  - More frequently for support as needed
  - Individualized based on clinical presentation

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Nutritional services or registered dietitian for ongoing nutritional assessment and counseling
  - First trimester ideal but not covered by many insurers including Medicaid
- Lactation consultant for instruction and support
- Social services
  - Women, Infants, and Children (WIC) program, Supplemental Nutrition Assistance Program (SNAP), food pantry
- Obstetric or perinatal services
  - Pregnant women who are obese benefit from a team approach to care
  - Fetal growth concerns: fetal growth restriction (FGR) or macrosomia
  - Preeclampsia
  - Gestational diabetes or overt diabetes
  - Fetal anomalies
- Anesthesia service: consult before labor (American College of Obstetrician Gynecologists [ACOG], 2013c)
  - Epidural catheter placement can be more difficult
  - Intubation more difficult
- Bariatric surgeon postpartum if >100 lb over normal weight
- Midwifery leadership: in empathetic and emotionally responsive care to women struggling with obesity stigma and bias (Puhl & Heuer, 2009)
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN EXPOSED TO PARVOVIRUS (FIFTH DISEASE)

Key Clinical Information

Human parvovirus B19 causes erythema infectiosum, also known as fifth disease. It is spread by hand-to-mouth contact and by respiratory secretions, most often in the springtime. Viremia occurs 4–14 days after inoculation and can last several days. Symptoms can include a lacy rash on the face, trunk, and extremities. In addition,

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the hand, wrist, and knee joints can become edematous. Elementary school teachers and women with elementary school–aged children are prone to exposure. Fortunately, most women contract parvovirus as children and are not at risk for primary infection during pregnancy. Pregnant women who are not immune usually experience a mild and brief illness, and the fetus does not experience any adverse effect. In less than 5% of cases, however, infection can result in fetal hydrops, aplastic anemia, or fetal growth restriction (FGR), especially when infection occurs in the first half of pregnancy (Center for Disease Control and Prevention [CDC], 2015d).

History and Chart Review: Components of the History to Consider

- Gestational age
- Review lab results
  - Blood type and Rh
  - Rubella and rubeola titers
- Employment history
- History of recent outbreak with close contact
  - School teachers
  - Healthcare workers
  - Woman with school-aged child
- Symptoms of parvovirus infection
  - Rash
  - Fever
  - Malaise
  - Myalgia, arthralgia

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including temperature
- Fetal evaluation as appropriate for gestational age
- Evaluate for the following conditions:
  - Flu-like symptoms
    - Fever
    - Headache
  - Rash
    - Diffuse maculopapular rash
    - May appear on the face, trunk, and extremities
    - Occurs several days after fever
    - Resolves in 7–10 days
  - Joint and muscle pain, especially in the hands, wrists, and knees
- Some women may be asymptomatic

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Fifth disease, erythema infectiosum, parvovirus B19
- Other viral exanthema
- Allergic rash

Screening and Diagnosis: Tests and Procedures to Consider

- Serologic testing for parvovirus B19
  - Indications
    - Postexposure
    - Positive clinical signs and symptoms
    - Fetal nonimmune hydrops
  - Parvovirus B19 IgM and IgG
    - Positive IgM indicates recent infection
    - Positive IgG indicates current immunity; if the woman is not immune, repeat the test in 3–4 weeks
- Ultrasound every 2 weeks for those women who test positive for parvovirus infection
  - Fetal cardiac, spleen, and liver evaluation
  - Fetal hydrops

Providing Treatment: Therapeutic Measures to Consider

No treatment for parvovirus B19 infection is available. However, heightened fetal surveillance is recommended if seroconversion occurs.

Providing Treatment: Integrative Therapies to Consider

(Romm, 2010)

In women with possible exposure to parvovirus B19, consider the following measures:

- Herbs for immune support
  - Astragalus
  - Echinacea
  - Elderberry
  - Lemon balm
  - Garlic
- Stress-reduction techniques: breathing techniques, yoga, guided imagery, journaling

Providing Support: Education and Support Measures to Consider

- Provide reassurance: Most adults are immune to the virus

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- Explain the screening and management plan
- Identify the warning signs to report
  - Rash
  - Decreased fetal movement
- ⚠ Note the potential for fetal compromise with infection
  - Most have no negative effect or outcome
  - Spontaneous abortion (SAB) in first trimester
  - Fetal death in second trimester (3–6 weeks post–maternal infection)
  - Nonimmune hydrops
  - Severe anemia
  - Viral-induced cardiomyopathy
- Parvovirus B19 is not associated with birth defects

Follow-up Care: Follow-up Measures to Consider

(Hunt & Hunt, 2010)

- Document and discuss
  - Clinical findings and implications
  - Testing and results
  - Fetal surveillance plan, when indicated
- Testing: parvovirus-specific IgG and IgM
  - IgG positive and IgM negative: immune; no further testing is necessary
  - IgG negative and IgM positive: very recent infection or false-positive; repeat testing in 1–2 weeks
  - IgG positive and IgM positive: recent infection
  - IgG negative and IgM negative: not immune
- Return for care
  - In 2–3 weeks postexposure
  - At the onset of signs or symptoms
- Mother with acute illness
  - Follow for hydrops: biweekly ultrasound for 12 weeks
  - Provide emotional support

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Obstetric or perinatology and pediatric services
  - Maternal infection with parvovirus B19
  - ⚠ Fetus with evidence of the following conditions:
    - Cardiomyopathy
    - Hydrops
    - Anemia
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH PRURITIC URTICARIAL PAPULES AND PLAQUES OF PREGNANCY

Key Clinical Information

Pruritic urticarial papules and plaques of pregnancy (PUPPP), also called polymorphic eruption of pregnancy, is a form of urticaria that most commonly appears in the third trimester. These pruritic dermatoses typically erupt on the abdomen, but can extend to the torso and extremities (Bergman, Melamed, & Koren, 2013). The condition generally resolves within 6 weeks after the birth of the infant. There are no systemic disorders associated with PUPPP; therefore, treatment is aimed at relieving the symptoms, which can range from mild to severe in nature.

History and Chart Review: Components of the History to Consider

- GP TPAL, gestational age
  - Most often primipara
  - Third trimester
- Onset, duration, and severity of symptoms
  - Pruritic papules often begin in striae
    - Can include small vesicles
    - Surrounded by narrow, pale halo
    - Severe itching
  - Pattern of spread
    - Abdomen and striae
    - Periumbilical area not involved
    - Trunk and limbs
    - Face, palms, and soles spared
  - Other associated signs and symptoms
- Presence of allergies
  - Medications
  - Exposure to topical irritants
- Exposure to viral infections: Obtain immune titers as indicated
- Self-help remedies used and their effects

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including temperature
- Inspect abdomen and striae
- Location and appearance of lesions
  - Erythematous, edematous papules

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  - Urticarial plaques
  - Papulovesicular lesions
- Evaluate as needed for signs related to other differential diagnoses

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Pruritic urticarial papules and plaques of pregnancy
- Scabies
- Allergic dermatitis
  - Drug or food reaction
  - Poison ivy
- Impetigo
- Viral exanthema
- Herpes gestationis
- Erythema multiform
- Cholestasis of pregnancy

Screening and Diagnosis: Tests and Procedures to Consider

- Culture of vesicular lesions
  - Herpes
  - Impetigo
  - Scabies skin prep
- Immune titers as needed
  - Rubella
  - Rubeola
  - Varicella
- Liver function tests to evaluate for cholestasis
  - Alkaline phosphatase
  - Gamma-glutamyl transferase

Providing Treatment: Therapeutic Measures to Consider

- Topical antipruritic lotions
  - Calamine or Caladryl (over-the-counter [OTC] preparations)
  - Doxepin HCl 5% cream
- Oral antihistamines
  - Diphenhydramine HCl (Benadryl)
    - 25–50 mg PO q4–6h
  - Loratadine (Claritin)
    - 10 mg PO daily
  - Cetirizine HCl (Zyrtec)
    - 5–10 mg PO daily
  - Hydroxyzine (Atarax)
    - 25–100 mg PO daily
- Topical corticosteroids
  - Rule out viral cause before using topical cortocosteroids
- Oral steroid therapy for severe and unrelenting cases
  - Prednisone 0.5–1 mg/kg/day PO
    - Use the minimum effective dose
    - Taper off doses when symptoms abate
  - Use with caution in women with the following conditions:
    - Gestational diabetes
    - Hypertension

Providing Treatment: Integrative Therapies to Consider

(Romm, 2010)

- Topical relief of itching
  - Colloidal oatmeal bath
  - Calendula cream or oil
  - Olive oil
  - Aloe vera
  - Chamomile cream
  - Gotu kola ointment
  - Chinese skullcap
  - St. John's wort extract
  - Witch hazel
  - Baking soda paste
  - Cool compress to affected area
- Internal use
  - Yellow dock root tea
  - Dried nettle leaf tea
  - Dandelion root tea
  - Milky oats tincture
  - California poppy
  - Passion flower
- Tea bath
  - Add chamomile, calendula, St. John's wort, oats, and lavender to a warm water bath

Providing Support: Education and Support Measures to Consider

- PUPPP is not associated with fetal jeopardy; however, it can be constant and unbearable to the woman
  - Scratching can lead to open lesions of the skin and secondary infection

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- Instruction to call the midwife if symptoms persist or worsen
- Address the woman's concerns and treatment options
- Medication instructions
  - Topical steroids
    - Apply a thin film only
    - Do not cover or occlude
    - May be systemically absorbed
  - Oral steroids
    - Take as directed
    - Do not stop suddenly

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Clinical findings and significance
  - Recommended treatment plan
- Return for care
  - Per routine for prenatal care
  - If symptoms worsen or additional symptoms develop

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Dermatology services
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WHO IS Rh-NEGATIVE

Key Clinical Information

Rh alloimmunization or ABO incompatibility can have devastating effects on the newborn. Infants are at risk when fetomaternal bleeding (such as can occur during pregnancy, a vaginal or surgical birth, or spontaneous or elective abortion) or a blood transfusion causes the woman to develop antibodies to the Rh (D) antigen (anti-D antibodies). This outcome can result when an Rh-positive infant is born to an Rh-negative mother, or when a woman with Rh-negative blood receives an Rh-positive blood transfusion.

The incidence of fetomaternal bleeding is approximately 1–3 per 1,000 live births (Stroustrup & Trasande, 2012), with an estimated incidence of 0.03–4% based on volume of fetal bleeding over 1 mL and over 30 mL, respectively (Corcoran, Murphy, Donnelly, & Ainle, 2014). No apparent cause of bleeding can be found in as many as 80% of documented cases of fetomaternal hemorrhage (Stroustrup, Plafkin, & Savitz, 2014). Often, the baby who is being carried when the fetomaternal bleeding occurs does not have a problem, although the mother becomes sensitized. The sensitization manifests itself in a subsequent pregnancy when maternal antibodies can affect the fetal blood cells. Alloimmunization can result in fetal hydrops, congestive heart failure, and fetal anemia. Adherence to established guidelines in the treatment of the Rh-negative mother significantly decreases the incidence of fetal hemolytic disease and its sequelae (American College of Obstetrician Gynecologists [ACOG], 1999).

History and Chart Review: Components of the History to Consider

- GP TPAL, gestational age
- Previous blood transfusions
- Pregnancy history
  - Unexplained fetal losses
  - Stillbirth
  - Miscarriage
- Ectopic pregnancy
- Pregnancy termination
- Previous RhIG injection
- Knowledge of own blood type and the pathophysiology of the incompatibility
- Recent trauma, especially to abdominal area
- Recent procedures, such as amniocentesis

Physical Examination: Components of the Physical Exam to Consider

- Maternal vital signs
- General inspection for signs of trauma
- Fetal evaluation as appropriate to gestational age

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Rh-negative woman
- Rh-sensitized woman
- Other abnormal antibodies in a pregnant woman

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Screening and Diagnosis: Tests and Procedures to Consider

- Maternal: test at the first prenatal visit, and repeat at 24–28 weeks for Rh-negative mothers
  - Type and Rh factor
  - Antibody screen (indirect Coombs test)
  - Antibody identification for positive antibody screen
  - ⚠ Early RhIG administration after amniocentesis or threatened spontaneous abortion (SAB) can give a positive titer at the 24-to-28-week screen
- Maternal test results
  - Titer < 1:8 anti-D suggests passive immunity from RhIG
  - Titer > 1:8 anti-D suggests active alloimmunization due to Rh incompatibility
  - Rh(D)-negative or type O mother
    - Plan to obtain cord blood at birth for analysis
    - Maternal/newborn follow-up postpartum
- Kleihauer–Betke quantitative testing
  - Determine the volume of fetal blood in the maternal system and the dosage of RhIG to give to the mother
  - Performed when a high risk of fetomaternal hemorrhage exists (Stroustrop & Trasande, 2012)
    - Preterm birth
    - Previa
    - Abruption
    - Umbilical cord anomalies
    - Abdominal trauma
    - Hydrops
    - Sinusoidal or other abnormal fetal heart patterns
    - Unexplained still birth or fetal demise
    - Neonatal anemia

Providing Treatment: Therapeutic Measures to Consider

(ACOG, 1999)

- RhIG is indicated for an unsensitized Rh-negative woman in the following circumstances:
  - Pregnancy loss in the first trimester
  - Threatened abortion
  - Invasive procedures such as amniocentesis or chorionic villus sampling
  - External cephalic version
  - Trauma, such as a car accident
  - Placenta previa
  - Abruptio placentae
  - Fetal death
  - Accidental transfusion of Rh-positive blood to an Rh-negative person
  - At 28 weeks' gestation when the father of the baby is Rh-positive or his Rh status is unknown (ACOG, 1999)
  - Within 72 hours postpartum when baby is Rh-positive
    - Can be given up to 28 days postpartum for some benefit
    - Adjust dose for large fetomaternal bleed based on laboratory results
  - Intravenous (IV) RhIG is available as Rhophylac
- For women who choose informed refusal to antenatal RhIG, follow with an antibody screen (indirect Coombs test) every 4 weeks prenatally

Providing Treatment: Integrative Therapies to Consider

- Limit invasive procedures
- Avoid traumatic placental delivery

Providing Support: Education and Support Measures to Consider

Provide information about the following topics:

- Rh and blood-type status
- Rh-immune globulin
  - Prophylaxis and desired result
  - Potential risks with RhIG
    - Transfusion-type adverse reactions
  - Potential risks without RhIG
    - Maternal sensitization
    - Fetal hydrops or other complications with future pregnancy
    - Difficulty of crossmatching blood for the woman in the future (e.g., after an accident or surgery)
    - Potential for jaundice in the infant due to Rh or ABO incompatibility

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Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Indication for RhIG
  - Rh-negative and antibody status
  - Education provided and the woman's preferences
  - Agreed-upon plan for continued care
- ⚠ Observe for potential blood transfusion–type reactions
  - Warmth at injection site
  - Low-grade fever
  - Flushing
  - Chest or lumbar pain
  - Poor clotting
- When mother is Rh(D) negative
  - Newborn
    - Type and Rh
    - Direct Coombs test
    - Bilirubin levels
  - Maternal testing postpartum
    - Type and Rh
    - Antibody screen (indirect Coombs test)
    - Antibody identification for positive antibody screen

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Obstetric or perinatology services
  - For women who are Rh-negative with a positive antibody screen
    - Evidence of large maternal–fetal bleed
    - Transfusion-type reactions
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH SIZE–DATE DISCREPANCY

Key Clinical Information

Serial fundal height measurements during pregnancy provide a clinical estimation that, along with other parameters, is used to form a broad assessment of fetal growth. Discrepancies in uterine size and gestational age can be physiologic: many infants are simply constitutionally small or large. In late third trimester, the fetal head descends into the pelvis and fundal height measurement can remain static despite appropriate fetal growth. Overweight and obese women can measure consistently larger for dates, which can reflect maternal adipose tissue rather than fetal weight. For other women, size–date discrepancy can signal a problem, with the most common causes including fetal growth restriction (FGR) and macrosomia related to gestational diabetes mellitus (GDM).

The term *impending macrosomia* is not a diagnosis, and yet it has been used to describe a fetus that could potentially grow to a weight associated with increased risk for labor dystocia. Not only is this language inaccurate and a poor predictor of birth weight, it is also an expression of the provider's fear that is transmitted to the pregnant woman and can erode her confidence in her ability to give birth. A recent study indicated that approximately one third of women were told by their maternity care providers that their babies might have "impending macrosomia"; however, only 9.9% of these women gave birth to a baby weighing ≥4,000 g (Cheng, Declercq, Belanoff, Stotland, & Iverson, 2015). Careful consideration of each woman's unique clinical situation and preferences can help to prevent over- or under-intervention when fetal size–date discrepancy is noted.

History and Chart Review: Components of the History to Consider

(Cunningham et al., 2014; Jordan et al., 2014)

- GP TPAL
- Review accuracy of LMP and EDB
- Verify gestational age
  - Estimated date of conception
  - Uterine size at first visit
  - Date of quickening
  - Early ultrasound report
- Pregnancy history
  - Review past and current fundal growth curve
  - Hypertension
  - Preeclampsia
  - Gestational diabetes
  - Illness with fever, especially in the first trimester
  - Birth weights of prior infants
- Social history
  - Diet and weight-gain pattern
  - Maternal activity patterns
  - Tobacco, alcohol, or substance use
  - Psychosocial factors
    - Stress
    - Mental illness

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        - Physical or emotional abuse
        - Occupational or environmental exposures
        - Housing or food insecurity
- Family history
    - Personal or family history of diabetes
    - Hypertension
    - Other preexisting disease
    - Ethnic norm for fetal weight
    - Genetic abnormalities
- Review of systems
    - Shortness of breath, palpitations
    - Signs or symptoms of illness
    - Fetal activity patterns

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including blood pressure (BP) and body mass index (BMI)
- Weight gain/loss and pattern
- General appearance and well-being
- Inspect mucosa and nailbeds for evidence of anemia
- Palpate thyroid
- Cardiopulmonary evaluation
- Abdominal examination
    - Fundal height
    - Interval growth
    - Fetal lie, presentation, and position
    - Estimated fetal weight
    - Amniotic fluid volume: oligohydramios or polyhydramnios
        - Palpate for fluid thrill
- Fetal heart rate
- Extremities
    - Reflexes
    - Edema
    - Physical evidence of substance use, such as needle marks
- Pelvic examination
    - Station of presenting part
    - Evidence of rupture of membranes (ROM)

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Poor fetal growth affecting management of the mother
    - Excessive fetal growth
    - Small-for-dates fetus
        - Fetal growth restriction
        - Small for gestational age (SGA)
        - Constitutionally small infant
        - Oligohydramnios
    - Congenital malformations
    - Large-for-dates fetus
        - Large for gestational age (LGA)
        - Gestational or maternal diabetes
        - Multiple pregnancy
        - Polyhydramnios
        - Constitutionally large infant
        - Uterine fibroids
- Symmetric or asymmetric FGR secondary to the following conditions:
    - Hypertension
    - Underlying maternal disease or infection
    - Poor nutrition

Screening and Diagnosis: Tests and Procedures to Consider

- Dip urinalysis
- Complete blood count (CBC)
- Urine toxicology and/or maternal drug screen
- Diabetes screen
- Maternal antiphospholipid antibody testing
- Fetal karyotype
- Titers for the following infections:
    - Toxoplasmosis
    - Cytomegalovirus (CMV)
    - Herpes virus
- Preeclampsia laboratory profile
- Ultrasound evaluation
    - Verify singleton versus multiple pregnancy
    - Confirm estimated date of birth (EDB) by ultrasound parameters
        - Third-trimester ultrasound not accurate for confirming pregnancy dating (±7–14 days; Butt & Lim, 2014)
    - Fetal anomaly study
    - Fetal growth: serial ultrasounds
        - Schedule at least 3 weeks apart
        - Abdominal circumference: decreased in asymmetric FGR
    - Amniotic fluid index (AFI) for oligohydramnios or polyhydramnios

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  - Placenta previa
  - Chronic placental abruption
  - Presence of uterine fibroids
- Fetal surveillance begins as early as FGR is suspected
  - Weekly or biweekly nonstress test (NST), biophysical profile (BPP)
  - Consider oxytocin challenge test (OCT) or contraction stress test (CST) if NST is nonreactive or Category II
  - Weekly or biweekly AFI: normal range >6
- Large for gestational age (LGA)/macrosomia
  - Ultrasound evaluation
    - Poor diagnostic power for estimated fetal weight (EFW) and macrosomia
    - Accurate approximately one third of the time (Wagner, 2011)
    - Clinician palpation of EFW is more accurate than ultrasound
    - A multiparous woman's perception of fetal size is more accurate than late ultrasound (Campaigne & Conway, 2007)

Providing Treatment: Therapeutic Measures to Consider

- Treat underlying medical condition(s)
  - Preeclampsia
  - Gestational diabetes
  - Infection
  - Anemia
- Substance use treatment
- FGR
  - Decrease maternal activity/increase rest periods throughout the day
  - Consume a high-quality diet with adequate protein
  - Avoid substances that can affect placental efficiency, such as smoking or illicit substance use
  - Encourage the left lateral position to enhance uteroplacental blood flow
  - Ensure adequate hydration and oxygenation
  - ⚠ Consider delivery if fetal compromise is evident
- LGA/macrosomia
  - Not an absolute indication for induction (American College of Obstetrician Gynecologists [ACOG], 2000); best practice undetermined (Lee, Niu, Kaimal, & Caughey, 2015)
  - Not an absolute contraindication for vaginal birth after cesarean
  - ⚠ Both ultrasound and clinical estimates of fetal weight are imprecise
  - Cesarean may be considered in the following circumstances:
    - EFW >5,000 g in a nondiabetic mother
    - EFW >4,500 g in a diabetic mother
- LGA/polyhydramnios
  - Consider amnio-reduction of fluid (therapeutic amniocentesis)
  - Antacids for increased heartburn

Providing Treatment: Integrative Therapies to Consider

Alternative measures vary with the condition causing the size–date discrepancy.

Providing Support: Education and Support Measures to Consider

- Provide information about the following topics:
  - Implications for continued care
  - Options for treatment
  - Parameters for intervention
- Nutritional counseling and surveillance as needed
- Serial evaluation of fetal well-being is indicated
- Potential for change in location or providers for birth
- Provide support and reassurance
- Address individual and family concerns

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Clinical findings
  - Results of diagnostic testing
  - Woman's personal goals and preferences
  - Plan of care with the woman and family
  - Indications for consultation or referral
- Anticipated follow-up
  - Serial fetal assessment: weekly or biweekly
  - Update plan weekly or as indicated by findings
  - Assess nutritional intervention understanding and adherence
- ⚠ Anticipate the need for birth before term in the presence of the following conditions:
  - Non-reactive NST or positive CST
  - Oligohydramnios or low AFI
  - Ultrasound documentation of limited cranial growth or abnormal Doppler flow

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- ⚠ LGA infant
  - Anticipate potential for shoulder dystocia
    - Discuss with mother and birth care team
    - Mutually agreed-upon plan
    - Anticipate need for additional personnel at birth
  - Anticipate possible fetal/neonatal resuscitation

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Obstetric or perinatology services
  - Prenatal consultation based on maternal and fetal condition
  - Documented FGR
  - Potential referral to high-risk obstetrics service
  - With induction
  - With anticipated LGA infant
  - As indicated or needed during labor and birth
- Pediatric services
  - Preterm infant
  - FGR
  - Maternal diabetes
  - Chronic maternal malnutrition
  - Anticipated newborn resuscitation
- Social services as indicated
  - Tobacco, drug, or substance use
  - Poor social support systems
  - Women, Infants, and Children (WIC) program, food stamps, local food assistance
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH TOXOPLASMOSIS INFECTION

Key Clinical Information

Acute primary maternal infection with toxoplasmosis puts the fetus at increased risk for congenital toxoplasmosis infection. Infection in pregnancy is more likely to be transmitted to the fetus as the pregnancy progresses toward term. The risk of congenital fetal toxoplasmosis infection rises from 15% in women who contract toxoplasmosis in the first trimester to 30% in women who develop this infection during the second trimester, and peaks at 60% during the last trimester (Center for Disease Control and Prevention [CDC], 2015e). Complications of maternal toxoplasmosis infection can include spontaneous abortion (SAB) or miscarriage, fetal demise, fetal microcephaly, chorioretinitis, cerebral calcifications, and abnormalities of the cerebrospinal fluid. Because prevalence of this disease is low in the United States, however, routine screening for toxoplasmosis during pregnancy is not currently recommended. Preventive measures for pregnant women to employ are essential to protecting them and their children from infection.

History and Chart Review: Components of the History to Consider

(Jordan et al., 2014)

- Gestational age
- Fetal activity
- Query regarding possible source of exposure
  - Raw or rare meat
    - Primary source of toxoplasmosis infection
  - Cat feces
  - Soil or sand
  - Unwashed fruits or vegetables
  - Contaminated water or milk
- Onset, duration, and severity of symptoms
  - Fever and flu-like symptoms
  - Exhaustion, fatigue
  - Sore throat
  - Swollen lymph nodes
  - Other associated symptoms
- Most people infected are asymptomatic

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including temperature
- Evaluation for lymphadenopathy
- Evaluation for liver margins
- Fetal evaluation as appropriate to gestational age

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Toxoplasmosis
- Mononucleosis
- Influenza
- Other viral illnesses

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Screening and Diagnosis: Tests and Procedures to Consider

- Toxoplasmosis testing
  - Preconception as needed
  - Retest every trimester as needed
- Types of tests (CDC, 2015e)
  - IgG-Sabin-Feldman dye test
  - IgM-immunofluorescent antibody (IFA): If titers exceed 1:512, recent acute infection is likely
  - Possible exposure
    - IgG and IgM negative: no infection or previous exposure
    - IgG positive and IgM negative: previous infection/immunity
    - IgG negative and IgM positive: early infection, repeat for rising titers
    - Both IgG and IgM positive: possible past or acute infection, repeat for rising titers
      - ➤ Recheck IgM in 3 weeks: If titers are rising, acute infection is likely

Providing Treatment: Therapeutic Measures to Consider

Provide maternal therapy per perinatology or obstetric recommendations (Paquet & Yudin, 2013):

- Spiramycin (first and second trimesters)
- Clindamycin
- Pyrimethamine, sulfadiazine, and folinic acid
  - Avoid in the first trimester

Providing Treatment: Integrative Therapies to Consider

- Immune support
  - Maintain a high-quality diet
  - Rest
  - Echinacea
  - Astragalus tea, tincture, or capsule
- Emotional support and reassurance

Providing Support: Education and Support Measures to Consider

Prevention measures (CDC, 2015e)

- Avoid the following:
  - Handling raw meat, when possible
  - Eating rare-cooked meat
    - Cook whole cuts of meat to 145° F
    - Cook ground meat to 160° F
    - Cook poultry to 165° F
  - Contact with cats, cat feces, and cat bedding
  - Travel during pregnancy to areas with endemic toxoplasmosis
    - Parts of South America, Latin America, especially Brazil, and tropical Mexico (Anand, Jones, Ricks, Sofarelli, & Hale, 2012)
  - Drinking untreated water
  - Eating unwashed fruits and vegetables
  - Consumption of unpasturized milk
- Recommended practices
  - Careful hand washing with soap and water
  - Use of gloves in the following situations:
    - Preparing raw meat
    - Cleaning litter or sandbox
    - Gardening
  - Use of mask recommended to avoid inhalation of sporulated oocytes
  - Clean surfaces after handling raw meat
- Information and discussion about the following topics:
  - Test results and diagnosis
  - Options for care
  - Recommendations for continued care
  - Optimal location for birth
  - Pediatric care for birth
  - Breastfeeding recommended

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Implications for fetus and pregnancy
  - Diagnostic testing and plan of care
- Positive maternal titer
  - Ultrasound at 20–22 weeks' gestation for fetal anomalies
  - Serial ultrasounds as indicated
  - Percutaneous umbilical blood sampling (PUBS) or amniotic fluid PCR testing and culture
  - Evaluation of the newborn for congenital infection
- Return for care
  - Per prenatal routine
  - Provide ongoing support

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Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Obstetric or perinatology services with diagnosis of acute toxoplasmosis
- Genetic counseling
- Counseling or support group
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH URINARY TRACT INFECTION

Key Clinical Information

The physiologic changes experienced during pregnancy enhance the risk of ascending urinary tract infection (UTI), which in pregnancy can have a variety of presentations. The presence of significant amounts of bacteria in the urine, without symptoms of a UTI, is considered asymptomatic bacteriuria (ASB), which occurs in approximately 2.5–15% of pregnancies (Lumbiganon, Laopaiboon, & Thinkhamrop, 2010). Simple cystitis can also occur during pregnancy and can be extremely painful. Untreated ASB or UTIs can lead to ascending infection and pyelonephritis, which is a serious complication for both the woman and her fetus, as it is associated with significant pain, preterm birth, low birth weight, and increased perinatal mortality. Women of higher parity and low socioeconomic status are more likely to experience UTI during pregnancy (Gilbert et al., 2013). Approximately one third of pregnant women diagnosed with a UTI will have a recurrence during the same pregnancy (Johnson & Kim, 2012). The economic costs and impact on quality of life related to UTIs can be considerable.

History and Chart Review: Components of the History to Consider

- GP TPAL, gestational age
- Current symptoms
  - Onset, duration, and severity
  - Dysuria, urgency, frequency, and burning
  - Fever, chills
  - Nausea, vomiting
  - Flank pain, back pain, suprapubic pain or heaviness
  - Colicky flank pain
  - Hematuria
  - Strong odor to urine
  - Self-diagnosis in women with history of UTI
  - Symptoms of preterm labor
  - Other associated symptoms
- Review history related to the following issues:
  - Urinary tract infections
  - Renal calculi
  - Recent urinary catheterization
  - Frequency of intercourse
  - Voiding and fluid intake habits
  - Recent antibiotic therapy
  - Structural or functional abnormalities of the urinary tract
  - Intimate partner violence
  - Chronic conditions, such as sickle cell trait/disease and diabetes
  - Multiple sex partners or new sex partner
- Review of hygiene practices
  - After toileting (*Escherichia coli* is common causative agent)
  - After sexual activity

Physical Examination: Components of the Physical Exam to Consider

- Vital signs, including temperature
- Abdominal evaluation
  - Fetal evaluation as appropriate to gestational age
  - Uterine tenderness
  - Presence of contractions
  - Suprapubic tenderness
  - Guarding or rebound tenderness
  - Distended bladder
- Signs of renal involvement
  - Appearance of malaise
  - Fever
  - Costovertebral angle tenderness
- Pelvic examination
  - External genitalia and urethra
  - Vaginal discharge or odor
  - Evaluate cervical length, consistency, and dilation if PTL a concern
  - Station of presenting part

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Urinary tract infection
  - Asymptomatic bacteriuria

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  - Cystitis
  - Pyelonephritis
  - Renal calculi
- Pregnancy-related diagnoses
  - Preterm labor
  - Preeclampsia
  - Concealed placental abruption
  - Ectopic pregnancy
- Appendicitis
- Sexually transmitted infection (STI), vaginitis

Screening and Diagnosis: Tests and Procedures to Consider

- Urinalysis, urine dipstick
  - Low sensitivity, frequent false positives
  - Not recommended for ASB screening (Lumbiganon et al., 2010)
  - Microscopy and gram stain
    - Blood (red blood cells)
    - Pyuria (white blood cells)
    - Bacteria
    - Casts
  - Gram stain: Positive result correlates with positive culture
- Urine culture and sensitivity testing from a clean-catch sample are indicated for the following conditions:
  - Routine screening in the first trimester
  - Symptoms of UTI
  - Positive urinalysis
  - History of UTI
  - Sickle cell trait (screening each trimester of pregnancy is recommended)
  - Diabetes
  - Chronic renal disease
  - Hypertension
  - Test of cure after treatment for positive results
    - Repeat every 6–12 weeks for remainder of pregnancy
- Urine culture findings
  - Less than 100,000 colonies, symptomatic
    - Urinary tract infection
    - Treatment indicated
    - Determine sensitivity of the identified bacteria to the prescribed drug
  - Less than 100,000 colonies, asymptomatic
    - No infection
    - Treatment not indicated
  - More than 100,000 colonies, symptomatic
    - Urinary tract infection
    - Treatment indicated
    - Check for sensitivity of the identified bacteria to the prescribed drug
  - More than 100,000 colonies, asymptomatic
    - Asymptomatic bacteriuria
    - Treatment indicated
    - Check for sensitivity of the identified bacteria to the prescribed drug
  - Presence of Group B Streptococcus (GBS) in urine (American College of Obstetrician Gynecologists [ACOG], 2011; Center for Disease Control and Prevention [CDC], 2010b; Society of Obstetricians and Gynaecologists of Canada [SOGC], 2012)
    - Treat according to same guidelines as other bacteria (i.e., do not treat asymptomatic women with colony counts below 100,000)
    - Additional vaginal/rectal screening is not needed, regardless of the amount of GBS detected; the woman should be counseled and offered intrapartum antibiotic prophylaxis for early-onset GBS disease in the newborn
- Suspicion of pyelonephritis or renal calculi
  - Complete blood count (CBC)
  - Electrolytes
  - Blood urea nitrogen, creatinine
  - Renal ultrasound
  - Strain all urine
- Ultrasound to evaluate for the following conditions:
  - Maternal hydronephrosis
  - Calculi
  - Fetal status
- ⚠ Screening for recurrent UTI in women with
  - Group B Streptococcus
  - Sickle cell trait
  - G6PD
  - Diabetes

Providing Treatment: Therapeutic Measures to Consider

(Brucker & King, 2017)

- Amoxicillin
  - 250–500 PO mg 3 times a day for 3–7 days

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- Can be used to treat GBS bacteriuria
- 500 mg PO QID for 3–7 days
- High rates of bacterial resistance

- Amoxicillin-clavulanic acid (Augmentin)
  - 250/120 mg PO 4 times a day for 3–10 days
  - High rates of bacterial resistance
- Cephalexin (Keflex)
  - 500 mg PO 4 times a day for 5–10 days
- Nitrofurantoin (Macrobid)
  - Simple cystitis: 100 mg PO BID for 3 days
  - Simple or recurrent UTI: 100 mg PO BID for 7–10 days
  - ⚠ Avoid in the following circumstances
    - Before 13 weeks' gestation unless it is the best choice; may be associated with increased risk of birth defects
    - After 36 weeks' gestation; can cause newborn anemia
    - In women with G6PD anemia
- Trimethoprim/sulfamethoxazole (Bactrim DS)
  - 160/800 mg PO 2 times a day for 7 days
  - ⚠ Avoid in the following circumstances
    - Before 13 weeks' gestation unless it is the best choice; is a folate antagonist and can be associated with increased risk of birth defects
    - After 36 weeks' gestation; can cause newborn anemia
    - In women with G6PD anemia
- Pyridium for dysuria
  - Available over the counter (OTC)
  - 200 mg PO TID
  - Maximum six doses
- Consider providing a prescription for Candida treatment PRN for women who frequently get candidiasis with antibiotic therapy
- Postcoital prophylaxis when sexual activity usually precedes UTI
  - Cephalexin 250 mg PO for one dose within 2 hours after intercourse
- ⚠ 📞 Pyelonephritis
  - Hospitalization
  - Intravenous (IV) hydration
    - 200 mL/hr
    - Balanced electrolyte solution
  - Antibiotics
    - IV Cefoxitin 1–2 g q6h or other cephalosporins
    - Change to PO when the woman has been afebrile for 24 hours
  - Provide for adequate pain control

Providing Treatment: Integrative Therapies to Consider

(Natural Medicines, 2015a; Romm, 2010)

- Live culture probiotics
- Vitamin C 500 mg up to 2,000 mg daily during acute infection
- Herbals
  - Cranberry juice or cranberry tablets, 1–2 tablets PO q4–6h with fluid
    - Inhibits bacteria from binding to bladder wall

Providing Support: Education and Support Measures to Consider

- Medication instructions
  - Take medication dose with full glass of water
  - Complete full course of antibiotics
- ⚠ Review warning signs of progression
  - Fever and chills
  - Flank pain
  - Urinary urgency or burning
  - Hematuria
  - Generalized abdominal pain
  - Nausea, vomiting, loss of appetite, inability to maintain hydration
- Review perineal hygiene
  - Void immediately after intercourse
  - Blot after voiding
  - Wipe front to back after bowel movement
- When to call or come in for care
  - Symptoms do not resolve within 24 hours
  - Symptoms worsen
  - Symptoms recur
- Indications for hospitalization
- Indications for a consult or referral
- Encourage the following practices:
  - Increased frequency of voiding: q1–2h while awake
  - Increased fluid intake
    - Water preferable

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- Cranberry juice or tea
- One cup of fluid per hour while awake

- Limit the following:
  - Caffeine
  - Excess vitamin C
  - Sugars

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Condition, maternal and fetal implications
  - Plan of care
    - Observe for improvement
    - Change antibiotics based on sensitivities
    - Culture for test of cure
  - Perform dip urinalysis on each visit to assess for blood, nitrites, and leukocytes
  - Culture each trimester
  - Consider suppressive therapy after two positive cultures with documented negative in between (otherwise positive cultures may simply reflect inadequate treatment)
    - Rx: nitrofurantoin 100 mg PO daily
    - Suppressive therapy is not shown to be more effective than closely monitoring for recurrence (Schneeberger, Geerlings, Middleton, & Crowther, 2012)
  - Observe for signs and symptoms of preterm labor
- Fetal surveillance as appropriate to gestational age
  - Monitor fetal heart rate (FHR) and activity if pyelonephritis
- Hospitalized women: discharge is appropriate in the following circumstances:
  - 24 hours on PO antibiotics
  - Afebrile
  - Calculi passed or absent
  - No signs or symptoms of preterm labor

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Obstetric or perinatology services
  - Pyelonephritis
  - Renal calculi
  - Threatened preterm labor
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH VAGINAL BLEEDING, FIRST TRIMESTER

Key Clinical Information

Early home pregnancy diagnosis can result in women's awareness of pregnancy before menses are missed and contribute to significant anxiety when bleeding occurs. Nonviable pregnancy and miscarriage can have a powerful emotional impact on women. Vaginal bleeding in the first trimester is a relatively common occurrence, affecting as many as 15–25% of pregnant women (Snell, 2009). Implantation and growth of the embryo are complex processes affected by maternal hormones and immune responses, and maturational events in the developing embryo. In women with singleton pregnancies, vaginal bleeding is associated with increased risk of subsequent spontaneous abortion (SAB), placental abruption, previa, preterm birth, stillbirth, and congenital anomalies (Lucovnik, Tul, Verdenik, & Blickstein, 2014). Ectopic pregnancy and molar pregnancy should always be considered. Serial evaluation with quantitative β–human chorionic gonadotropin (β-hCG) levels and ultrasound can assist the midwife in evaluation of the woman who presents with vaginal bleeding in early pregnancy. This emotionally difficult time is made more so by uncertainty and limited effective treatments. The midwife can provide support and information, while maintaining hope until the viability of the pregnancy is determined.

History and Chart Review: Components of the History to Consider

- Age, GP TPAL
- Estimated gestational age
  - LMP
  - Date of conception, if known
  - Ultrasound report, if done
- Onset, duration, and severity of bleeding
  - Color, amount, and characteristics of bleeding/discharge, any tissue passed
  - Precipitating events, if any
  - Presence of cramping or abdominal pain
  - Fever or flu-like symptoms
  - Presence or regression of pregnancy symptoms
  - Other associated symptoms
- Pregnancy and gynecologic history
  - Blood type and Rh

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  - Risk factors for ectopic pregnancy (Kirk, Bottomley, & Bourne, 2014)
    - Pelvic inflammatory disease
    - Pelvic surgery
    - Sexually transmitted infections (STIs), especially chlamydia
    - In vitro fertilization
    - Smoking
    - History of prior ectopic pregnancy
  - History
    - Abnormal cervical cytology
    - STIs
    - Vaginal infections
    - Infertility
    - Cesarean
- Potential risk exposure
  - STIs
  - Viral infections
  - Physical abuse or trauma
- Review of systems

Physical Examination: Components of the Physical Exam to Consider

(Snell, 2009)

- Vital signs
- Fetal evaluation as appropriate for gestation
- Inspect the pad the woman was wearing for estimate of blood loss
- External genitalia
  - Trauma
  - Lesions
  - Varicosities, hemorrhoids
  - Blood or discharge at introitus
- Speculum examination
  - Blood or discharge
    - From vaginal vault
    - From cervix
  - Visual cervical dilation
  - Presence of products of conception (POC) at os or in vaginal vault
  - Presence of erosion, polyps, or other cervical cause of bleeding
- Bimanual examination
  - Cervical dilation
  - Uterine size for dates
  - Uterine tenderness or pain
  - Presence of adnexal mass or pain
  - Presence of cervical motion tenderness

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Implantation bleeding
- Spontaneous abortion
  - Threatened SAB
  - Inevitable SAB
  - Incomplete SAB
  - Complete SAB
  - Missed SAB
- Ectopic pregnancy
- Molar pregnancy
- Cervical bleeding
  - Cervicitis
  - Cervical polyps
  - Cervical trauma
  - Cervical cancer
- STIs

Screening and Diagnosis: Tests and Procedures to Consider

- Serial quantitative β-hCG 48 hours apart (**Table 3-6**)
- Complete blood count (CBC)
- Type and Rh status
- Infection screening if indicated
- Coagulation studies if missed abortion is suspected
  - Prothrombin time
  - Partial thromboplastin time
  - Fibrinogen level
  - Platelets

Table 3-6 Anticipated HCG Level

WEEKS POST-LMP	LEVEL (mIU/mL)
4	5–425
5	18–7,350
6	1,080–56,500
7–8	7,650–230,000
9–12	25,700–288,000
13–16	13,500–253,000
17–24	4,060–65,500

Data from Frye, A. (2007). *Understanding diagnostic tests in the child-bearing year* (7th ed.). Portland, OR: Labrys Press.

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- Serum progesterone levels (Ku et al., 2015)
  - Low levels associated with increased rate of miscarriage
  - Lower risk of miscarriage with progesterone of >12 ng/mL
- Ultrasound (Kirk et al., 2014)
  - Transvaginal approach preferred
  - Serial studies may be necessary
  - Crown–rump length (CRL)
  - Fetal heart motion
  - Placenta previa or abruptio
  - Ectopic and/or intrauterine pregnancy (IUP)
  - Pregnancy of unknown location: positive pregnancy test with no pregnancy visualized on ultrasound
  - Correlation of CRL with LMP, hCG, and serum progesterone
- Ultrasound criteria for diagnosis of miscarriage (Preisler et al., 2015)
  - ≥25 mm for empty gestational sac, *or*
  - CRL ≥7 mm for embryos without heart activity
  - Gestational sac <10 mm, repeat scan in >14 days, absence of doubling of sac size confirms miscarriage
  - CRL <7 mm and no heart activity, repeat scan in 7 days, absence of heart activity confirms miscarriage

Providing Treatment: Therapeutic Measures to Consider

- Triage and treat based on amount of bleeding and definitive differentiation between viable IUP and non-viable IUP pregnancy
- An hCG rise of <35% in 48 hours before initiation of medical treatment can reduce the likelihood of termination of a potentially viable fetus (Kirk et al., 2014)
- Threatened miscarriage between 6 and 10 weeks (Siew et al., 2015)
  - Progesterone therapy
- Expectant management, nonviable pregnancy
  - Pelvic rest, await spontaneous resolution to SAB
  - Bleeding can be significant
  - Provide expectations, warning signs, and reassurance
- Medical management: methotrexate for ectopic pregnancy
- Treatment for nonviable pregnancy <13 weeks' gestation (van den Berg et al., 2014)
  - Misoprostol 600–800 µg PO or vaginally
    - Repeat dose if POC are not passed within 8–24 hours
  - Mifepristone 200 mg PO, followed in 36 hours by
    - 800 µg misoprostol vaginally
    - Repeat misoprostol dose in 24 hours if no cramping or bleeding
- Surgical management: D&C or D&E
- Discussion of risk/benefits of each option
- RhIG for Rh-negative mother (see Care of the Pregnant Woman Who Is Rh-Negative in Chapter 3)
- Iron-replacement therapy for anemia (see Care of the Pregnant Woman with Anemia in Chapter 3)

Providing Treatment: Integrative Therapies to Consider

- Herbal treatment for missed abortion (Romm, 2010)
  - Evening primrose oil capsules 1,000 mg PO BID for 2 days
  - Tincture of cotton root, black cohosh, or blue cohosh
    - Take 2.5 mL PO q4h; repeat daily up to 5 days
- Promote healing after SAB
  - Rescue remedy
  - Herbal combinations that may include the following herbs:
    - Red raspberry leaf
    - Vitex berries
    - Black haw root
- Bleeding during pregnancy with rising hCG levels
  - Red raspberry leaf
  - False unicorn root
  - Wild yam root
  - Black haw

Providing Support: Education and Support Measures to Consider

- For all types of first trimester bleeding
  - Assess woman's emotional response

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- Provide emotional support
- Discuss the following topics:
  - Initial testing and follow-up
  - Potential for miscarriage based on results of testing
  - Options for care: expectant, medical or surgical
  - RhIG for Rh-negative mother
- For SAB
  - Pelvic rest
  - Avoid heavy lifting
  - Call if bleeding increases or is accompanied by pain
  - If awaiting spontaneous resolution of SAB at home, call or seek care immediately in the following circumstances:
    - Heavy bleeding with pain for more than 1 hour
    - Faintness or weakness
    - Adnexal pain
    - Fever
- After SAB
  - Abstain from intercourse for 2 weeks
  - Bleeding may last 7–10 days
  - Discuss birth control if desired
- In case of incomplete SAB: Provide information on options for care
- For ectopic pregnancy, discuss the following options:
  - Surgical treatment
  - Medical treatment
- For bleeding of unknown etiology:
  - Reassurance that 50% of women with bleeding go on to have a healthy pregnancy
  - Warning signs given, with indications when to call the healthcare provider
  - Plan for follow-up
- Before next pregnancy
  - Take a multivitamin with folic acid daily
  - Improve nutrition if indicated
  - Avoid tobacco, alcohol, and substance use

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Clinical findings
  - Evaluation of pregnancy viability
  - Need for serial evaluation
  - Woman's response and jointly developed plan of care
- ⚠ Evaluate for
  - Molar pregnancy
  - Choriocarcinoma
  - Ectopic pregnancy
  - Incomplete SAB
- Follow β-hCG levels
  - 48–96 hours in case of threatened SAB
  - Repeat every 3–5 days until either of the following occurs:
    - Clear regression
    - Appropriate increase
  - 4–6 weeks post-SAB
- Ultrasound follow-up
  - No intrauterine pregnancy (IUP) seen on ultrasound
    - Serial hCG levels
    - Continued positive or elevated hCG
      - ➤ ⚠ Suspect ectopic pregnancy
      - ➤ Repeat ultrasound in 2–7 days
  - Subchorionic bleeding on ultrasound
    - Follow-up ultrasound for anomalies
    - Follow β-hCG levels
- After SAB
  - Examination in 2–4 weeks
    - Evaluate return to nonpregnant state
    - Assess emotional status
    - Initiate birth control if desired

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Obstetric services
  - Ectopic pregnancy
  - No IUP seen on ultrasound
  - Molar pregnancy
  - Excessive bleeding
  - Dilatation and curettage as indicated or desired
  - Cervical lesion or suspected cervical cancer
- Genetic counseling for recurrent losses (three or greater)
- Other referrals as needed
  - Pathology or genetic evaluation of POC
  - Evaluation for problems that can lead to SAB
    - Maternal disease (e.g., lupus, *Listeria* infection, syphilis)
    - Congenital anomalies of maternal reproductive tract

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- Previous cervical surgery
- Hormonal imbalances
- Fibroids

- Social services
  - Mental health services
  - Grief counseling
  - Support groups
- For diagnosis or treatment outside the midwife's scope of practice

CARE OF THE PREGNANT WOMAN WITH VAGINAL BLEEDING, SECOND AND THIRD TRIMESTERS

Key Clinical Information

Vaginal bleeding in later pregnancy occurs in approximately 10–20% of pregnant women (Yang et al., 2004). Bleeding can be a frightening experience for the woman; the midwife's prompt attention and action are reassuring. When a woman presents with vaginal bleeding in the latter part of the second trimester or in the third trimester, evaluation and stabilization of the mother and fetus are the immediate goals. There are benign causes for spotting or bleeding in this time frame, such as postcoital or postexamination spotting, vaginal or cervical infection or inflammation, and bloody show due to labor. However, the midwife must be vigilant for signs and symptoms of placenta previa, placental abruption, and conditions that can jeopardize maternal and fetal health. It is noteworthy that the majority of placenta previa cases diagnosed during early second-trimester ultrasound will not be present at birth, as the leading edge of the placenta can move away from the cervix as the lower uterine segment expands over time.

History and Chart Review: Components of the History to Consider

- Age, GP TPAL
- Gestational age
- Onset, duration, and severity of bleeding
  - Color, amount, and characteristics of discharge
  - Precipitating events, if any
  - Presence of contractions, abdominal pain or tenderness, or no pain
  - Other associated symptoms
- Recent examination or intercourse
- Recent trauma, such as motor vehicle accident or interpersonal violence
- Location of placenta on prior ultrasound, if done
- Fetal activity
- Pregnancy and reproductive health history (Cunningham et al., 2014)
  - Blood type and Rh
  - Risk factors for placenta previa
    - Multiparity
    - Maternal age >35 years
    - Previous placenta previa
    - Previous cesarean or other uterine surgery
    - Previous spontaneous or elective pregnancy termination
    - Multifetal pregnancy
    - Smoking
  - Risk factors for placental abruption
    - Maternal hypertensive disorders
    - Advanced maternal age or parity
    - Previous placental abruption
    - Previous cesarean or other uterine surgery
    - Chorioamnionitis
    - Smoking
    - External cephalic version
    - Preterm prelabor rupture of membranes
    - Uterine leiomyoma
    - History of Factor V Leiden thrombophilia
    - Sudden decrease in uterine volume (e.g., with spontaneous [SROM] or artificial rupture of membranes [AROM])
    - Blunt abdominal trauma
    - Cocaine use, especially crack cocaine

Physical Examination: Components of the Physical Exam to Consider

- Vital signs
- Pain rating or assessment
- Estimate of total blood loss, keep a running total
  - Quantitative (weigh blood-soaked materials)
  - Visual
- Abdominal evaluation
  - Fetal evaluation
    - Fetal heart rate (FHR) and pattern
    - Fetal movement
    - Lie, presentation, position

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  - Uterine enlargement
    - Uterine pain
    - Board-like abdomen
- ⚠ Defer vaginal examination until placental location is known
- Evaluation of external genitalia
  - Trauma
  - Lesions
  - Varicosities, hemorrhoids
  - Blood or discharge at introitus
- Speculum examination after exclusion of placenta previa
  - Blood or discharge
    - From vaginal vault
    - From cervix
  - Visual cervical dilation
  - Presence of erosion, polyps, or other cervical cause of bleeding
- Bimanual examination after exclusion of placenta previa
  - Cervical dilation, effacement, and station
  - Presenting part
  - Status of membranes

Clinical Impression: Differential Diagnoses to Consider

(ICD10Data.com, 2015)

- Premature separation of the placenta, placental abruption, or subchorionic hemorrhage
- Placenta previa with hemorrhage
- Vasa previa
- Bloody show of labor
- Premature labor
- Bleeding, secondary to the following conditions:
  - Postcoital spotting
  - Postexamination spotting
  - Trauma
  - Cervicitis
- Sexually transmitted infections (STIs)

Screening and Diagnosis: Tests and Procedures to Consider

- Ultrasound evaluation of the placental membranes, previa, abruption, and fetal status
  - Color and pulsed Doppler
  - Biophysical profile
- Nonstress test (NST), continuous electronic fetal monitoring
- Type and Rh status
- Complete blood count (CBC), blood type, and screen
- Coagulation studies
  - Prothrombin time
  - Partial thromboplastin time
  - Fibrinogen level
  - Platelets

Providing Treatment: Therapeutic Measures to Consider

- For benign spotting
  - Pelvic rest until spotting resolves
  - Treatment of underlying cause, when known (e.g., bacterial vaginosis)
  - Reassurance and review of danger signs
- For labor at term or preterm, see Care of the Woman During Labor and Birth in Chapter 4
- 📱 For placenta previa (Silver, 2015)
  - Expectant management when bleeding stops and fetal response is reassuring:
    - Woman may go home with limited physical activity instructions
    - Ready access to transportation and hospital facility
    - Strict pelvic rest, avoiding the following:
      - ➤ Intercourse, sexual arousal, and orgasm
      - ➤ Douching or placement of anything in the vagina
  - Optimal birth timing and method variable according to specific clinical situation, resources, gestational age, and woman's preferences
    - Vaginal birth considered when placenta >2 cm from endocervical os
    - Planned cesarean at term
  - If bleeding continues and fetal testing is abnormal
    - Assemble surgical team and neonatal resuscitation team
    - Plan for rapid emergency cesarean
- 📱 For placental abruption
  - When bleeding is minimal or stops and fetal well-being is ascertained
    - May cautiously support, induce, or augment labor per consultant
    - Hospital birth with physician available

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  - When bleeding is significant or continues and FHR pattern is abnormal
    - Assemble surgical team and neonatal resuscitation team
    - Plan for rapid emergency cesarean
- RhIG for Rh-negative mother (see Care of the Pregnant Woman Who Is Rh-Negative in Chapter 3)
- Iron-replacement therapy for anemia (see Care of the Pregnant Woman with Anemia in Chapter 3)
- Fluid and blood replacement as indicated

Providing Treatment: Integrative Therapies to Consider

- ⚠ There are no alternative treatments for placenta previa, placental abruption, or vasa previa
- Integrative measures for anemia and immune support, such as chlorophyll and rest

Providing Support: Education and Support Measures to Consider

- Nonemergent bleeding: Provide support and reassurance
  - Review cause, treatment, and warning signs
  - Provide clear indications for when to call the healthcare provider
- During an emergency
  - Briefly explain the nature of the emergency and anticipated steps to be taken
  - Keep the woman and family apprised of what is happening
  - Provide emotional support
  - Ensure appropriate interpreter services as needed
- After an emergency
  - Debrief about the emergency
  - Employ compassionate listening
- Education
  - Potential for recurrence in future pregnancies
  - Status and prognosis of the infant

Follow-up Care: Follow-up Measures to Consider

- Document and discuss
  - Findings, woman's response, and plan of care
  - Parameters for immediate care
  - Location and expectations for birth
- RhIG for Rh-negative mother
- Iron-replacement therapy for anemia
- Postpartum
  - Examination in 1–4 weeks
  - Evaluate return to nonpregnant state
  - Assess emotional status and response to outcomes
  - Initiate birth control if desired

Interdisciplinary Practice: Consider Consultation, Collaboration, or Referral

- Obstetric/perinatology services
  - Placenta previa, placental abruption, vasa previa
  - Cervical mass or lesion
- Neonatal/pediatric services
  - Compromised infant
- Social services
  - Mental health services
  - Grief counseling
  - Support groups
- For diagnosis or treatment outside the midwife's scope of practice

WEB RESOURCES FOR CLINICIANS

RESOURCE	URL
Patient Information	
Dietary sources of iron and of vitamin C (CDC)	http://www.cdc.gov/nutrition/everyone/basics/vitamins/iron.html
"What Do I Need to Know About Gestational Diabetes" (National Diabetes Clearing House, 2013)	http://diabetes.niddk.nih.gov/dm/pubs/gestational/
CDC handouts on STIs in pregnancy including herpes and hepatitis	http://www.cdc.gov/std/pregnancy/stdfact-pregnancy.htm
March of Dimes—Educational Handouts	http://www.marchofdimes.org/professionals/information-for-your-patients.aspx

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Clinician Information	
Female genital mutilation (WHO, 2014)	http://apps.who.int/iris/bitstream/10665/77428/1/WHO_RHR_12.41_eng.pdf
Treatment of hepatitis in pregnancy (CDC, 2015a)	http://www.cdc.gov/std/tg2015/default.htm
Interim Guidelines for Pregnant Women During a Zika Virus Outbreak – United States, 2016 (CDC, 2016)	http://www.cdc.gov/mmwr/volumes/65/wr/mm6502e1.htm
Recommendations for ARV therapy in pregnancy (NIH, 2015)	https://aidsinfo.nih.gov/contentfiles/lvguidelines/PerinatalGL.pdf
March of Dimes	http://www.marchofdimes.com/professionals/patients.html

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