This chapter contains collaborative nursing care plans for common potential complications of various medical diagnoses during pregnancy. This does not mean the complication will occur, but that the woman is at risk for the complication. Similar to generic nursing care plans in Chapter 2, each of these care plans applies to any woman with a particular condition or medical diagnosis, such as gestational hypertension. The care plans include a brief description of the potential complication, etiologies and/or risk factors, signs and symptoms, diagnostic studies, a brief overview of medical management, and collaborative care for women who have the potential for developing that complication. The nursing activities focus on assessments to detect the complication and preventive nursing actions. The terms nursing activities and nursing actions are used interchangeably in this chapter. These care plans are used in conjunction with specific care plans for each condition or disease. Many topics in this book refer to these collaborative care plans.

**Potential Complication: ANEMIA**

Anemia is characterized by a decreased number of red blood cells (RBCs) and below normal hemoglobin (Hgb) concentration. Anemia results in a reduced oxygen-carrying capacity of the blood, and the heart attempts to compensate by increasing rate and cardiac output. Because this increases the workload of the heart, anemia that occurs with any other complication (e.g., preexisting cardiac disease) may result in congestive heart failure. Anemia is one of the most common conditions affecting pregnant women.

Anemia related to disease (pathologic anemia) must be differentiated from the physiologic anemia of pregnancy, which occurs because increased plasma volume (approximately 40–50% greater than prepregnancy levels) during pregnancy exceeds increased RBC production. During pregnancy, there is a decrease in normal Hgb (to 12–16 g/dl) and hematocrit (Hct) values (to 37–47%). When Hgb falls below 11 g/dl or Hct below 35%, anemia exists. This care plan addresses the care of women who are at risk for anemia, regardless of the etiology. For actual anemia of pregnancy, refer to the topic “Prenatal Anemia” beginning on p. 119 in Chapter 5.

**Etiologies and Risk Factors**
- Dietary iron deficiency (accounts for the majority of the cases of anemia in pregnancy)
- Dietary folic acid deficiency
- Genetic conditions (sickle cell hemoglobinopathy, thalassemia)
- Pregnancy complications with potential for excessive blood loss (e.g., placenta previa)

**Signs and Symptoms**
- Fatigue, malaise
- Pallor of the skin, sclera, and mucous membranes
- Headache
- Itching and jaundice (while less common, may occur when hemolysis of RBCs occurs)

**Diagnostic Studies**
- Hgb level: less than 11 g/dl in first and third trimesters; less than 10.5 g/dl in second trimester
- Hct value: less than 35% in first trimester, less than 30% in second trimester, less than 34% in third trimester
- Microscopic studies: identify specific type of anemia
Medical Management

- Medical management varies with the specific type of anemia. In most cases, oral iron supplements (e.g., ferrous sulfate, 30–60 mg/day) are prescribed to prevent iron-deficiency anemia.

Nursing Activities and Rationales

Focus Assessments

- Assess Hgb and Hct. This data allows for differentiation between the normal anemia of pregnancy and disease states, which facilitates implementation of appropriate nursing actions. Normal hemodilutional anemia of pregnancy does not require treatment. Hct is an indirect index of the oxygen-carrying capacity of the blood. Hct reflects the RBC volume.
- Assess for objective signs of anemia. For example, inspect the skin, sclera, and mucous membranes. Pallor occurs because of reduced amounts of hemoglobin and reduced blood flow to the skin. Jaundice occurs when there is an increased concentration of serum bilirubin, which increases when hemolysis of RBCs occurs. The sclera and mucous membranes reflect integumentary changes more accurately than the skin, especially in dark-skinned individuals.
- Assess for subjective signs of anemia. For example, inquire about fatigue or pruritus. Fatigue occurs because the oxygen-carrying capacity of blood is reduced. Pruritus occurs because of increased serum and skin bile salt concentrations.
- Assess the adequacy of the woman’s diet. This assessment reveals dietary adequacy or deficiencies and facilities dietary teaching if needed.

Preventive Nursing Activities

- Teach about foods high in iron and folic acid. Adequate intake of iron and folic acid may help prevent dietary iron and folic acid deficiencies, which are the common forms of anemia during pregnancy. Teach the correct method for taking iron supplements. Milk and milk products should be avoided for at least an hour before and after taking an iron supplement or eating iron-rich foods, because iron binds with calcium, prohibiting complete absorption of iron. Taking iron with foods and drinks rich in vitamin C (e.g., orange juice) is encouraged because vitamin C enhances the effects of iron.

Potential Complication: DISSEMINATED INTRAVASCULAR COAGULATION

Disseminated intravascular coagulation (DIC) is an acute blood-clotting disorder characterized by paradoxical clotting and bleeding. It is related to low levels of fibrinogen, prothrombin, platelets, and factors V and VIII. DIC is always a secondary diagnosis from diseases and conditions that cause an imbalance between the body’s clotting and lysing functions. The amount of thrombin released from these diseases/conditions exceeds the body’s ability to secrete antithrombins. Widespread and diffuse clotting activity occurs in the microcirculation, and clotting factors and platelets are consumed, resulting in clotting activity breakdown. Generalized hemorrhage results. DIC is an emergency situation, though when promptly recognized and treated, positive outcomes can result.

This care plan primarily addresses the care of women who are at risk for DIC, regardless of the etiology. Goals and nursing activities for detecting and preventing DIC related to specific conditions are found under those topics later in the text. For more information, refer to the collaborative care plan “Potential Complication of Abruptio Placentae or Placenta Previa: Hemorrhage, Hypovolemic Shock, DIC” beginning on pp. XX in Chapter 6 or refer to a Maternity or Obstetrics textbook.

Etiologies and Risk Factors

- Abruptio placenta (risk factors include abdominal trauma, smoking, premature rupture of membranes [PROM], chronic hypertension, preeclampsia, and cocaine use)
- Hypertensive disorders (preeclampsia, eclampsia)
- Intrauterine fetal death with prolonged retention of the fetus
- Amniotic fluid embolism
- Septic abortion
  - HELLP syndrome (hemolysis, elevated liver enzymes, low platelets)
  - Septic shock (associated with pyelonephritis during pregnancy)

Signs and Symptoms

- Spontaneous bleeding (e.g., hematuria, oozing from previous puncture sites)
- Tachycardia and hypotension
- Tachypnea and dyspnea
- Diminished or absent bowel sounds
- Small hemorrhages in skin and mucous membranes (e.g., petechiae, ecchymoses)
Diagnostic Studies

- Partial thromboplastin time or activated prothrombin time: prolonged more than 60 seconds
- Prothrombin time: prolonged more than 15 seconds
- Platelet count: less than 100,000 µl fibrinogen (less than 150 mg/dl) or a progressive decrease in platelet count
- Fibrin degradation products: more than 45 µg/ml
- D-dimer test: presence of an asymmetrical carbon compound fragment formed in the presence of fibrin split products; positive at less than 1.8 dilution
- Positive fibrin monomers: diminished levels of factors V and VIII, fragmentation of RBCs
- Hgb: less than 10 g/dl
- Urine output: initially normal, rapidly decreasing to less than 30 ml/hour
- Elevated blood urea nitrogen: greater than 30 mg/dl
- Elevated serum creatinine: greater than 1.3 mg/dl
- Clot retraction test: prolonged more than 10 minutes

Medical Management

Medical management of DIC requires emergency and intensive care to control bleeding and counteract shock. Treatment of the underlying condition(s) (e.g., birth of the fetus) is essential in order to correct the coagulation problem. However, as stated earlier, this care plan focuses on assessment and prevention of DIC, not on treatment. For potential DIC, management is simply to identify and correct risk factors for DIC and perform tests to diagnose it if clinical symptoms develop.

Focus Assessments

- Assess for risk factors (e.g., hypertensive disorders, abdominal trauma, PROM, intrauterine fetal death). Any or all of these events can trigger the acceleration of clotting, resulting in generalized activation of prothrombin and a consequent excess of thrombin in a chain of sequences that uses large amounts of coagulation factors. Risk factors are routinely assessed at the first prenatal visit.
- Assess for blood pressure (BP) and pulse alterations and compare to prenatal record. Signs of hemorrhage include decreasing BP, increasing pulse rate, and narrowing of pulse pressure. Early detection may prevent serious progression of the abnormal clotting process.
- Observe for diaphoresis. This may indicate blood loss and decreasing BP.
- Observe for signs of unusual bleeding. DIC is diagnosed according to clinical findings and laboratory markers. Clinical findings often suggest the need for laboratory tests. Symptoms result from loss of blood volume, decreased organ and peripheral tissue perfusion, and clots in the microcirculation. Signs of abnormal bleeding include spontaneous bleeding from the gums or nose; petechiae around the BP cuff; excessive bleeding from the episiotomy (following birth), intravenous line, injection sites, or from nicks from shaving the abdomen; hematuria; blood in the stool; hemoptysis; cyanotic, cold, mottled fingers and toes; severe muscle, back, abdominal, and chest pain; confusion; dyspnea; and oliguria.
- Monitor platelet counts. A pattern of decreasing platelet numbers signifies platelet consumption, which may forewarn DIC.

Preventive Nursing Activities

- Teach the importance of prenatal care. Early prenatal care promotes health during pregnancy by managing preexisting medical conditions and facilitating early detection of complications that place the woman at increased risk for DIC.
- Question the woman about current medications, including over-the-counter preparations. Numerous pharmacologic agents can interfere with clotting (e.g., aspirin, nonsteroidal anti-inflammatory drugs, certain diuretic agents, broad-spectrum antibiotics, estrogens, and antihistamines), although these medications do not cause DIC.

Potential Complication: Fetal Compromise (Nonreassuring Fetal Heart Rate Pattern)

Fetal distress or fetal compromise involves evidence that the fetus is in jeopardy (e.g., a change in intensity or frequency of fetal movement or the presence of nonreassuring fetal heart rate [FHR] patterns [Category III tracings]). Category III tracings include absent baseline fetal heart rate variability, recurring late and variable decelerations, bradycardia, and sinusoidal pattern (Macoves, Hankins, Spong, Hauth, & Moore, 2008). Fetal distress is the result of fetal asphyxia in utero, a condition in which hypoxemia (reduction of Po2), hypercapnia (increase in partial pressure of carbon dioxide [PCO2]), and respiratory and metabolic acidosis (reduction of blood pH) occur. Any condition that reduces maternal oxygenation or circulation or reduces fetal-placental exchange (e.g., hypertonic uterine contractions) can cause fetal asphyxia.
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This care plan addresses the care of women who are at risk for fetal compromise, regardless of the etiology. For actual fetal compromise refer to the collaborative care plan “Potential Complications of Neonatal Asphyxia: Hypoxia, Fetal Compromise, and Fetal Death” beginning on p. XXX Chapter 12, or the topic “Intrapartum Fetal Monitoring” beginning on p. XX in Chapter 7.

**Etiologies and Risk Factors**

- Umbilical cord compression
- Prolapsed cord
- Fetal head compression
- Maternal fever
- Hypertonic uterine contractions (UCs)
- Maternal hypotension or hypertension
- Disease states (diabetes mellitus, anemia, cardiac disease, hyperthyroidism, hypertension)
- Abruptio placentae
- Placenta previa

**Signs and Symptoms**

- Persistent nonreassuring FHR patterns: late decelerations, decreased or absent variability, prolonged decelerations
- Tachycardia
- Bradycardia
- Fetal scalp pH less than 7.19
- Decrease in or absence of fetal movement once quickening has occurred
- Abrupt, large increase in fetal movement in excess of that generally felt from normal fetus

**Diagnostic Studies**

- Antepartum fetal monitoring (nonstress, contraction stress test). (Refer to the topic, “Antepartum Fetal Monitoring and Other Diagnostic Tests,” beginning on p. 62 in Chapter 4.)
- Intrapartum electronic fetal monitoring: more reliable in identifying the well-oxygenated fetus than the compromised one.
- Intrapartum fetal scalp stimulation: tactile scalp stimulation to evaluate fetal response; FHR acceleration of 15 beats/min for 15 seconds indicates adequate oxygenation and normal acid–base balance; half of infants who do not produce accelerations are in acidosis via scalp blood pH analysis while the other half are in normal acid–base balance (Mattson & Smith, 2010).
- Vibroacoustic stimulation: reassuring response is the same as for fetal scalp stimulation.
- Fetal scalp blood pH analysis: normal scalp pH is greater than or equal to 7.25.
- Cord blood pH and gases: provides information about the fetal acid–base balance and the immediate condition of the newborn following birth.
- Internal fetal monitoring: provides greater accuracy, especially with regard to variability, if nonreassuring patterns develop.

**Medical Management**

Medical management depends on the severity of fetal compromise. Immediate birth, usually by cesarean birth, is indicated for severe, nonreassuring patterns.

**Nursing Activities and Rationales**

**Focus Assessments**

- Assess for risk factors for fetal compromise. Women with risk factors require more frequent assessment so that preventive measures can be taken and nonreassuring patterns recognized early. Any factor that compromises maternal oxygenation or circulation also affects fetal oxygenation or circulation.
- Assess fetal monitor tracing every 15 minutes throughout the first stage and every 5 minutes throughout the second stage of labor, as well as during and following procedures or activities. Labor, procedures, medications, maternal position, and activities may alter fetal oxygenation, heart rate patterns, and blood flow through the umbilical cord. Careful monitoring allows for early recognition of fetal compromise.
- Assess all five essential components of FHR tracing. The five components include baseline heart rate, baseline variability, decelerations, accelerations, and FHR patterns over time. Baseline rates less than 100 or greater than 160 beats/min may indicate fetal compromise. Each of these components is considered when determining whether or not immediate action is required. Assess for nonreassuring patterns (loss of variability, accelerations, decelerations). Nonreassuring patterns may indicate the presence of acid–base imbalance, hypoxia, head compression, or cord compression. Severe, nonreassuring patterns may indicate the need for immediate birth in order to save the fetus.
- Assess frequency and duration of uterine contractions. Placental exchange can be compromised when intrathoracic pressure exceeds 20 mmHg or contractions are separated by less than 60 seconds, last longer than 90 seconds, or occur more frequently than every 2 minutes.
- Assess maternal vital signs. Vital signs can reveal conditions such as fever, hypertension, hypotension, or other factors that increase the risk for fetal compromise.

**Preventive Nursing Activities**

- Position the woman on her left side, avoiding the supine position. This position eliminates aortocaval compression, which may compromise placental blood flow by decreasing maternal venous return to the heart and, consequently, cardiac output.
- Maintain oral and/or IV fluid intake. Maternal dehydration and hypovolemia are risk factors for fetal compromise. Maintaining fluid intake increases maternal blood volume and BP, which increases placental perfusion.
Reposition the woman if cord compression is suspected. Turning the woman from side to side or elevating her hips moves the fetus toward her diaphragm and may help relieve pressure on the cord.

- Discontinue oxytocin administration if fetal distress occurs. Oxytocin, if administered, increases the force and duration of uterine contractions, which may result in greater cord compression, fetal head compression, or decreased placental perfusion.
- Administer 100% oxygen by face mask if fetal distress occurs. This method increases the amount of oxygen available to both the woman and the fetus by increasing maternal blood oxygen saturation.
- Teach the woman the need for and benefit of fetal monitoring throughout the labor process. Knowledge alleviates anxiety; anxiety can contribute to fetal compromise by increasing the woman’s oxygen consumption.
- Teach the woman how to monitor fetal activity. This facilitates early corrective actions if required. Decreased or absence of fetal activity once quickening has occurred (at about 20 weeks’ gestation) signals fetal distress.

## Potential Complication: HEMORRHAGE

Vaginal bleeding may occur any time during pregnancy. Bleeding during early pregnancy increases the risk for other complications such as anemia, infection, preterm labor, and preterm birth. Approximately 50% of third-trimester bleeding is related to placenta previa and abruptio placentae, both of which can result in hemorrhage and are medical emergencies. Intrapartal hemorrhage can be caused by uterine rupture. Postpartum hemorrhage is most often the result of uterine atony, but may also be caused by retained placental fragments, lacerations of the birth canal, uterine inversion, and DIC. Prevention of hemorrhage or early corrective action is essential to save the lives of mother and fetus.

This care plan addresses the care of women who are at risk for hemorrhage, regardless of the etiology. Goals and nursing activities for detecting and preventing hemorrhage caused by specific conditions (e.g., uterine rupture, postpartum hemorrhage) are found under those topics later in the text. For postpartum hemorrhage, refer to the topic of “Postpartum Hemorrhage” beginning on p. XXX in Chapter 10.

## Etiologies and Risk Factors

- Antepartum hemorrhage: placenta previa, abruptio placentae, ectopic pregnancy
- Intrapartum hemorrhage: uterine atony, uterine rupture, lacerations of the birth canal, DIC

## Signs and Symptoms

- Antepartum: vaginal bleeding or spotting. Suspect placenta previa or placental abruption whenever there is vaginal bleeding after 20 weeks’ gestation. Classically, abdominal pain occurs with abruption but not with previa; however, this may vary.
- Postpartum: loss of more than 500 ml blood after vaginal birth or more than 1,000 ml after cesarean birth, or a 10% decrease in Hct between admission for labor and postpartum
- Decreased blood pressure (BP), increased pulse and respirations, restlessness, thirst, pallor, clammy skin, persistent late decelerations

## Diagnostic Studies

### Antepartum

- Speculum exam: rules out local causes of bleeding; performed if ultrasound reveals a normally implanted placenta; preferably done only after 34 weeks’ gestation.
- Transabdominal ultrasound examination: determines if placenta is attached normally and location of placenta. Ultrasonography can verify placenta previa but cannot always verify abruption. Retroplacental clots may or may not be seen with ultrasound.

### Other

- Complete blood cell count (CBC): decreased hemoglobin and hematocrit (Hct), possible elevated white blood cell (WBC) count.
- Clotting studies (platelet count, prothrombin time, partial thromboplastin time, fibrinogen, fibrin split products, D-dimer): rules out clotting abnormality and establishes a baseline for later comparisons.

## Medical Management

Early identification of risk factors for hemorrhage is the best way to prevent hemorrhage. If hemorrhage does occur, medical management varies with the condition, but in all cases, it will include:

- Intravenous fluid replacement: supports blood pressure by expanding intravascular volume
- Administration of blood products: blood, fresh, frozen plasma; or cryoprecipitate
- Oxygen therapy
- Immediate birth may be indicated if hemorrhage is severe and infant is viable
- Prophylactic antibiotics: prevents infection
Focus Assessments

- Assess for risk factors that predispose to hemorrhage. Early identification of risk factors allows for anticipation of hemorrhage so that corrective actions can be taken before bleeding occurs.
- Assess for visible vaginal bleeding, and count or weigh vaginal pads. Counting or weighing pads estimates the amount of blood loss: 1 g of pad weight is equal to 1 ml of blood loss. Excessive blood loss can result in antepartum and postpartum anemia and infection, as well as maternal or fetal death.
- Assess and monitor heart rate, blood pressure, and pulse pressure. These findings provide information about the severity of blood loss and adequacy of fluid replacement. Tachycardia and decreased BP are later signs of blood loss/shock. Narrowing of pulse pressure is an early sign of blood loss. Preexisting hypertension may mask hypotension that occurs with fluid deficit.
- Assess and monitor respirations. Tachypnea is a late sign of blood loss/shock, but may also be a symptom of pain.
- Assess and monitor capillary refill and skin and mucous membrane color. Slow capillary refill and cyanosis are early signs of blood loss. When blood volume decreases, peripheral vasoconstriction shunts blood away from the periphery to vital organs.
- Assess and monitor CBC (especially Hgb and Hct). These values reflect the amount and cause of blood loss and adequacy of replacement. Hct greater than 30% is needed for adequate oxygenation.
- Assess and monitor for bleeding. Include assessment of the IV site, gums, urine for bleeding, and skin for petechiae. These findings may indicate coagulation deficiency (e.g., DIC).
- Assess and monitor level of consciousness (LOC). Changes to LOC reflect decreased circulation of oxygen to the brain, which causes central nervous system irritability.

Preventive Nursing Activities

- Teach the symptoms of bleeding/hemorrhage and when to call the care provider or go to the hospital. Knowledge of signs of bleeding helps to ensure the woman will recognize early bleeding and contact the care provider or hospital for early treatment.
- Keep intravenous access available via saline lock or low flow fluid rate when risk of bleeding is identified. Intravenous access is difficult once bleeding starts due to hypovolemia and compensatory peripheral vasoconstriction. Ready access allows for rapid replacement of circulating volume lost from bleeding. It also helps maintain BP and therefore tissue perfusion (e.g., to vital organs) until blood replacement products are available and transfused should actual bleeding occur. IV infusions of glucose must be converted to saline solutions before infusing blood to prevent hemolysis.
- Type and cross-match per protocol and/or ascertain availability of compatible blood for transfusion. This facilitates rapid birth and infusion of correct blood product if replacement is needed.
- Provide emotional support to the woman and family. The woman and her family will be concerned for her safety and that of her unborn baby. Explaining procedures, keeping her informed, and offering emotional support will help reduce fear and anxiety, both of which increase oxygen consumption.

Potential Complication: INFECTION

Acute and chronic diseases, environmental factors, and maturational dynamics all produce conditions favorable for infection. Postpartum infections are a major source of maternal morbidity and mortality in the world, accounting for about 11.6% of maternal deaths following live, ectopic, and stillborn pregnancies (Wong & Rosh, 2012). Infection can occur anywhere in the body, but during the antepartum and postpartum periods the focus is primarily on reproductive tract and urinary tract. Endometritis, wound infections, urinary tract infections, mastitis, respiratory tract infections, and pelvic cellulitis (parametritis) are examples of postpartum infections.

This care plan addresses the care of women who are at risk for infection, regardless of the etiology. Goals and nursing activities for detecting and preventing infection caused by specific conditions are found under those topics later in the text. For specific infections refer to the topics “Vaginal Infections” and “Urinary Tract Infection” beginning on p. XX and p. XX, respectively, in Chapter 6 and “Postpartum Infection” and “Mastitis” beginning on p. XXX and XXX, respectively, in Chapter 10.

Etiologies and Risk Factors

During pregnancy and birth, a woman’s susceptibility to infection can increase for a variety of reasons, including the following:
- Postpartum period (e.g., inadequate primary defenses such as broken skin, traumatized tissue, stasis of body fluids, change in pH of secretions, postpartum hemorrhage)
- Perineal wound (e.g., episiotomy or laceration)
- Rupture of amniotic membranes
- Intrauterine fetal monitoring
- Lack of/depletion of normal flora
- Chronic conditions (e.g., diabetes mellitus, anemia)
- Poor nutrition
- Immunosuppression
- Previous infection (e.g., urinary tract, mastitis, pneumonia)
Signs and Symptoms
- Fever and/or chills
- Generalized malaise and anorexia
- Abdominal tenderness or pain
- Abnormally large uterus
- Foul-smelling lochia drainage
- Tender, reddened, and hard breast
- Urinary frequency and/or burning

Diagnostic Studies
- WBC count: differentiates between infection and inflammation. A WBC count greater than 18,000/mm³ during the intrapartum or postpartum period indicates infection. The WBC count normally increases during labor and may stay elevated during the first few postpartum days in the absence of infection, but it will return to normal by 7 days postpartum.
- Cultures (urine, vaginal, blood): reveal the presence and type of pathogenic organisms
- Urinalysis: reveals the presence of blood (hematuria), WBCs, casts, and bacteria. Turbid, foul-smelling urine indicates infection.

Medical Management
Treatment of infections is based on the type, location, and extent of infection.
- Antibiotic therapy may be initiated after culture and sensitivity studies are completed.
- Intravenous fluids may be administered if the woman becomes dehydrated from fever.
- Analgesics may be prescribed for pain management.

Nursing Activities and Rationales
Focus Assessments
- Assess for factors that place the woman at risk for infection. Recognition of risk factors enhances development of individualized nursing care directed at prevention of infection. A history of past or frequent infections is a risk factor for infections during pregnancy.
- Assess and monitor vital signs, especially temperature and pulse. Temperature elevation and chills are often the first signs of endometritis and other reproductive tract infections, including mastitis. Tachycardia also is a common sign associated with increased body temperature and increased metabolic rate.
- Assess and monitor lochia for color and odor (postpartum). Heavy bleeding can predispose the postpartum woman to pelvic infection because bacteria thrive on blood. Foul-smelling lochia is a sign of infection caused by decomposition of dead bacteria and cells.
- Assess for signs and symptoms of urinary tract infection. The urinary tract is a common site for infection in women, and even more so during pregnancy and the postpartum period. Because the urinary meatus and anus are in close proximity, Escherichia coli from the rectum can easily spread to the urethra. Other risk factors are increased during the antepartum period, as well. For example, increased progesterone levels cause relaxation of smooth muscles of the kidneys and ureters, leading to urinary stasis (Refer to the topic “Urinary Tract Infection” in Chapter 6).

Preventive Nursing Activities
- Teach correct hand-washing technique, perineal care, and personal hygiene. These prevent the introduction of pathogens into the body and prevent the transfer of E. coli from the anus to the urethral meatus.
- Teach the woman to assess her breasts frequently for signs of mastitis (postpartum). The lactating breast can become infected via fissured or cracked nipples. Detection of early signs and symptoms (e.g., soreness, redness) can help prevent full-blown infection or more serious complications. Mastitis rarely develops during the immediate postpartum period; it usually develops in women who are at least 2 weeks postpartum, at which point women are home and need to know how to assess their own breasts. Refer to the topic “Mastitis” in Chapter 10.
- Teach signs and symptoms that need to be reported if they occur. Nausea; vomiting; abdominal distention; burning on urination; and a painful, reddened breast are examples. Early reporting and subsequent treatment can prevent more severe complications such as peritonitis and sepsisemia, which can be life threatening.
- Teach women who breastfeed the correct techniques, breast hygiene, and relief measures for engorgement. Incorrect breastfeeding can result in fissures; cracked nipples; breast engorgement; and stasis of milk, blood, and lymph. These are all predisposing factors to infection because they provide a portal of entry for pathogens or cause tissue damage or irritation.
- Teach the woman to void frequently and to avoid carbonated beverages. Frequent emptying of the bladder prevents urinary stasis and subsequent infection. Carbonated drinks alter urinary pH, making it more alkaline, which favors bacterial growth.
Potential Complication: PREMATURE RUPTURE OF MEMBRANES

Premature rupture of membranes (PROM) refers to the rupture of the amniotic sac and loss of amniotic fluid at least 1 hour prior to the onset of true labor. Preterm premature rupture of the membranes (PPROM) refers to the rupture of membranes prior to the 37th week of gestation. Preterm labor (PTL) and birth are commonly associated with PPROM, and the fetus is endangered because of risk for infection and/or premature birth.

This care plan primarily addresses the care of women who are at risk for PROM, regardless of etiology. For the actual complication refer to the topic, “Premature Rupture of Membranes,” beginning on p. XXX in Chapter 6.

Etiologies and Risk Factors
- Chorioamnionitis (infection of the membranes that may be subclinical)
- Incompetent cervix
- Weak amniotic sac structure
- Fetal malpresentation
- Fetal abnormality
- Hydramnios
- Vaginal or cervical infection

Signs and Symptoms
- Sudden loss of fluid from the vagina
- Continued leakage of fluid from the vagina

Diagnostic Studies
- Nitrazine paper test: amniotic fluid is alkaline and causes the paper to turn blue
- Ferning: amniotic fluid shows a ferning pattern when placed on a glass slide and examined microscopically
- Cultures: detect the presence of infections such as gonorrhea, Chlamydia, or β-Streptococcus
- Sonogram: assesses amniotic fluid index
- WBC count: WBCs greater than 18,000/mm³ suggest the presence of infection
- Biophysical profile and amniotic fluid volume (AFV): assess for fetal health status and estimates amniotic fluid volume

Medical Management
If PROM actually occurs, if the fetus is too young to survive outside the uterus and PROM does not stimulate labor, the woman is placed on complete bed rest and monitored for indications of infection. If the fetus can survive, labor is usually induced to prevent infection; however, this care plan focuses only on detection and prevention of PROM in women who are at risk for it.

Preventive Nursing Activities
- Teach the woman to notify the healthcare provider immediately if symptoms of vaginitis occur. Some forms of vaginitis predispose the woman to PROM. Early treatment of vaginitis can decrease risk for PROM.
- Teach the importance of monitoring for and reporting signs of PROM. Monitoring and reporting fever, increased heart rate, and foul-smelling vaginal drainage do not prevent PROM, but they facilitate early treatment if PROM does occur. Because PROM represents a threat to both the mother and the fetus, it is important the woman recognizes its occurrence and notifies her healthcare provider immediately. The longer the time between PROM and birth of the baby, the higher the risk for fetal and maternal infection. Refer to “Signs and Symptoms” previously listed.
- Teach the importance of keeping the genital area clean and wiping from front to back after bowel movements. These measures help prevent infection if PROM does occur.

Potential Complication: PRETERM LABOR
Preterm labor (PTL) is the occurrence of regular UCs accompanied by cervical effacement and dilation between 20 and 36 weeks’ gestation. PTL occurs in approximately 12% of pregnancies (Martin, Osterman, & Sutton, 2010). If UCs and cervical changes are identified early, it is often possible to arrest preterm labor and prevent the birth of a premature infant.
This care plan addresses the care of women who are at risk for preterm labor and spontaneous abortion, regardless of the etiology. For the actual complication refer to the topic, "Preterm Labor and Spontaneous Abortion," beginning on p. XXX in Chapter 6.

**Etiologies and Risk Factors**
- Previous event of PTL
- Uterine abnormalities
- Multiple gestation
- Chorioamnionitis
- Polyhydramnios
- PROM
- Placenta previa or abruptio placentae
- Hypertension
- Fetal abnormality
- Malnutrition
- Dehydration
- UTI
- Smoking
- Alcohol or other drug use
- Age older than 40 years
- Age younger than 16 years

**Signs and Symptoms**
- Uterine contractions
- Complaints of low back pain and/ or pelvic pressure
- Cervical changes
- Fetal engagement
- Tachycardia
- Increased vaginal discharge
- Heaviness or aching in the thighs
- Feeling of the baby balking up
- Abdominal pain similar to menstrual cramps
- Diarrhea

**Diagnostic Studies**
- Fetal fibronectin: presence of fetal fibronectin in vaginal secretions prior to membrane rupture may indicate impending PTL. A test is positive when levels are greater than 0.05 mcg/ml and indicates that birth is likely within 7 to 14 days; conversely, if fetal fibronectin is not present, there is a 98% chance the woman will not go into PTL.
- Salivary estriol: salivary E3 at or above 2.1 ng/mL is a common biomarker for spontaneous preterm labor.
- CBC: detects the presence of infection, which may be a contributing factor to PTL. A WBC count greater than 18,000/mm³ indicates the presence of infection.
- Urinalysis: detects the presence of WBCs, RBCs, bacteria, and nitrites, which indicate UTI.

**Medical Management**
- Hospitalization as needed. Hospitalization allows for frequent assessment and careful monitoring to detect changes and prevent birth if possible.
- Administration of tocolytic drugs. Magnesium sulfate halts labor by decreasing acetylcholine levels, which block neuromuscular transmission; terbutaline (Brethine) inhibits labor by stimulating β-2 adrenergic receptors in uterine smooth muscle; and nifedipine (Procardia) inhibits UCs by blocking calcium channels. Tocolytic drugs do not halt labor for greater than 48 to 72 hours, but do allow time for administration of glucocorticoids to enhance fetal lung maturity before birth occurs.
- Intravenous fluids. IV access provides an intravenous route for fluids and drug administration. Fluids support circulation, prevent fluid volume deficit.
- Glucocorticoid administration. Glucocorticoids decrease the risk for respiratory distress syndrome, necrotizing enterocolitis, and intravascular hemorrhage in the neonate.

**Nursing Activities and Rationales**

**Focus Assessments**
- Assess for risk factors associated with PTL (see "Etiologies and Risk Factors"). Knowledge of risk factors facilitates early recognition and early treatment so that labor can be halted, when possible, to allow fetal maturation and avoidance of complications that may compromise the mother or fetus.
- Project the expected date of birth. This date estimates fetal age and viability, factors that must be considered when determining treatment plans.
- Assess quality and timing of UCs. A pattern of contractions lasting more than an hour and occurring as often as every 10 minutes for at least 30 seconds may indicate PTL when accompanied by cervical changes. Preterm UCs without cervical change do not indicate PTL.
- Assess for cervical changes. Effacement, dilation, softening, or shortening of the cervix indicates the presence of labor and impending birth. If cervical change occurs in the presence of UCs, it is unlikely that labor can be stopped.
Assess for abdominal cramping and pain, or lower back pain. These signs and symptoms are sometimes associated with PTL.

- Assess for excessive discharge of clear fluid from the vagina. This may indicate PROM. Amniotic fluid is clear and can be confused with urinary incontinence. PROM is a common complication of PTL.
- Assess FHR (e.g., nonstress test, contraction stress test). Tachycardia, bradycardia, and decelerations may indicate the presence of fetal distress. Fetal status is a factor in deciding whether the pregnancy can be continued.
- Assess maternal vital signs. Elevated temperature and tachycardia may indicate the presence of infection or dehydration, both of which may be contributing factors to PTL.

Preventive Nursing Activities

- Maintain bed rest with the woman in the lateral position and teach the importance of same. Activity may stimulate UCs. The lateral position maximizes uterine blood flow, prevents pressure on the vena cava and subsequent hypotension, and prevents the fetus from placing pressure on the cervix, which may hasten birth.
- Teach the importance of drinking adequate fluids and eating a nutritious diet. Poor nutrition and dehydration are risk factors for PTL. Uterine irritability and contractions can occur from dehydration.
- Teach the woman how to palpate for and time uterine contractions. This knowledge facilitates the woman’s ability to make an accurate determination of her labor and the need for contacting her provider if she is in danger of delivering at home.
- If risk factors exist or PTL is suspected, advise against intercourse, nipple stimulation, or any activity that produces orgasm. Orgasm involves rhythmic contractions of the uterus. Nipple stimulation and prostaglandins in semen can stimulate UCs even if orgasm does not occur.
- Assist woman/partner with planning for assistance with usual household or parenting responsibilities. This facilitates compliance with bedrest restrictions required to help decrease UCs.

### Potential Complication: HYPERTENSIVE DISORDERS

Hypertensive disorders include the medical diagnoses of preeclampsia, preeclampsia with severe features, eclampsia, chronic hypertension (CHTN), and preeclampsia superimposed on chronic hypertension and gestational hypertension. Women with hypertensive disorders may have mild elevations of BP or severe elevations in BP accompanied by various organ dysfunctions. Eclampsia is defined as the new onset of seizures during pregnancy in the absence of CNS lesions (American College of Obstetricians and Gynecologists [ACOG], 2013).

This care plan primarily addresses the care of women at risk for hypertensive disorders, regardless of the etiology. For hypertensive disorders refer to the topic, “Hypertensive Disorders of Pregnancy,” beginning on p. XXX in Chapter 6.

#### Etiologies and Risk Factors

- Age older than 40 years or younger than 18 years
- Family history
- Diabetes mellitus
- Multiple gestation
- Chronic hypertension
- Obesity

#### Signs and Symptoms

**Preeclampsia**

- Systolic BP greater than or equal to 140 mmHg or diastolic BP greater than or equal to 90 mmHg after 20 weeks gestation in a woman with previously normal BP
- Total protein/creatinine greater than or equal to 0.3, 300 mg or greater of protein in 24 hours, or 1+ on urine dip-stick after 20 weeks gestation
- Preeclampsia can occur with elevated BP in the absence of proteinuria when accompanied by thrombocytopenia, impaired liver function, new onset renal insufficiency, pulmonary edema, or visual or cerebral disturbances

**Preeclampsia with Severe Features**

- Systolic BP greater than or equal to 160 mmHg or diastolic BP greater than or equal to 110 mmHg on at least two occasions, 4 hours apart, while on bed rest
- New onset renal insufficiency with serum creatinine greater than 1.1 mg/dL
- Visual disturbances (e.g., blurred vision, spots before eyes)
- Pulmonary edema, dyspnea, moist breath sounds on auscultation, and/or cyanosis
- Elevated liver enzymes
- Thrombocytopenia
- Weight gain, edema (face, fingers)
- Fetal compromise (growth restriction, placental premature aging)

**Eclampsia**

- Seizures (new onset in absence of CNS lesions)

**Chronic Hypertension (CHTN)**

- Prepregnancy hypertension or onset of hypertension prior to 20th week of pregnancy
- Prepregnancy use of antihypertensive medication
- Failure of BP normalization following pregnancy
Preeclampsia Superimposed on Chronic Hypertension

- CHTN plus preeclampsia or preeclampsia with severe features
- HELLP Syndrome (hemolysis, elevated liver enzymes, and low platelet count). A laboratory diagnosis of a variant of severe preeclampsia with hematologic and hepatic involvement

Gestational Hypertension

- Hypertension after 20 weeks’ gestation without proteinuria
- If proteinuria develops, diagnosis changes to preeclampsia
- If BP remains elevated for more than 12 weeks, diagnosis changes to chronic hypertension

Diagnostic Studies

Diagnostic studies are based on severity of diagnosis, e.g., pre-eclampsia vs. preeclampsia with severe features.

- Urinalysis: verifies presence of proteinuria. 1+ or 2+ protein or more than 300 mg/L in a 24-hour specimen; for severe pre-eclampsia, greater than 2 g of protein in a 24-hour specimen.
- Hct: may be reduced because of anemia.
- Serial BP readings: BP reading should be taken in upright position following a 10-minute rest period and repeated 4 hours after the initial reading to confirm consistent BP elevation.
- Thrombocyte count: platelet count less than or equal to 100,000/μl for preeclampsia, eclampsia with severe features, HELLP syndrome, chronic hypertension superimposed on preeclampsia, and gestational hypertension with severe features. Repeated weekly.
- ALT/AST: elevated in preeclampsia and hypertensive conditions with severe features. Repeated weekly.
- Serum creatinine: elevated (in the absence of other renal conditions/diseases) in preeclampsia and hypertensive disorders with severe features.
- Urinary protein: urinary protein is no longer used to predict maternal or fetal outcome in the presence of preeclampsia. Women can experience significant illness and organ dysfunction without experiencing proteinuria (ACOG, 2013).

Medical Management

Medical management of hypertensive disorders during pregnancy depends on the type of disorder, severity of the symptoms, gestational age, and the woman’s compliance with the medical regimen.

Preeclampsia

- Home care with BP checks twice weekly
- If admitted to acute care facility:
  - Bed rest is not routinely recommended
  - BP every 6 hours
- Daily evaluation of weight, CNS, fetal movement, vaginal bleeding, and contractions
- Weekly platelet count and liver enzymes
- Magnesium sulfate is not recommended unless BP exceeds 160/110 or unless accompanied by headaches or blurred vision (see “Preeclampsia with Severe Features”)
- Antihypertensive medications are not recommended unless BP exceeds 160/110 (see “Preeclampsia with Severe Features”)

Specific treatments for each hypertensive disorder are discussed in Chapter 6, beginning on p. XXX.

Nursing Activities and Rationales

Focus Assessments

- Assess for early indicators of hypertensive disease progression. Elevated BP, urine protein, oliguria, weight gain, facial and/or peripheral edema, changes in neurologic status (e.g., headaches, blurred vision, hyperactive knee jerk, irritability, tinnitus), decreased respirations, lung sounds (for pulmonary edema), and epigastric or right upper quadrant abdominal pain (liver involvement) are early indicators of disease progression and the possible need for increased bed rest and other restrictions. Many of the clinical manifestations of hypertension during pregnancy are the result of vasoconstriction of the arterioles, e.g., reduced glomerular filtration rate resulting in protein loss in the urine and reduced urinary output, and sodium and water retention, which in turn contribute to generalized edema. However, preeclampsia can occur in the absence of proteinuria.
- Assess for the availability of resources to help support the high-risk woman in the home environment. Bed rest at home is no longer recommended before the birth; however, the woman may require assistance with frequent visits to the provider/clinic for assessments, which may stress financial resources. Those lacking in financial and other support systems may need referrals to appropriate community resources.

Preventive Nursing Activities

- Teach the importance of eating a well-balanced diet. Nutritional deficiencies, especially protein and calcium, may contribute to the development of hypertensive disorders. However, it has not been proven that deficient diets causes preeclampsia or that dietary changes treat or prevent preeclampsia. A high-protein diet does help replace protein that may be lost in the urine, even though preeclampsia can occur in the absence of proteinuria.
- Teach the importance of regular prenatal visits. Regular monitoring helps ensure that patterns or changes in BP suggesting preeclampsia will be detected.
Potential Complication: URINARY TRACT INFECTION

Urinary tract infection (UTI) refers to symptomatic infections such as cystitis or pyelonephritis and asymptomatic bacteriuria (urine containing bacteria). Bacteria can enter the urinary tract from the bloodstream or from the lower urinary tract. Escherichia coli is the most common cause of UTIs, which result from introducing the bacteria via contaminated catheters or from ascending infection. UTIs can be serious enough to cause renal damage. They are more common in female patients because of the shorter length of the urethra. UTIs are especially common during pregnancy, when the urinary structures (renal calices, pelvis, and ureters) begin to dilate at the same time that peristalsis of the ureters decreases. These changes are related to progesterone-like hormones and obstruction from the growing uterus. The result is urinary stasis, which provides an environment conducive for bacterial proliferation. As the uterus continues to enlarge, the bladder becomes displaced, placing it at further risk for infection.

This care plan addresses the care of women who are at risk for UTI, regardless of the etiology. For the actual complication refer to the topic, “Urinary Tract Infection,” beginning on p. XXX in Chapter 6.

Etiologies and Risk Factors
- Pregnancy itself
- Diabetes mellitus
- Renal abnormalities
- Poor hygiene

Signs and Symptoms

Lower Urinary Tract Infection (Cystitis)
- Tenderness over urinary bladder
- Burning or pain on urination (dysuria)
- Urinary urgency and frequency
- Blood in the urine (hematuria)
- Malaise

Upper Urinary Tract Infection (Pyelonephritis)
- Chills
- Fever
- Unilateral or bilateral flank pain
- Malaise
- Nausea and vomiting
- Appearance of being sick

Diagnostic Studies
- Urinalysis: the presence of more than 100,000 organisms per ml urine indicates microbial overgrowth (infection).
- Urine culture and sensitivity: identify causative organism and appropriate antimicrobial agent.
- CT and renal scans: rule out contributing factors when infections are severe and/or recurrent.
- Urine leukocyte count: value greater than 10 leukocytes/μL indicates injury rather than infection.

Medical Management
Medical management is based on the type of infection and causative organism. Most infections are successfully treated with antimicrobial agents and increased fluid intake. The following care plan, however, focuses on detection and prevention of potential UTIs.
- Antiseptics: inhibit microbial growth.
- Analgesics: reduce pain.
- Cranberry pills, vitamin C, or blueberry juice: these may help prevent UTIs in susceptible women because they prevent bacteria from adhering to the bladder wall and change the pH of the urine, producing a hostile environment for bacterial growth. They do not kill bacteria. Note: Cranberry juice can also be effective, but juices contain sugar and can contribute to the problem if ingested in large quantities.
- Antibiotics: after two documented episodes of pyelonephritis, women are placed on antibiotics for the remainder of their pregnancies to prevent future episodes. Some providers initiate suppressive therapy after only one occurrence of pyelonephritis. Nitrofurantoin (Macrodantin) is the drug most often used for suppressive therapy.

Nursing Activities and Rationales

Focus Assessments
- Assess for risk factors. Knowledge of risk factors helps identify women at increased risk for development of UTIs so that preventive measures, such as increased fluid intake, can be recommended and implemented.
- Assess vital signs. Recording of vital signs establishes a baseline for women at increased risk for UTI and helps reveal signs of UTI, such as fever and tachycardia.
Assess urinalysis. Urinalysis distinguishes between normal urine and urine reflective of injury or infection. Increased bacterial counts support the presence of UTI, whereas increased leukocyte counts support the presence of inflammation or injury.

- Assess for signs/symptoms of UTI and report abnormal findings. Bladder tenderness, urinary frequency and urgency, and dysuria occur from bacterial irritation of the bladder lining and urethra. Fever, chills, and malaise result from the immune response to infection.

Preventive Nursing Activities

- Encourage increased fluid intake. Fluids flush bacteria out of the urinary system and help prevent ascending infections. Increasing fluid intake is often effective in preventing infections.
- Encourage intake of cranberry pills, vitamin C tablets, or blueberry juice. These prevent bacterial adhesion to the bladder wall and may reduce the incidence of UTIs. They do not kill bacteria, but produce a hostile bacterial environment, reducing bacterial growth. Note: Cranberry juice can also be effective, but juices contain sugar and can contribute to the problem if ingested in large quantities.
- Teach the woman to urinate after sexual intercourse. Sexual intercourse may transfer E. coli from the anal area into the urethra and force bacteria colonized at the urethra back up into the bladder. Urinating flushes bacteria out of the bladder and urethra.
- Teach the woman signs and symptoms of UTIs, and emphasize the need to report such infections early. Knowledge of the signs and symptoms of UTI helps ensure the woman will report them so early treatment to prevent renal damage or chronic urinary tract infection will be implemented.
- Teach the importance of taking medications as prescribed and finishing the entire course. Taking the medication as prescribed, e.g., one tablet twice each day, and finishing the entire course of antibiotic therapy helps prevent drug-resistant strains of bacteria from developing and reduces recurrence of infection.

REFERENCES


RESOURCES


