Chapter 31
Obstetrics and Neonatal Care

Unit Summary

After students complete this chapter and the related course work, they will understand the anatomy and physiology of the female reproductive system as it relates to pregnancy. They will learn the assessment and emergency treatment for childbirth including stages of labor, normal delivery, complications of pregnancy, and neonatal evaluations and resuscitation.

National EMS Education Standard Competencies

Special Patient Populations

Applies a fundamental knowledge of growth, development, and aging and assessment findings to provide basic emergency care and transportation for a patient with special needs.

Obstetrics

- Recognition and management of:
  - Normal delivery (pp 1115i-1124)
  - Vaginal bleeding in the pregnant patient (pp 1112i-1113, 1132)
- Anatomy and physiology of normal pregnancy (pp 1107i-1111)
- Pathophysiology of complications of pregnancy (pp 1111i-1114)
- Assessment of the pregnant patient (pp 1115i-1117)
- Management of:
  - Normal delivery (pp 1117i-1124)
  - Abnormal delivery (pp 1122i-1123, 1128i-1132)
    - Nuchal cord (pp 1122i-1123)
    - Prolapsed cord (p 1129)
    - Breech delivery (p 1128)
  - Third trimester bleeding (pp 1112i-1113)
    - Placenta previa (pp 1112i-1113)
    - Abruptio placenta (pp 1112i-1113)
- Spontaneous abortion/miscarriage (pp 1129i-1130)
- Ectopic pregnancy (pp 1111i-1112)
- Preeclampsia/eclampsia (pp 1111i-1112)

Neonatal care

Assessment and management of:
- Newborn care (pp 1124i-1128)
- Neonatal resuscitation (pp 1124i-1128)

Trauma

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely injured patient.

Special Considerations in Trauma
Recognition and management of trauma in the:

- Pregnant patient (pp 1113-1114)
- Pediatric patient (Chapter 32, "Pediatric Emergencies")
- Geriatric patient (Chapter 33, "Geriatric Emergencies")

Pathophysiology, assessment, and management of trauma in the:

- Pregnant patient (pp 1112-1113)
- Pediatric patient (Chapter 32, "Pediatric Emergencies")
- Geriatric patient (Chapter 33, "Geriatric Emergencies")
- Cognitively impaired patient (Chapter 34, "Patients With Special Challenges")

Knowledge Objectives

1. Be familiar with the anatomy and physiology of the female reproductive system. (pp 1107-1109)
2. Understand the normal changes that occur in the body during pregnancy. (pp 1109-1110)
3. Differentiate between the three stages of labor. (pp 1110-1111)
4. Recognize complications of pregnancy including hypertensive disorders, bleeding, and gestational diabetes. (pp 1111-1113)
5. Understand the need to consider two patients—the woman and the unborn fetus—when treating a pregnant trauma patient. (pp 1113-1114)
6. Be aware of special considerations involving pregnancy in different cultures and with teenage patients. (pp 1114-1115)
7. Describe assessment of the pregnant patient. (pp 1115-1117)
8. Explain the significance of meconium in the amniotic fluid. (pp 1116-1117)
9. Describe the indications of an imminent delivery. (pp 1116-1117)
10. Explain the steps involved in normal delivery management. (pp 1117-1123)
11. List the contents of an obstetrics kit. (p 1118)
12. Explain the necessary care of the baby as the head appears. (pp 1120-1123)
13. Describe the procedure followed to cut and tie the umbilical cord. (pp 1123-1124)
14. Describe delivery of the placenta. (p 1124)
15. Understand the steps to take in neonatal assessment and resuscitation. (pp 1124-1128)
16. Recognize complicated delivery emergencies including breech presentations, limb presentations, umbilical cord prolapse, spina bifida, abortion (miscarriage), multiple gestation, abuse, substance abuse, premature infants, postterm pregnancy, fetal demise, and delivery without sterile supplies. (pp 1128-1132)
17. Describe and know how to deal with postpartum complications. (p 1132)

Skills Objectives

1. Demonstrate the procedure to assist in a normal cephalic delivery. (pp 1117-1123, Skill Drill 31-1)
2. Demonstrate care procedures of the infant as the head appears. (pp 1120-1122)
3. Demonstrate the steps to follow in postdelivery care of the infant. (pp 1123-1124)
4. Demonstrate how to cut and tie the umbilical cord. (pp 1123-1124)
5. Demonstrate how to assist in delivery of the placenta. (p 1124)
6. Demonstrate the postdelivery care of the mother. (pp 1123-1124)
I. Introduction

A. Most infants in the United States are delivered in a hospital, with doctors and nurses in attendance to care for the mother and the newborn infant.

B. Occasionally, the birth process moves faster than the mother expects.

C. You must then decide whether to:
   1. Stay on the scene and deliver the infant
   2. Transport the patient to the hospital

II. Anatomy and Physiology of the Female Reproductive System

A. The female reproductive system includes:
   1. Ovaries
   2. Fallopian tubes
   3. Uterus
   4. Cervix
   5. Vagina
   6. Breasts

B. The ovaries are two glands, one on each side of the uterus, that are similar in function to the male testes.
   1. Each ovary contains thousands of follicles, and each follicle contains an egg.
   2. Females are born with all the eggs they will release in their lifetime.
   3. During each menstrual cycle, there will only be one follicle that is successful at maturing and is able to release an egg.
   4. Ovulation occurs approximately 2 weeks prior to menstruation.
   5. If fertilized, the egg implants in the endometrium, or the lining, of the inside of the uterus.
   6. If the egg is not fertilized within 36 to 48 hours after it has been released, the lining is shed as menstrual flow.
      a. Occurs around the 28th day of a woman’s cycle

C. The fallopian tubes extend out laterally from the uterus, with one tube associated with each ovary.
   1. Fertilization, when a sperm meets the egg, usually occurs when the egg is inside the fallopian tube.
   2. The fertilized egg then continues to the uterus where it continues to develop into an embryo and implants in the wall of the uterus.

D. The uterus, or womb, is a muscular organ, and it is here that the fetus grows for approximately 9 months (40 weeks).
   1. The uterus is responsible for contractions during labor and ultimately helps to push the infant through the birth canal.
   2. The birth canal is made up of the vagina and the lower third, or neck, of the uterus, called the cervix.
      a. During pregnancy, the cervix contains a mucous plug that seals the uterine opening, preventing contamination.
      b. When the cervix begins to dilate, this plug is discharged into the vagina as pink-tinged mucus, or bloody show.
c. This small amount of blood appears at the beginning of labor and may signal the first stage of labor.

E. The vagina is the outermost cavity of the female reproductive system and forms the lower part of the birth canal.
   1. It is about 8 to 12 cm in length, begins at the cervix, and ends as an external opening of the body.
   2. The vagina completes the passageway from the uterus to the outside world for the infant.
   3. The perineum is the area of skin between the vagina and the anus.

F. The breasts produce milk that is carried through small ducts to the nipple to provide nourishment to the infant once it is born.
   1. Signs of pregnancy in the breasts include increased size and tenderness.

G. The placenta, a disk-shaped structure, attaches to the inner lining of the wall of the uterus and is connected to the fetus by the umbilical cord.
   1. The placental barrier consists of two layers of cells, keeping the circulation of the woman and fetus separated but allowing substances to pass between them.
   2. Anything ingested by a pregnant woman also affects the fetus, including:
      a. Nutrients
      b. Oxygen
      c. Waste
      d. Carbon dioxide
      e. Many toxins
      f. Most medications
   3. After delivery, the placenta, or afterbirth, separates from the uterus and is delivered.
   4. The umbilical cord is the lifeline of the fetus, connecting the woman and fetus through the placenta.
      a. The umbilical vein carries oxygenated blood from the woman to the heart of the fetus.
      b. The umbilical arteries carry deoxygenated blood from the heart of the fetus to the woman.

H. The fetus develops inside a fluid-filled, baglike membrane called the amniotic sac, or bag of waters.
   1. The sac contains about 500 to 1,000 mL of amniotic fluid, which helps insulate and protect the floating fetus.
   2. The amniotic fluid is released in a gush when the sac ruptures, usually at the beginning of labor.

III. Normal Changes in Pregnancy

A. During pregnancy, many normal changes occur in the body that are not all directly related to the reproductive system.
   1. The primary systems involved with these changes are the respiratory, cardiovascular, and musculoskeletal systems.

B. In the reproductive system, hormone levels increase to support fetal development and prepare the body for childbirth.
   1. This puts patients at an increased risk for complications from trauma, bleeding, and some medical conditions.
   2. As the fetus develops and grows, the uterus also grows, stretching to accommodate a full-term infant.
   3. As the size of the uterus increases, so does the amount of fluid it must hold.
      a. Uterus is displaced out of its normally protected position.
      b. This increases the chance of direct fetal injury.
      c. The size of the uterus will also have a direct effect on the respiratory and cardiovascular systems because the organs are shifted from their normal position.

C. Rapid uterine growth occurs in the second trimester of pregnancy.
   1. As the uterus grows, it pushes up on the diaphragm and displaces it from its normal position.
2. As the pregnancy continues, respiratory capacity changes, with increased respiratory rates and decreasing minute volumes.

3. Overall blood volume gradually increases throughout the pregnancy to:
   a. Meet the increased needs of the fetus
   b. Allow for adequate perfusion of the uterus
   c. Prepare for the blood loss that will occur during childbirth

4. Blood volume may eventually increase as much as 50% by the end of the pregnancy.

5. The number of red blood cells also increases.

6. The patient is able to clot faster to protect herself from excessive bleeding during delivery.

7. By the end of pregnancy, the pregnant patient’s heart rate increases up to 20% to accommodate the increase in blood volume.

8. Cardiac output is significantly increased.

D. In the third trimester, there is an increased risk of vomiting and potential aspiration following trauma because of changes that occur in the gastrointestinal tract.

1. Changes in gastrointestinal motility and the displacement of the stomach upward significantly increase the chance that a pregnant trauma patient will vomit and aspirate if you are unable to clear her airway.

E. Changes in the cardiovascular system and the increased demands of the fetus significantly increase the workload of the heart.

1. Remember, not all women are healthy when they begin pregnancy.

2. Cardiac compromise is a life-threatening possibility.

F. Weight gain is expected in pregnant patients.

1. The increase in body weight will eventually challenge the heart and musculoskeletal system.

2. Increased hormones affect the musculoskeletal system by making the joints more “loose” or less stable.

3. In the third trimester, changes in the body’s center of gravity increase the risk of slips and falls.

IV. Stages of Labor

A. There are three stages of labor: dilation of the cervix, delivery of the infant, and delivery of the placenta.

1. The first stage begins with the onset of contractions as the fetus enters the birth canal and ends when the cervix is fully dilated.

2. The first stage is usually the longest, lasting an average of 16 hours for a first delivery.

3. The onset of labor starts with contractions of the uterus.
   a. Other signs of the beginning of labor are the bloody show and the rupture of the amniotic sac.
   b. The frequency and intensity of contractions in true labor increase with time.
   c. The uterine contractions become more regular and last about 30 to 60 seconds each.

4. Labor is generally longer in a primigravida than in a multigravida.
   a. A primigravida is a woman experiencing her first pregnancy.
   b. A multigravida is a woman who has experienced previous pregnancies.

5. Table 31-1 discusses how to tell when true labor is occurring.
   a. A woman may experience preterm or false labor, or Braxton-Hicks contractions.
   b. You should provide transport for the patient.
   c. If true labor is occurring, you may need to prepare for a delivery.

6. Some women experience a premature rupture of the membranes, in which the amniotic sac ruptures too early and the fetus is not developed or ready to be born.
a. The patient may or may not go into labor.
   b. You will need to provide supportive care and transport to the hospital.

B. Toward the end of the third trimester, the head of the fetus normally descends into the woman’s pelvis as the fetus positions for delivery.
   1. This movement down into the pelvis and the sensation that may accompany the descent is called lightening.

C. The second stage of labor begins when the fetus begins to encounter the birth canal and ends when the infant is born (spontaneous birth).
   1. During this stage, you will have to make a decision about helping the mother to deliver at the scene or providing transport to the hospital.
   2. Uterine contractions are usually closer together and last longer.
   3. Under no circumstances should you let the mother sit on the toilet.
   4. The perineum will begin to bulge significantly, and the top of the infant’s head should begin to appear at the vaginal opening.
      a. This is called crowning.

D. The third stage of labor begins with the birth of the infant and ends with the delivery of the placenta.
   1. During this stage, the placenta must completely separate from the uterine wall.
   2. Always follow standard precautions to protect yourself, the infant, and the mother from exposure to body fluids.

V. Complications of Pregnancy

A. Most pregnant women are healthy, but some may be ill when they conceive or become ill during pregnancy.
   1. You may safely use oxygen to treat any heart or lung disease in a pregnant patient without harm to the fetus.

B. Hypertensive disorders
   1. One complication that occurs most commonly in patients who are pregnant for the first time is preeclampsia, or pregnancy-induced hypertension.
      a. This condition can develop after the 30th week of gestation.
      b. Characterized by the following signs and symptoms:
         i. Headache
         ii. Seeing of spots
         iii. Swelling in the hands and feet (edema)
         iv. Anxiety
         v. High blood pressure
   2. Another condition, eclampsia, is characterized by seizures that occur as a result of hypertension.
      a. To treat eclampsia:
         i. Lie the patient on her side, preferably her left side.
         ii. Maintain an airway.
         iii. Provide supplemental oxygen.
         iv. If vomiting occurs, suction the airway.
         v. Provide rapid transport.
         vi. Call for an ALS intercept, if available.
   3. Transporting the patient on her left side can also prevent supine hypotensive syndrome.
      a. This condition is caused by compression of the descending aorta and the inferior vena cava by the pregnant uterus when the patient lies supine.
      b. Hypotension results.

C. Bleeding
1. Internal bleeding may be the sign of an ectopic pregnancy, a pregnancy that develops outside the uterus, most often in a fallopian tube.
   a. This occurs about once in every 300 pregnancies.
   b. The leading cause of maternal death in the first trimester is internal hemorrhage into the abdomen following rupture of an ectopic pregnancy.
   c. You should consider the possibility of an ectopic pregnancy in women who have missed a menstrual cycle and complain of sudden stabbing and usually unilateral pain in the lower abdomen.

2. Hemorrhage from the vagina that occurs before labor begins may be very serious; call for ALS backup.
   a. In early pregnancy, it may be a sign of a spontaneous abortion, or miscarriage.
   b. In the later stages of pregnancy, vaginal hemorrhage may indicate a serious condition involving the placenta.
      i. In abruptio placenta, the placenta separates prematurely from the wall of the uterus, most commonly from hypertension in the mother and as a result of trauma.
      ii. In placenta previa, the placenta develops over and covers the cervix.

3. Decreasing the patient’s anxiety during these situations will directly impact how she and the fetus may respond during the emergency.

D. Diabetes
   1. Diabetes develops during pregnancy in many women who have not had diabetes previously.
   2. This condition, called gestational diabetes, will clear up after delivery.
   3. The treatment is the same as for any other patient with diabetes.
      a. A pregnant woman may control her blood glucose level with diet and exercise or may take medication.
      b. In some cases, the woman will have to manage her condition with insulin injections.

VI. Special Considerations for Trauma and Pregnancy

A. With a trauma call involving a pregnant patient, you have two patients to consider—the woman and the unborn fetus.
   1. Any trauma to the woman has a direct effect on the condition of the fetus.
   2. Pregnant women may be victims of many types of trauma, including:
      a. Assaults
      b. Motor vehicle crashes
      c. Shootings
      d. Domestic abuse

B. Pregnant women also have an increased risk of falls compared with nonpregnant women.
   1. Hormonal changes loosen up the joints in the musculoskeletal system.
   2. The weight of the uterus and displacement of abdominal organs can change the patient’s balance.

C. Pregnant women have an increased amount of overall total blood volume and an approximate 20% increase in their heart rate by the third trimester.
   1. A pregnant trauma patient may have a significant amount of blood loss before you will see or detect signs of shock.
   2. The fetus also may be in trouble well before signs of shock are present.

D. Pregnant trauma patients need to have additional concerns considered and unique types of injuries assessed for and managed.
   1. The uterus is especially vulnerable to penetrating trauma and blunt injuries.
   2. Some data suggest that almost 70% of all penetrating abdominal trauma in pregnant patients results in fetal injury.
   3. A trauma injury to the pregnant uterus can be life threatening to the woman and fetus because the uterus has a rich blood supply.
4. In most cases, the only chance to save the fetus is to adequately resuscitate the woman.

E. When a pregnant woman is involved in a motor vehicle crash or a similar mechanism of injury (MOI), severe hemorrhage may occur from injuries to the pregnant uterus.

1. Trauma is one of the leading causes of abruptio placenta.

2. You should suspect abruptio placenta when the MOI is blunt trauma to the abdomen and the patient’s signs and symptoms are suggestive of shock.

3. Significant vaginal bleeding is common with severe abdominal pain.
   a. Quickly assess and transport the patient.
   b. Support the airway.
   c. Administer high-flow oxygen.
   d. Place sanitary pads on the vagina.
   e. Position the patient on her left side.
   f. Call for ALS backup.

4. Not all pregnant women properly position their seatbelts when in a vehicle.
   a. If a pregnant woman is involved in a motor vehicle crash with an improperly positioned seatbelt, the seatbelt can cause harm to the woman and fetus.
   b. Carefully assess a pregnant woman’s abdomen and chest for seatbelt marks, bruising, and obvious trauma.

F. If a pregnant trauma patient goes into cardiac arrest, your focus is the same as with other patients in cardiac arrest.

1. Remember that the only chance you have to save the infant is to do all you can to save the mother.

2. Perform CPR and provide transport to the hospital according to local protocol.

3. You should notify the receiving facility personnel as soon as possible that you are en route with a pregnant trauma patient in cardiac arrest.

G. Assessment and management

1. Your focus is on the assessment and the management of the woman.
   a. You should suspect shock based on the MOI.
   b. Be prepared for vomiting, and anticipate the need to manage the airway to protect the patient from aspirating.
   c. Attempt to determine the gestational period to assist you with determining the size of the fetus and the position of the uterus.

2. Follow these guidelines when treating a pregnant trauma patient:
   a. Maintain an open airway.
      i. Be prepared for and anticipate vomiting.
      ii. Keep your suction unit readily available.
   b. Administer high-flow oxygen.
      i. Keep the oxygen saturation level high.
      ii. Administer high-flow, 100% oxygen by nonrebreathing mask.
   c. Ensure adequate ventilation.
      i. Listen to lung sounds and confirm that bilateral breath sounds are present.
      ii. If the patient has inadequate ventilation, provide or assist ventilation with a bag-mask device and 100% oxygen.
   d. Assess circulation.
      i. Maintain a high index of suspicion for internal bleeding and shock based on the MOI.
      ii. Keep the patient warm.
   e. Transport considerations
      i. Transport the patient on her left side.
ii. If spinal injury is suspected, tilt the backboard to the left.

iii. Transport the patient to a trauma center if one is available in your area.

VII. Cultural Value Considerations

A. The United States is a culturally diverse nation.
   1. Women of some cultures may have a value system that will affect:
      a. Their pregnancy
      b. The choice of how they care for themselves during pregnancy
      c. How they have planned the childbirth process
   2. Some cultures may not permit a male health care provider, especially in the prehospital setting, to assess or examine a female patient.
   3. You should respect these differences and honor requests from the patients.
   4. Your responsibility is to the patient and is limited to providing care and transport.
   5. A competent, rational adult has the right to refuse all or any part of your assessment or care.

VIII. Teenage Pregnancy

A. The United States has one of the highest teenage pregnancy rates compared with other developed countries.
   1. There is a good chance that during your career, you will respond to a pregnant teenager who may or may not be in labor.
   2. Adolescents present their own challenges to the EMS community in terms of physical and psychological development, even without being pregnant.

B. Pregnant teenagers may not know they are pregnant or may be in denial about it.
   1. As you begin to assess all female teenagers, remember that pregnancy is a possibility.
   2. Respect the teenager’s privacy and need for independence.
      a. If possible, perform your assessment and obtain the history away from her parents.

IX. Patient Assessment

A. Childbirth is seldom an unexpected event, but there are occasions when childbirth becomes an emergency.
   1. Dispatch protocols usually include the dispatcher asking simple questions to determine whether birth is imminent.
   2. Contractions may be caused by trauma or medical conditions.

B. Scene size-up
   1. Scene safety
      a. Your safety is a priority.
      b. Take standard precautions.
         i. Gloves and eye protection are a minimum if delivery has already begun or is complete.
         ii. If the call is going to result in a field delivery and if time allows, a mask and gown should also be used.
      c. Do not be complacent in your safety observations and precautions.
      d. Remain calm and professional.
      e. Consider calling for additional or specialized resources.
   2. Mechanism of injury/nature of illness
      a. You will encounter pregnant patients who are not in labor, so it is important to determine the MOI or NOI.
      b. Do not maintain tunnel vision during a call.
      c. Falls and spinal immobilization must be considered.
C. Primary assessment

1. Form a general impression.
   a. The general impression should tell you whether the patient is in active labor or if you have time to assess for imminent delivery and address other possible life threats.
   b. Perform a rapid scan of the patient.
   c. Take a moment to confirm whether the infant will be delivered in the next few minutes or whether you have time to continue to evaluate the situation.
   d. When trauma or other medical problems are the presenting complaint, evaluate these first and then assess the impact of these problems on the fetus.
   e. Use the AVPU scale to determine the patient’s level of consciousness.

2. Airway and breathing
   a. During an uncomplicated birth, life-threatening conditions with the mother’s airway and breathing are not usually an issue.
   b. However, a motor vehicle crash, an assault, or any number of medical conditions may cause a life threat to exist, and, sometimes, result in a complicated delivery.
      i. Assess the airway and breathing to ensure they are adequate.
      ii. If needed, provide airway management and high-flow oxygen.

3. Circulation
   a. External and internal bleeding are potential life threats to the patient and should be assessed early on.
   b. Blood loss after delivery is expected, but significant bleeding is not.
   c. Quickly assess for any potential life-threatening bleeding, and begin treatment immediately.
   d. Assess the skin for color, temperature, and moisture.
   e. Check the pulse to determine if it is too fast or too slow.
   f. If there are signs of shock, control the bleeding, give oxygen, and keep the patient warm.

4. Transport decision
   a. If delivery is imminent, you must prepare to deliver at the scene.
      i. The ideal place to deliver an infant is in the security of your ambulance or the privacy of the mother’s home.
      ii. The area should be warm and private with plenty of room to move around.
   b. If delivery is not imminent, prepare the patient for transport and perform the remainder of the assessment en route to the emergency department.
      i. Administer oxygen.
      ii. Pregnant women in the last two trimesters of pregnancy should be transported lying on the left side when possible.
      iii. If spinal immobilization is indicated, secure the mother to the backboard and elevate the right side of the board with rolled towels or blankets.
   c. Provide rapid transport for pregnant patients who:
      i. Have significant bleeding and pain
      ii. Are hypertensive
      iii. Are having a seizure
      iv. Have an altered mental status

D. History taking

1. Investigate the chief complaint.
   a. You will encounter pregnant patients who are not in labor.
      i. Your thorough patient assessment will enhance your ability to determine the patient’s primary problem.
   b. Determine a pregnant patient’s chief complaint, and begin asking questions that will help you identify the cause of her complaint and the associated signs and symptoms.
c. You should obtain a thorough obstetric history, including:
   i. Her expected due date
   ii. Any complications that she is aware of
   iii. If she has been receiving prenatal care
   iv. Her thorough medical history

d. Most pregnant patients in the late stages of pregnancy will be able to tell you if they feel anything different with the fetus.

e. If your patient is in labor, focus your questions to determine whether delivery is imminent, and find out:
   i. How long the contractions have been occurring and how long they are lasting
   ii. Whether the patient’s water has broken
   iii. Whether the patient feels like having a bowel movement

2. Obtain a SAMPLE history.
   a. Some pregnant women have a history of medical problems and take prescription medications.
   b. Some women who have not experienced medical problems require medications when they become pregnant.
   c. Do not focus only on the pregnant history; obtain a SAMPLE history as well.
      i. Pertinent past history should relate specifically to prenatal care.
      ii. Identify any complications she may have had during the pregnancy or potential complications during delivery.
      iii. Determine the due date, frequency of contractions, a history of previous pregnancies and deliveries.
      iv. Determine whether there is a possibility of twins and whether the mother has taken any drugs or medications.
   d. If her water is broken, ask whether the fluid was green.
      i. Green fluid is due to meconium (fetal stool).
      ii. The presence of meconium can indicate newborn distress, and it is possible for the fetus to aspirate meconium during delivery.

E. Secondary assessment

   1. Physical examinations
      a. A complete assessment of the major body systems should also be performed, with emphasis on the patient’s chief complaint.
      b. Assess for fetal movement by asking the patient whether she can feel the baby moving.
      c. For a pregnant patient who is in labor, your physical examination should be focused on contractions and possible delivery.
      d. If at any point you suspect that delivery is imminent, you should check for crowning.
      e. If you do not suspect an imminent delivery and the patient has other complaints unrelated to delivery, you should not visually inspect the vaginal area.

   2. Vital signs
      a. Vital signs should include pulse; respirations; skin color, temperature, and condition; and blood pressure.
      b. Pay special attention to tachycardia and hypotension or hypertension.
      c. It is typical for a woman’s blood pressure to drop slightly during the first two trimesters of pregnancy but return to normal during the third trimester.
      d. Hypertension, even mildly elevated blood pressure, may indicate more serious problems.

F. Reassessment

   1. Repeat the primary assessment with a focus on the patient’s ABCs and vaginal bleeding, particularly after delivery.
   2. Obtain another set of vital signs and compare with those obtained earlier.
   3. Recheck interventions and treatments to see whether they were effective.
   4. Uterine massage can be used to slow vaginal bleeding after delivery.
5. Interventions
   a. In most cases, childbirth is a natural process that does not require your assistance.
   b. When childbirth is complicated by trauma or other conditions, any interventions you provide for the patient will benefit the fetus.

6. Communication and documentation
   a. If your assessment determines that delivery is imminent, notify staff at the receiving hospital.
      i. Provide an update on the status of the mother and newborn after delivery.
   b. On the rare occasion that delivery does not occur within 30 minutes or you determine that a complication is occurring that cannot be treated in the field, notify the hospital and provide rapid transport.
   c. For a pregnant patient with a complaint unrelated to childbirth, be sure to include the pregnancy status of the patient in your radio report.
   d. The hospital staff will want to know:
      i. The number of weeks of gestation
      ii. Her due date
      iii. Any known complications of the pregnancy
   e. You will have two patient care reports to complete.

X. Normal Delivery Management

A. Preparing for delivery
   1. Consider delivering the infant at the scene when:
      a. Delivery can be expected within a few minutes
      b. A natural disaster, inclement weather, or other environmental factor makes it impossible to reach the hospital
   2. To determine if delivery is imminent, ask the patient the following questions:
      a. How long have you been pregnant?
      b. When are you due?
      c. Is this your first baby?
      d. Are you having contractions?
         i. How far apart are they?
         ii. How long do they last?
      e. Do you feel as though you will have a bowel movement?
      f. Have you had any spotting or bleeding?
      g. Has your water broken?
      h. Were any of your previous children delivered by cesarean section?
   3. To help determine potential complications, ask these questions:
      a. Have you had problems in a previous pregnancy?
      b. Do you use drugs, drink alcohol, or take any medications?
      c. Do you know if there is a chance of a multiple birth (having twins, more than one baby)?
      d. Does your doctor expect any complications?
   4. If the patient has delivered before, she may be able to tell you whether she is about to deliver.
      a. If the patient says that she is about to deliver, you should immediately prepare for delivery.
      b. Otherwise, does she have an extremely firm abdomen?
      c. Does she say that she has to move her bowels or feels the need to push?
      d. If so, the infant’s head is probably pressing on the rectum, and delivery is about to occur.
      e. At this point, you should visually inspect the vagina to check for crowning.
      f. Do not touch the vaginal area until you have determined that delivery is imminent.
5. Once labor has begun, there is no way it can be slowed or stopped.
   a. Never attempt to hold the patient’s legs together.
   b. Do not let her go to the bathroom.
   c. Instead, reassure her that the sensation of needing to move her bowels is normal and that it means she is about to deliver.

6. If your decision is to deliver at the scene, remember that you are only assisting the woman with the delivery.
   a. Your part is to help, guide, and support the baby as it is born.
   b. You want to appear calm and reassuring while protecting the woman’s modesty.
   c. Recognize when the situation is beyond your level of training.
   d. If delivery is imminent, contact medical control for a decision to deliver on the scene or to transport.

7. Your emergency vehicle should always be equipped with a sterile emergency obstetric (OB) kit, including:
   a. Surgical scissors or scalpel
   b. Umbilical cord clamps
   c. Umbilical tape
   d. A small rubber bulb syringe
   e. Towels
   f. 4x4 gauze sponges and/or 2x10 gauze sponges
   g. Sterile gloves
   h. Infant blanket
   i. Sanitary napkins
   j. An infant-sized bag-mask device
   k. Goggles
   l. A plastic bag

8. Patient position
   a. The patient’s clothing should be pushed up to her waist, and pants and undergarments should be removed.
   b. Remember to preserve the patient’s modesty as much as possible.
   c. Place the patient on a firm surface that is padded with blankets, folded sheets, or towels.
   d. Elevate the hips about 2” to 4” with a pillow or blankets.
   e. Support the head, neck, and upper back with pillows and blankets.
   f. Communicate with your crew and plan where you will place the newborn after delivery.
   g. If the emergency delivery is occurring at home, you should move the patient to a sturdy, flat surface or the floor if she will allow it.
   h. Track the progression of the delivery closely at all times.

9. Preparing the delivery field
   a. Place towels or sheets on the floor around the delivery area to help soak up body fluids and to protect the mother and infant.
      i. Elevate the patient’s hips, and support her head and shoulders with folded blankets or pillows.
   b. Open the OB kit carefully so that its contents remain sterile.
   c. Put on the sterile gloves.
   d. Use the sterile sheets and towels from the OB kit to make a sterile delivery field.
      i. Place one sheet or towel under the patient’s buttocks, and unfold it toward her feet.
      ii. Wrap another sheet behind the patient’s back and drape over each thigh. Drape another sheet across the abdomen.

B. Delivery

1. Your partner should be at the patient’s head to comfort, soothe, and reassure her during the delivery.
2. If the patient will allow it, apply oxygen.

3. It is common for patients to become nauseated during delivery, and some may vomit.
   a. If this occurs, have your partner assist her and clear out her airway.

   a. Some patients may experience precipitous labor and birth.
   b. Do not allow an abrupt or explosive delivery to occur.
   c. Position yourself so that you can see the perineum at all times.
   d. Time the patient’s contractions.
   e. Remind the patient to take quick, short breaths during each contraction but not to strain.
   f. Between contractions, encourage the mother to rest and breathe deeply through her mouth.

5. Follow the steps in *Skill Drill 31-1* to deliver the infant.

6. Delivering the head
   a. Observe the infant’s head as it begins to exit the vagina so you can provide support as it emerges.
   b. Place your gloved hand over the emerging bony parts of the head and exert very gentle pressure on it, decreasing the pressure slightly between contractions.
   c. Continue to support the head as it rotates.
   d. Methods of reducing the risk of perineal tearing during labor include:
      i. Applying gentle pressure across the perineum with a sterile gauze pad
      ii. Applying gentle pressure to the head while gently stretching the perineum.
   e. Be prepared for the possibility of the mother having a bowel movement because of the increased pressure on the rectum.
   f. Be careful that you do not poke your fingers into the infant’s eyes or into the fontanelles.
   g. Unruptured amniotic sac
      i. Usually, the amniotic sac will break or rupture at the beginning of labor or during contractions.
      ii. If it has not ruptured by this point, it will appear as a fluid-filled sac emerging from the vagina.
      iii. The sac will suffocate the infant if it is not removed.
      iv. You may puncture the sac with a clamp.
      v. Make sure that the puncture site is away from the infant’s face and only perform this procedure as the head is crowning.
      vi. Clear the infant’s mouth and nose immediately, using the bulb syringe and gauze.
      vii. If the amniotic fluid is greenish, notify the receiving hospital.
   h. Umbilical cord around the neck
      i. As soon as the head is delivered, use one finger to feel whether the umbilical cord is wrapped around the infant’s neck.
      ii. This commonly is called a nuchal cord.
      iii. A nuchal cord that is wound tightly around the neck could cause the infant to strangle.
      iv. Usually, you can slip the cord gently over the infant’s delivered head.
      v. If not, you must cut it.
   i. Once you have delivered the infant’s head and verified that no nuchal cord is present, you will need to suction the amniotic fluids from the infant’s airway before the delivery proceeds.
      i. You must ask the mother not to push while you are doing this.
      ii. While supporting the infant’s head with one hand, quickly and efficiently suction the fluid from the mouth first and then the nostrils.
      iii. Make sure the syringe does not touch the back of the mouth.
      iv. Discard the fluid into a towel, and repeat the procedure, suctioning the mouth and nostrils two or three times each, or until they are clear.

7. Delivering the body
a. Once the head has been delivered, it usually rotates to one side or the other.
b. This rotation places the infant in a better position to deliver the rest of the body.
c. The infant’s head is the largest part of the body.
i. Once it is born, the rest of the infant usually delivers easily.
d. Support the head and upper body as the shoulders deliver.
e. Do not pull the infant from the birth canal.
f. Grasp the infant’s feet as they are born; support and hold the infant with both of your hands.
g. The infant will be slippery and covered with a white, cheesy substance, called vernix caseosa.

C. Postdelivery care

1. Dry off the infant and wrap him or her in a blanket or towel immediately.
2. Place the infant on one side, with the head slightly lower than the rest of the body.
3. Wrap the infant so that only the face is exposed, making sure that the top of the head is covered.
4. Keep the blanket or towel warm, if possible, before you use it.
5. Wipe the infant’s mouth with a sterile gauze pad, and suction the mouth and nose.
6. You can pick up and cradle the infant.
   a. Keep the infant at the level of the mother’s vagina until the umbilical cord is cut.
   b. Always keep the infant’s head slightly downward to help prevent aspiration.
7. Once the infant is born, the umbilical cord is of no further use to the mother or infant.
   a. Postdelivery care of the umbilical cord is important because infection is easily transmitted through the cord to the infant.
   b. Clamp and cut the cord.
   c. Tie the end coming from the infant with special umbilical tape.
8. Give the wrapped infant to your partner to complete the infant’s initial care.
   a. You can give the infant to the mother if she is alert and in stable condition.
   b. The mother may want to begin breastfeeding at this time.
9. Delivery of the placenta
   a. The placenta is attached to the end of the umbilical cord that is coming out of the mother’s vagina.
   b. Again, your job is only to assist.
   c. The placenta delivers itself, usually within a few minutes of the birth, although it may take as long as 30 minutes.
   d. Never pull on the end of the umbilical cord.
   e. Wrap the entire placenta and cord in a towel, place them in a plastic bag, and take them to the hospital.
   f. After delivery of the placenta and before transport, place a sterile pad or sanitary napkin over the vagina and straighten the mother’s legs.
      i. You can help to slow bleeding by gently massaging the mother’s abdomen with a firm, circular, kneading motion.
      ii. You should be able to feel a firm, grapefruit-sized mass in the lower abdomen, called the fundus.
   g. Record the time of birth in your patient care report.
   h. Some bleeding, usually less than 500 mL, occurs before the placenta delivers and is normal and expected.
   i. The following are emergency situations:
      i. More than 30 minutes elapse and the placenta has not delivered.
      ii. There is more than 500 mL of bleeding before delivery of the placenta.
      iii. There is significant bleeding after the delivery of the placenta.
   j. If one or more of these events occur, transport the mother and infant to the hospital promptly.
A. **Follow standard precautions, and always put on gloves before handling a newborn infant.**

1. A newborn infant will usually begin breathing spontaneously within 15 to 30 seconds after birth, and the heart rate will be 120 beats/min or higher.

2. If you do not observe these responses:
   a. Gently tap or flick the soles of the feet or rub the back.
   b. Begin resuscitation efforts.

3. Many infants require some form of stimulation that will encourage them to breathe air and begin circulating blood through the lungs, including:
   a. Positioning of the airway
   b. Drying
   c. Warming
   d. Suctioning
   e. Tactile stimulation

4. To maximize the effects of these measures, follow these tips:
   a. Position the infant on his or her back with the head down and the neck slightly extended.
      i. Place a towel or blanket under the infant’s shoulders to help maintain the position.
   b. Suction the mouth and then the nose using a bulb syringe or suction device with an 8- or 10-French catheter.
      i. Suction both sides of the back of the mouth, but avoid deep suctioning of the mouth and throat.
      ii. Aim blow-by oxygen at the infant’s mouth and nose during resuscitation.
   c. In addition to drying the infant’s head, back, and body vigorously with dry towels, you may rub the infant’s back and flick or slap the soles of his or her feet.

B. **Additional resuscitation efforts**

1. Observe the newborn for spontaneous respirations, skin color, and movement of the extremities.
2. Evaluate the heart rate by palpating the pulse at the base of the umbilical cord or at the brachial artery.
   a. The heart rate is the most important measure in determining the need for further resuscitation.
3. If chest compressions are required, give them at a rate of 120 beats/min using either the hand-encircling technique or the two-finger technique.
4. Any newborn who requires more than routine resuscitation requires transport to a hospital with a Level III neonatal intensive care unit.
5. About 12% of deliveries are complicated by the presence of meconium.
   a. If you see meconium in the amniotic fluid or meconium staining and the infant is not breathing adequately, continue vigorous suctioning of the infant after delivery.

C. **The Apgar score**

1. The Apgar score is the standard scoring system used to assess the status of a newborn.
2. It assigns a number value (0, 1, or 2) to five areas of activity.
   a. Appearance
      i. The skin of a light-skinned newborn infant and the mucous membranes of a dark-skinned infant should turn pink.
      ii. Blue skin all over or blue mucous membranes signal a central cyanosis.
   b. Pulse
      i. If a stethoscope is unavailable, you can measure pulsations with your fingers in the umbilical cord or at the brachial pulse.
An infant with no pulse requires immediate CPR.

c. Grimace or irritability
   i. Grimacing, crying, or withdrawing in response to stimuli is normal in a newborn and indicates that the newborn infant is doing well.
   ii. The way to test this is to snap a finger against the sole of the infant’s foot.

d. Activity or muscle tone
   i. The degree of muscle tone indicates the oxygenation of the newborn infant’s tissues.
   ii. Normally, the hips and knees are flexed at birth, and, to some degree, the infant will resist straightening them out.
   iii. A newborn should not be floppy or limp.

e. Respirations
   i. Normally, the newborn’s respirations are regular and rapid, with a good strong cry.
   ii. If the respirations are slow, shallow, or labored, or if the cry is weak, the newborn infant may have respiration insufficiency and need assistance with ventilation.
   iii. Complete absence of respirations or crying is a very serious sign.

3. The total of the five numbers is the Apgar score.
   a. A perfect score is 10.
   b. Calculate the Apgar score at 1 minute and 5 minutes after birth.

4. Follow these steps in assessing a newborn infant:
   a. Quickly calculate the Apgar score to establish a baseline of the newborn’s status.
   b. Suctioning and stimulation should result in an immediate increase in respirations.
      i. If they do not, you must begin ventilations with a bag-mask device.
   c. If the newborn is breathing well, you should next check the pulse rate by feeling the brachial pulse or the pulsations at the base of the umbilical cord.
      i. The pulse rate should be at least 100 beats/min.
      ii. If it is not, begin ventilations with a bag-mask device.
      iii. Reassess respirations and heart rate at least every 30 seconds.
   d. Assess the newborn’s skin color.
      i. Check for central cyanosis.
      ii. If present, administer blow-by oxygen by holding oxygen tubing at high-flow close to the newborn infant’s face.
   e. You should request a second unit as soon as possible if you determine that the newborn infant is in any distress and will require resuscitation.

5. In situations in which assisted ventilation is required, you should use a newborn bag-mask device.
   a. Make sure you have a good mask-to-face seal.
   b. Using gentle pressure, make the chest rise with each ventilation.

6. If the infant does not begin breathing on his or her own or does not have an adequate heart rate, continue CPR and rapidly transport.
   a. Once CPR has been started, do not stop until the infant responds or is pronounced dead by a physician.

XII. Complicated Delivery Emergencies

A. Breech delivery
   1. The presentation is the position in which an infant is born or the body part that is delivered first.
   2. Most infants are born headfirst, called a vertex presentation.
   3. Occasionally, the buttocks are delivered first, called a breech presentation.
a. The infant is at great risk for trauma from the delivery.
b. Prolapsed cords are more common in a breech delivery.

4. Breech deliveries usually take longer, so you will often have time to transport the mother to the hospital.
   a. However, if the buttocks have already passed through the vagina, the delivery has begun.
   b. Provide emergency care and call for ALS backup.
   c. If the mother does not deliver within 10 minutes of the buttocks presentation, provide prompt transport.
   d. Consult medical control to guide you.

5. Preparing for a breech delivery is the same as for a normal childbirth.
   a. Position the pregnant woman.
   b. Prepare the OB kit.
   c. Place yourself and your partner as you would for a normal delivery.
   d. Allow the buttocks and legs to deliver spontaneously, supporting them with your hand to prevent rapid expulsion.
   e. Let the legs dangle on either side of your arm while you support the trunk and chest as they are delivered.
   f. The head is almost always facedown and should be allowed to deliver spontaneously.
   g. Make a "V" with your gloved fingers and position them in the vagina to keep the walls of the vagina from compressing the infant’s airway.

B. Presentation complications

1. On rare occasions, the presenting part of the infant is neither the head nor the buttocks, but a single arm, leg, or foot.
   a. This is called a limb presentation.

2. An infant with a limb presentation cannot be successfully delivered in the field.
   a. Usually surgery is needed.
   b. You must transport the patient to the hospital immediately.
   c. If a limb is protruding, cover it with a sterile towel.
   d. Never try to push it back in, and never pull on it.
   e. Place the patient on her back, with her head down and pelvis elevated.
   f. Remember to give the woman high-flow oxygen.

3. Prolapse of the umbilical cord, where the umbilical cord comes out of the vagina before the infant, must be treated in the hospital.
   a. The infant’s head will compress the cord during birth and cut off circulation to the infant, depriving it of oxygenated blood.
   b. Do not attempt to push the cord back into the vagina.
   c. There is usually time to get the patient to the hospital.
   d. Your job is to try to keep the infant’s head from compressing the cord.
   e. Place the pregnant woman on a backboard in Trendelenburg’s position or in a knee-chest position.
      i. Either of these positions is meant to help keep the weight of the infant off the prolapsed cord.
   f. Carefully insert your sterile gloved hand into the vagina, and gently push the infant’s head away from the umbilical cord.
   g. Wrap a sterile towel, moistened with saline, around the exposed cord.
   h. Give the patient high-flow oxygen and transport rapidly.

C. Spina bifida

1. Spina bifida is a developmental defect in which a portion of the spinal cord or meninges may protrude outside of the vertebrae and possibly outside of the body.
   a. This is easily seen on a newborn’s back and usually occurs in the lower third of the back in the lumbar area.
b. Cover the open area of the spinal cord with a sterile, moist dressing immediately after birth to help prevent a potentially fatal infection.
c. Maintenance of body temperature is important when applying moist dressings because the moisture can lower the newborn’s body temperature.
  i. Have someone hold the newborn against his or her body.

D. Abortion
1. Passage of the fetus and placenta before 20 weeks is called abortion.
2. Abortions may be spontaneous (miscarriage) or intentional.
3. Deliberate abortions may be self-induced, or planned and performed in a hospital or clinic.
4. The most serious complications are bleeding and infection.
   a. Bleeding can result from portions of the fetus or placenta being left in the uterus (incomplete abortion) or from injury to the wall of the uterus.
   b. Infection can result from such perforation and from the use of nonsterile instruments.
5. If the woman is in shock, treat and transport her promptly to the hospital.
   a. Never try to pull tissue out of the vagina.

E. Multiple gestation
1. Twins occur about once in every 80 births.
   a. Usually, twins are diagnosed early in pregnancy with modern ultrasound techniques.
   b. With twins, always be prepared for more than one resuscitation, and call for assistance.
2. Twins are smaller than single infants, and delivery is typically not difficult.
   a. Consider the possibility of twins any time the first infant is small or the mother’s abdomen remains fairly large after birth.
   b. If twins are present, the second one will usually be born within 45 minutes of the first.
   c. After 10 minutes after the first birth, contractions will begin again, and the birth process will repeat itself.
3. The procedure for delivering twins is the same as that for single infants.
   a. Clamp and cut the cord of the first infant as soon as it has been born and before the second infant is delivered.
   b. There may only be one placenta, or there may be two.
4. Record the time of birth of each twin separately.
5. Twins may be so small that they look premature.
   a. Handle them carefully and keep them warm.

F. Abuse
1. There is an increased chance of domestic violence and abuse in pregnant women.
2. Some studies have indicated that 15% to 25% of pregnant women are victims of physical or sexual abuse.
3. Abuse during pregnancy increases the chance of miscarriage, premature delivery, and low birth weight.
4. The woman is at risk from bleeding, infection, and uterine rupture.
5. Use a calm, professional approach.
   a. Pay attention to the environment for any signs of abuse.
   b. Your attention to detail will be helpful in your documentation.
6. Pregnant patients who are abused are often scared and may not be honest as to how their injuries may have occurred.
   a. Talk to the patient in a private area, away from the potential abuser.
   b. The best way for you to care for the fetus is to treat the mother.
G. Substance abuse

1. More and more infants are being born to women who are addicted to drugs or alcohol.
2. The effects of the addiction on the fetus include:
   a. Prematurity
   b. Low birth weight
   c. Severe respiratory distress
   d. Death
3. Fetal alcohol syndrome describes the condition of infants born to mothers who have abused alcohol.
4. If you are called to handle a deliver of a drug- or alcohol-addicted mother, pay special attention to your own safety.
5. Follow standard precautions.
   a. Wear eye protection, a face mask, and gloves at all times.
6. Clues that you are dealing with an addicted mother may include:
   a. The presence of drug paraphernalia
   b. Empty wine or liquor bottles
   c. Statements made by family or bystanders or by the patient herself
7. The newborn will probably need immediate resuscitation.
   a. Assist with the delivery, and be prepared to support the infant’s respirations and administer oxygen during transport.

H. Premature infant

1. The usual gestational period is 9 calendar months, or 40 weeks.
2. A normal, single infant will weigh approximately 7 lb at birth.
3. Any infant who delivers before 8 months (36 weeks) or weighs less than 5 lb at birth is considered premature.
4. A premature infant is smaller and thinner than a full-term infant, and the head is proportionately larger in comparison with the rest of the body.
   a. The vernix will be missing on the premature infant or will be very minimal.
   b. There will also be less body hair.
5. Premature infants require special care to survive.
   a. They often require resuscitation efforts, which should be performed unless it is physically impossible.
   b. With such care, infants as small as 1 lb have survived and developed normally.

I. Postterm pregnancy

1. Postterm pregnancy refers to pregnancies lasting longer than 42 weeks.
   a. 10% of pregnancies
   b. The patient may or may not know that her pregnancy has lasted more than 42 weeks.
2. Infants can be larger than a typical 40-week infant, sometimes weighing 10 lb or more.
3. This condition can lead to problems with the mother and infant.
   a. A more difficult labor and delivery
   b. Increased chance of injury to the fetus
   c. Increased chance of cesarean section
   d. The woman is also at risk for perineal tears and infection.
   e. Infants have increased risks of meconium aspiration, infection, and being stillborn.
   f. Infants may not have been able to develop normally because of the restricted size of the uterus.
4. You should be prepared to resuscitate the newborn, as respiratory and neurologic functions may have been affected.
J. Fetal demise

1. You may find yourself delivering an infant who died in the mother’s uterus before labor.
2. The onset of labor may be premature, but labor will otherwise progress normally in most cases.
3. If an intrauterine infection has caused the demise, you may note an extremely foul odor.
   a. The delivered infant may have skin blisters, skin sloughing, and a dark discoloration.
   b. The head will be soft and perhaps grossly deformed.
4. Do not attempt to resuscitate an obviously dead infant.

K. Delivery without sterile supplies

1. On rare occasions, you may have to deliver an infant without a sterile OB kit.
2. Even without the OB kit, you should always have eye protection, gloves, and a protective mask with you.
3. Carry out the delivery as if sterile supplies were available.
   a. If possible, use clean sheets and towels that have not been used since they were laundered.
   b. As soon as the infant is born, wipe the inside of the mouth with your finger to clear away blood and mucus.
   c. You should not cut or tie the umbilical cord.
   d. Instead, as soon as the placenta delivers, wrap it in a clean towel or put it in a plastic bag and transport it to the hospital.
   e. Always keep the placenta and the infant at the same level, or elevate the placenta slightly if possible.
   f. Keep the infant warm.

XIII. Postpartum Complications

A. Bleeding that exceeds approximately 500 mL is considered excessive.

1. Although up to 500 mL of blood loss is considered normal, you should continue to massage the uterus after delivery.
2. Check your technique and hand placement if bleeding continues.
3. Excessive bleeding after birth is usually caused by the muscles of the uterus not fully contracting due to:
   a. Delivery of more than one infant
   b. A long labor process that causes the uterus to be too tired to contract
   c. Parts of the placenta still being inside the uterus
4. Continue massaging the uterus and cover the vagina with a sterile pad, changing the pad as often as possible.
   a. Do not discard any blood-soaked pads.
   b. Hospital personnel will use them to estimate the amount of blood loss.
   c. Save any tissues that may have passed from the vagina.
5. Place the woman in the shock position, administer oxygen, monitor vital signs frequently, and transport her immediately to the hospital.
   a. Never hold the woman’s legs together in an effort to stop bleeding.
   b. Never pack the vagina with gauze pads in an attempt to control bleeding.

B. Postpartum patients are also at an increased risk of an embolism—most commonly a pulmonary embolism.

1. A pulmonary embolism results from a clot that travels through the bloodstream and becomes lodged in the pulmonary circulation.
2. This obstruction will block blood flow to the lungs and is potentially life threatening.
3. If you deliver a newborn in the field and the mother begins to report sudden difficulty breathing or shortness of breath, consider pulmonary embolism as a possibility.
4. Also suspect a pulmonary embolism in patients of childbearing age with respiratory complaints who have recently delivered, especially with the sudden onset of difficulty breathing or altered mental status.
   a. Provide supportive care of the ABCs with high-flow oxygen and rapid transport to the hospital.

XIV. Summary

A. Inside the uterus, the developing fetus floats in the amniotic sac. The umbilical cord connects the mother and fetus through the placenta. Eventually, contractions of the uterus will propel the neonate through the birth canal.

B. Throughout pregnancy, the body changes to accommodate the fetus. The primary systems involved with these changes are the respiratory, cardiovascular, and musculoskeletal systems.

C. As a result of enlargement of the uterus, a pregnant patient’s respiratory capacity changes with increased respiratory rates and decreasing minute volumes.

D. A pregnant patient’s blood volume increases by as much as 50%, and the heart rate increases by 20%.

E. Increased hormone levels affect the musculoskeletal system by making the joints more “loose” or less stable.

F. The first stage of labor, dilation, begins with the onset of contractions and ends when the cervix is fully dilated.

G. The second stage of labor, expulsion of the fetus, begins when the cervix is fully dilated and ends when the infant is born.

H. The third stage of labor, delivery of the placenta, begins with the birth of the infant and ends with the delivery of the placenta.

I. Once labor has begun, it cannot be slowed or stopped; however, there is usually time to transport the patient to the hospital during the first stage of labor.

J. During the second stage of labor, you must decide whether to deliver the infant at the scene or transport the patient.

K. During the third stage of labor, once the infant has been born, you will probably not transport the patient until the placenta has been delivered.

L. Complications of pregnancy include hypertensive disorders, bleeding, and diabetes.

M. During a trauma call that involves a pregnant woman, you have two patients to consider—the woman and the unborn fetus. Any trauma to the woman will have a direct effect on the condition of the fetus.

N. Abnormal or complicated deliveries include breech deliveries, limb presentations, and prolapse of the umbilical cord. Quickly transport the patient with a limb presentation or prolapsed umbilical cord to the hospital.

O. Only place a finger or hand into the vagina to keep the walls of the vagina from compressing the infant’s airway during a breech presentation, or to push the infant’s head away from the cord when the cord is prolapsed.

P. Excessive bleeding is a serious emergency. Cover the vagina with a sterile pad; change the pad as often as necessary, and take all used pads to the hospital for examination.
Unit Assessment

1. How long is a full-term pregnancy?

2. Which stage of labor is usually the longest?

3. What signs and symptoms characterize preeclampsia?

4. In what position should a pregnant woman be transported to prevent supine hypotensive syndrome?

5. What is an ectopic pregnancy?

6. Under what circumstances should you consider delivering on the scene?

7. Which should be suctioned first when delivering the infant, the mouth or the nostrils?

8. When should the Apgar score be calculated?

9. In what position should the mother be transported if a prolapsed cord is present?

10. What are the most serious complications of spontaneous abortion (miscarriage)?