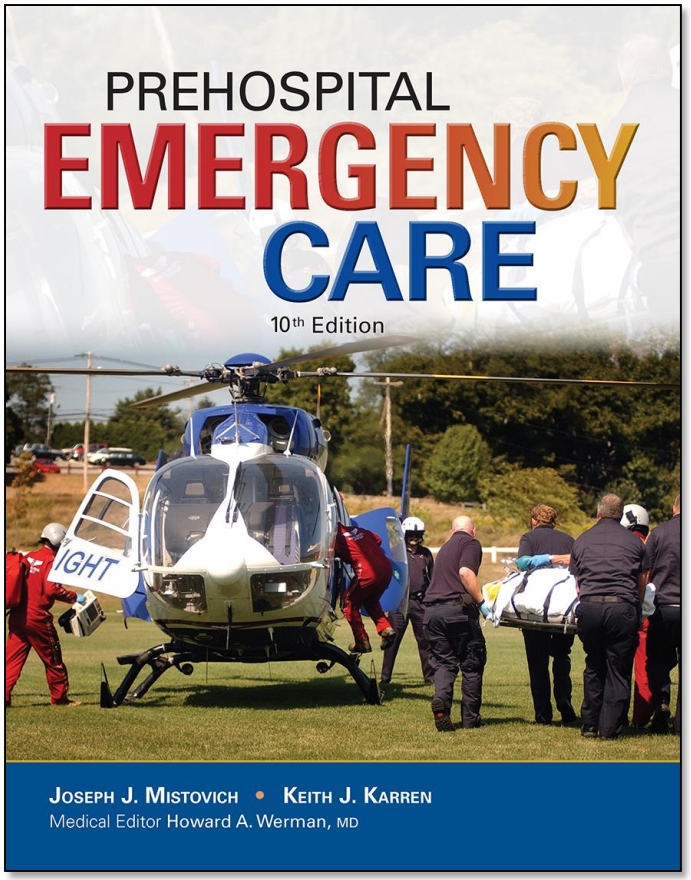
PREHOSPITAL EMERGENCY CARE

TENTH EDITION



CHAPTER 37

Obstetrics and Care of the Newborn

Learning Readiness

- EMS Education Standards, text p. 988

Learning Readiness Objectives

- Please refer to page 988 of your text to view the objectives for this chapter.

Learning Readiness Key Terms

- Please refer to page 989 of your text to view the key terms for this chapter.

Setting the Stage

- Overview of Lesson Topics
  - Anatomy and Physiology of the Obstetric Patient
  - Antepartum Emergencies
  - Labor and Normal Delivery
  - Abnormal Delivery
  - Care of the Newborn

Case Study Introduction

EMTs Lacy Schroeder and Alan Phillips arrive on the scene of a dispatch for an OB call to find an obviously pregnant woman in her 30s who appears to be uncomfortable and anxious. "I'm only 35 weeks," she says. "The baby shouldn't be here for another month, but I think she's coming now!"

Case Study

- At 35 weeks gestation, what is the risk of distress if the baby is born now?
- How should the EMTs prioritize the order of the information they need?
- What factors will determine whether there is time to transport the patient to the hospital?

Introduction

- Childbirth is a natural process.
- On occasion, EMTs assist with out-of-hospital delivery.
- Complications of pregnancy, labor, and delivery are not common, but EMTs must be prepared to manage them when they occur.

Anatomy and Physiology of the Obstetric Patient

- Ovaries
  - Produce hormones
  - Release eggs (ova)
- Fallopian tube
  - Fertilization of the ovum may occur.
  - Transports ovum to the uterus

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Anatomy and Physiology of the Obstetric Patient

- Uterus
  - Three sections: fundus, body, cervix
    - The cervix dilates to allow delivery.
  - Three layers: endometrium, myometrium, perimetrium
    - The smooth muscle layer contracts during labor.
  - Allows development of fetus

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Anatomy and Physiology of the Obstetric Patient

- Placenta
  - Temporary organ of pregnancy, attached to inner uterine wall
  - Highly vascular
  - Provides for fetal nourishment and waste removal
  - Separates from the uterus after delivery and is expelled

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Anatomy and Physiology of the Obstetric Patient

- Umbilical cord
  - Attaches the fetus to the placenta
  - Umbilical vein carries oxygen and nutrients to the fetus; umbilical arteries carry deoxygenated blood from the fetus to the placenta

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Anatomy and Physiology of the Obstetric Patient

- Amniotic sac
  - Encloses the fetus
  - Contains 500 to 1,000 mL of amniotic fluid
  - May rupture at the beginning of labor

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Anatomy and Physiology of the Obstetric Patient

- Vagina
  - Lower portion of the birth canal
  - Extends from the cervix to an external opening of the body

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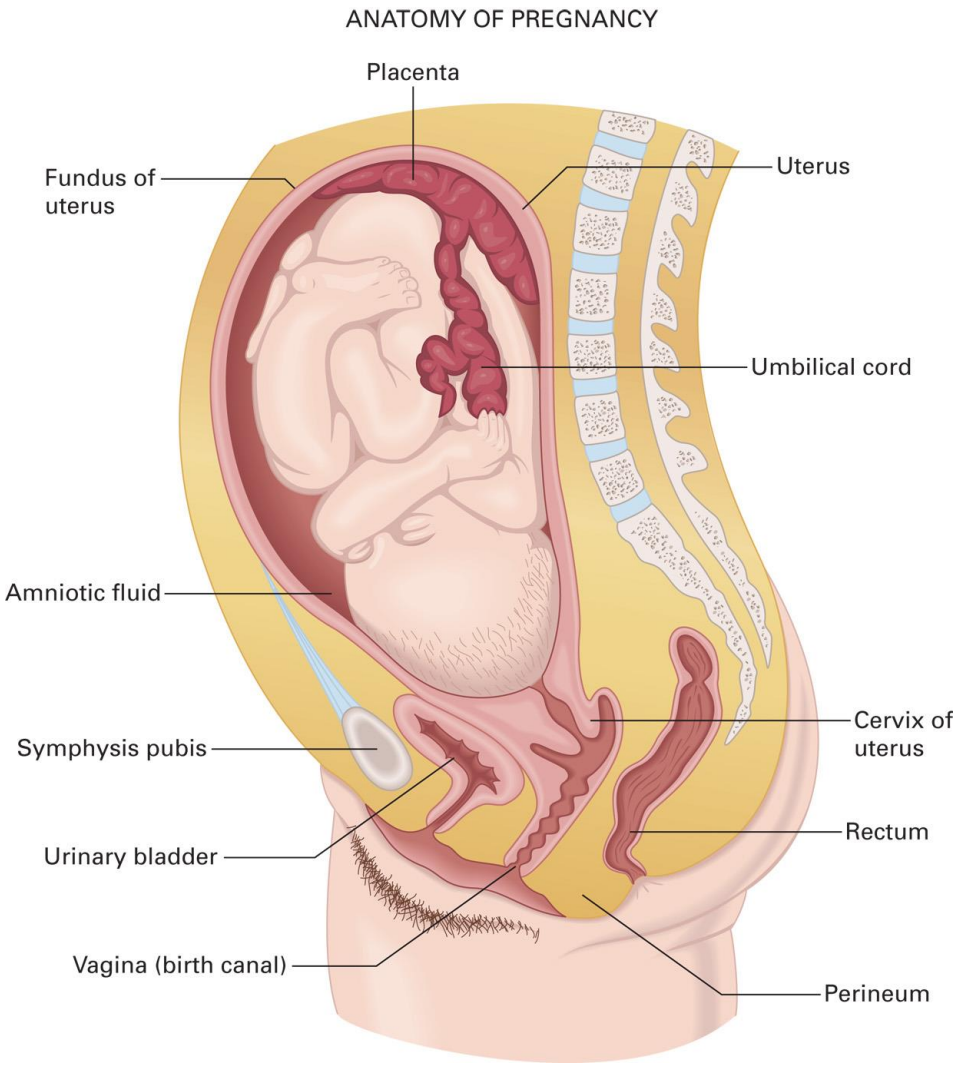
Anatomy of pregnancy.



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Anatomy and Physiology of the Obstetric Patient

- Menstrual cycle
  - Average 28 days, controlled by estrogen and progesterone
  - The first day of the cycle begins with menstruation.
  - During menstruation the endometrium is shed.
  - After menstruation, the endometrium is rebuilt.

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Anatomy and Physiology of the Obstetric Patient

- Menstrual cycle
  - On day 14 of the cycle, ovulation occurs.
  - The ovum travels through the fallopian tube, where it may be fertilized.
  - If fertilization occurs, the ovum is implanted into the endometrium.

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Anatomy and Physiology of the Obstetric Patient

- Prenatal period
  - For the first 14 days, the fertilized ovum is in the pre-embryonic phase.
  - From day 15 to 8 weeks is the embryonic stage.
  - From 8 weeks to birth is the fetal stage.
  - At birth, the baby is called a neonate.

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Anatomy and Physiology of the Obstetric Patient

- Prenatal period
  - Pregnancy lasts 280 days, or nine calendar months.
  - Pregnancy is divided into three 3-month trimesters.

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Anatomy and Physiology of the Obstetric Patient

- Physiological changes in pregnancy
  - Caused by hormones, growing fetus, and increased metabolic rate.
  - Many body systems are affected.

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Anatomy and Physiology of the Obstetric Patient

- Reproductive system
  - Uterus substantially increases in size.
  - The uterus is extremely vascular and contains about one-sixth of the mother's blood volume.
  - A mucus plug forms in the opening to the cervix .
  - The breasts enlarge in preparation for lactation.

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Anatomy and Physiology of the Obstetric Patient

- Respiratory system
  - Mother's oxygen demand increases.
  - Respiratory tract resistance decreases.
  - Tidal volume increases by 40%.
  - Respiratory rate increases slightly.
  - Oxygen consumption increases by 20%.

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Anatomy and Physiology of the Obstetric Patient

- Cardiovascular system
  - Cardiac output increases.
  - Maternal blood volume increases by 45%, with a larger increase in plasma volume than in RBCs.

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Anatomy and Physiology of the Obstetric Patient

- Cardiovascular system
  - Maternal heart rate increases by 10 to 15 bpm.
  - BP decreases slightly in the first and second trimesters and returns to normal in the third trimester.

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Anatomy and Physiology of the Obstetric Patient

- Gastrointestinal system
  - Nausea and vomiting commonly occur during the first trimester.
  - Bloating and constipation may occur from a decrease in peristalsis.

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Anatomy and Physiology of the Obstetric Patient

- Urinary system
  - Renal blood flow increases.
  - Glomerular filtration increases.
  - Urinary bladder is displaced superiorly and anteriorly, increasing the risk of injury.
  - Increased urinary frequency in the first and third trimesters.

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Anatomy and Physiology of the Obstetric Patient

- Musculoskeletal system
  - Pelvic joints loosen as a result of hormone changes.
  - Change in the center of gravity caused by the heavy uterus; accompanied by lower back pain.

Antepartum Emergencies

- Hemorrhagic emergencies
  - May or may not present with vaginal bleeding
  - Hemorrhage may be life-threatening.
  - Causes include spontaneous abortion, placenta previa, abruptio placentae, ruptured uterus, and ectopic pregnancy.

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Antepartum Emergencies

- Spontaneous abortion
  - Delivery of the fetus and placenta before the fetus is viable (before 20 weeks gestation)
  - Most spontaneous abortions occur before 12 weeks gestation.

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Antepartum Emergencies

- Spontaneous abortion signs and symptoms
  - Cramplike lower abdominal pain similar to labor
  - Moderate to severe vaginal bleeding, which may be bright or dark red
  - Passage of tissue or blood clots

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Antepartum Emergencies

- Placenta previa
  - Abnormal implantation of the placenta near or over the cervix
  - Excessive bleeding can occur as the cervix begins to dilate; the bleeding is painless.
  - May be total, partial, or marginal
  - Anticipate and treat for shock.

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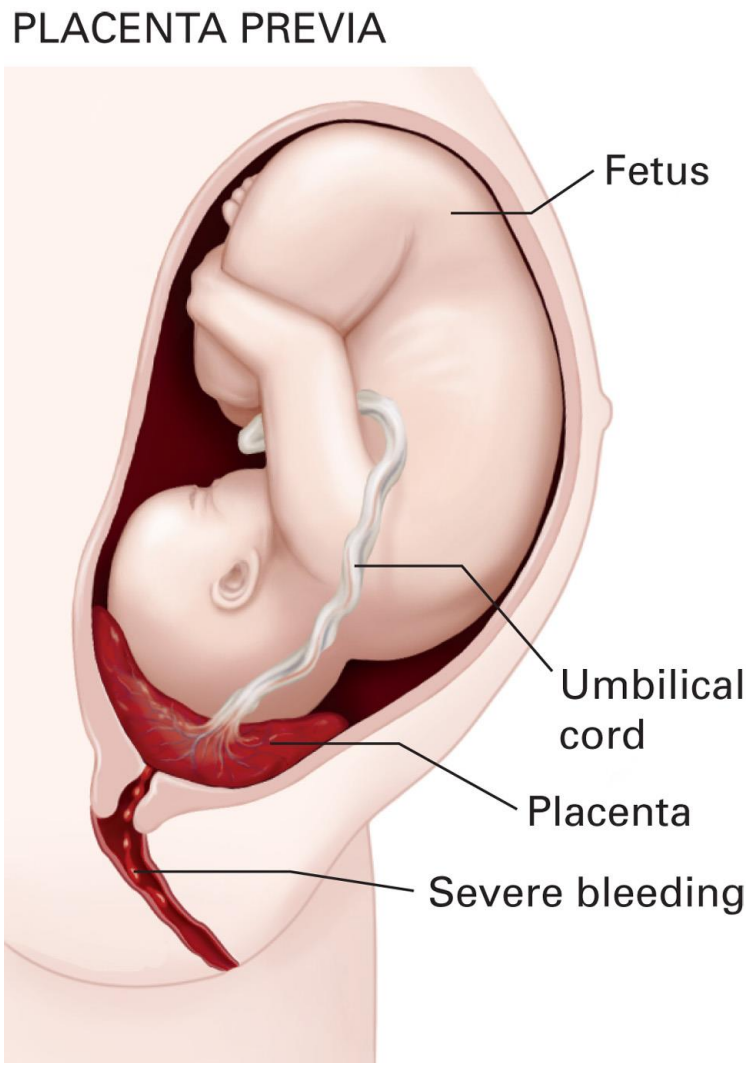
Placenta previa.



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Antepartum Emergencies

- Abruptio placentae
  - Abnormal separation of the placenta from the uterine wall prior to delivery
  - Bleeding occurs from the arteries between the uterine wall and placenta, and the bleeding separates the placenta from the uterine wall.

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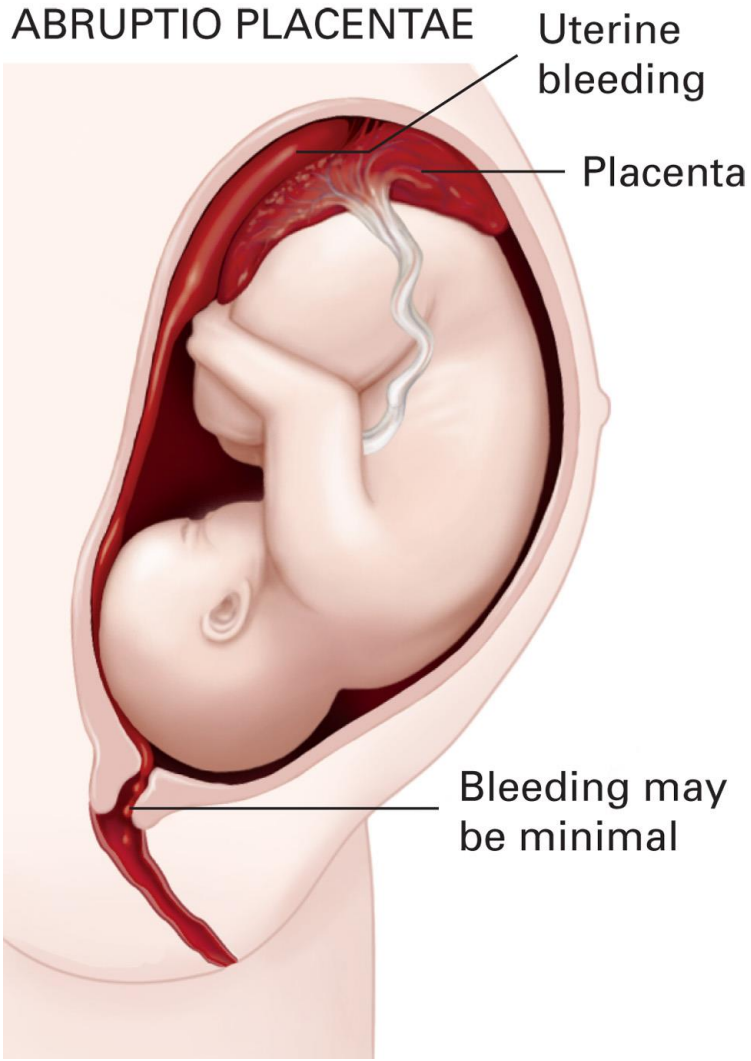
Abruptio placentae.



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Antepartum Emergencies

- Abruptio placentae
  - Separation may be partial or complete.
  - Separation of the placenta causes two major problems:
    - Poor gas, nutrient, and waste exchange between the fetus and the placenta
    - Severe maternal blood loss

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Antepartum Emergencies

- Abruptio placentae
  - Signs and symptoms
    - Vaginal bleeding associated with constant abdominal pain
    - Abdominal pain due to muscle spasm of the uterus may be mild, sharp, or acute
    - Lower back
    - Uterine contractions

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Antepartum Emergencies

- Abruptio placentae
  - Signs and symptoms
    - Abdomen is tender on palpation.
    - Bleeding can be dark red or bright red.
    - Vaginal bleeding may be severe, minimal, or absent.
    - Signs and symptoms of hypovolemic shock

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Antepartum Emergencies

- Ruptured uterus
  - The thinned uterine wall can rupture, releasing the fetus into the abdominal cavity.
  - High mortality rate
  - Requires immediate surgery

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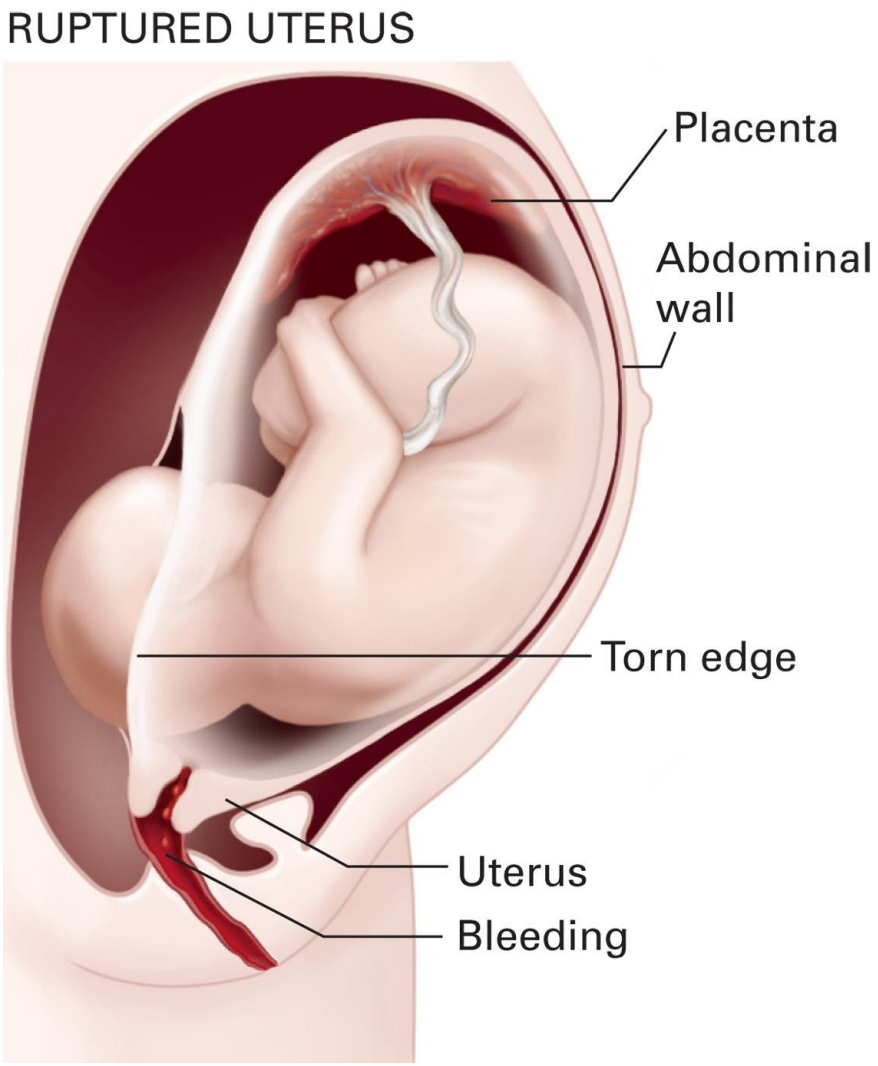
Ruptured uterus.



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Antepartum Emergencies

- Ruptured uterus assessment
  - History of previous uterine rupture
  - History of abdominal trauma
  - Large fetus
  - More than two previous births
  - Prolonged, difficult labor

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Antepartum Emergencies

- Ruptured uterus assessment
  - Prior cesarean section or uterine surgery
  - Tearing or shearing sensation in the abdomen
  - Constant, severe abdominal pain
  - Nausea
  - Signs and symptoms of shock

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Antepartum Emergencies

- Ruptured uterus assessment
  - Vaginal bleeding
  - Cessation of uterine contractions
  - Palpation of the fetus through the abdominal wall

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Antepartum Emergencies

- Ectopic pregnancy
  - A fertilized ovum is implanted outside the uterus, usually in the fallopian tube.
  - The tissue into which the developing embryo is expanding ruptures.

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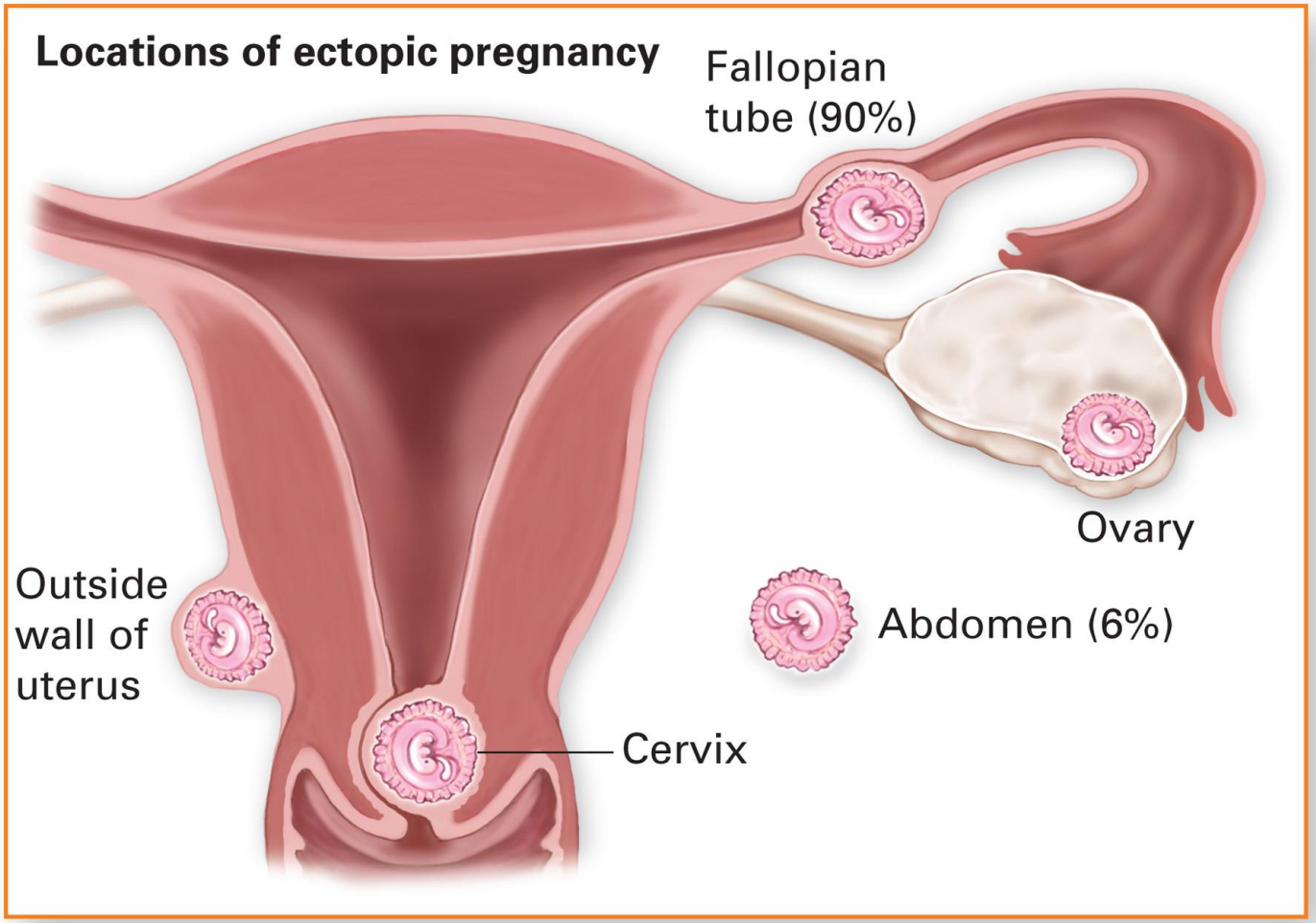
Ectopic pregnancy.



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Antepartum Emergencies

- Ectopic pregnancy assessment
  - Dull, aching pain that is poorly localized and becomes sharp, and localized to one lower quadrant
  - Shoulder pain
  - Vaginal bleeding
  - Tender, bloated abdomen

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Antepartum Emergencies

- Ectopic pregnancy assessment
  - Palpable mass in the abdomen
  - Weakness or dizziness when sitting or standing
  - Decreased blood pressure
  - Increased pulse rate

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Antepartum Emergencies

- Ectopic pregnancy assessment
  - Signs of shock
  - Discoloration around the umbilicus
  - Urge to defecate

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Antepartum Emergencies

- Antepartum seizures and blood pressure disturbances
  - Preeclampsia occurs most frequently in the last trimester and is most likely to affect women in their 20s who are pregnant for the first time.
  - Eclampsia is a more severe form of preeclampsia and includes coma or seizures.

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Antepartum Emergencies

- Preeclampsia assessment
  - History of hypertension, diabetes, kidney (renal) disease, liver (hepatic) disease, or heart disease
  - No previous pregnancies
  - History of poor nutrition
  - Sudden weight gain (2 pounds a week or more)

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Antepartum Emergencies

- Preeclampsia assessment
  - Altered mental status
  - Abdominal pain
  - Blurred vision or spots before the eyes
  - Excessive swelling of the face, fingers, legs, or feet

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Antepartum Emergencies

- Preeclampsia assessment
  - Decreased urine output
  - Severe, persistent headache
  - Persistent vomiting
  - Elevated blood pressure
    - >140/90 mmHg, or
    - Systolic increase >30 mmHg, or
    - Diastolic increase >15 mmHg

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Antepartum Emergencies

- Pregnancy-induced hypertension (PIH)
  - BP >140/90 mmHg on two occasions 6 hours apart, or
  - Increase in systolic BP >30 mmHg
  - Diastolic BP >15 mmHg

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Antepartum Emergencies

- When edema and protein in the urine are present in addition to hypertension, it is defined as preeclampsia.
- When seizures or coma occur, preeclampsia has progressed to eclampsia.

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Antepartum Emergencies

- Supine hypotensive syndrome
  - Third-trimester complication
  - The weight of the fetus compresses the inferior vena cava when the patient is in a supine position.
  - Reduced blood flow to the right atrium decreases preload.
  - Decreased preload reduces stroke volume and cardiac output.

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Antepartum Emergencies

- To avoid supine hypotensive syndrome
  - Place any patient at 20 weeks or greater gestation in a sitting position or on her side.
  - If supine position is indicated, elevate the right hip.

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Antepartum Emergencies

- Assessment-based approach
  - Scene size-up
    - Consider the dispatch information.
    - Any female between 12 and 50 could potentially be experiencing an obstetric emergency.

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Antepartum Emergencies

- Assessment-based approach
  - Primary assessment
    - Standard Precautions
    - Assess the mental status, airway, breathing, and circulation

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Antepartum Emergencies

- Secondary assessment should include appropriate questions:
  - Have you ever been pregnant before?
  - If so, how many pregnancies? (gravida)
  - How many pregnancies resulted in live births? (para)

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Antepartum Emergencies

- Secondary assessment should include appropriate questions:
  - Were the births vaginal or by cesarean section?
  - Any complications with any of the births?

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Antepartum Emergencies

- For pain or discomfort:
  - What is the quality of the pain?
  - How intense is the pain?
  - Did the pain have a sudden or a gradual onset?
  - Does the pain radiate?
  - Can you point to the pain with one finger?

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Antepartum Emergencies

- For pain or discomfort:
  - Is the pain constant? Does it come in regular or irregular intervals?
  - What is the duration of the pain or cramps?
  - How often do the cramps occur?

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Antepartum Emergencies

- For pain or discomfort:
  - Are you nauseated? Have you thrown up?
  - Is the pain related to a menstrual cycle or sexual intercourse?

continued on next slide

Antepartum Emergencies

- Secondary assessment should include appropriate questions:
  - When was your last menstrual period?
    - Date?
    - Was the volume and color of blood normal?
    - Have there been any episodes of bleeding between menstrual periods?
    - Have your periods been regular?

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Antepartum Emergencies

- Secondary assessment should include appropriate questions:
  - Have you missed a menstrual period?
    - Is there any chance of pregnancy?
    - Is there any breast tenderness, an increase in urination, fatigue, nausea, or vomiting?

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Antepartum Emergencies

- Secondary assessment should include appropriate questions:
  - Have you had any unusual vaginal discharge?
    - What color was it?
    - Did it have an abnormal or foul odor?
    - How much was discharged?

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Antepartum Emergencies

- Secondary assessment should include appropriate questions:
  - When (if patient knows she is pregnant) is your due date?
    - Have you had any prenatal care?
    - How many pregnancies have you had?
    - How many children do you have?
    - Did you have any complications with previous pregnancies?

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Antepartum Emergencies

- Secondary assessment
  - Examine and palpate the abdomen.
  - Consider conditions related to an acute abdomen.
  - Obtain a set of baseline vital signs.

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Antepartum Emergencies

- Antepartum emergency signs and symptoms
  - Abdominal pain, nausea, vomiting
  - Vaginal bleeding, passage of tissue
  - Weakness, dizziness
  - Altered mental status
  - Seizures

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Antepartum Emergencies

- Antepartum emergency signs and symptoms
  - Excessive swelling of the face or extremities
  - Abdominal trauma
  - Hypoperfusion; signs of shock may be masked
  - Hypertension

continued on next slide

Antepartum Emergencies

- Emergency medical care
  - Treat emergencies as you would in other patients.
  - If patient is 20 weeks gestation or more, position to avoid supine hypotensive syndrome.

continued on next slide

Antepartum Emergencies

- Emergency medical care
  - Ensure adequate airway, breathing, oxygenation, and circulation.
  - If there is any suspicion of poor perfusion of hypoxia, administer oxygen by nonrebreather mask.
  - Use positive pressure ventilation if breathing is inadequate.

continued on next slide

Antepartum Emergencies

- Emergency medical care
  - Care for bleeding from the vagina.
    - Place a sanitary pad over the vaginal opening.
    - Never pack the vagina to control bleeding.
    - Save and transport any passed tissue.
  - Treat for shock.

continued on next slide

Antepartum Emergencies

- Emergency medical care
  - Provide treatment according to signs and symptoms.
  - Transport the patient on her side.
  - Reassess.

continued on next slide

Antepartum Emergencies

- Maintaining the mother's circulation and oxygenation is critical to saving the fetus.
- CPR in the mother may save the fetus.

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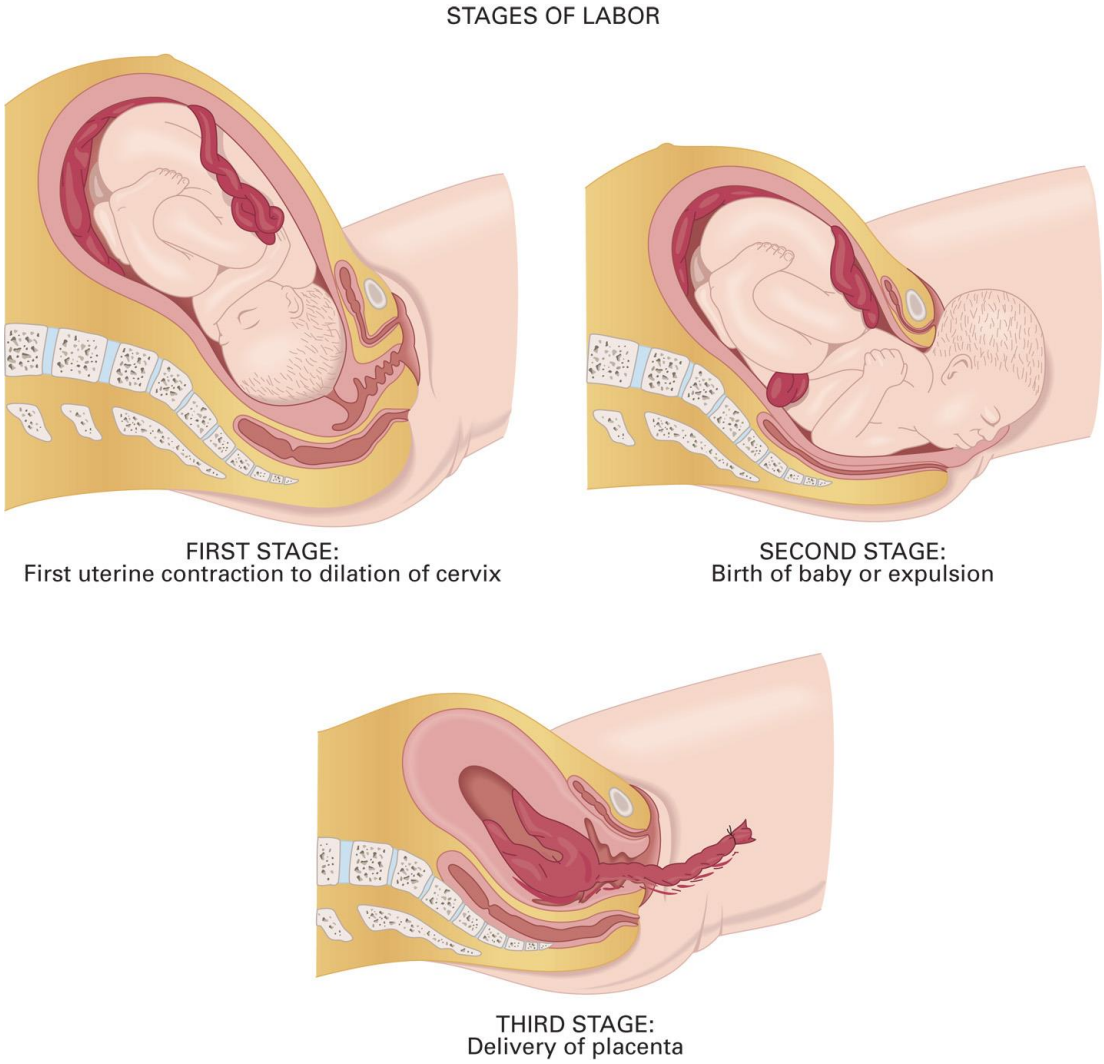
Labor and Normal Delivery

- Labor consists of contractions of the uterus, which expel the fetus and the placenta out of the uterus and vagina.
- Normal labor is divided into three stages.

Stages of labor.



Labor and Normal Delivery

- Stage one for a first-time mother lasts 8–10 hours, and 5–7 hours in a woman who has had a child before.
- At the end of stage one, contractions are at regular 3- to 4-minute intervals, last at least 60 seconds each, and feel very intense.

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Labor and Normal Delivery

- Braxton-Hicks contractions become more frequent throughout pregnancy, but are not true labor.
- It is not possible to differentiate between Braxton-Hicks contractions and true labor in the prehospital setting.
- Transport any patient having contractions.

continued on next slide

Labor and Normal Delivery

- During the second stage, the infant moves through the vagina and is born.
- Contractions are 2–3 minutes apart and last 60 to 90 seconds each.
- As the infant moves downward, the mother experiences considerable pressure in her rectum.

continued on next slide

Labor and Normal Delivery

- As the second stage progresses, the mother may feel an urge to bear down.
- The perineum bulges, indicating impending birth.
- The infant crowns.
- After the head delivers, the body follows.

continued on next slide

Labor and Normal Delivery

- In the third stage, the placenta is delivered, usually within 5 to 20 minutes.
- Do not pull on the umbilical cord to facilitate delivery of the placenta.

continued on next slide

Labor and Normal Delivery

- Assessment-based approach
  - Determine if delivery is imminent.
    - What is the age of the patient?
    - How many times has the patient been pregnant?
    - How many deliveries has the patient experienced?
    - What is the estimated due date?
    - Has there been any bleeding or discharge?

continued on next slide

Labor and Normal Delivery

- Assessment-based approach
  - Determine if delivery is imminent.
    - Has the amniotic sac ruptured? If so, when and what color is it?
    - Has fetal movement been present or absent?
    - Are there any contractions or pain present?

continued on next slide

Labor and Normal Delivery

- Assessment-based approach
  - Determine if delivery is imminent.
    - What is the frequency and duration of contractions?
    - Is crowning occurring with contractions?
    - Does the patient feel the need to push?

continued on next slide

Labor and Normal Delivery

- Assessment-based approach
  - Determine if delivery is imminent.
    - Does the patient feel as if she is having a bowel movement with increasing pressure in the vaginal area?
    - Is the abdomen hard upon palpation?
    - Did the pregnant patient take any medication? If so, what was taken and when was it taken?

continued on next slide

Labor and Normal Delivery

- You must assist delivery at the scene if:
  - There is no suitable transportation
  - The hospital or physician cannot be reached due to bad weather, a natural disaster, or catastrophe
  - Delivery is imminent

continued on next slide

Labor and Normal Delivery

- Signs and symptoms of imminent delivery
  - Crowning has occurred
  - Contractions are ≤ 2 minutes apart, they are intense, and last 60 to 90 seconds
  - The patient feels the urge to defecate
  - The patient has a strong urge to push
  - The patient's abdomen is very hard

Click on the finding that should prompt you to anticipate the need for immediate on-the-scene delivery.

A. Contractions are five minutes apart.

B. Contractions started five hours ago.

C. The mother has not had regular prenatal care.

D. The mother states she feels like she needs to have a bowel movement.

Labor and Normal Delivery

- Preparation for delivery
  - Standard Precautions, including gloves, gown, and eye protection
  - Do not touch the vaginal area except during delivery.
  - Do not allow the patient to use the bathroom.

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Labor and Normal Delivery

- Preparation for delivery
  - Do not hold the mother's legs together or otherwise try to delay delivery.
  - Prepare a sterile OB kit.

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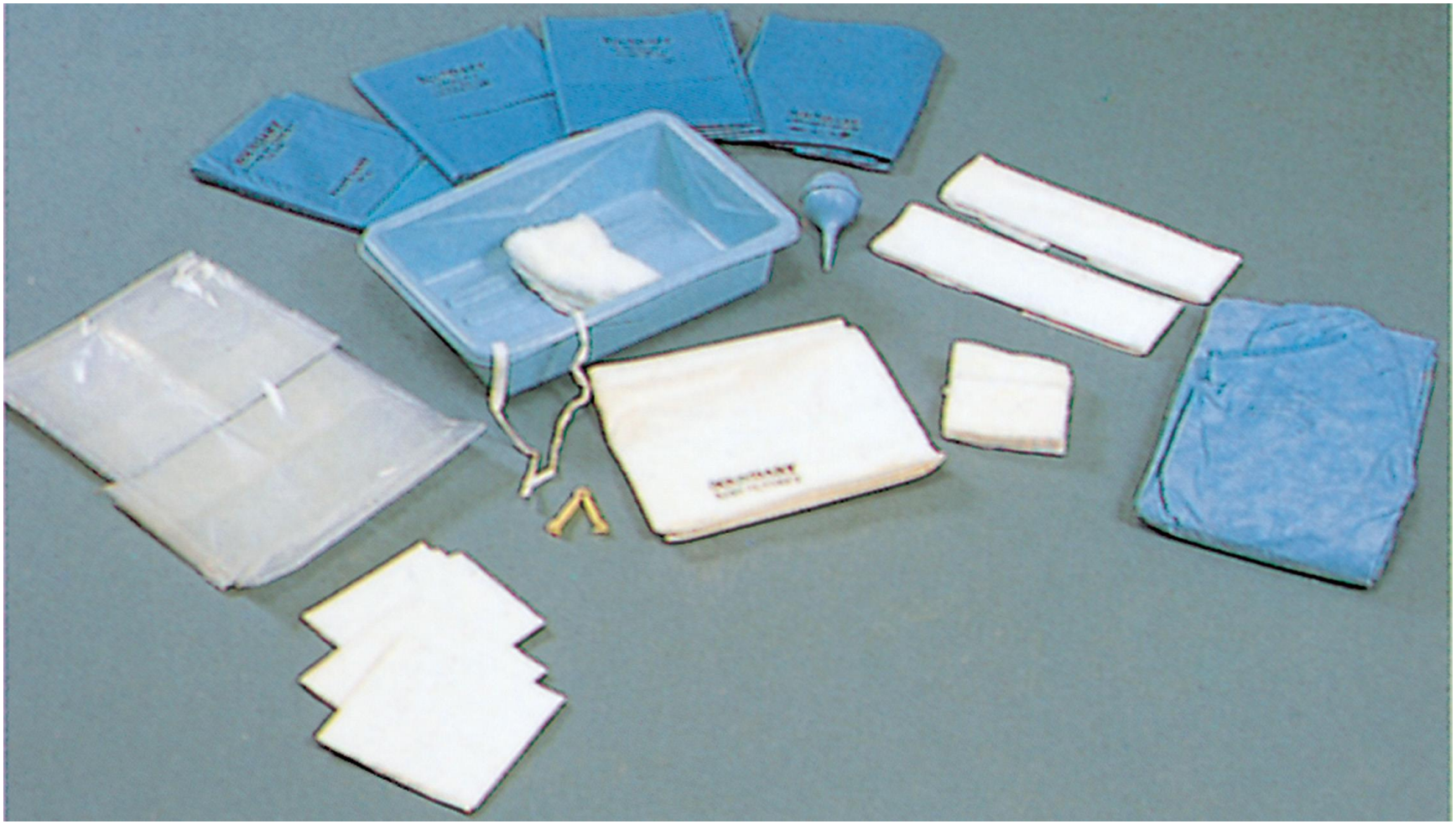
Disposable obstetrics (OB) kit.



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Labor and Normal Delivery

- Steps for a normal delivery
  - Position the patient.
  - Apply oxygen by nasal cannula at 2 to 4 lpm.
  - Create a sterile field.
  - Anticipate vomiting.
  - Assess for crowning.

continued on next slide

Labor and Normal Delivery

- Steps for a normal delivery
  - Apply gentle pressure to the head to prevent explosive delivery.
  - Tear the amniotic sac if it has not ruptured.

continued on next slide

Labor and Normal Delivery

- Steps for a normal delivery
  - Determine the position of the umbilical cord.
  - Suction fluids from the infant's airway only if obvious obstruction exists or positive pressure ventilation is necessary.

continued on next slide

Labor and Normal Delivery

- Steps for a normal delivery
  - Support the baby with both hands as it is delivered.
  - Grasp the feet as they are born; avoid pulling on the umbilical cord.
  - Suction the nose and mouth only if there is obstruction to breathing or positive pressure ventilation is needed.

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Labor and Normal Delivery

- Steps for a normal delivery
  - Dry, wrap, warm, and position the infant; keep the infant at or above the level of the vagina until the umbilical cord is cut.
  - Have your partner complete the assessment of the newborn.

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Labor and Normal Delivery

- Steps for a normal delivery
  - Clamp and cut the umbilical cord as pulsations cease.
  - Observe for delivery of the placenta.
  - Place the placenta in a plastic bag for transport.

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Labor and Normal Delivery

- Steps for a normal delivery
  - Place a sanitary pad over the vaginal opening; use direct pressure to control external bleeding from the perineum.
  - Record the time of delivery and transport.

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Crowning. The vertex of the head is showing in the vaginal opening.

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Once the head is delivered, check if the umbilical cord is around the neck (nuchal cord). Deliver the shoulders with the next contraction.

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Once the shoulders are delivered, the entire torso is likely to be delivered quickly.

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Maintain a good grasp of the newborn and keep the baby level with the mother's body.

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Provide newborn care. Dry and warm.

continued on next slide

Clamp and cut the umbilical cord.

continued on next slide

Deliver the placenta.

continued on next slide

Provide blow-by oxygen based on the SpO_2 reading.

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Labor and Normal Delivery

- Up to 500 mL of vaginal bleeding following delivery is normal.
- For excessive blood loss:
  - Provide oxygen.
  - Massage the uterus.
  - Allow the mother to nurse the infant.
  - Transport.

Case Study

Lacy reassures the patient and explains that she needs to check and see if the baby is about to be born. Lacy confirms that the delivery is imminent. Lacy pulls on a gown and eye protection as Alan prepares the OB kit.

Within 10 minutes, Lacy has assisted with the delivery of a baby girl.

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Case Study

- What steps are required in the immediate care and assessment of the newborn?
- What special considerations are there for the newborn's prematurity?

Abnormal Delivery

- Signs and symptoms of abnormal delivery
  - Any fetal presentation other than the normal crowning of the head
  - Abnormal color or smell of the amniotic fluid
  - Labor before 38 weeks of pregnancy
  - Recurrence of contractions after the first infant is born

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Abnormal Delivery

- Emergency medical care
  - Emphasis is on:
    - Immediate transport
    - Administering oxygen
    - Continuously monitoring vital signs
  - For most intrapartum emergencies, delivery in the prehospital setting is not possible.

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Abnormal Delivery

- Prolapsed cord
  - The umbilical cord is the presenting part.
  - The cord may be compressed, cutting off oxygen to the infant.
  - Instruct the mother not to push.

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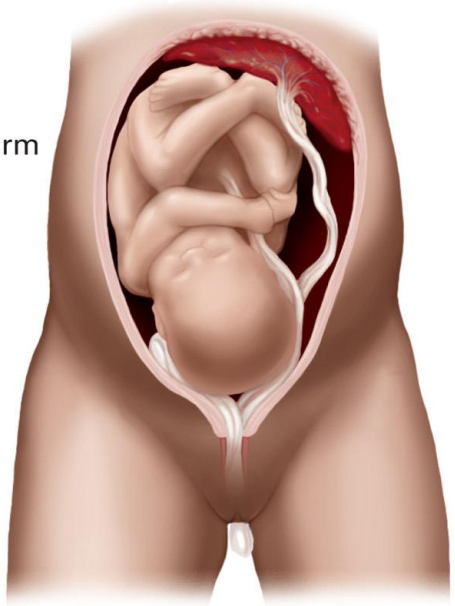
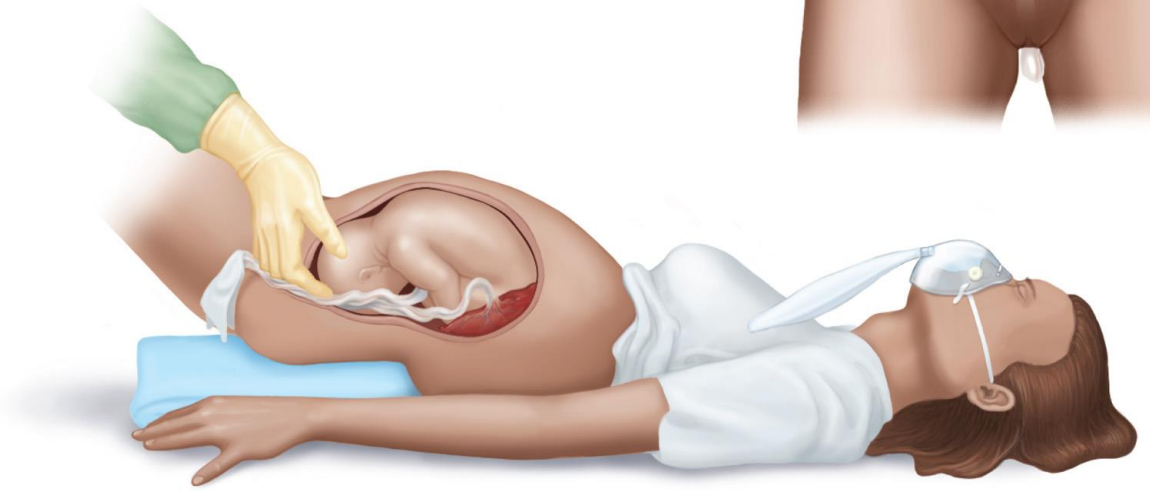
Prolapsed cord.

PROLAPSED CORD

- Elevate hips, administer oxygen, and keep mother warm
- Keep baby's head away from cord
- Do not attempt to push cord back
- Wrap cord in sterile moist towel
- Transport mother to hospital, continuing pressure on baby's head





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Abnormal Delivery

- Breech birth
  - The buttocks or lower extremities are the presenting part.
  - Increased risk of complications for the infant and mother.
  - Transport in a supine head-down position.

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Breech delivery. (© Science Photo Library/Custom medical Stock Photo)

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Abnormal Delivery

- If a prehospital breech delivery is unavoidable:
  - Position the mother with her buttocks at the edge of a firm surface or bed.
  - Have her hold her legs in a flexed position.
  - As the infant delivers, support the legs
  - Allow the entire body to be delivered as you simply support it.

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Abnormal Delivery

- If a prehospital breech delivery is unavoidable:
  - If the body delivers, but the head does not, use your fingers to form a "V" along the vaginal wall and push against the vaginal wall to create a space for respiration.

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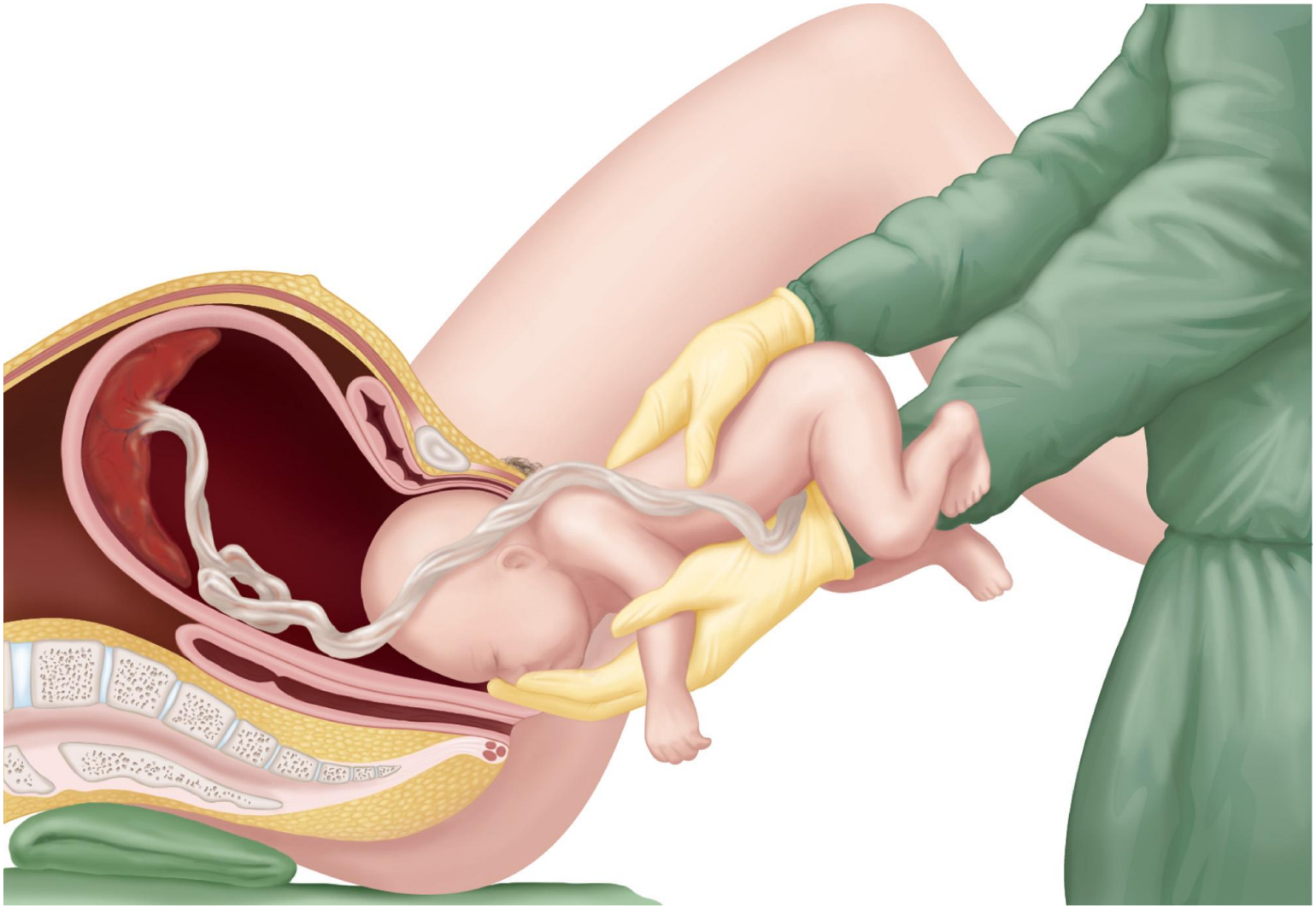
Establish an airway during a prolonged breech delivery.



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Abnormal Delivery

- Limb presentation
  - An arm or leg is the presenting part.
  - Vaginal delivery is impossible.
  - Administer oxygen and transport the patient in knee-chest position.

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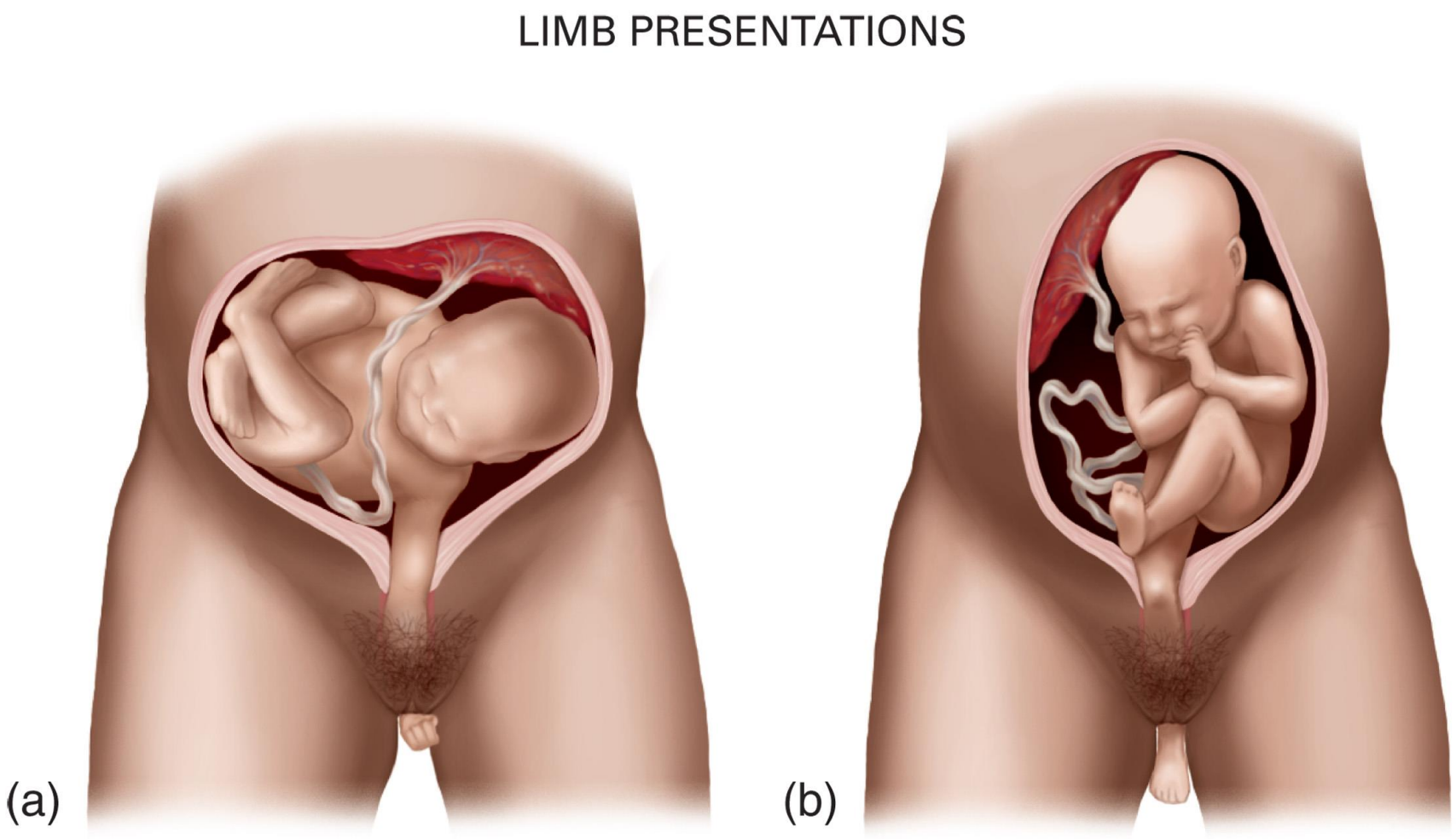
Limb presentations: (a) arm, (b) leg.



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Abnormal Delivery

- Be prepared for multiple births if:
  - The abdomen is still very large after one infant is delivered.
  - Uterine contractions continue to be strong after delivering the first infant.

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Abnormal Delivery

- Be prepared for multiple births if:
  - Uterine contractions begin again about 10 minutes after one infant has been delivered.
  - The infant's size is small in proportion to the size of the mother's abdomen.

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Abnormal Delivery

- Multiple births
  - You will need additional resources to manage multiple infants.
  - If the second infant does not deliver in 10 minutes of the first, transport.
  - Multiples tend to have lower birth weight and may require more resuscitation.

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Abnormal Delivery

- Meconium
  - Fetal distress can lead to the fetus passing a bowel movement into the amniotic fluid.
  - If the meconium-stained fluid is aspirated, pneumonia can result.

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Abnormal Delivery

- Meconium
  - If the infant is vigorous, do not suction.
  - If the infant is not vigorous, do not dry or stimulate until you have aggressively suctioned the airway.

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Abnormal Delivery

- Premature birth
  - Infant weighing less than 5 lbs. or born before the 38th week of gestation
  - Premature infants are prone to hypothermia and respiratory problems.

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Abnormal Delivery

- Care for premature infant
  - Dry the infant thoroughly; avoid heat loss. Use warmed blankets or a plastic bubble-bag swaddle.
  - Use gentle suction if it is necessary to clear the airway.
  - Prevent bleeding from the umbilical cord.

continued on next slide

Abnormal Delivery

- Care for premature infant
  - If oxygen is necessary, hold the end of tubing 1 inch above the mouth and nose; support ventilation if breathing is inadequate.
  - Prevent contamination; do not let anyone breathe into the infant's face.
  - Wrap the infant securely; heat the ambulance.

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Abnormal Delivery

- Postterm pregnancy
  - Delivery beyond 42 weeks gestation
  - Increased risk of complications

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Abnormal Delivery

- Precipitous delivery
  - The fetus is delivered within three hours of the onset of labor.
  - Most common in multiparas
  - Increased risk of trauma to the fetus and mother

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Abnormal Delivery

- Shoulder dystocia
  - The fetal shoulders are larger than the fetal head.
  - The head delivers, but then retracts back into the vagina.

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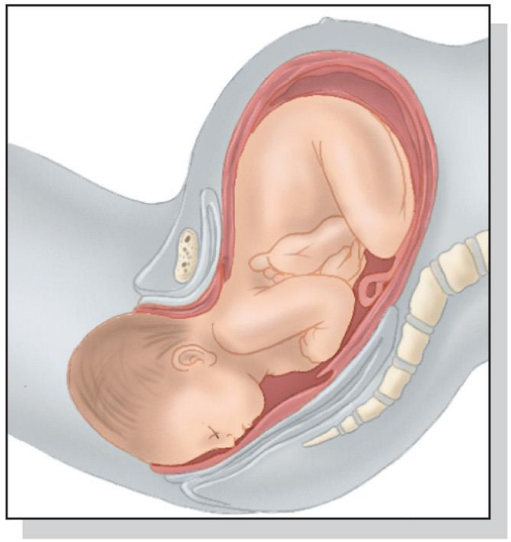
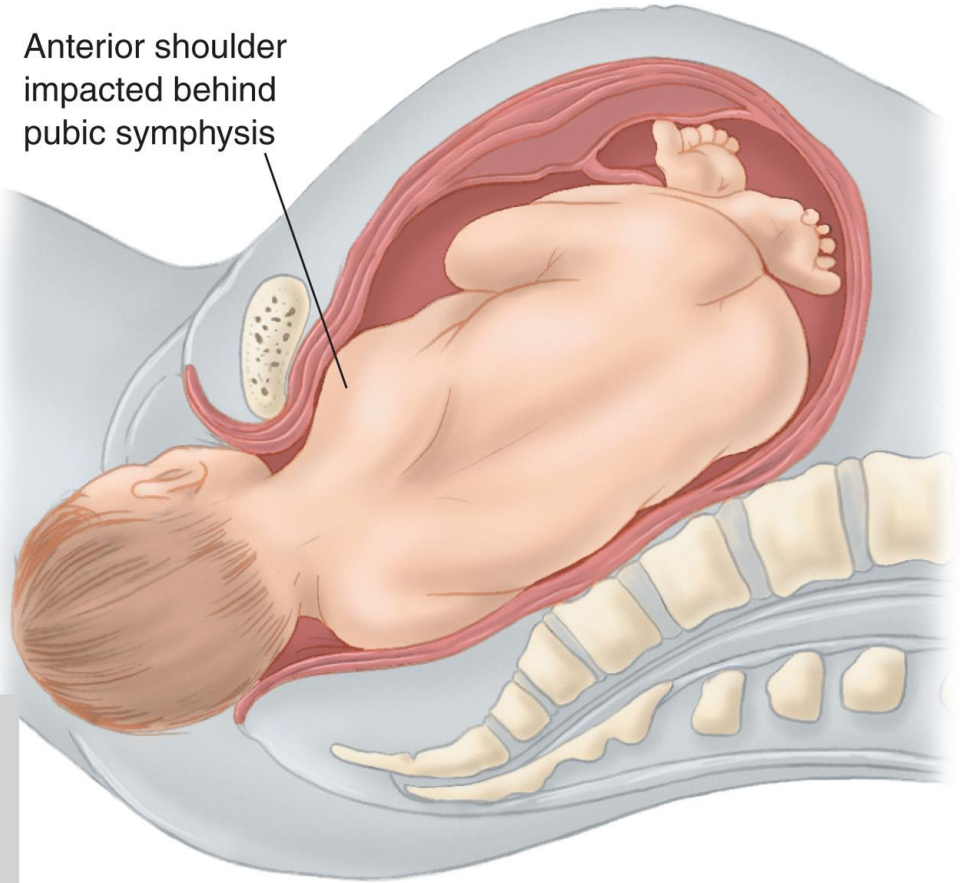
Shoulder dystocia.

Normal



Shoulder Dystocia



Dangers Include:

- Entrapment of cord
- Inability of child's chest to expand properly
- Severe brain damage or death if child is not delivered within minutes

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Abnormal Delivery

- Preterm labor
  - Labor after the 20th week, but prior to the 37th week of gestation
  - With treatment, it may not progress to delivery.
  - Administer oxygen and transport

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Abnormal Delivery

- Premature rupture of membranes (PROM)
  - Spontaneous rupture of the amniotic sac prior to the onset of true labor and before the end of the 37th week of gestation
  - Increased risk of infection

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Abnormal Delivery

- Postpartum hemorrhage
  - Loss of >500 mL blood after delivery
  - The uterus fails to regain tone after delivery.
  - Manage with fundal massage, oxygen, and transport.

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Abnormal Delivery

- Embolism
  - Pregnant and postpartum patients are at increased risk for blood clots, which can lead to pulmonary embolism
  - Amniotic fluid embolism may occur

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Abnormal Delivery

- Embolism
  - Patients can present with shortness of breath, syncope, tachycardia, sharp chest pain, hypotension, cyanosis, and pale, cool, clammy skin.
  - Ensure adequate ventilation and maximize oxygenation.
  - Transport.

Care of the Newborn

- General considerations
  - Neonates lose body heat quickly.
  - Immediately dry the infant.
  - Wrap the infant in a blanket or a plastic bubble-bag swaddle.

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Care of the Newborn

- General considerations
  - Suction to clear the airway only if necessary.
  - Position the newborn on his back with the neck slightly extended in a sniffing position.

continued on next slide

Care of the Newborn

- Assessment
  - Obtain an APGAR score at 1 minute and 5 minutes after birth.

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Care of the Newborn

- Assessment
  - APGAR assigns a score of 0, 1, or 2 on five indicators:
    - Appearance
    - Pulse
    - Grimace
    - Activity
    - Respirations

continued on next slide

Care of the Newborn

- Appearance
  - 0 points if the entire body is blue or pale
  - 1 point if the body is pink but the extremities are blue
  - 2 points if the body and extremities are pink

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Care of the Newborn

- Pulse
  - 0 points for no pulse
  - 1 point for heart rate <100
  - 2 points for heart rate >100

continued on next slide

Care of the Newborn

- Grimace (reflex irritability)
  - 0 points for no activity
  - 1 point for some facial grimace
  - 2 points for grimace with cough, sneeze, or cry

continued on next slide

Care of the Newborn

- Activity
  - 0 points for limp, or no movement
  - 1 point for some flexion
  - 2 points for active movement

continued on next slide

Care of the Newborn

- Respiration
  - 0 points for no respiratory effort
  - 1 point for slow or irregular breathing effort or weak cry
  - 2 points for good respiration and strong cry

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Care of the Newborn

- Use the APGAR to determine the need for resuscitation.
  - 7 to 10 points—provide routine care.
  - 4 to 6 points—stimulate and provide oxygen.
  - 0 to 3 points—extensive care may be needed, including oxygen, positive pressure ventilation, and CPR.

continued on next slide

Care of the Newborn

- If the newborn is not breathing adequately, stimulate by rubbing the back or flicking the soles of the feet.
- Continually assess the newborn during transport.

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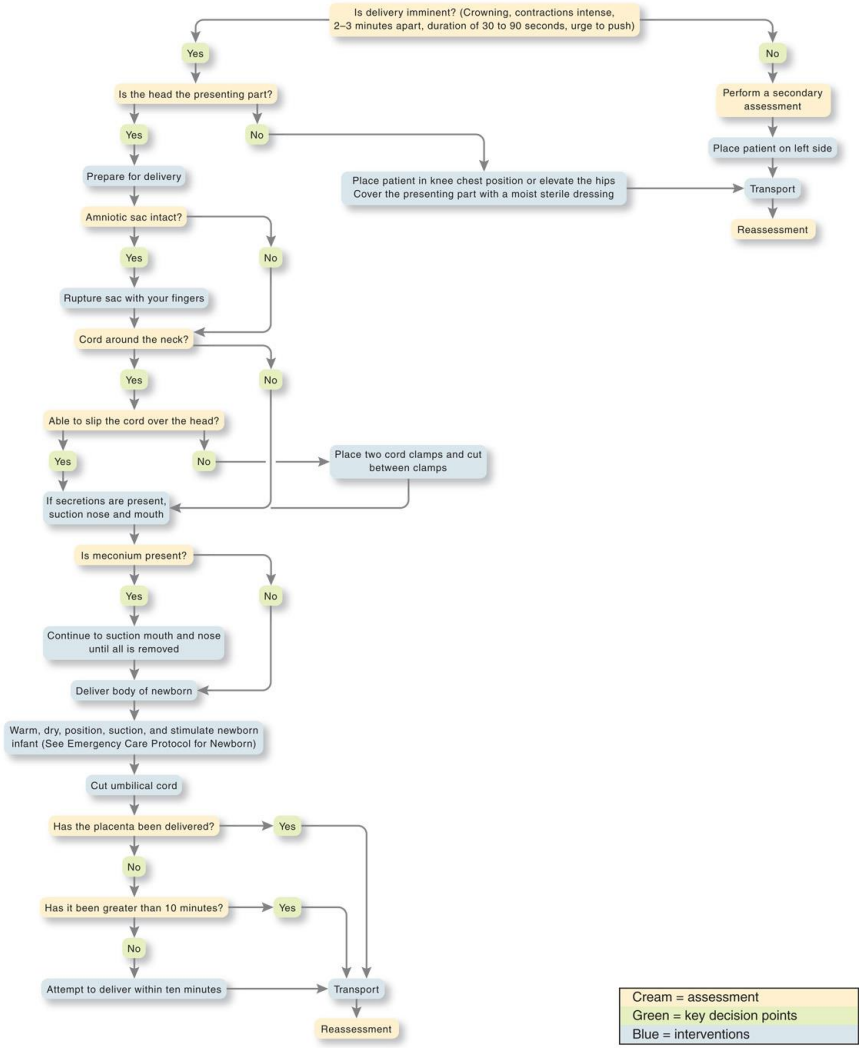
Emergency care algorithm: obstetric emergency—active labor and delivery.



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Care of the Newborn

- Most newborns require only routine care.
- Of those who require more care, most need only oxygen and bag-valve-mask ventilations.
- A few newborns require chest compressions and advanced care.

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Care of the Newborn

- Signs and symptoms of a severely depressed newborn
  - Respiratory rate >60
  - Diminished breath sounds
  - Heart rate >180 or <100
  - Obvious signs of trauma from the delivery process

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Care of the Newborn

- Signs and symptoms of a severely depressed newborn
  - Poor or absent skeletal muscle tone
  - Respiratory arrest, or severe distress
  - Heavy meconium staining of amniotic fluid and a nonvigorous newborn
  - Weak pulses

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Care of the Newborn

- Signs and symptoms of a severely depressed newborn
  - Cyanotic body (core and extremities)
  - Poor peripheral perfusion
  - Lack of or poor response to stimulation
  - Apgar score under 4

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Care of the Newborn

- Expected SpO_2 readings in the newborn are based on preductal readings, obtained from the right upper extremity.
- The expected SpO_2 takes several minutes to reach normal levels.

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TABLE 37-1 Targeted Preductal SpO_2 After Birth

Preductal oxygen saturation is measured by placing the SpO_2 probe on the right hand or extremity to measure blood oxygen saturation before it reaches the ductus arteriosus in the aorta.

Minutes After Birth	Expected Preductal SpO_2 Reading
1 minute	60% to 65%
2 minutes	65% to 70%
3 minutes	70% to 75%
4 minutes	75% to 80%
5 minutes	80% to 85%
10 minutes	85% to 90%

continued on next slide

Care of the Newborn

- The majority of newborns who require intervention require only simple measures.

continued on next slide

Stimulate the infant who is not breathing by flicking the soles of the feet or by rubbing the back.

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Care of the Newborn

- These three questions guide the need for resuscitation:
  - Is this a term gestation?
  - Does the newborn have a good cry or is he breathing adequately?
  - Does the newborn have good muscle tone?

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TABLE 37-2 Assessment and Initial Management of the Newborn

Assessment	Response	Intervention
Heart rate	>100 bpm, No gasping, No apnea	Assess breathing.
Heart rate	<100 bpm, Gasping respirations or apnea	Clear the airway and begin positive pressure ventilation using an infant-sized BVM (250 mL) at a rate of 40 to 60 ventilations/minute with a volume that is just enough to cause the chest to rise. Continue to provide PPV until HR increase to 100 bpm or greater. Then assess breathing.
Heart rate	<60 bpm	Clear the airway and begin chest compressions and PPV. Compress 1/3 the anteroposterior diameter of the chest at a rate of 120 compressions/minute with a ratio of 3 compressions: 1 ventilation. Continue compressions until heart rate is greater than 60 bpm. Continue PPV until heart rate is greater than 100 bpm.

TABLE 37-2 Assessment and Initial Management of the Newborn

Assessment	Response	Intervention
Breathing	Adequate, cyanosis that is not persistent, and SpO_2 within normal limits after birth	Continue to assess heart rate, respirations, and oxygenation.
Breathing	Labored breathing, persistent cyanosis, or SpO_2 less than normal after birth	Clear the airway and provide blow-by oxygen.
Breathing	Apnea, gasping respiration, or inadequate breathing	Clear the airway and begin positive pressure ventilation using an infant-sized BVM (250 mL) at a rate of 40 to 60 ventilations/minute with a volume that is just enough to cause the chest to rise. Continue to assess heart rate, respirations, and oxygenation.
Oxygenation	Within normal limits following birth, HR >100 bpm, breathing is adequate and cyanosis is not persistent	Continue to assess heart rate, respirations, and oxygenation.
Oxygenation	Less than the normal limit following birth	Administer blow-by oxygen. Continue to assess heart rate, respirations, and oxygenation.

Source: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care.

Care of the Newborn

- Interventions
  - To provide blow-by oxygen, hold the tube 1 inch from the nose and mouth and direct the oxygen flow, at 5 lpm or greater, across the mouth and nose.

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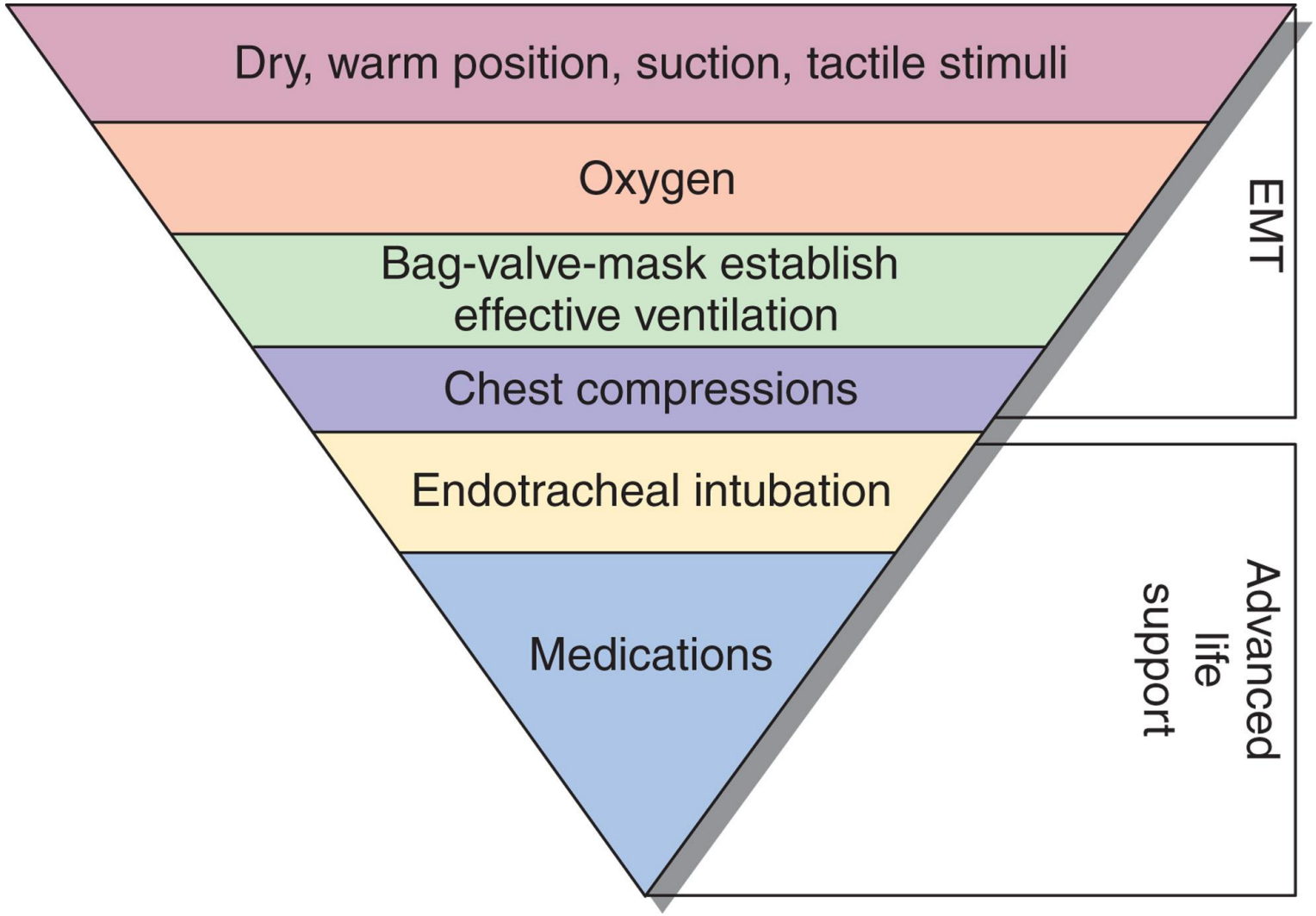
The inverted pyramid for neonatal resuscitation shows that the majority of newborns will respond to simple routines of care; only a few will require aggressive resuscitation.



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Care of the Newborn

- Positive pressure ventilation
  - Clear the airway by suction.
  - Provide ventilations by bag-valve mask at the rate of 40–60 per minute.
  - Reassess after 30 seconds.
  - If breathing has not improved and the heart rate is less than 100/minute, continue ventilations.
  - Reassess every 30 seconds.

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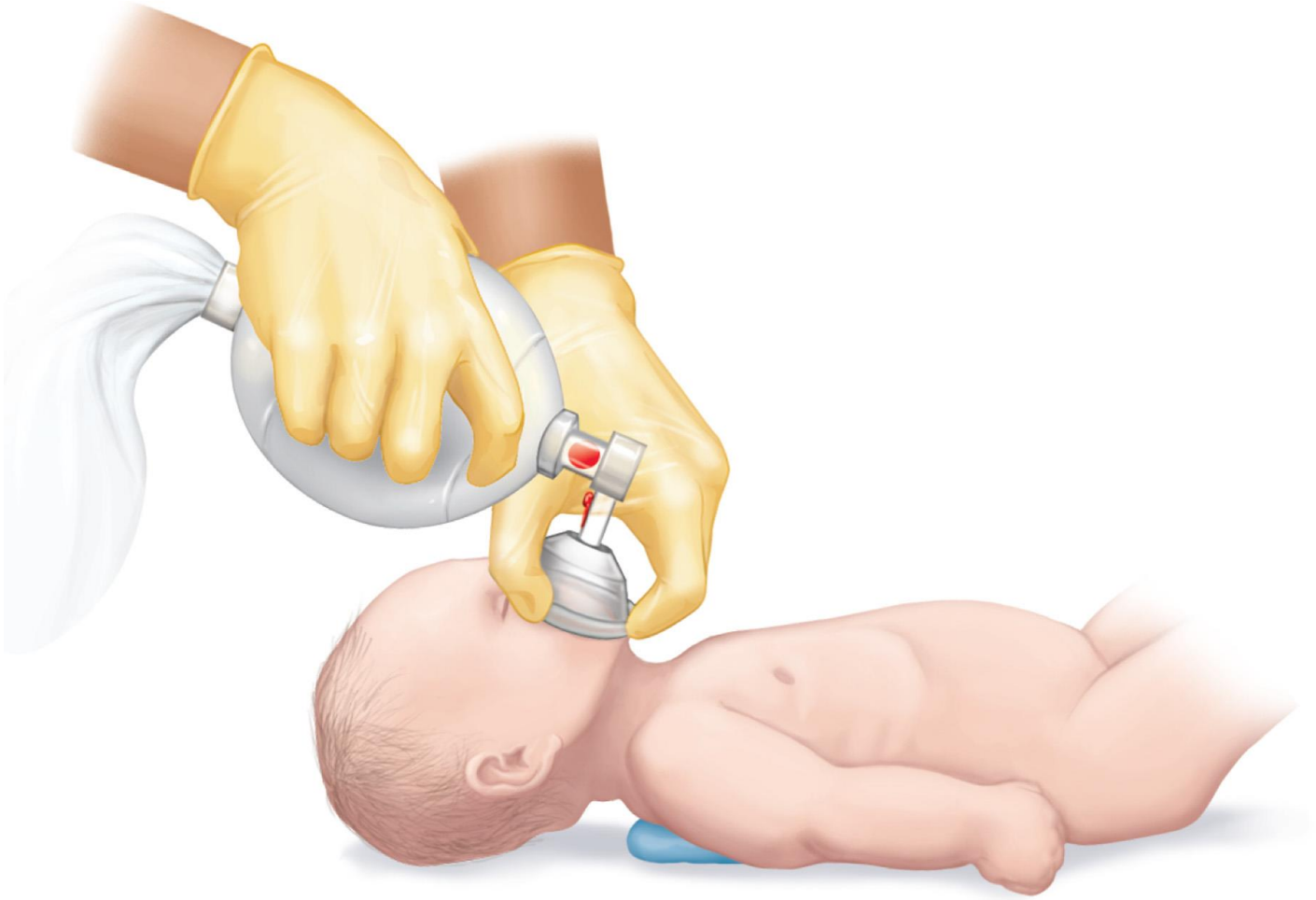
To provide positive pressure ventilation, use a bag-valve mask. Maintain a good mask seal. Ventilate with just enough force to raise the infant's chest. Ventilate at a rate of 40–60 per minute for 30 seconds. Then reassess.



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Care of the Newborn

- If the infant's heart rate drops to <60, continue ventilations and begin chest compressions.

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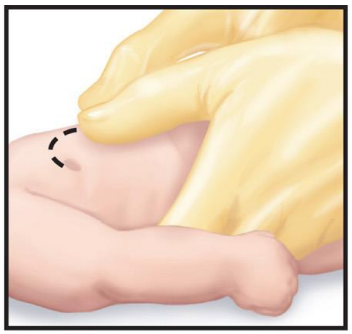
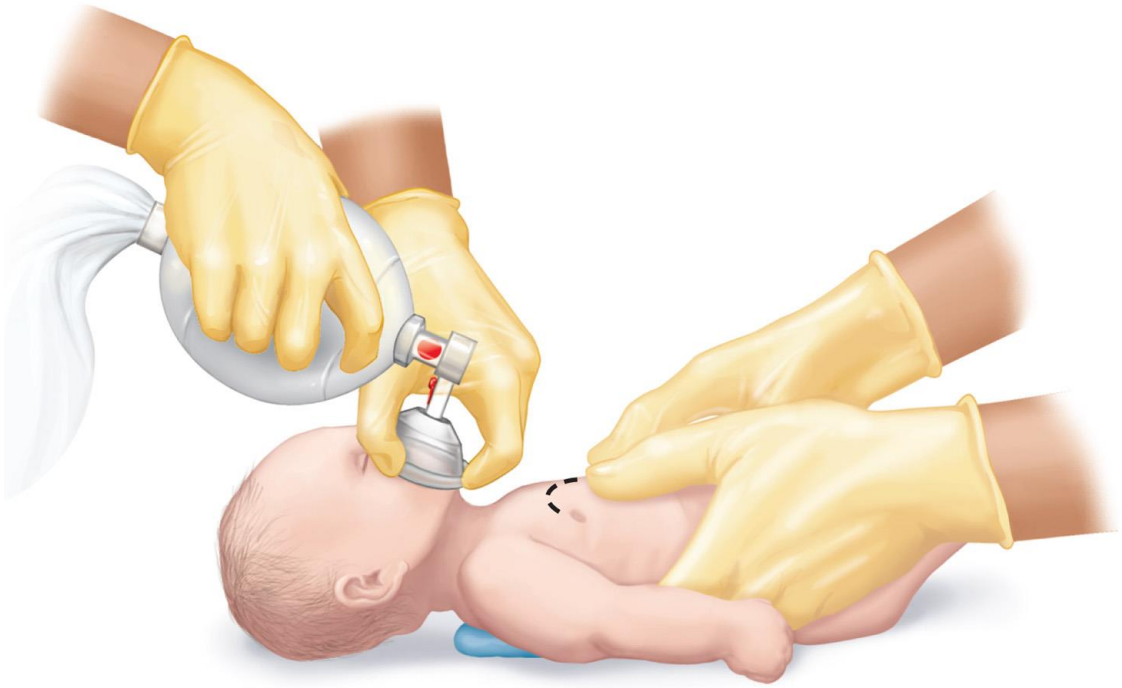
To provide chest compressions, circle the torso with the fingers and place both thumbs on the lower third of the infant's sternum. If the infant is very small, you may need to overlap the thumbs. If the infant is very large, compress the sternum with the ring and middle fingers placed one finger's depth below the nipple line. Compress the chest one-third the depth of the chest at the rate of 120 per minute and a ratio of 3:1 compressions to ventilations.





Case Study Conclusion

As Lacy assists with delivery of the placenta and monitors the mother, Alan determines that the newborn has a one-minute APGAR score of 7, and a five-minute APGAR score of 8.

Alan ensures that the baby is dry and warm, and hands her to her mother.

En route, the EMTs continue to monitor both patients, who are stable on arrival at the hospital.

Lesson Summary

- Pregnancy results in physiological changes to several body systems.
- Antepartum emergencies include hemorrhagic emergencies and hypertensive emergencies.
- There are three stages of normal labor.

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Lesson Summary

- Most abnormal deliveries cannot take place in the prehospital setting.
- Newborn resuscitation begins with simple measures such as drying, warming, and stimulation.