

## Objectives

At the end of the CE module, the EMS provider will be able to:

1. Describe the anatomic structures and physiology of the female reproductive system
2. Assess and provide care for obstetric patients with pre-delivery emergencies
3. Identify and describe complications associated with pregnancy and delivery



## Introduction

Although most pregnancies proceed without any significant difficulties, complications do occasionally arise. In those circumstances, EMS personnel must remember two important prehospital management principles:

1. Definitive care might not be possible in the field.
2. Appropriate care of the mother provides the most appropriate care for the fetus.

This article will focus on common prehospital obstetrical emergencies, such as vaginal bleeding, abdominal pain, labor, pre-eclampsia/eclampsia, trauma and other medical conditions.

## Anatomy and Physiology Review

Each month, the female sex organs known as the ovaries release an egg into the fallopian tube. Conception normally takes place when the egg and sperm unite within the fallopian tube. The fertilized egg then completes its journey through the tube and comes to rest on the upper back wall of the uterus between four and seven days after release.

The uterus is a hollow, pear-shaped muscular organ composed of three tissue layers. These layers help provide nutrients during fetal

development, contract during labor to expel the fetus and prevent maternal hemorrhage after delivery by closing off blood vessels.

The elongated lower portion of the uterus, or cervix, opens into the vagina. The vagina, sometimes referred to as the birth canal, is a fibrous muscular tube that extends to the outside of the body. A mucus plug seals the cervix during pregnancy. As labor begins, changes in the cervix release the plug, expelling it from the vagina in what may be a bloody discharge. Growth of the pregnant uterus places pressure on the bladder and bowel and results in feelings of urgency or needing to urinate often. When birth is imminent, the patient may have a strong sense of needing to move her bowels.

## Organs of Pregnancy

Attached to the internal uterine wall is the placenta, which originates from the same mass of cells as the fetus. This organ provides support for the fetus by transferring respiratory gases, nutrients, wastes, antibodies, hormones and electrolytes between mother and child through the placental membranes.

A long twisting collection of tubes known as the umbilical cord attaches the fetus to the placenta. Throughout the pregnancy, the umbilical cord grows to meet the needs of the

fetus. At birth, as many as 40 spiral twists may be present in the cord. A possible complication resulting from this anatomic configuration is stillbirth. The fetus can move through a loop of umbilical cord to create a true knot, stopping the flow of nutrients from the placenta to the fetus.

Surrounding the fetus is a bag of water known as the amniotic sac. The amniotic fluid serves as a cushion to decrease external forces applied to the fetus. At term, the sac contains about 1,000 mL of fluid, most of which is water but it may also contain fetal urine.

### ***Fetal Circulation***

Maternal blood flow is essential for fetal development and well-being; however, the mother's blood does not flow directly through the infant. The baby has its own circulatory system. Blood from the fetus flows through the umbilical cord, filters through the fetal side of the placenta and then returns to the infant. Tightly fitting cells form a placental barrier, which separates fetal blood from maternal blood. The placental barrier allows some substances, such as oxygen and glucose, to pass from mother to baby but prevents other substances, such as certain drugs, from diffusing across.

### ***Progress of Gestation (The Trimesters of Pregnancy)***

A full term pregnancy lasts approximately 280 days, and health care providers divide these days into three-month intervals called *trimesters*.

During the first trimester, the uterus does not enlarge very much. The fetus is still very tiny, but all essential fetal body parts form during the first trimester. In the first trimester, the mother may experience breast tenderness due to the enlargement of breast tissue, fatigue, frequent urination as the uterus expands enough to put pressure on the bladder, heartburn due to decreased gastric emptying and nausea or vomiting (morning sickness) thought to be caused by pregnancy hormones.

By the time the second trimester begins most of these symptoms will disappear. The second trimester is generally a period of well-being highlighted by the first sensations of fetal movement.

During the third trimester, the growing uterus causes the mother's diaphragm to elevate, which can lead to shortness of breath.

An increase in the maternal blood volume will produce a physiological anemia. Leg cramps are common. The expanding abdomen changes the mother's center of gravity and predisposes her to falls.

### **Prehospital Assessment of the Obstetrical Patient**

An ideal environment for conducting an obstetrical assessment would be clean, quiet and private. Those conditions might be hard to come by in prehospital settings, thereby complicating patient assessment. A lack of privacy could lead to increased anxiety and fear for the expectant mother, which further complicates the assessment.

To minimize these anxieties, EMS personnel should attempt to reassure the patient, explain every step in the assessment and attempt to preserve the patient's privacy whenever possible.

### ***History***

Health care providers who suspect pregnancy as the cause of the patient's chief complaint must obtain a complete and accurate obstetric and gynecologic history. For some patients, especially teenage patients, conducting the interview in private is preferred, as denial of pregnancy may prevent EMS personnel from obtaining an accurate history. A public statement of regular menstrual periods and/or the lack of sexual activity may not rule out pregnancy.

The history can provide clues for determining the likelihood of adverse events and developing emergencies. The SAMPLE history, normally obtained for every patient, is a good place to start. For example, knowing about medical conditions such as anemia (which can make pregnant women more susceptible to complications from blood loss) or insulin-dependent diabetes (which increases the likelihood of a miscarriage) gives health care providers important assessment tools.

Essential data for an obstetrical/gynecological history also includes:

- A description of any abdominal pain using the OPQRST method
- Last normal menstrual period or expected date of delivery (abbreviated as EDC, which stands for *estimated date of confinement*)
- Likelihood of pregnancy in patients not obviously pregnant

- Gravity, which is a term that indicates the number of pregnancies the woman has had, and parity, which is the number of live births she has had
- The presence and amount of vaginal bleeding. The patient may be able to recall the number of pads or tampons used per day
- The presence or amount of any other vaginal discharge, such as products of conception
- Any prenatal care and by whom. Women who receive regular prenatal care are more likely to quickly identify complications

When EMS personnel suspect labor is imminent, additional information should focus on the obstetrical history of the patient. This expanded data includes:

- Previous cesarean sections
- The possibility of a ruptured amniotic sac and any discolorations (which would suggest the presence of meconium)
- Frequency and duration of contractions. If the mother says the baby is coming, prepare for immediate delivery.
- Any complications expected, such as multiple births or placenta previa

### ***Rapid Physical Assessment***

Follow the history with a rapid physical assessment, which will evaluate the patient's general medical condition and vital signs. The goal of this assessment is to identify and treat any immediately life-threatening symptoms. Remember, however, the two basic principles of prehospital obstetric care:

1. Definitive care might not be possible in the field.
2. Appropriate care of the mother provides the most appropriate care for the fetus.

### ***Vital Signs***

When evaluating the obstetrical patient, a few important vital sign changes must be taken into consideration. The average heart rate in the pregnant patient will often increase steadily throughout pregnancy. By the third trimester, her heart rate may be 15 to 20 beats per minute higher than a non-pregnant patient. The systolic and diastolic blood pressure will often decrease

by 10 to 15 mmHg in the second trimester and then return to normal by term.

When a third trimester patient is supine, the enlarged uterus may come to rest on the inferior vena cava. This can reduce blood flow back to the heart by as much as 25 to 30 percent, causing significant hypotension. To avoid acting on incorrect data, place third trimester patients on their left side and not supine. For gravid patients immobilized on a backboard, tilt the backboard at about a 20-degree angle to the left to allow the uterus to roll off the vena cava.

By the third trimester, the patient will also have a significant increase in the volume of circulating blood. However, this increase is primarily in the liquid component. There is no significant increase in oxygen-carrying capacity. Because of the increased volume, a pregnant patient near term can tolerate a greater blood loss before the blood pressure falls. In fact, it may take a 30 to 35 percent blood loss before the systolic blood pressure changes.

Compensatory mechanisms in the mother will attempt to keep blood flowing to the vital organs in both the baby and in the mother herself. However, once the compensatory mechanisms begin to fail and the blood pressure starts to drop, the survival mechanisms within the mother will divert blood away from the fetus in favor of the mother's own organs. Blood loss significant enough to cause hypotension in the mother will be fatal for the fetus most of the time. However, maternal blood loss that does not result in hypotension can still reduce blood flow to the fetus by 90 to 95 percent.

Hypovolemic patients may have changes in blood pressure readings as they change from a supine to an upright position. If the conditions allow, EMS personnel should measure a supine blood pressure and reassess with the patient in an upright or sitting position. Be sure to support the mother as syncope could occur in fragile patients. A tilt-test is unnecessary if there are obvious signs of blood loss. Consider the presence of blood loss and tachycardia as enough evidence of hypovolemia and treat accordingly.

### ***Physical Assessment***

The prehospital physical examination is usually limited, with a focus on determining blood loss and/or the presence of crowning during labor. An internal vaginal exam has no place in the prehospital evaluation of the

patient. It provides little useful information and may actually create life-threatening complications for the mother and fetus.

EMS personnel must perform a visual inspection of the vagina for third trimester patients complaining of vaginal discharge or labor. Visual inspection may reveal uncorrectable conditions such as breech presentations or a prolapsed umbilical cord, which are substantial threats to the baby. Vaginal bleeding in the third trimester is a serious condition and may represent a significant threat to the fetus even when the mother's vital signs seem normal.

### **General Treatment Principles**

As previously mentioned, appropriate care of the mother provides the most appropriate care for the fetus. It is true that you have two patients, but survival of the internal patient relies exclusively on the ability of the external patient to maintain compensatory mechanisms. Until both patients arrive at a definitive care facility, ensuring the mother remains as stable as possible gives the fetus the best chance of survival.

Oxygen administration may have significant benefits for both the mother and the baby. Ensuring high oxygen saturations in the mother will help to ensure the fetus has enough oxygen to perform vital organ functions.

Vital signs of the mother may be a poor indicator of the hemodynamic status of the baby. For that reason, advanced EMS personnel should obtain venous access and perform fluid resuscitation for any suspicion of hypovolemia. Maintain maternal blood pressure above 90 mmHg using normal saline in 250 mL bolus infusions as often as necessary. Vasopressors, such as dopamine and norepinephrine, have been known to cause decreased blood flow to the uterus and therefore should be used only after fluid resuscitation and then only when necessary as a final effort to prevent complete cardiovascular collapse. Place the hypotensive obstetrical patient on a cardiac monitor.

Remember that a third trimester patient should be transported on her left side in order to keep the uterus from reducing the blood flow back to the heart. If you are concerned about the potential for a spinal injury, immobilize the patient and tilt the backboard at a 20-degree angle, which should prevent the uterus from compressing the inferior vena cava.

Not only is appropriate care essential for the survival of the mother and baby, but the decision of where to transport will also influence the outcome of both patients. The destination hospital must be capable of providing comprehensive care for obstetric and neonatal emergencies much in the same way that burn and trauma centers provide specialized services for those patients.

### **Vaginal Bleeding and Abdominal Pain**

Two of the most common chief complaints in obstetrical or gynecological patients are vaginal bleeding and abdominal pain. Although there are many possible explanations for these symptoms, for safety's sake EMS personnel must always assume they are pregnancy-related in women of childbearing age.

Any bleeding during pregnancy represents the possibility of a spontaneous abortion, or miscarriage. Definitive care for this patient is not possible in the prehospital environment and transport to an emergency facility capable of advanced obstetrical and neonatal care is the clear priority. Perform the history, physical exam and treatment on the way to the hospital.

If the patient is sexually active but not visibly pregnant or is unsure of her pregnancy status, vaginal bleeding often with abdominal pain suggests an ectopic pregnancy. Again, rapid transport to an appropriate facility, oxygen and fluid resuscitation en route are the priorities.

### **Labor**

Another frequent presentation for the pregnant patient is labor. The majority of deliveries proceed normally with minimal risks; however, EMS personnel must be prepared to manage any number of complications that may develop with little or no warning.

Very early in the assessment, the emergency care provider must determine whether there is time to transport the mother to the hospital safely before childbirth or if delivery is imminent. Perineal or rectal bulging, uncontrollable pushing, the sensation of an impending bowel movement or visible crowning are all evidence of imminent delivery. If birth is imminent, quickly prepare for the delivery. If the baby has not delivered within ten minutes, begin transport and provide all subsequent care on the way to the hospital.

EMS personnel must resist the urge to prevent or delay delivery. Do not hold the

mother's legs together. Do not let the mother go to the bathroom. Recognize your own limitations and, if necessary, begin transport.

If delivery outside the hospital is inevitable, place the mother on her back with her knees widely separated and feet firmly on the floor or on the stretcher. The buttocks can be elevated with pillows or blankets to allow greater access to the baby. If time permits, don clean gloves, a mask, gown and eye protection.

In most cases, the role of the emergency care provider is to control the birthing process and prevent an explosive delivery that could injure the fetus. After the infant delivers, thoroughly suction the baby's mouth and nose, dry the infant and keep the baby warm. Calculate the APGAR score by evaluating the newborn baby on five criteria on a scale from zero to two, then summing up the five values. The resulting APGAR score ranges from zero to ten. The five criteria are appearance, pulse, grimace, activity, and respiration.

Many acute obstetrical complications cannot be resolved in the prehospital environment. Breech or limb presentations and prolapsed umbilical cords are indications of rapid transport to an emergency obstetric facility. In cases of breech presentations, place the mother in a head down position with the pelvis elevated. If delivery progresses, the EMS provider should assist in the delivery. The stimulus for the baby to take its first breath comes when the chest clears the vaginal opening. In a breech delivery, the baby will be stimulated to breathe before the head emerges. If there is a delay in the delivery of the head, rescuers may prevent fetal suffocation by inserting two gloved fingers into the vagina and pushing the birth canal away from the baby's mouth and nose.

A prolapsed umbilical cord endangers the life of the unborn fetus. This condition develops when the umbilical cord enters the birth canal before the baby. As the baby enters the canal, the cord is compressed and severely compromises blood flow to the unborn child. Push the baby off the prolapsed cord by inserting two gloved fingers into the vagina as described previously. Elevate the mother's hips and buttocks to allow gravitational assist in pulling the baby out of the birth canal. Maintain maternal positioning and manual protection of the cord integrity until arrival at the receiving hospital. Cord prolapse and abnormal presentation are the only two situations that

require direct vaginal intervention by EMS personnel.

## **Trauma**

The leading cause of death for pregnant patients is trauma. Trauma care for the pregnant female does not differ significantly from trauma care provided to any other patient. Airway, breathing and circulation problems have priority. Protect the cervical spine and do not spend any more time on scene than is necessary. Third trimester patients secured to a backboard should have the backboard tilted at a 20-degree angle to keep the enlarged uterus off the vena cava.

Gravid patients are at an increased risk for serious injury from a variety of anatomic and physiologic changes related to the pregnancy. Vital sign abnormalities previously discussed may make shock less noticeable. Pregnancy slows movement of food through the gastrointestinal tract. This, combined with the increased pressure on the stomach by the enlarged uterus, makes vomiting more likely, creating an increased aspiration risk. Finally, seemingly minor mechanisms of injury can cause the placenta to tear away from the uterine wall, and this placental abruption is the leading cause of traumatic fetal death.

## **Specific Obstetrical Emergencies**

Now that we have examined some common patient presentations, we can review specific obstetrical emergencies.

### ***Abortion***

Spontaneous abortion, often called a miscarriage, is the most common complication of pregnancy and occurs in about 10 to 20 percent of all pregnancies. It is estimated that as many as 50 percent of all pregnancies spontaneously terminate before the first missed menstrual period and are therefore not clinically recognized. By definition, a spontaneous abortion must be a pregnancy recognized by blood test or ultrasound that terminates before the 20th week of conception.

The timing of the miscarriage may provide clues to its cause. Spontaneous abortion occurring in the first eight weeks of gestation is usually the result of chromosomal defects in the developing embryo. Miscarriages in the first trimester beyond eight weeks may be the result of maternal hormone imbalances, infections,

environmental factors or maternal structural anomalies. Second-trimester abortions are usually associated with anatomic mutation.

About 500 women in the United States die every year from complications of pregnancy, with spontaneous or induced abortions accounting for about six percent of these deaths. Statistically, African American females are almost twice as likely to die as a result of spontaneous abortion as white females. Women over the age of 20 years are twice as likely to suffer a spontaneous abortion compared to those less than 20 years of age.

Vital signs for patients experiencing a miscarriage should all be within normal limits unless further complicated by infection or hypovolemia. The abdomen will usually be soft and non-tender, but the patient may be complaining of cramping and vaginal discharge. Abdominal pain is usually confined to the lower abdominal quadrants and suprapubic pain is common. If present, pain may also radiate into the lower back, perineum, buttocks or genitals. The miscarriage may have expelled partial or complete conceptual products into clothing or a toilet. Occasionally, the mother will discharge the gestational sac intact.

EMS personnel should maintain universal precautions. Because of the potential for heavy blood loss, hemorrhagic shock may develop quickly. Manage any hemodynamic instability aggressively with fluid resuscitation. Administer oxygen as needed. Place OB pads over the external vagina and begin transport as soon as possible. Encourage the patient to bring any expelled tissues to the hospital for analysis.

### ***Pre-eclampsia/Eclampsia***

Pre-eclampsia is a hypertensive disease that occurs in about five percent of all pregnancies, with an estimated 35 to 300 deaths per 1000 births, depending on the neonatal support capabilities of the delivering hospital. Fetal mortality rates in pre-eclampsia are twice that of normotensive pregnancies.

The cause of pre-eclampsia remains unknown, however, placental dysfunctions may result in blood pressure elevations and an increase in the development of blood clots. Pre-eclampsia typically develops after the 20th week of gestation. Risk factors include maternal extremes of age, with the greatest risk in women under the age of 20 years, first pregnancies, preexisting high blood pressure, diabetes, renal

disease or family history of pre-eclampsia.

The most serious complication of pre-eclampsia is a progression to eclampsia, which causes seizures and coma. It occurs in less than one percent of all pregnancies, but as many as 36 percent of the mothers who progress to eclampsia will die, and fetal mortality rates are high. About one-fourth of all eclampsia will develop and present for the first time after the baby is born but within a three-week postpartum period. Any seizure beyond the third postpartum week is probably not the result of eclampsia.

The hypertension present in eclampsia causes brain swelling and is the likely origin of the seizures and mental status changes. Maternal death is usually the result of cerebral hemorrhage. The seizures can also cause the placenta to separate from the uterine wall, which will kill the fetus and result in maternal hemorrhage.

EMS personnel do not have the diagnostic tests necessary for a definitive diagnosis of pre-eclampsia in the prehospital environment, but symptoms may indicate the condition. The patient may have called an ambulance because she has a headache, right upper quadrant (RUQ) abdominal pain, shortness of breath on exertion, swelling in the hands and face, visual disturbances or nausea/vomiting. A physical examination may reveal a blood pressure higher than 140/90 mmHg, tachycardia, tachypnea, pulmonary edema and confusion. Generalized edema may be present. By the time eclampsia has developed, the blood pressure is usually higher than 160/110 mmHg, although it is possible to develop seizures with lower pressures.

As with other patients, secure an airway, ensure adequate ventilation and maintain sufficient circulation. Administer oxygen and keep suction nearby. Establish an IV and treat for shock, if indicated. Place the patient on a cardiac monitor. Place the patient on her left side and transport to an appropriate facility. Be aware that lights, sirens and excessive movement can set off seizures in the pre-eclamptic patient. Transporting with lights and sirens activated is not necessary unless seizure or coma is present.

Definitive treatment of eclampsia requires the delivery of the neonate. Magnesium sulfate is the drug of choice for the management of eclamptic seizures, however the doses required may be large and most ambulances are not



equipped for the intensive maternal and fetal monitoring required when administering the drug.

For eclamptic patients experiencing a seizure, advanced EMS personnel in many systems administer a benzodiazepine in small increments by IV push until the seizure stops or until reaching a preauthorized maximum dose of the medication. If the seizure persists, EMS personnel should contact a medical control authority as soon as possible for additional medication orders. The primary disadvantage with benzodiazepine administration is that this class of medication will cross the placental barrier and therefore may cause neonatal depression.

### ***Ectopic Pregnancy***

An ectopic pregnancy exists when a fertilized egg implants anywhere other than the normal lining of the uterus. Ectopic pregnancy is the leading cause of pregnancy-related death in the first trimester and may be responsible for as many as 10 percent of all maternal deaths. Minority teenagers have a mortality rate from ectopic pregnancy almost five times higher than their white counterparts.

In some situations, narrowing or scarring in the fallopian tube will cause the fertilized egg to implant along the length of the tube instead of in the uterus. As a result, the placenta invades the surrounding tissues, is unable to accommodate the developing fetus and ruptures. The resulting hemorrhage can be life threatening for the mother.

Ectopic pregnancy occurs most often in women between the ages of 25 and 34 years old. The use of fertility drugs, oral contraceptives and intrauterine devices (IUD) increases the likelihood of ectopic implantation. Abnormal implantation may also be due to a variety of factors, including a prior tubal infection, structural abnormalities of the fallopian tubes or uterine anomalies.

No physical signs or symptoms are specific enough to allow the definitive diagnosis of an ectopic pregnancy in the prehospital environment. Because the risk of death is significant, EMS personnel should assume ectopic pregnancy until proven otherwise in any woman in her childbearing years with a chief complaint of abdominal pain, pelvic pain, cramping, and/or vaginal bleeding. The patient may also report or physical exam may reveal

any of the following:

- A late or delayed menstrual period
- Vaginal bleeding ranging from minimal or absent to hemorrhage with evidence of clinical shock
- Abdominal pain may range from mild to severe and may be described as “knife-like” that is localized on one side
- Shoulder pain as the result of blood in the peritoneal cavity
- Periods of lightheadedness or fainting as the result of orthostatic changes in blood pressure

EMS personnel must be prepared to manage shock even if the signs and symptoms have not fully developed. Rescuers should administer oxygen, elevate the patient’s lower extremities approximately eight to 12 inches, keep the patient warm, establish one or two large-bore IVs with aggressive fluid resuscitation as needed and begin transport to an emergency obstetric facility as early as possible.

### ***Abruptio Placentae***

Abruptio placentae, or placental abruption, occurs when the normally located placenta separates from the uterine wall after the 20th week of gestation and prior to birth. Abruptio placentae occurs in about one percent of all pregnancies and the fetal mortality rate is about 15 percent when it happens.

Placental abruption begins with bleeding between the maternal and fetal portions of the placenta. With continued bleeding, the developing hematoma further separates the fetal portion of the placenta from the uterine wall. The hematoma can compromise blood flow to the fetus and when enough of the placenta separates, the fetus will die unless a doctor performs an immediate cesarean section.

In some cases, the bleeding will cause the uterine wall to weaken. As the pressure from the growing hematoma increases, the weakened area can rupture and bleeding will extend into the peritoneal cavity. This uterine rupture will lead to an immediately life-threatening obstetrical emergency.

Maternal hypertension is the cause of almost half of all abruptions. Trauma, such as motor-vehicle collision, assaults and falls are also significant causes of abruption. Risk factors for the development of non-traumatic abruption are cigarette smoking, alcohol or cocaine use during

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pregnancy and advanced maternal age.

Some abruptions will produce vaginal bleeding although most do not. Patients frequently describe the accompanying severe abdominal or back pain as a “tearing” sensation as the placenta essentially tears away from the uterine wall. Some degree of fetal distress will likely be present although this can be almost impossible to assess in the field. As the placenta begins to separate from the uterus, premature labor will begin in about one-fourth of the cases.

The definitive care for abruption is to remove the fetus by cesarean section, which is beyond the scope of prehospital care. Continuous, high-flow supplemental oxygen, elevation of the lower extremities, keeping the patient warm, one or two large-bore IVs lines, fluid resuscitation as needed and rapid transport to an emergency obstetric facility is indicated.

### **Placenta Previa**

Another of the leading causes of vaginal bleeding in the second or third trimesters is placenta previa. Placenta previa occurs when the placenta implants over or near the cervix, which is the passageway from the uterus to the birth canal. When this happens,

early labor or fetal movement can cause the placenta to separate from the uterine wall. This obstetrical complication is responsible for significant morbidity and mortality to both the fetus and the mother with the majority of deaths related to the degree of uterine bleeding.

African American and Asian females are more likely to have placenta previa than white females. Expectant mothers over the age of 30 years are also three times more likely to develop an abnormal placental implantation compared to younger mothers. Other risk factors include the first pregnancy following a cesarean delivery, multiple gestation, previous abortion and smoking.

The most common symptom and complaint associated with placenta previa is vaginal bleeding. The bleeding is usually bright red and painless although contractions and premature labor sometimes develop. The bleeding may be severe enough to produce hypovolemic shock.

The most common cause of death in placenta previa is hypovolemia. Prehospital care should focus on oxygen, shock positioning, keeping the patient warm, maintaining hemodynamic stability, and rapid

transport to an appropriate facility.

### **Conclusion**

In most circumstances, pregnancy proceeds without any problems and a healthy baby is born. The arrival of a child is usually a joyous occasion welcomed by all involved. However, complications do occasionally arise and EMS personnel must be prepared to manage those emergencies. As a final reminder, the prehospital management strategy for complications of pregnancy focuses on two primary principles:

1. Definitive care might not be possible in the field.
2. Appropriate care of the mother provides the most appropriate care for the fetus.

### **References**

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