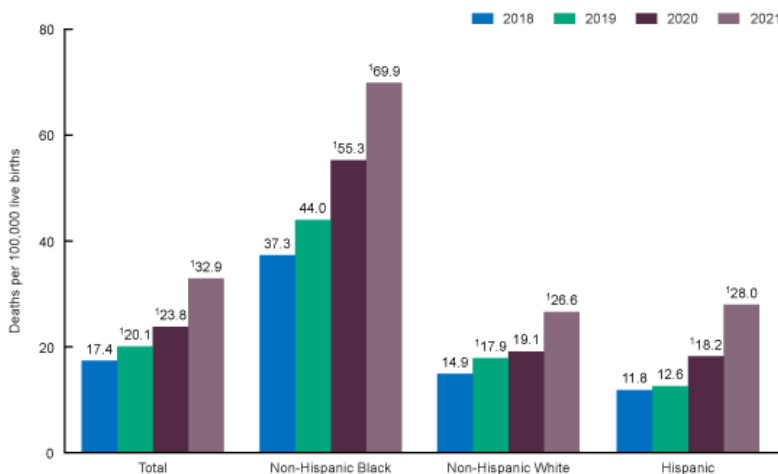
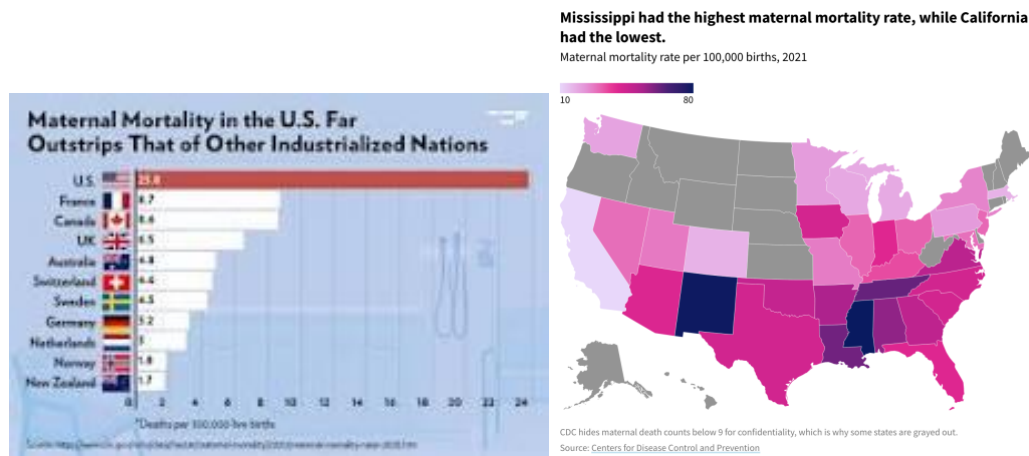


OBSTETRICAL EMERGENCIES

INTRODUCTION: While we are blessed to live in a country that has some of the most sophisticated medical treatments, the day to day preventive healthcare is the worst of all industrialized nations. Lack of access and disparities in healthcare is extremely prevalent in maternal care. Because of this, the US lags behind other industrialized nations in maternal mortality and prenatal care. Even within the US there are large disparities from state to state. As the graph to the right demonstrates, you don't want to get pregnant down south!



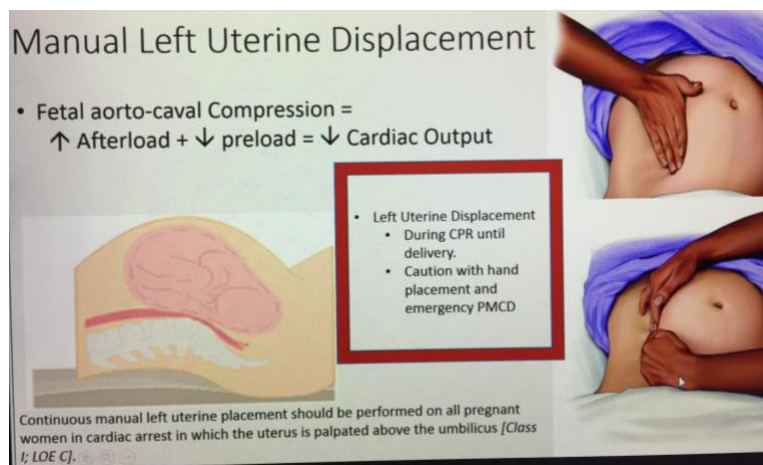
<https://www.cdc.gov/nchs/data/hestat/maternal-mortality/2021/maternal-mortality-rates-2021.htm#:~:text=The%20maternal%20mortality%20rate%20for,20.1%20in%202019%20>

Obstetrical emergencies create their own set of challenges. Potential complications can change with the age of the pregnancy, the number of pregnancies, type of pregnancy i.e. natural vs IVF, the age of the mother and the access of healthcare. As well, there is the need not only to address the care of the mother but also the fetus. This all leads to an array of potential catastrophic issues in an otherwise extremely young and healthy group. The paper will go over the many potential complications of pregnancy along with management

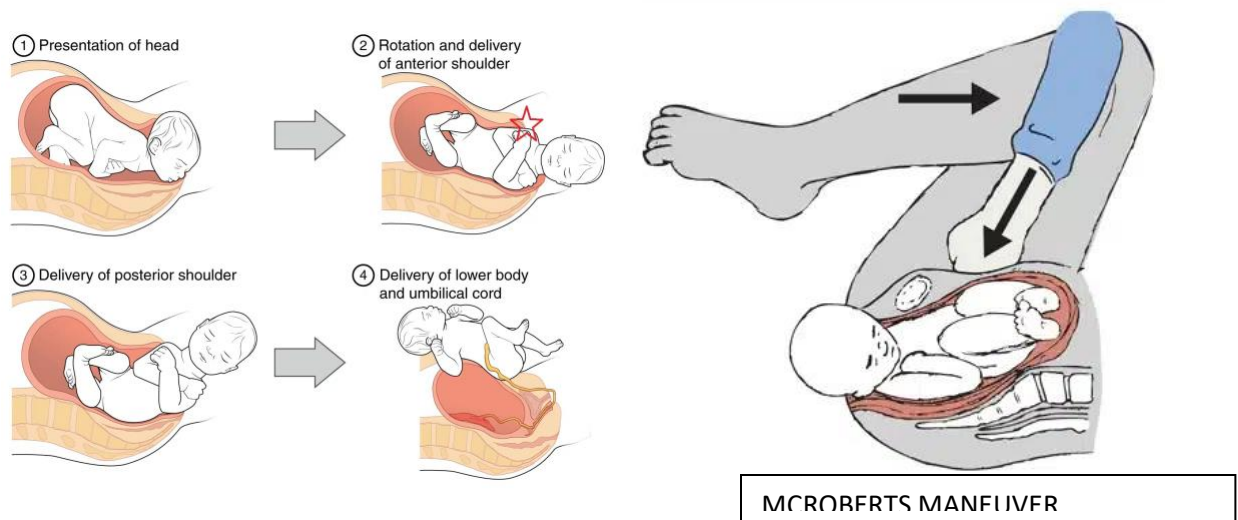
COMPLICATIONS OF PREGNANCY: Some complications are very rare while others are frequent. We have all seen miscarriages and tubal pregnancies, but I doubt any of us have seen an amniotic fluid embolism. Most of the information for this handout was obtained from <https://teachmeobgyn.com/labour/emergencies/>

AMNIOTIC FLUID EMBOLISM is a rare but potentially fatal complication to both the mother and in some cases, the fetus. Typically it occurs during labor but can happen up to 48 hours after delivery. It is a very difficult diagnosis to make, in part, because it mimics other causes of morbidity and mortality. It is thought that the amniotic fluid gets into the blood stream of the mother and causes a type of “anaphylactoid reaction”. The other thought is that the emboli clogs the pulmonary vasculature the way a blood clot would clog the vessels in a pulmonary emboli.

It is difficult to confirm the diagnosis of Embolic emboli, and the focus should be on resuscitation and stabilization. Symptoms can include cough, altered mental status, drops in O₂ and changes in CO₂. Hypotension and cyanosis may also ensue. Oxygen, fluids along with following ACLS protocols are the mainstay of treatment. Since the thought is that the emboli cause an anaphylactoid reaction, Epinephrine may be beneficial if a vasopressor is needed. If it occurs during labor, it is necessary to improve blood flow and left uterine displacement is crucial in the resuscitation efforts.



SHOULDER DYSTOCIA: In a normal delivery, the fetus is face down on original presentation. It then rolls to the side and the anterior shoulder pops out followed by the posterior shoulder. With a shoulder dystocia, the anterior shoulder gets hung up on the pubic symphysis, or the posterior shoulder gets caught on the sacral promontory. The dystocia stalls the delivery which can result in hypoxia if not relieved. As well, tugging on the head and trying to pull the kid out can lead to a brachial plexus injury/neuropathy.



First Line Maneuvers

McRoberts maneuver – hyper flex maternal hips (knees to chest position) and tell the patient to stop pushing. This widens the pelvic outlet. This single maneuver has a success rate of about 90% and is even higher when combined with ‘suprapubic pressure’, (see below).

Suprapubic pressure is applied in either by pushing down on the pelvic brim. Pressure in a sustained or rocking fashion is applied so that the anterior shoulder is pushed downward so as to disimpact it from underneath the maternal symphysis.

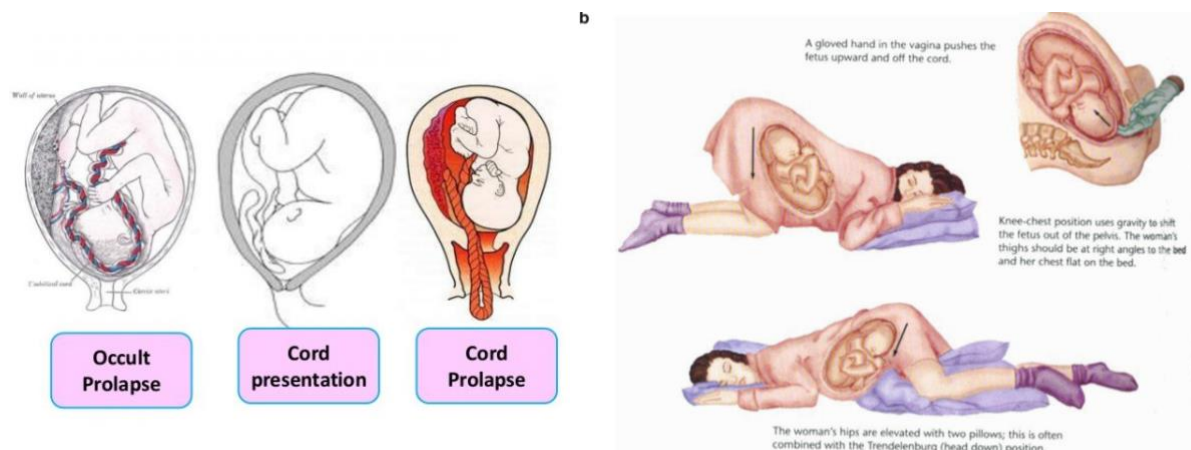
Youtube: <https://www.youtube.com/watch?v=RE8-fAdZiLo>

UMBILICAL CORD PROLAPSE: This occurs when the cord passes through the cervix or vaginal canal in front of the fetus. Compression or pinching of the cord by the fetus can cause a hypoxic insult to the fetus. Alternatively, exposure of the cord to cool air has been shown to cause vasospasm resulting in diminished blood flow and oxygen to the fetus. There are three classifications of cord prolapse:

Occult (incomplete) cord prolapse – the umbilical cord descends alongside the presenting part, but not beyond it.

Cord presentation – the cord presents just in front of the presenting part which is the head unless the fetus is breach. This can occur with or without intact membranes

Overt (complete) cord prolapse – the umbilical cord descends past the presenting part and is lower than the presenting part in the pelvis.



Emergency management focuses on reducing the pressure of the fetus on the cord. Avoid touching the cord if it presents as this can cause vasospasm. Place the mother in a position that causes the fetus to “fall back” onto the fundus, so that cord pressure is reduced. Alternatively, you can use a sterile glove to push the head back, so as to reduce the fetal pressure on the cord. You should not however, touch the cord.

OEMS PROTOCOL 2.10:

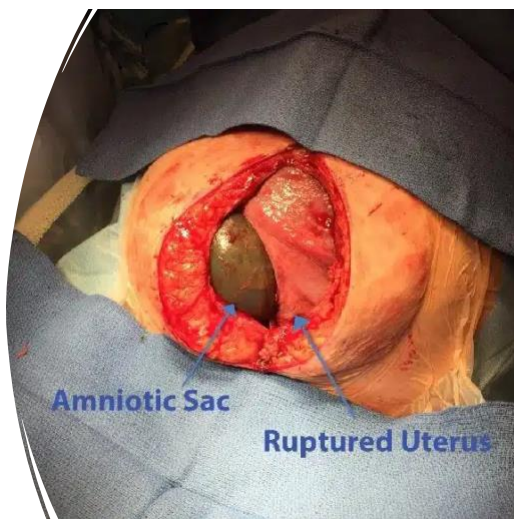
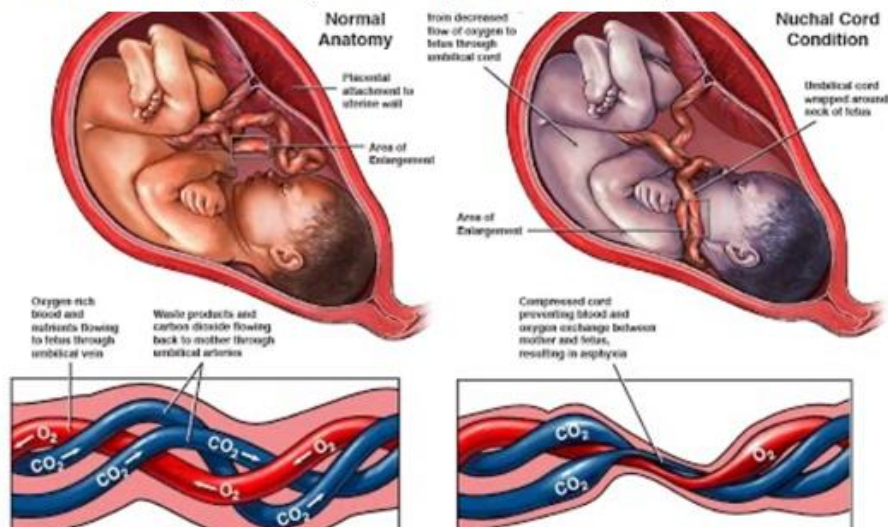
- Do not digitally examine or insert anything into the vagina.
 - Exceptions: fingers may be inserted to manage baby’s airway in breech presentation or to treat prolapsed or nuchal cord.
- Place mother in left-lateral recumbent position except as noted
 - Prolapsed cord:
 - Knee-chest position or Trendelenburg position
 - If only the cord has prolapsed and the presenting part has yet to go through the cervix, gently elevate the presenting part to remove pressure on the umbilical vessels to permit blood flow through cord.

A nuchal cord can be viewed as a prolapse that wraps around the neck. Typically it will wrap once or twice. It is relatively common affecting 20 to 30% of the pregnancies. As the fetus advances out of the vagina, the umbilical cord which is also attached to the placenta will stretch and tightened around the neck. This can result in hypoxia to the fetus. Fortunately the umbilical cord has a very elastic quality. When the head presents, if the cord is wrapped around the neck, you pause the pushing and delivery. Grab the cord and stretch it over the head so that is no longer wrapped around the neck.

NUCHAL CORD: <https://www.youtube.com/watch?v=2NVu7ynGArE>

NUCHAL CORD: <https://www.youtube.com/watch?v=j6iXZxfzHXw>

NUCHAL CORD <https://www.youtube.com/watch?v=SxD95mg75CM>



UTERINE RUPTURE: This occurs when the fetus ruptures through the uterine wall. An incomplete rupture will leave the outer layer intact in all the contents still in the uterus. However a complete rupture can result in the uterine contents spilling into the pelvic cavity. This has high morbidity and mortality for both the fetus and the mother. This would be very rare to see but could happen in a precipitous delivery. The most common cases would be women who have had previous cesareans. It can also happen in women with multiple uterine surgeries or have had multiple children.

<https://teachmeobgyn.com/labour/emergencies/uterine-rupture/>

Typically uterine rupture will occur during labor. There may be a sudden onset of abdominal pain which will continue even after the contraction stops. As well they may feel some shoulder pain which is caused by the uterine contents irritating the the diaphragm and referring pain along the phrenic nerve whose origin is C3,4,5.. Vaginal bleeding may or may not occur. It can also be expected that the fetus will be in distress and develop bradycardia.

Treatment is going to be following ACLS protocols. If you expect this you want to provide oxygen and end-tidal CO₂. Expect that there is bleeding and apply 2 large-bore IVs. Consider TXA. If pre-hospital blood is available and the mother is in shock, administration could potentially save her life. Remember, the body does not care whether bleeding is traumatic, obstetrical or medical. Treat all severe bleeding the same.

PRE-ECLAMPSIA AND ECLAMPSIA: Preeclampsia can be seen after 20 weeks of gestation and up to 4 to 6 weeks postpartum. Typical findings are elevated blood pressures along with proteinuria and generalized edema. By definition systolic blood pressure which is greater than or equal to 140 mmHg or diastolic blood pressure greater than or equal to 90 mmHg on 2 separate occasions 4 hours apart qualifies for preeclampsia. A systolic blood pressure of greater than or equal to 160 mmHg or diastolic blood pressure greater than or equal to 110 mmHg on any occasion also qualifies. Proteinuria is when protein is found in the urine and typically the patient will have generalized edema noted with swelling especially to the lower legs and ankles. They also may feel that the rings no longer fit on their fingers. These will be the first findings of preeclampsia. There is also a whole list of other severe findings which go along with the severe elevated blood pressure of 140 mmHg systolic or 90 mmHg diastolic. Headaches, altered mental status, visual disturbances all can occur. Other end organ findings may include fluid in the lungs hyper-reflexia, thrombocytopenia, jaundice and impaired liver functions. **HELLP SYNDROME** is a unique finding which includes **H**emolysis, **E**levated **L**iver function tests, **L**ow **P**latelets

SEVERE PRE-ECLAMPSIA

- Systolic BP greater than or equal to **140 mm Hg** or Diastolic BP greater than or equal to **90 mm Hg**
- Impaired liver function and severe RUQ pain. **Jaundice**
- Progressive renal insufficiency
- New onset **headaches**, cerebral (**AMS**) and **visual disturbances** (flashing lights, blurred vision)
- Pulmonary edema
- Thrombocytopenia (low platelets)
- **Hyper-Reflexia**
- **HELLP SYNDROME:** **H**emolysis, **E**levated **L**iver Function, **L**ow **P**latelets

ECLAMPSIA in simplest terms is severe preeclampsia along with seizures. There is a significant differential diagnosis that would go with this at all have to be considered. Hypoglycemia, cerebral aneurysms, head trauma, hemorrhagic stroke, septic shock are just a few of the things that could occur and mimic eclampsia. **ECLAMPSIA IS A LIFE-THREATENING EMERGENCY** that needs to be addressed immediately especially in the setting of a pregnant woman as both the fetus and mother's life are in jeopardy.

EMS AND ECLAMPSIA: CLINICAL FINDINGS

- **Obvious pregnancy or recently post-partum (up to 6 weeks)**
- **Seizure & AMS**
- **Severe Hypertension(greater than 140 SPB or greater than 90 DBP)**
- **Hyper-reflexia**
- Jaundice
- Pulmonary edema

Management of eclampsia is to control the seizures, reduce the blood pressure and if still pregnant deliver the fetus. Seizure control is actually done with magnesium sulfate. Getting the blood pressure down to around 140/90 is the other goal. Hydralazine is a drug of choice but not part of EMS armamentarium of medications. Therefore Lopressor would be something that could be used.

OEMS MA 2.10:

PARAMEDIC STANDING ORDERS

Eclamptic Seizures

- Midazolam 2 - 6 mg slow IV/IO/IM or Midazolam 2 - 6 mg IN
- Magnesium sulfate 2-4 grams IV/IO over 5 minutes

MEDICAL CONTROL MAY ORDER

- Administration of additional IV Normal Saline.
- Calcium chloride 10% 20 mg/kg IV/IO administer slowly over 5 minutes to a maximum dose of 1 gram. (Antidote for Magnesium Sulfate).
- Further anticonvulsant therapy

PREECLAMPSIA/ECLAMPSIA: <https://www.youtube.com/watch?v=RV-6Hi0d0OQ>

HYPEREMESIS GRAVIDARUM: Hyperemesis gravidarum is severe vomiting in pregnancy which typically occurs around 4 to 7 weeks. This occurs with many women in the early pregnancy but can lead to severe dehydration and electrolyte imbalances. In the setting of other conditions such as diabetes mellitus, for example, a pregnant woman could be thrown into DKA. When caring for somebody with hyperemesis gravidarum is necessary to know any other medical conditions such as diabetes. Exam should be an assessment for dehydration along with an abdominal exam in order to assure that there is no significant tenderness. IV hydration and antiemetics, whether in the back of an ambulance or in the emergency department, are the treatment for this disorder.

MISCARRIAGE AND ABORTION: <https://medlineplus.gov/abortion.html>

MISCARRIAGE: *A miscarriage is the spontaneous loss of a fetus before the 20th week of pregnancy. Pregnancy losses after the 20th week are called [stillbirths](#). Miscarriage is a naturally occurring event.*

ABORTION: *An abortion is a procedure to end a pregnancy. It can be done two different ways:*

- *Medication abortion, which uses medicines to end the pregnancy. It is sometimes called a "medical abortion" or "abortion with pills."*
- *Procedural abortion, a procedure to remove the pregnancy from the uterus. It is sometimes called a "surgical abortion."*

Mass. General Laws c.112 § 12N

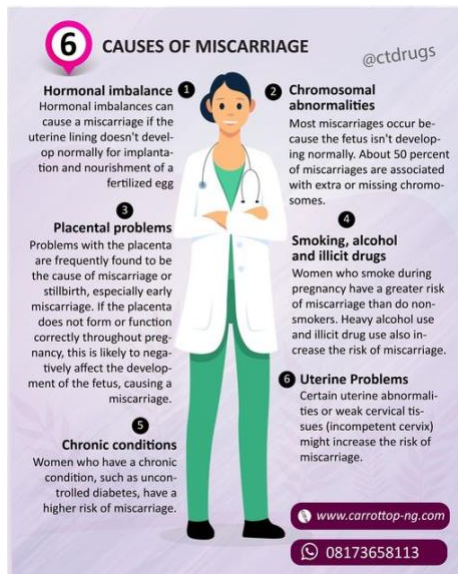
If a pregnancy has existed for 24 weeks or more, no abortion may be performed except by a physician, and only if in the best medical judgment of the physician it is: (i) necessary to preserve the life of the patient; (ii) necessary to preserve the patient's physical or mental health; (iii) warranted because of a lethal fetal anomaly or diagnosis; or (iv) warranted because of a grave fetal diagnosis that indicates that the fetus is incompatible with sustained life outside of the uterus without extraordinary medical interventions.

THE LEGAL LANDSCAPE:

The medical landscape in the management of miscarriages and abortions has dramatically changed with the overturning of *Roe v Wade*. Restrictive abortion laws have been passed in some states and in others, constitutional amendments have been passed to preserve women's rights. SCOTUS is presently hearing abortion cases that include along with court cases coming before SCOTUS, including the use of chemical abortions (misoprostol). Interestingly, SCOTUS overturned *Roe vs Wade* because it determined abortions is a state's issue. Now the misoprostol case is trying to prevent all chemical abortions in the United States. Makes for an interesting legal dilemma!

Massachusetts allows for abortions and has a law for termination of a pregnancy after 24 weeks. 24 weeks is considered the age of viability. These laws, whether in Massachusetts or other states, do not allow for *carte blanche* terminations just because the mother wants it. There are very specific reasons which come down to protecting the mother's life or electively terminating a pregnancy because the fetus is dead or will die at birth due to genetic complications. Ultimately these changes in the laws will potentially change the types of challenges we see in the field. The largest one may be septic abortions resulting from illegal abortions.

MISCARRIAGES: Miscarriages are considered loss of pregnancy prior to age of viability which is 24 weeks. Most occur during the first trimester. Miscarriages are relatively common with about 10% to 20% of pregnancies ending with a miscarriage. There are many causes for miscarriages with half due to genetic abnormalities.



MISCARRIAGE RISK FACTORS:

- Maternal age greater than 30-35. Largely due to increase in chromosomal abnormalities.

- Chromosomal abnormalities both maternal and paternal.

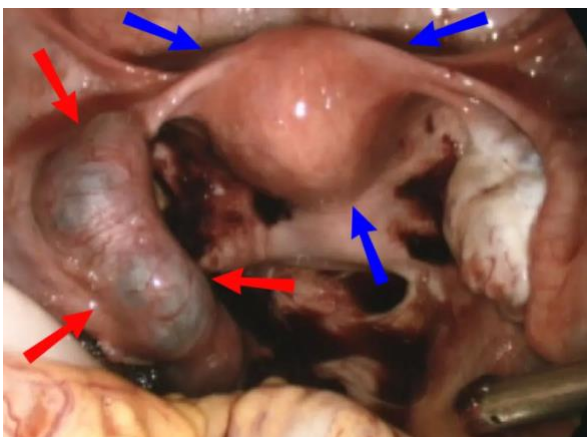
- Previous uterine surgery
- Coagulopathies
- Smoking
- Uterine abnormalities

Chromosomal abnormalities make up the near majority of the miscarriages.

MANAGEMENT: Typically miscarriages will occur during the first trimester. You should always assume the possibility of pregnancy in a woman of childbearing age

complaining of abdominal pain. Early on they may not even realize they are pregnant. Vaginal bleeding is oftentimes the presenting symptom. This can then lead to abdominal pain and cramping. Bleeding typically is not extremely heavy but there is a possibility of severe heavy bleeding which needs to be addressed if it impacts their hemodynamic status. In most cases monitoring is all that is necessary but IV and fluids may be necessary in some cases. Keep in mind that if they are having abdominal pain bleeding and early in their pregnancy the alternative diagnosis could be an ectopic pregnancy which is potentially life-threatening to the mother.

ECTOPIC PREGNANCY: An ectopic pregnancy usually occurs between 6 and 8 weeks. In an ectopic or tubal pregnancy, the fetus does not embed in the uterus but most commonly in the fallopian tube. At about 6-8 weeks, the fetus will become large enough to cause significant pressure on the fallopian tube. Abdominal/adnexal pain is the most common presenting

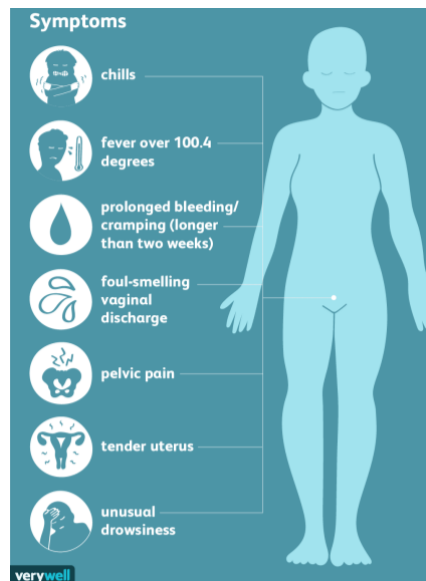


complaint, and if picked up early enough it can be treated by terminating the pregnancy chemically or surgically removing the embryo. In the most severe cases where the tube ruptures, there can be significant bleeding into the pelvis. Sometimes retrograde bleeding occurs into the vagina as well. Shoulder pain caused by diaphragmatic irritation is indicative of significant amount of blood in the pelvis that is expanding up to the diaphragm. If bleeding continues into the pelvis, hemodynamic

instability will occur.

SEPTIC ABORTION: Septic abortion refers to any abortion that results in a severe uterine infection. If this goes undetected it can become blood-borne resulting in sepsis for the patient. Majority of septic abortions are caused by 2 sources. An incomplete abortion occurs when parts of the product of conception remain in the uterus. These remains of the pregnancy will die off and can cause an infection. The other cause of infection is from surgical instrumentation of the uterus to induce an abortion. This can occur when an abortion is done under the care of a physician. Unfortunately and what may be seen more frequently in the future is when the abortion is self-induced or has been illegally done.

Symptoms are typically referred to the reproductive system where there may be vaginal discharge, bleeding and abdominal pain. Other symptoms which are more suggestive of sepsis would be hypotension, tachycardia, fevers and altered mental status.



While the cause of the septic abortion has to do with the pregnancy, treatment has to be focused on the fact that the person is

septic. First and foremost you must recognize the possibility of sepsis.

Aggressive fluid resuscitation

needs to be started and if necessary the early use of vasopressors. Do not underestimate the value of the

National Early Warning Score (NEWS) which can help you recognize the patient is septic.

Chart 1: The NEWS scoring system

Physiological parameter	3	2	1	0	1	2	3
Respiration rate (per minute)	≤8		9–11	12–20		21–24	≥25
SpO ₂ Scale 1 (%)	≤91	92–93	94–95	≥96			
SpO ₂ Scale 2 (%)	≤83	84–85	86–87	88–92 ≥93 on air	93–94 on oxygen	95–96 on oxygen	≥97 on oxygen
Air or oxygen?		Oxygen		Air			
Systolic blood pressure (mmHg)	≤90	91–100	101–110	111–219			≥220
Pulse (per minute)	≤40		41–50	51–90	91–110	111–130	≥131
Consciousness				Alert			CVPU
Temperature (°C)	≤35.0		35.1–36.0	36.1–38.0	38.1–39.0	≥39.1	



ARE SEPTIC ABORTIONS ON THE RISE?

• "Experts predict that today's Supreme Court decision to overturn *Roe v. Wade* and end the Constitutional right to abortion will increase maternal morbidity and mortality in the United States. Incidence of maternal sepsis, which can develop from any infection that occurs during pregnancy, delivery, or the postpartum period, or after miscarriage or abortion, is also likely to increase as a direct result of this decision"

• <https://www.sepsis.org/news/overturning-roe-v-wade-health-consequences-for-pregnant-people-likely-to-include-an-increase-in-maternal-sepsis/>

PRECIPITOUS VAGINAL DELIVERY: A common call for 911 is a woman in labor. This can result in a transport to the hospital for delivery on the labor and delivery floor or it could also result in a precipitous vaginal delivery occurring in the back of the ambulance. The situations are typically very chaotic, and it is incumbent upon the medics to first and foremost control the situation. That means coming prepared for the delivery and relaying the information to the hospital. When suspecting an eminent delivery, you want to first assess the situation which includes seeing if the fetus is crowning. This is done by looking at the vaginal opening to see if the head is present. You should not be reaching inside the vagina to determine if the head is close as this can potentially cause an infection. If there is no crowning, you should begin transport to the hospital. It was also important to determine the frequency of contractions.

We are fortunate that babies are able to deliver themselves. Therefore our job is just to assist in the delivery. It is important that you coach the mother to assure that the breathing is controlled



and that any pushing is done in an orderly manner. This will minimize trauma to the vagina and also help ensuring a safe delivery. In a normal delivery, the presenting part is the head with the face down. The baby will then rotate to the side so that one shoulder is by

the pelvis and the other by the sacrum. Check to make sure when you see the neck that there is no cord around it. If so, have the mother stop pushing so that you can remove the cord from the neck. If the cord is not removed from the neck,



the continued pushing will result in stretching of the cord and tightening it around the neck. If things are under control you can wipe the face clean but there is no reason to suction the baby anymore. On cutting the cord, you want the baby

lower than the mother so that the fetal blood stays in the baby circulatory system.

The baby should begin breathing spontaneously but if the baby is blue, assist with ventilations. A little bit of oxygen typically is all that is needed. You then want to check the Apgar score.



AND BE PROFESSIONAL

EMS SKILL: <https://www.youtube.com/watch?v=ynh-7DKw49g>



PRECIPITOUS DELIVERY:

<https://www.youtube.com/watch?v=e2KEBImp0Ms>

POST PARTUM BLEEDING: This is potentially a very significant and devastating complication. Post-partum bleeding may not manifest itself during a precipitous delivery in the back of an ambulance.

However, a home delivery may result in heavy bleeding and a hemodynamic unstable mother if significant bleeding occurs. Furthermore, the short time spent in the hospital may result in delayed bleeding that occurs at home.

As the uterus contracts and shrinks, the placenta will detach from the uterine wall. If the placenta is not delivered or a part remains attached to the uterus, bleeding can occur. Alternatively the patient may have a rare condition called placenta accreta where the placenta actually grows into the uterine wall. That part of the placenta will not be able to come out and this can become a life-threatening emergency due to the heavy bleeding. Oftentimes the end result is a hysterectomy in order to control the bleeding. Another possibility is trauma to the vagina due to the delivery. It is important to recognize that post-

partum bleeding can be extremely heavy bleeding resulting in the need for fluid resuscitation. In all cases IVs and fluids need to be established quickly.

POST PARTUM BLEEDING

RETAINED PLACENTA

- Placenta is attached and vascular.
- Able to continue to bleed

PLACENTA ACCRETA

- Placenta grows into the uterus
- Placenta continues to bleed
- Extremely heavy and oftentimes results in a hysterectomy to control the bleeding.



Anterior placental location, loss of "the clear space between the placenta and uterus," and the presence of multiple lacunae within the placenta are all unusual features of placenta accreta spectrum.