

# High-risk Pregnancy

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## Abstract

Pregnancy is usually a serene time of unparalleled joy and expectation in a women's life. However, sometimes it can be complicated by illnesses or medical conditions. Some five to ten percent of pregnancies are termed "high risk." Certain conditions or characteristics, called risk factors, make a pregnancy high risk. Identifying high-risk pregnancies ensures that women who most need medical care receive it in a specialized center.

A high-risk pregnancy diagnosis shouldn't automatically have a negative connotation. With proper care, 90 to 95 percent of high-risk pregnancies produce healthy and viable babies. The earlier a problem is detected, the better the chances that both mother and neonate will stay healthy. With the development of medical technology, pregnant women can be carefully monitored for signs and symptoms of high-risk pregnancies and manages well skillfully.

## INTRODUCTION

There is no formal or universally accepted definition of a "high-risk" pregnancy. A pregnancy is considered high-risk when maternal or fetal complications are present that could affect the health or safety of either the mother or baby. All pregnancies should be evaluated to know whether there are or will be risk factors. Risk factors present before pregnancy, problems in a previous pregnancy, disorders present before pregnancy and risk factors that develop during pregnancy can make a pregnancy high risk. Identifying a pregnancy as high risk helps ensure that it receives extra attention and proper care, thereby significantly decreasing maternal and neonatal morbidity and mortality rates<sub>1</sub>.

## RISK FACTORS PRESENT BEFORE PREGNANCY

Some physical and social characteristics of women, problems that have occurred in previous pregnancies and certain disorders in women may complicate pregnancy.

**Physical Characteristics:** The age, weight and height of women affect risk during pregnancy. Maternal age is one factor that contributes to pregnancy risks. Girls aged 15 and younger are at increased risk of preeclampsia/eclampsia. Adolescents are also at increased risk of having low-birth-weight babies. The chances of pregnancy-induced hypertension or diabetes in the mother and risk of fetal chromosomal abnormalities increase with the mother's age. Women aged 35 and older are at increased risk of problems such as high blood pressure, gestational diabetes, and

complications during labor<sub>2, 3</sub>.

Women weighing less than 100 pounds (< 45 kg) before becoming pregnant are more likely to deliver low-birth-weight babies. Obese women are more likely to have macrosomic babies. Also, overweight women put themselves at risk for gestational diabetes and hypertension. For women < 5 ft tall, the risk of fetal-pelvic disproportion, preterm labor, and intrauterine growth retardation is increased<sub>2, 3</sub>.

**Social Characteristics:** Being unmarried or in a lower socioeconomic group increases the risk of problems during pregnancy. For example, these women are more likely to smoke and less likely to consume a healthy diet and to obtain appropriate medical care.

## PROBLEMS IN A PREVIOUS PREGNANCY

When women have had a problem in one pregnancy, they are more likely to have a problem, often the same one, in subsequent pregnancies. Such problems include having had a premature baby, an underweight baby, baby with birth defects, a previous miscarriage, a post-term delivery (after 42 weeks), or a delivery that required a cesarean section

<sub>1,4,5,6</sub>

**Habitual abortion:** The risk of recurrent abortion after three consecutive losses in early pregnancy is about 35%. Women who have habitual abortions are more likely to have 2nd-trimester and early 3rd-trimester stillbirths and preterm labor.

**Previous stillbirth or neonatal death:** A history of perinatal loss suggests the possibility of fetal or parental cytogenetic abnormality, maternal diabetes, chronic renal vascular disease, hypertension, connective tissue disease, or drug abuse. Anticardiolipin antibody and/or lupus anticoagulant may be elevated in women with recurrent perinatal loss. Use of aspirin to counteract a lupus-like disease and perinatal loss has had mixed results.

**Previous preterm delivery or SGA newborn:** The more preterm deliveries a woman has had, the greater the risk of preterm delivery in the current pregnancy. A woman who has had an SGA (small for gestational age) newborn should be evaluated for hypertension, renal disease, inadequate weight gain, infection, cigarette smoking, and alcohol or drug abuse.

**Previous large newborn:** A previous delivery of a newborn weighing > 4.5 kg (> 10 lb) may suggest maternal diabetes.

**Multiparity:** Having had five or more pregnancies increases the risks of rapid labor and postpartum hemorrhage due to uterine atony. Grand multipara are also at increased risk of a placenta previa.

**Previous preeclampsia or eclampsia:** A history of these complications increases the risk of hypertension in a subsequent pregnancy.

**Previous infant with a genetic disorder or congenital anomaly:** Women who had a baby with a genetic disorder or birth defect are more likely to have another baby with a similar problem. Genetic testing of the baby, even if stillborn, and of both parents may be appropriate before another pregnancy is attempted. Tests (eg, ultrasonography, chorionic villus sampling, amniocentesis, DNA analysis) should be offered to determine the presence of congenital defects that are likely to recur.

**Family history of a genetic condition:** A family history of mental retardation or familial disorders increases the risk of the same in the newborn. Having twins also runs in families.

**Previous birth injury:** If the woman has a history of difficult delivery or has had newborns requiring intensive care, shoulder dystocia or prolonged labor may have occurred, and she has an increased risk for midpelvic operative delivery in subsequent pregnancies.

### **DISORDERS PRESENT BEFORE PREGNANCY,**

After they become pregnant, they may need special care,

often from an interdisciplinary team.

**Heart Disease** Most women who have heart disease—including valvular heart diseases—can safely give birth to healthy children, without any permanent ill effects. However, women who have heart failure before pregnancy are at considerable risk of problems.

Pregnancy may worsen heart disease or cause heart disease to produce symptoms for the first time. Pregnant women with heart disease may become unusually tired and may need to limit their activities. Rarely, women with severe heart disease are advised to have an abortion early in pregnancy. Risk is also increased during labor and delivery. Primary pulmonary hypertension and Eisenmenger's syndrome are examples of heart disease where pregnancy is inadvisable.

The fetus may be born prematurely. Women with birth defects of the heart are more likely to have children with similar birth defects. Ultrasonography can detect some of these defects before the fetus is born.

**Hypertension:** Hypertension is associated with increased risk of maternal and fetal morbidity and mortality. Common effects are cerebral, cardiac, and renal complications in the mother; stillbirths; abruptio placentae; and, in the fetus, intrauterine growth retardation and hypoxia due to superimposed pregnancy-induced hypertension. Most antihypertensive drugs used to treat high blood pressure can be used safely during pregnancy. However, angiotensin-converting enzyme (ACE) inhibitors are discontinued during pregnancy, particularly during the last two trimesters. These drugs are nephrotoxic to fetus.

**Kidney Disorders:** High blood pressure, which often accompanies a kidney disorder, may also worsen, and preeclampsia may develop. The fetus may be growth retarded or may be stillborn. Women who have had a kidney transplant that has been in place for 2 or more years are usually able to safely give birth to healthy babies if their kidneys are functioning normally. Many women who have a kidney disorder and who undergo hemodialysis regularly can also give birth to healthy babies.

**Seizure Disorders:** Taking anticonvulsants increases the risk of birth defects. Some women may be able to safely discontinue anticonvulsants during pregnancy, but most women should continue to take the drugs. The risks resulting from not taking the drugs (resulting in more frequent seizures) usually outweigh the risks resulting from taking

them during pregnancy.

**Sexually Transmitted Diseases:** Chlamydial infection may cause preterm labor and premature rupture of the membranes. It can also cause conjunctivitis in newborns, as can gonorrhea. Syphilis can cause several birth defects. Women with HIV infection should take antiretroviral drugs during pregnancy. For some women with HIV infection, delivery by cesarean section may further reduce the risk of transmitting HIV to the baby. Pregnancy does not seem to accelerate the progress of HIV infection in women. Genital herpes can be transmitted to a baby during a vaginal delivery. If herpes produces sores in the genital area late in pregnancy, women are usually advised to give birth by cesarean section.

**Diabetes:** The risk of complications during pregnancy can be reduced by controlling the level of glucose in the blood. Measures to control the blood sugar level (such as diet, exercise, and insulin should be started before pregnancy). If diabetes is poorly controlled, the risks of early miscarriage, significant birth defects are increased, the fetus tends to be large and the risk of stillbirth is increased. The risk of preeclampsia is also increased for women with diabetes.

Newborns of women with diabetes are at increased risk of having hypoglycemia, low calcium, and high bilirubin levels in the blood.

**Asthma:** If pregnant women with severe asthma are treated with prednisone, the risk of IUGR and prematurity is increased. Maintaining good control of asthma is important. Cromolyn, bronchodilators and corticosteroids can be taken during pregnancy. Inhalation is the preferred way for taking these drugs. Aminophylline and theophylline are occasionally used during pregnancy.

**Autoimmune Disorders:** The abnormal antibodies produced in autoimmune disorders can cross the placenta and cause problems in the fetus. Pregnancy affects different autoimmune disorders in different ways.

**Fibroids:** Fibroids in the uterus, which are relatively common noncancerous tumors, may increase the risk of preterm labor, dystocia, malpresentation, placenta previa, and habitual abortion. Rarely, carneous degeneration (infarction of the fibroid) may occur in pregnancy, resulting in an acute abdomen. Treatment consists of fluids, rest, and pain relief.

## RISK FACTORS/DISORDERS THAT DEVELOP DURING PREGNANCY

During pregnancy, a problem may occur or a condition may develop to make the pregnancy high risk. For example, pregnant women may be exposed to something that can produce birth defects (teratogens), such as radiation, certain chemicals, drugs, or infections. Infections that are teratogenic include rubella, varicella, syphilis, toxoplasmosis, and infections caused by cytomegalovirus,

7, 8

**Drugs:** Some drugs taken during pregnancy cause birth defects. Examples are alcohol, isotretinoin, some anticonvulsants, lithium, some antibiotics (such as streptomycin, kanamycin, and tetracycline), thalidomide, warfarin, and angiotensin-converting enzyme (ACE) inhibitors. Taking drugs that block the actions of folic acid (such as methotrexate or trimethoprim) can also cause birth defects. Using cocaine may cause birth defects, placental abruption, and premature birth. Smoking cigarettes increases the risk of having a baby with a low birth weight.

**Fevers:** A disorder that causes a temperature greater than 103° F (39.5° C) during the first trimester increases the risk of a miscarriage and defects of the brain or spinal cord in the baby. Fever late in pregnancy increases the risk of preterm labor.

**Infections:** Rubella can cause birth defects, particularly of the heart and inner ear. Cytomegalovirus infection can cross the placenta and damage the fetus's liver and brain. Herpes simplex and chickenpox (varicella) may harm the fetus or cause birth defects. Toxoplasmosis may cause miscarriage, death of the fetus, and serious birth defects. Listeriosis can also harm the fetus. Bacterial vaginosis during pregnancy may lead to preterm labor or premature rupture of the membranes.

**Pyelonephritis:** For all pregnant women, a midstream urine specimen should be collected for culture early in pregnancy. Patients with significant bacteriuria should be given antibiotics to minimize the risk of pyelonephritis, which is associated with preterm labor and premature rupture of the membranes.

**Disorders That Require Surgery:** During pregnancy, a disorder that requires emergency laparotomy may develop. This increases the risk of preterm labor and can cause an abortion. If appendicitis develops during pregnancy, appendectomy is performed immediately. However,

appendicitis may be difficult to recognize during pregnancy. The appendix is pushed higher in the abdomen as the pregnancy progresses, so the location of pain due to appendicitis may not be what is expected. If an ovarian cyst persists during pregnancy, surgery is usually postponed until after the 12th week of pregnancy. The cyst may be producing hormones that are supporting the pregnancy and often disappears without treatment. Obstruction of the intestine during pregnancy can be very serious. Exploratory laparotomy is usually performed promptly when pregnant women have symptoms of intestinal obstruction.

**Thromboembolic Disease:** The risk of developing thromboembolic disease is increased for about 6 to 8 weeks after delivery. The risk is much greater after a cesarean section than after vaginal delivery. Women who have had a blood clot during a previous pregnancy may be given heparin during subsequent pregnancies to prevent blood clots from forming. If a blood clot is detected, heparin is started without delay. Heparin does not cross the placenta and cannot harm the fetus. Treatment is continued for 6 to 8 weeks after delivery. After delivery, warfarin may be used instead of heparin. Warfarin can be taken by women who are breastfeeding.

**Anemia:** The need for iron doubles during pregnancy. Anemia may also develop during pregnancy because of a folic acid deficiency. Anemia can usually be prevented or treated by taking iron and folic acid supplements during pregnancy. The risk of preterm labor is increased. Women with anemia are more likely to develop infections after delivery.

### **PREGNANCY COMPLICATIONS**

They may affect the woman, the fetus, or both and may occur at different times during the pregnancy. However; most pregnancy complications can be effectively treated.

**Hyperemesis Gravidarum:** It is severe nausea and excessive vomiting during pregnancy. If women vomit often and have nausea to such an extent that they lose weight and become dehydrated, they have hyperemesis gravidarum. The cause is unknown. An intravenous line is inserted into a vein to give fluids, sugar (glucose), electrolytes, and occasionally vitamins. Sedatives, antiemetics, and other drugs are given as needed. Usually, vomiting stops within a few days.

**Preeclampsia:** In this complication, an increase in blood pressure is accompanied by protein in the urine (proteinuria) and/or edema. Preeclampsia usually develops between the

20th week of pregnancy and the end of the first week after delivery. It is more common among women who are pregnant for the first time, who are carrying two or more fetuses, who have had preeclampsia in a previous pregnancy, who already have high blood pressure or a blood vessel disorder. It is also more common among girls aged 15 and younger and among women aged 35 and older.

A variation of severe preeclampsia, called the HELLP syndrome, occurs in some women. It consists of the following:

- hemolysis
- elevated levels of liver enzymes, indicating liver damage
- low platelet count, increasing the risk of bleeding during and after labor.

In 1 of 200 women who have preeclampsia, blood pressure becomes high enough to cause seizures; this condition is called eclampsia. Preeclampsia may lead to placental abruption. Babies may be small because the placenta malfunctions or because they are born prematurely.

If preeclampsia worsens, women are usually hospitalized. Antihypertensives may be needed. If preeclampsia develops near the due date, labor is usually induced and the baby is delivered. If preeclampsia is severe, the baby may be delivered by cesarean section, unless the cervix is already dilated enough for a prompt vaginal delivery. After delivery, women who have had preeclampsia or eclampsia are closely monitored for 2 to 4 days because they are at increased risk of seizures. Their blood pressure may remain high for 6 to 8 weeks.

**Gestational Diabetes:** Unrecognized and untreated, gestational diabetes can increase the risk of health problems for pregnant women and the risk of death for the fetus. Gestational diabetes is more common among obese women and among certain ethnic groups, particularly women of Mexican, Indian, and Asian descent. After delivery, gestational diabetes usually disappears. However, many women who have gestational diabetes develop type 2 diabetes as they become older.

**Preterm labor:** A woman who has a medical condition complicating pregnancy may be more likely to have preterm labor and delivery. Smoking, poor nutritional habits, drug and alcohol abuse, etc also increase the risk of early delivery

and birth of stillborn or low birth weight sick infants. Uterine anomalies, incompetent cervix, previous uterine surgery, maternal stress, multiple pregnancy, and antepartum bleeding are associated with preterm labor. Maternal infections (asymptomatic bacteriuria, appendicitis) can also cause preterm labor.

**Multiple pregnancies:** The incidence of preterm labor, fetal malformation, and complications during labor and delivery is increased in all forms of multiple pregnancy.

**Post-term pregnancy:** Neonatal mortality and stillbirth rates in post-term pregnancies (lasting > 42 wk) increase significantly. Non-stress testing and a biophysical profile obtained using ultrasonography can identify the fetus at risk.

**Rh Incompatibility:** Rh incompatibility occurs when a pregnant woman has Rh-negative blood and the fetus has Rh-positive blood, inherited from a father who has Rh-positive blood. Problems can occur if the fetus's Rh-positive blood enters the woman's bloodstream. The woman's immune system may recognize the fetus's red blood cells as foreign and produce antibodies, called Rh antibodies, to destroy the fetus's red blood cells. The production of these antibodies is called Rh sensitization. During a first pregnancy, Rh sensitization is unlikely, because no significant amount of the fetus's blood is likely to enter the woman's bloodstream until delivery. So the fetus or newborn rarely has problems. However, once a woman is sensitized, problems are more likely with each subsequent pregnancy in which the fetus's blood is Rh-positive. If Rh antibodies cross the placenta to the fetus, they may destroy some of the fetus's red blood cells. If red blood cells are destroyed faster than the fetus can produce new ones, the fetus can develop anemia. Such destruction is called hemolytic disease of the fetus or of the newborn. As a precaution, women who have Rh-negative blood are given an injection of Rh antibodies at 28 weeks of pregnancy and within 72 hours after delivery of a baby who has Rh-positive blood, even after a miscarriage or an abortion.

**Peripartum Cardiomyopathy:** The heart's walls may be damaged late in pregnancy or after delivery, causing peripartum cardiomyopathy. The cause is unknown. Peripartum cardiomyopathy tends to occur in women who have had several pregnancies, who are older, who are carrying twins, or who have preeclampsia. Peripartum cardiomyopathy can result in heart failure, which is treated.

**Polyhydramnios and oligohydramnios:** Polyhydramnios can

lead to severe maternal dyspnea and preterm labor. It is associated with uncontrolled maternal diabetes, fetal anomalies (eg, esophageal atresia, anencephaly, spina bifida), multiple pregnancy, and isoimmunization. Oligohydramnios is associated with congenital anomaly of the fetal urinary tract, severe intrauterine growth retardation, and fetal death. . If the amount of fluid is greatly reduced, the fetus's lungs may be immature and the fetus may be compressed, resulting in deformities; this combination of conditions is called Potter's syndrome, marked by pulmonary hypoplasia and surface compression abnormalities.

**Third-trimester bleeding:** The most common causes of third-trimester bleeding are placenta previa, abruptio placentae, and lower genital tract disease. All patients who bleed in the 3rd trimester should be considered at risk and should have a full evaluation, including ultrasonography, inspection of the cervical area, etc.

Placenta Previa is implantation of the placenta over or near the cervix, in the lower rather than the upper part of the uterus. The placenta may completely or partially cover the opening of the cervix. Placenta previa occurs usually in women who have had more than one pregnancy or who have structural abnormalities of the uterus, such as fibroids.

It can cause painless bleeding that suddenly begins late in pregnancy. Bleeding may become profuse, endangering the life of the woman and the fetus. Ultrasonography helps in identifying placenta previa and distinguishing it from a placental abruption. Women who bleed profusely may need repeated blood transfusions. When bleeding is slight and delivery is not imminent, patient is advised to take bed rest in the hospital. A cesarean section is almost always performed before labor begins.

Placental Abruption (Abruptio Placentae) is the premature detachment of a normally positioned placenta from the wall of the uterus. The placenta may detach incompletely or completely. This is more common among women who have high blood pressure (including preeclampsia) and among women who use cocaine. Symptoms may include sudden continuous or crampy abdominal pain, tenderness when the abdomen is pressed, and shock. Premature detachment of the placenta can lead to widespread clotting inside the blood vessels (disseminated intravascular coagulation), kidney failure, and bleeding into the walls of the uterus, especially in pregnant women who also have preeclampsia.

The usual treatment is bed rest. If symptoms lessen, women

are encouraged to walk and may be discharged from the hospital. If bleeding continues or worsens or if the pregnancy is near term, an early delivery is often best for the woman and the baby. If vaginal delivery is not possible, a cesarean section is performed.

### CONCLUSION

Specialized care should be given to women who are experiencing complications or problems during their pregnancies including: preterm labor; pregnancy-induced hypertension; bleeding; chronic hypertension; diabetes; asthma or hyperemesis, etc.

Treatment for problems in pregnancy ranges from weekly or monthly ultrasound monitoring to complex intravenous infusions and medication management in hospitals— all delivered with the utmost care.

Women with chronic medical conditions, such as lupus, cancer, diabetes, or arthritis, are all at risk for complicated pregnancies. Also, a family history of mental retardation or birth defects can indicate a high-risk pregnancy. Likewise, women who have experienced miscarriages, pre-term deliveries, stillbirths, or neonatal deaths need specialized

care to ensure a healthy pregnancy and birth. Cigarette smoking, alcohol abuse, and drug abuse put mother and child at risk, but are factors which can be controlled.

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