



UNDERSTANDING

High-Risk Pregnancies

What every woman should know about causes, symptoms, diagnosis and treatment of high-risk pregnancies

The information in this guide is designed to answer common questions about high risk pregnancy.

While it may be scary or stressful to think you and your baby are at risk for pregnancy complications, it's important to remember every pregnancy is different, and together, you and your health care provider will determine the best way to manage your care.

Our maternal-fetal medicine (MFM) specialists partner with you and your health care providers to find resources to care for you before, during and after your pregnancy. Our goal is a safe outcome for both you and your baby.



This guide covers the factors that put pregnancies at risk, and what you can do to minimize those risks and take care of yourself and your baby during your pregnancy.

High-risk pregnancy factors include:

- existing health conditions such as diabetes, high blood pressure or infertility
- age
- lifestyle factors such as smoking, alcohol or drug use
- conditions of pregnancy such as gestational diabetes, preeclampsia or multiples

WHAT IS HIGH-RISK PREGNANCY?

A high-risk pregnancy is one in which the health of the mother, baby or both are in danger before, during or after birth. "All pregnancies have inherent risks," says Samuel T. Bauer, M.D., an OB-GYN maternal-fetal medicine specialist at Beaumont. "It's a matter of identifying them and figuring out how we can reduce those risks," he says.



Samuel T. Bauer, M.D.

Risks can affect how a pregnancy progresses. When a mother and her unborn baby need specialized care, it's because of one or more of the following reasons:

- problems the woman had prior to pregnancy (fertility issues or a history of miscarriages, for example)
- problems the woman developed during pregnancy (preeclampsia, for example)
- health problems the baby developed during gestation (fetal growth restriction or intrauterine growth restriction, for example)

Identifying the factors that place a pregnancy at high risk is the first step in developing a care treatment plan. There are both internal and external factors that put a woman at risk during pregnancy, including existing health conditions, genetic background, age, lifestyle choices, history of pregnancy complications, and conditions that may develop with pregnancy.

Genetics and High-Risk Pregnancy

If you are pregnant or thinking about becoming pregnant and are concerned about genetic risks or conditions, Beaumont's maternal-fetal medicine specialists also provide reproductive genetics services.

- **Prior to pregnancy:** Families that are worried about passing along genetic conditions can meet with a board-certified genetic counselor, who can help you understand risks, as well as order tests that screen for specific genetic conditions. You will meet with a maternal-fetal medicine specialist in conjunction to this visit, to make sure that all of your questions are answered.
- **During pregnancy:** Many genetic conditions can be diagnosed during pregnancy through ultrasound, amniocentesis and blood sampling, which we'll cover later in this guide.

If you have a family history of genetic disease, or you, your spouse or other children have been diagnosed with genetic disorders and you'd like to talk with our [Reproductive Genetics Program](#), visit beaumont.org or call 800-633-7377.



Pre-pregnancy Conditions

Some of the more common conditions that can put a pregnancy at risk include:

- anemia
- cancer
- diabetes
- epilepsy
- heart or kidney disease
- high blood pressure
- infertility (use of infertility medicine)
- polycystic ovary syndrome (PCOS)
- rheumatoid arthritis
- thyroid or autoimmune disease
- weight (underweight or overweight)

Pregnancy Conditions

During pregnancy, some women develop or are found to have the following disorders, which put their health and their baby's health at risk:

- [Anemia](#): Low red blood cell count in the mother.
- [Gestational diabetes](#): High blood sugar levels, especially in women who've never had diabetes before pregnancy.
- [Preeclampsia](#): A condition marked by high blood pressure, and often high levels of protein in the urine during pregnancy.
- [Cervical insufficiency](#): Dilation and widening of the cervix before the pregnancy has reached full term.

How Age Affects Pregnancy

- **Advanced maternal age**: Women over age 35 are considered of "advanced maternal age" and their pregnancies are high-risk because as we age, we tend to be at risk for other health problems.
- **Teen pregnancy**: Young pregnant women under age 18 are at higher risk for having low-birth-weight babies, high blood pressure during pregnancy and premature births.

Common Health Conditions That Affect Pregnancy

While some of these factors can be risky for both mother and baby, with proper assessment, screening, monitoring and/or treatment, many women have uncomplicated pregnancies, successful deliveries and healthy babies.



Other Conditions

Other factors that may influence a doctor's decisions to identify pregnancies as high-risk, include number of births, previous pregnancy complications, and timing between births.

- **Pregnancy with multiples:** Women who are pregnant with two or more babies typically need to see their physicians more often than single pregnancies because they are at risk for complications, including preterm labor.
- **Pregnancy spacing:** Women who get pregnant very quickly after giving birth, as well as those with several years between pregnancies, can be at risk for premature births and having babies with lower birth weights.
- **Previous pregnancy loss:** Women who've been unable to carry previous pregnancies to full term may be identified as high-risk.

Examples of External Lifestyle Choices That Affect Pregnancy

In addition to health conditions, certain lifestyle choices can also negatively impact a woman and her baby, including:

- alcohol consumption
- chemical exposure
- drug use
- high temperatures
- high altitude
- poor nutrition
- radiation exposure
- smoking

MANAGING HIGH-RISK PREGNANCY

A maternal-fetal medicine (MFM) specialist is an OB-GYN who has been fellowship trained in identifying, co-managing and caring for high-risk pregnancies. This doctor will collaborate with your private physician and specialists to care for you and your baby throughout the spectrum of possible pregnancy complications.

Dr. Bauer explains that the overarching goal of a MFM specialist is a safe outcome for both a mother and her baby. Health risks often challenge this goal, but OB-GYNs and MFMs work with you to identify and reduce risk. “MFMs specialize in the un-routine,” he says. “This is what we do every day.”

If you are concerned about high-risk pregnancy, your primary care physician or OB-GYN may refer you to a Beaumont MFM specialist. MFMs play three key roles in managing high-risk pregnancy:

1. **Consultation only:** Your doctor may refer you to an MFM specialist for a one-time consultation to help create a plan of care before and during your pregnancy.
2. **Co-managed care:** You’ll continue to see your OB-GYN for prenatal care; in addition, you’ll see your MFM for diagnosis, treatment and/or observation of a specific condition that may put you or your baby at risk. Most of Beaumont’s MFM patients fall within this co-managed care category.

3. **Full-care transfer:** A woman and her OB-GYN may decide the pregnancy is best managed by the MFM. In this case, the MFM will share information with the OB-GYN, then transfer the patient’s care back to that doctor after the baby is delivered.

Timeline: What to Expect During Your High-Risk Pregnancy

Step 1: Get a Referral

Once a woman’s physician identifies high-risk pregnancy factors, they send a referral to Beaumont, and the request is processed through the MFM nurse navigator — a specially trained registered nurse who is experienced with high-risk pregnancies — for review.

Step 2: Speak to a Nurse Navigator

Our nurse navigator will contact the patient, generally within 48 hours of receiving the referral. She will coordinate all appointments at Beaumont and facilitate other specialist appointments as necessary. The nurse will also review the patient’s medical records with the care team.

Step 3: Meet an MFM Doctor

A maternal-fetal medicine doctor will review the woman’s medical and pregnancy history, and meet with her to help map out the best plan based on her risk factors. He or she will collaborate with the primary care OB-GYN and prescribe diagnostic tests, treatments and follow-up visits.

Step 4: Meet Our Specialists

Dietician: All women who are referred to Beaumont's MFM providers can meet with a registered dietician who will review their nutrition and help create a nutrition plan that supports each pregnancy's unique issues. The dietitian may see the expectant mother only once and recommend a nutrition plan, or they may follow her throughout her pregnancy, depending on her needs.

Social Worker: If needed, Beaumont's social worker can talk with expectant mothers about social issues that may be related to or affect the pregnancy, such as stress, anxiety, depression, and history of abuse or other issues at home. The social worker will help to connect patients with resources to support those needs throughout their pregnancies and after delivery.

Step 5: Fetal Screening

At the first visit, depending how far along the woman is in her pregnancy, an ultrasound, blood tests and other diagnostic tests are performed to look inside the womb to evaluate the developing baby.

MFM's may also use advanced 3-D and 4-D ultrasound and fetal echocardiogram to screen for fetal anomalies. These specialized tests, available through [Beaumont fetal imaging](#), provide families with the most detailed information possible regarding risk factors and the development of the baby.

Several [first trimester tests and screenings](#) are offered between the 10th and 14th weeks of a high-risk pregnancy. Both a [transvaginal ultrasound](#), where a small transducer is inserted through the vagina, and maternal blood tests can help determine the risk of the baby having certain birth defects or chromosomal abnormalities like Down syndrome, trisomy 13 and trisomy 18.

The next section, High-Risk Pregnancy Testing, alphabetically lists and defines the many tests and procedures that maternal-fetal medicine specialists use to diagnose and treat women and babies during high-risk pregnancies.

Step 6: Team Collaboration

High-risk pregnancy care requires a team approach. Beaumont's nurse navigator may schedule a meeting with the mother, her private physician, her family (if she chooses), and the Beaumont high-risk pregnancy team to go through the diagnosis and to discuss the woman's options.



HIGH-RISK PREGNANCY TESTS

Because high-risk pregnancy can be anxiety inducing, Beaumont's maternal-fetal medicine team will coordinate all tests and specialist visits, and share information with the entire health care team. "We give patients the information they need to help decrease their anxiety," says Dr. Bauer.

Screening tests are used to estimate whether the baby is at higher risk or lower risk of having a certain condition. A diagnostic test can give a definite answer about whether the baby has a certain condition. These tests include amniocentesis or chorionic villus sampling (CVS).

What follows is a list of common tests MFM specialists order and perform for women who may experience high-risk pregnancy. You'll find a full list of tests and services at beaumont.org/maternity.

Amniocentesis

Between week 15 and 20, an [amniocentesis](#) can be performed to identify chromosomal disorders. During this amniotic fluid testing, the doctor inserts a hollow needle through the mother's abdomen and into the amniotic sac to remove a sample of fluid. These fetal cells are cultured in a genetics lab, with delivery of results in 10 to 14 days.

Cell-Free Fetal DNA (cfDNA)

The cell-free DNA prenatal screening test (also called "cfDNA test") screens for certain

conditions caused by an abnormal number of chromosomes. It does not test for all types of chromosomal disorders. It can be done as early as week nine or 10 of pregnancy and up until delivery. Some of the genetic material (DNA) from the pregnancy circulates in the mother's bloodstream. The cfDNA test is done on a sample of the pregnant woman's blood.

Human Chorionic Gonadotropin (hCG) Screening

HCG is a maternal blood test measuring levels of progesterone produced by the placenta. Increased hCG level are associated with increased risk for Down syndrome.

Non-stress Test (NST)

Typically performed in the third trimester of pregnancy, an NST tests for fetal wellbeing by monitoring the baby's heart rate and potential contractions. No stress is placed on the baby during this test.

Percutaneous Umbilical Blood Sampling (PUBS)

Fetal blood sampling may be performed at various times during the pregnancy depending on initial findings. Also called cordocentesis, PUBS, in general, checks for fetal anemia or fetal infection. During the procedure, a needle is inserted into the mother's uterus and blood is drawn from the blood vessels of the umbilical cord. Performed after 17 weeks, this type of fetal blood sampling is complex and involves a skilled team approach. Fetal blood sampling and ultimate fetal blood transfusion can be a lifesaving procedure.

Pregnancy-Associated Plasma Protein Screening (PAPP-A)

PAPP-A is a follow-up first trimester screening that measures levels of plasma protein produced by the placenta. Low levels are associated with increased risk for Down syndrome and trisomy 18.

Transcervical and Transabdominal Chorionic Villus Sampling

[CVS](#) can be performed between 11 and 14 weeks of pregnancy, and analyzes the placenta and the baby's DNA using a transvaginal (catheter) or transabdominal (needle biopsy) technique. Results, which can diagnose chromosomal abnormalities such as Down Syndrome and other genetic disorders, are available in 10 to 14 days.

Ultrasound

Beaumont is certified by the American Institute for Ultrasound in Medicine, and uses the highest level of ultrasound for detailed anatomy with 3-D and 4-D capabilities.

[Ultrasounds](#) – also known as sonograms – for high-risk pregnancies are non-invasive procedures that use high-frequency sound waves and a computer screen to produce imagery to better view a woman's muscles, blood vessels, organs and growing baby. When a pregnancy is high risk, there are different types of ultrasound diagnostic imaging that may be used for screening.

Fetal Nuchal Translucency (NT) Test

This ultrasound for high-risk pregnancy can detect increased fluid or thickening in the back of the neck, which would indicate potential fetal risks.

Anatomical Fetal Survey

This ultrasound exam is performed on all pregnancies typically at 19th week of gestation. However, for high-risk patients, detection of fetal problems will be necessary prior to 19 weeks. A fetal anatomy survey is often the first step in fetal screening.



Fetal Echocardiography

[Fetal echocardiography](#) uses ultrasound to evaluate the heart and detect abnormalities of an unborn baby to allow for medical intervention when the baby is born. Fetal echocardiograms are typically performed in the second trimester, but initial screening can be done in the late first trimester. These tests for high-risk pregnancy may be necessary when:

- closely related blood relatives have congenital heart disease
- chromosomal or genetic abnormalities were discovered in other testing
- pregnancy resulted from in-vitro fertilization
- mother abused alcohol or drugs while pregnant
- mother has existing health conditions
- mother has un-routine conditions of pregnancy
- routine ultrasound has discovered possible heart abnormalities or other congenital anomalies
- sibling has heart condition
- twins share a placenta (monochorionic twins)

Fetal Growth Assessment

Ultrasounds are a key element to monitoring and assessing the growth of a fetus and determining if there are growth problems.

Maternal-fetal medicine specialists use ultrasound techniques to monitor blood flow to the placenta to evaluate for intrauterine growth restriction (IUGR). Problems with blood flow can slow a baby's growth.

Macrosomia is a term used to describe a baby that is growing too fast. Both genetic issues and

a mother's high blood pressure can speed up a baby's growth, making them considerably larger than normal.

Ultrasound for Antenatal Surveillance

Some doctors recommend ultrasound for antenatal (before birth/during pregnancy) surveillance of the mother and her unborn baby.

- **Transvaginal sonograms** – This will be necessary if the mother's cervix length and health is a risk factor. Cervical insufficiency will be monitored throughout the pregnancy to assess the risk of preterm birth.
- **Amniotic fluid index (AFI)** – An ultrasound estimates how much fluid is present in the uterus. Too much or too little can indicate a leaking or rupture of membranes, placental problems, birth defects or maternal complications like hypertension or preeclampsia. AFI is a score given to the amount of amniotic fluid surrounding the baby.
- **Doppler flow studies** – When an unborn baby is smaller than normal for an extended period of time (IUGR), a Doppler flow studies ultrasound will check blood flow in the baby's brain, heart, organs and umbilical vein and arteries. This is a noninvasive test often used in a multiple pregnancy.
- **Biophysical profile (BPP)** – An ultrasound combined with a non-stress test determines the well-being of the unborn baby when the pregnancy is far enough along for delivery to be an option. A sonographer will watch for biophysical attributes like breathing, movement, tone, heart rate and amniotic fluid to determine the health of the baby. The BPP score will help the MFM decide if further monitoring is necessary or if an early delivery will be recommended.

YOUR ROLE IN YOUR HIGH-RISK PREGNANCY

A woman with a high-risk pregnancy should talk with her doctor about any concerns involving her or her baby's health and delivery.

"The best thing we can do is help educate patients about their health either before they're pregnant, or as soon as they become pregnant," Dr. Bauer says. The same guidelines apply to all pregnant women:

- keep all your prenatal visits
- manage your stress
- seek support from friends and family
- meet with a dietician and follow a healthy nutrition plan
- follow your doctor's recommendation for exercise
- learn about your condition from reliable sources, like your OB-GYN, midwife or MFM



HOW CAN WE HELP?

Beaumont has a comprehensive high-risk pregnancy program, as well as two Level III neonatal intensive care units and a team of pediatric specialists if your baby needs additional care after delivery. We want you to know this is what we do every day. We see it as a partnership with the patient, their doctors and the MFM specialist to manage their risks. It is our overarching goal to try to prolong the pregnancy to the safest length possible.

In addition to caring for you during your pregnancy, our MFMs can help to plan the expectations after the delivery and coordinate additional care once the baby is born.



Beaumont's Birth Centers

Beaumont is Michigan's largest health care system, based on inpatient admissions and net patient revenue, with eight hospitals, 174 health centers, and eight centers for labor and delivery:

- [Beaumont Hospital, Dearborn](#)
18101 Oakwood Blvd.,
Dearborn, MI 48124
- [Beaumont Hospital, Farmington Hills](#)
28050 Grand River Ave.,
Farmington Hills, MI 48336
- [Beaumont Hospital, Grosse Pointe](#)
468 Cadieux Road,
Grosse Pointe, MI 48230
- [Karmanos Center for Natural Birth](#)
3601 W. 13 Mile Road,
Royal Oak, MI 48073
- [Beaumont Hospital, Royal Oak](#)
3601 W. 13 Mile Road,
Royal Oak, MI 48073
- [Beaumont Hospital, Trenton](#)
5450 Fort Street.,
Trenton, MI 47183
- [Beaumont Hospital, Troy](#)
44201 Dequindre Road,
Troy, MI 48085
- [Beaumont Hospital, Wayne](#)
33155 Annapolis Street,
Wayne, MI 48184

For more information about Beaumont's maternal-fetal medicine specialists and high-risk pregnancy program, visit beaumont.org/maternity or call 800-633-7377.