

## Quad Marker Screen

### What is a quad marker screen?

The quad marker screen is a blood test that can provide a pregnant woman, her family, and health care provider with further information about her pregnancy. It is a test that looks for an increased risk of having a special-needs baby. During the quad marker screen, a sample of blood is taken from the woman's vein. Substances in the blood sample are measured to screen for:

Problems in the development of the fetus' brain, spinal cord and other neural tissues of the central nervous system (neural tube). Problems with neural tube development can occur as spina bifida or anencephaly (absence of all or part of the brain). Neural tube defects occur in 1 or 2 out of every 1,000 births. The quad marker screen can detect approximately 75 percent of open neural tube defects. Genetic disorders such as Down syndrome, a chromosomal abnormality. Approximately 1 in 720 babies is born with Down syndrome. The quad marker screen can detect approximately 75 percent of Down syndrome cases in women under age 35 and 85 to 90 percent of Down syndrome cases in women age 35 years and older.

### The following factors are associated with a higher chance of having a special needs baby:

- Your family has a history of birth defects
- You are age 35 or older when the baby is due
- You've had a child with a previous birth defect
- You have had insulin-dependent (type 1) diabetes prior to your pregnancy

### When should a quad marker screen be done?

A quad marker screen is typically performed between 15 and 20 weeks of pregnancy, counting from the first day of your last menstrual period.

### What substances are measured during a quad marker screen?

The blood sample is sent to a laboratory and tested for the presence of the following four substances that are normally found in the baby's blood, brain, spinal fluid and amniotic fluid:

- Alpha-fetoprotein (AFP) -- a protein produced by the fetus' liver
- Unconjugated Estriol (UE) -- a protein produced in the placenta and in the fetus' liver
- Human Chorionic Gonadotrophin (hCG) -- a hormone produced by the placenta
- Inhibin-A -- a hormone produced by the placenta

Higher than normal AFP levels could indicate that the fetus has an open neural tube defect. High AFP levels may also indicate that the fetus is older than was thought or that the woman is expecting twins. Lower than normal AFP levels could indicate that a woman is at higher risk for having a baby with Down syndrome. Levels of hCG and Inhibin-A are higher than normal when a woman has an increased risk of having a baby with Down syndrome. Lower than normal levels of Estriol may also indicate that a woman is at high risk for having a baby with Down syndrome.

### Is the quad marker screen safe?

The quad marker screen is a safe and sometimes useful screening test for families concerned about birth defects or genetic disorders. It is a test that carries no risk to the baby, since a blood sample is taken only from the mother. The main risk is the introduction of worry, anxiety and medical intervention into a normal pregnancy since the vast majority of "abnormal" results are, in fact, from healthy pregnancies.

### What happens if the quad marker screen results are normal?

Normal levels strongly indicate that you have a healthy pregnancy and a healthy baby. In over 98% of pregnancies, normal quad marker screen results predict healthy babies and births without major

complications. However, there are no prenatal tests that can guarantee your baby and pregnancy will be completely healthy or without complications. Unfortunately, the test can have both falsenegatives and false-positives.

### **What happens if the quad marker screen results are abnormal?**

Quad marker screen results that are not in the normal range do not necessarily mean there is a problem in your pregnancy.

The quad marker screen is used for screening only, which means it can only assess your risk of having a baby with a certain birth defect (it is not used to diagnose a particular problem that may be present). If the quad marker screen results are not in the normal range, further tests such as ultrasound or amniocentesis may be necessary.

Out of 1,000 pregnant women, approximately 50 will have quad marker screen results that indicate an increased risk for having a baby with an open neural tube defect. Of those 50 women, only one or two will actually have a baby with an open neural tube defect. About 40 women will have quad marker screen results that show an increased risk for having a baby with Down syndrome and one or two will actually have a baby with Down syndrome.

### **Do I need to have the quad marker screen?**

It is your decision whether or not to have the test. Some families would prefer not to know ahead of time if the baby has special problems. Other families might want to know to prepare ahead of time. Some don't want to go through the worry of the test; some are reassured by a normal result.

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Alpha-fetoprotein (AFP) information <http://www.americanpregnancy.org/prenataltesting/afp.html>