



Maternal Serum Screening

©2008 All rights reserved.

You were informed that your:

_____ Maternal serum screening (MSS) test, also known as the quad screen

_____ Other: _____

indicates that your risk for having a baby with an **Open Neural Tube Defect (ONTD), such as spina bifida (open spine) or anencephaly (open skull)**, is increased.

How Did I Get This Result?

You probably don't have a relative with an ONTD in your family, and you may be wondering why your doctor ordered this test. 1-2 out of every 1000 babies born in Georgia is born with some type of neural tube defect. 90% of these babies are born to families **without** a family history of these defects. Therefore, a normal family history does not lessen the chances to have a baby with this type of problem. If you do have a relative with a neural tube defect, your chances to have a baby with this type of problem may be higher, since genetic (& environmental) factors are thought to be involved.

What do these tests measure? The MSS test measures AFP, hCG, uE3, and DIA.

AFP, or alpha-fetoprotein, is made by the baby's liver during the second trimester of pregnancy and is normally filtered into the fluid surrounding the baby (amniotic fluid). AFP finally crosses the placenta into the mother's blood. Adults usually do not produce AFP in measurable quantities (unless they have a specific medical problem), so that AFP comes strictly from the baby (or babies).

hCG, or human chorionic gonadotropin, is produced only by the placenta, or afterbirth. Like AFP, it is also found in the mother's blood during pregnancy. hCG is, in fact, the chemical which is usually measured in either blood or urine to determine that a woman is pregnant.

uE3, or unconjugated estriol, comes from both the baby's liver and the placenta, and is therefore only produced during a pregnancy.

DIA, or dimeric inhibin A, comes from the placenta. Levels in maternal serum remain relatively constant through the 15th-18th week of gestation in normal pregnancies.

The normal values of each of these substances change with each week of pregnancy. That is why the results are expressed in multiples of the median, or MOMs. The MOM tells how close your value is to the median (average) value for that week of pregnancy. For example, ".5 MOMs AFP" means there is **half** as much AFP as is usually found during that week of the pregnancy, while "2.5 MOMs AFP" means there is **two and one half times** the usual amount of AFP for that particular week of pregnancy.

How do these measurements indicate an increased chance for an ONTD?

In a pregnancy in which the baby has an ONTD, the AFP "leaks" out of the opening in the back or skull, causing extra AFP to cross the placenta into the mother's blood during pregnancy. When the amount of AFP is greater than 2.5 MOMs, the result is reported out as "increased risk for neural tube defect". hCG, uE3, and DIA do not relate to the detection of neural tube defects, but are used to screen for other problems.

How many ONTD pregnancies does this test detect?

85% of pregnancies with an ONTD have an elevated AFP. This does **NOT** mean there is a 85% chance that your baby has an ONTD. In fact, only about 1 out of every 10 pregnancies with an elevated AFP is a pregnancy in which the baby has this type of defect. The detection rate is NOT 100%, and many factors unrelated to ONTDs can cause the test to look abnormal. The **MSS** test is a **SCREENING** test, and is **not** diagnostic. **A normal baby is still the most likely outcome, even after an abnormal maternal serum screening test.**

The amount of AFP found in your blood from the maternal serum screen test was elevated for this gestational age. Ultrasound and/or amniocentesis may be recommended.

What Factors Could Affect This Test Result?

1. **The dates of your pregnancy.** The levels of AFP, hCG, uE3, and DIA that are considered "normal" are different for each week of pregnancy. Estimating the week of pregnancy from the first day of your last menstrual period (called LMP) sometimes results in inaccurate dating of a pregnancy. Ultrasound examination can usually correct this discrepancy, and the AFP, hCG, uE3, and DIA levels can then be recalculated if the discrepancy is significant.
2. **The baby is producing the normal amount of AFP, but extra AFP is filtering through the placenta, into your bloodstream.** This may mean that the baby is healthy, but the placenta may have a problem. Ultrasound examinations are sometimes recommended in this situation to monitor the growth of the baby, to make sure the placenta is doing its job. (Likewise, a high or low amount of hCG, uE3, or DIA may also be indicative of a placental problem).
3. **Twins.** Two or more babies produce more AFP than a singleton pregnancy.
4. **A low level of amniotic fluid.** If the amount of fluid surrounding the baby is less than normal, the AFP may then be more concentrated, with more passing into the mother's bloodstream.
5. **An opening in the abdominal wall of the baby (ventral wall defects).** The front of the baby, called the ventral wall, may develop improperly, leaving an opening at the site where the umbilical cord inserts, or just off to the side of the umbilical cord. This opening may allow extra AFP to "leak" out into the fluid, across the placenta, into your bloodstream.
6. **Fetal death.** This is usually considered as a possibility only when the AFP is extraordinarily high.
7. **The levels of AFP, hCG, uE3, and DIA found in your blood simply reflect a normal variation in these levels, even though the amounts found are outside of the range considered 'normal'.**
8. **The baby has a chromosome abnormality (numerical or structural).** Amniocentesis can detect over 99% of these problems.
9. **The baby has a neural tube defect of some type.** Amniocentesis and high resolution ultrasound can detect over 99% of these problems.