



Information for Your Patients

What is first trimester combined risk assessment for Down syndrome?

First trimester combined screening for Down syndrome, also known as nuchal translucency screening or multiple marker screening, is a test offered to women in their first trimester of pregnancy to determine the chance that they will have a baby with Down syndrome. This is one of several options available to test for aneuploidy risk. More information on this test and other options may be found at the Genetic Education Modules website, (<http://gem.perinatalquality.org>).

What is Down syndrome?

Down syndrome is a genetic condition caused by having an extra copy of chromosome 21. It is also known as trisomy 21. Children with Down syndrome experience developmental delay and some degree of intellectual disability. They usually have characteristic facial features and may have other health conditions including an increased chance for congenital heart defects, thyroid problems, infections, respiratory problems, vision and hearing problems. However, each child with Down syndrome is unique.

More information about Down syndrome can be found through local support groups or at:

National Down Syndrome Society www.ndss.org

National Down Syndrome Congress www.ndscenter.org

National Association Down Syndrome <http://www.nads.org>

How is the risk assessment done?

First trimester screening is performed early in the pregnancy – usually between 10 ½ and 13 ½ weeks of pregnancy. The screening combines measurements from both a blood test and an ultrasound examination.

A small sample of the mother's blood is required for the screening. This sample may be taken either by finger stick or by blood draw from the arm. The sample is then analyzed for two pregnancy hormones (usually free beta or intact hCG and PAPP-A). Both substances are normally produced during pregnancy.

The ultrasound examination involves measuring the amount of fluid accumulated under the skin at the back of the baby's neck. This normal accumulation of fluid is known as the nuchal translucency (or NT) measurement and it is often increased when a developing baby has Down

syndrome. It is critical that this measurement be accurate, therefore it should always be performed by a physician or sonographer that has proper certification like that provided by the Nuchal Translucency Quality Review Program of the Perinatal Quality Foundation.

The ultrasound and blood results are then combined with maternal factors such as age and weight to calculate the chance for Down syndrome in the current pregnancy.

How long do the results take?

You can usually expect your test results to come back in approximately one week or less from the time the blood sample is obtained.

How will the results be reported?

You will receive an individual assessment of the chance for Down syndrome in *your* pregnancy (for example 1 in 800). While each patient will interpret their personal risk somewhat differently, in general, laboratories will choose a cut-off and any risk that is higher than the cut-off will be reported as “screen positive”. All values lower than the cut-off are reported as “screen negative”.

How accurate are the results?

Your individual risk based on the ultrasound examination and blood test is a very accurate reflection of the chance for your developing baby to have Down syndrome.

Ninety percent (90%) of pregnancies with Down syndrome will have results in the screen positive range. This means that roughly 9 out of 10 of pregnancies with Down syndrome will come back as ‘screen positive’. However, a ‘screen positive’ result does not mean that the baby has Down syndrome, it simply means that the risk is high enough that you should consider further evaluation of the pregnancy. The only way to know for certain whether or not a developing baby has Down syndrome is by performing a diagnostic test such as chorionic villus sampling (CVS) or amniocentesis (these tests are described below).

What else can the first trimester combined screening tell me?

First trimester screening can also determine whether the pregnancy has an increased chance for trisomy 18. Trisomy 18 is a chromosome change that results in severe intellectual disability and multiple birth defects. First trimester screening detects approximately 90% of pregnancies with trisomy 18.

What does it mean if my first trimester combined screening test result is positive for Down syndrome?

When a laboratory calculates the chance for a developing baby to have Down syndrome the results can range from 1 in 5 (20%) to 1 in 10,000 or less (0.01%). Each laboratory establishes a cut-off risk and any risk that is over that cut-off is considered to be *screen positive*. Being told

your result is screen positive does not mean that the developing baby definitely has Down syndrome; it simply means that the chance is high enough for you to be offered further testing. In fact, the majority of women with 'screen positive' results do *not* go on to have a baby with Down syndrome.

Screening tests are not diagnostic and do not provide definitive answers. Screening tests identify a high-risk group.

What further testing should I consider?

Chorionic villus sampling and amniocentesis are procedures that can determine definitively whether or not a developing baby has a chromosome difference like Down syndrome or trisomy 18 with greater than 99.9% accuracy.

Chorionic villi sampling (CVS) is typically done between 10 and 13 weeks of pregnancy. In this procedure the doctor obtains a small sample of tissue from the edge of the placenta using either a thin needle inserted through the abdomen or a small catheter inserted through the cervix. The method used depends on the location of the baby and of the placenta.

Amniocentesis is a procedure in which a thin needle is inserted through the woman's abdomen into the amniotic sac to withdraw a small sample of fluid from around the developing baby. Amniocentesis procedures are safest when done after 15 weeks of pregnancy.

The cells collected from either procedure can be used for chromosome analysis or for microarray that looks for even smaller changes in the DNA. Chromosome analysis allows the laboratory to determine if a baby has an extra chromosome (as with Down syndrome) or if the baby has exactly the number of chromosomes that we would expect. Microarray testing may pick up a other syndromes.

Both procedures are associated with a small chance for miscarriage. The decision whether or not to pursue a CVS or an amniocentesis is a personal one. Speaking to a genetic counselor or your obstetrician can help you make the decision that is best for you.

How do I decide what further testing I should have?

A genetic counselor is a health care professional that can explain your test results and review with you details about further testing options. Your doctor can refer you to a genetic counselor or you can find one in your area by selecting the "Find a Counselor" option on the National Society of Genetic Counselor's website at www.nsgc.org.

My doctor's office told me my result was negative, does this mean that everything will be normal?

A 'screen negative' result means that the chance for you to have a baby with Down syndrome or trisomy 18 is low. While this is good news, you should remember that the test is not a diagnostic test and some children with Down syndrome will be born to women in this low risk group. First

trimester screening does detect the majority of pregnancies with Down syndrome and trisomy 18, however about 10% of affected pregnancies have a negative first trimester screening result even though the baby actually has one of these conditions. Your individual result is the best estimate of the likelihood of this occurring in your pregnancy.

Is my pregnancy at risk for anything else?

First trimester nuchal translucency measurements greater than 3.5 mm have been associated with an increased chance for some structural birth defects. Your doctor may recommend a fetal echocardiogram at 18-20 weeks to rule out major congenital heart defects. You should also consider a high-resolution ultrasound examination at a specialist's office. However, most pregnancies that are screen positive will result in the delivery of a healthy baby.

It is also important to remember that this test has been designed to detect pregnancies at increased risk for Down syndrome and trisomy 18. It cannot detect all birth defects or genetic conditions. Your obstetrician will likely recommend some other tests during the pregnancy including:

- a detailed ultrasound examination
- a maternal serum AFP test at 16 – 18 weeks to detect open neural tube defects (like spina bifida)

If you are concerned that you may have an increased chance to have a baby with a problem due to your family or personal history, we encourage you to speak to your obstetrician in more detail or to contact a genetic counselor in your area. You can find a genetic counselor in your area by selecting the “Find a Counselor” option on the National Society of Genetic Counselor’s website at www.nsgc.org.

I am having twins. Can I still have first trimester risk assessment?

First trimester screening is available for twin pregnancies, but the results are a little more difficult to interpret when there are two developing babies instead of one. Therefore, the detection rate is lower and the chances for trisomy 18 cannot always be provided. Different laboratories approach the interpretation of first trimester screening in twin pregnancies differently. Some will provide a separate assessment for each twin while others evaluate the pregnancy as a whole. It is recommended that you talk with your doctor for more details about first trimester screening in a twin pregnancy.

Who should have first trimester combined screening?

Anyone who desires more information about her baby’s development should consider screening. More than 95% of babies with Down syndrome and trisomy 18 are born to families with no history of these conditions. In some cases, the diagnosis of a problem before birth may lead to different options during the pregnancy or special management of the delivery to improve the outlook for the baby.

Is this screening just for women over 35?

No. Women who are 35 or older at the time of delivery do have an increased risk of having a baby with Down syndrome or trisomy 18. However, babies with these conditions can be born to women of any age. In fact, more than 75% of babies with Down syndrome are born to women who are under 35 because women under age 35 are having more babies than women over 35.

If I am 35 or older should I still have first trimester risk assessment, or should I just have invasive testing (CVS or amniocentesis)?

Some women 35 and over choose to have an invasive test without having any screening. However, screening techniques have become so good that women of all ages should consider screening to better quantify their risk before deciding whether to have an invasive procedure.

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