



Prenatal Screening

Clinical Coverage Criteria

Overview

The American College of Obstetricians and Gynecologists (ACOG) recommends that all women, regardless of age, should be offered aneuploidy screening before 20 weeks gestation. A strategy that incorporates both first and second trimester prenatal screening should be offered to women who seek prenatal care in the first trimester.

Not all screening methods are available to all women. First-trimester screening is not an option for women who present in the second-trimester. In some practices, the availability of chorionic villus sampling (CVS) is limited. Availability and quality of nuchal translucency (NT) measurement is also an important consideration.

Independent first trimester prenatal screening:

Because of its ability to provide results early in pregnancy, first-trimester prenatal screening is becoming increasingly more important. First-trimester prenatal screening provides the opportunity for early risk assessment and definitive diagnosis of fetal aneuploidy via CVS. First-trimester combined screening includes measurement of:

- Maternal serum human chorionic gonadotropin (hCG), total or free
- Maternal serum pregnancy-associated plasma protein A (PAPP-A)
- Fetal NT measurement (by ultrasonography)

Independent second trimester prenatal screening:

During the second-trimester, the most common approach to screening is with multiple maternal serum markers. These markers, adjusted for gestational age, are used mainly for assessment of Down syndrome risk beyond that associated with maternal age. The triple screen, with AFP (alpha-fetoprotein), hCG (human chorionic gonadotropin) and uE3 (unconjugated estriol), sensitivity for Down syndrome is about 70%, with a false-positive rate of about 5%. Most labs in the United States measure the level of a fourth hormone called inhibin A. When this substance is included, the test is called a quadruplet (or quad) screen.

Combined first-trimester and second-trimester prenatal screening:

Optimally, prenatal screening should minimize the number of false-positive results while maximizing the overall detection rate. This is important because screen-positive results lead to diagnostic procedures that are invasive and risky.

- Integrated screening combines both first trimester (PAPP-A and NT) and second trimester (AFP, hCG, unconjugated estriol and inhibin-A) markers and the results are only reported after both first and second trimester screening is completed. This approach is controversial because some people believe that it is unethical to withhold the results of first-trimester screening, however integrated screening provides the highest sensitivity rates with the lowest false positive rates of all prenatal screening methods.
- Step-wise sequential screening combines both first-trimester (PAPP-A, hCG and NT) and second trimester (AFP, hCG, unconjugated estriol and inhibin-A)

markers, but discloses the first-trimester screening results, which gives the patient the option of an early diagnostic procedure. Sequential screening obviates the disadvantages of integrated screening and those at lower risk can still take advantage of the higher detection rate achieved with the addition of second-trimester screening.

- Contingent sequential screening combines both first-trimester and second-trimester markers, and classifies risk as low, medium or high on the basis of first-trimester screening results; women at high risk are offered CVS, and those at low risk have no further screening. Only women at intermediate risk go on to second-trimester screening. Analysis of data has shown that contingent sequential screening is the most cost effective.

Second trimester screening ultrasound:

Fetal ultrasound is considered safe when properly used and when medical information about a pregnancy is needed. Although there is no reliable evidence of physical harm to human fetuses from ultrasonography, public health experts and clinicians agree that casual use of ultrasonography, especially during pregnancy, should be avoided.

Ultrasound is the primary method of detecting fetal structural abnormalities including those that may be treated effectively before birth or at delivery (e.g., diaphragmatic hernia). The optimal time to perform an anatomic survey is at 18 to 22 weeks gestation. Most major fetal anatomic abnormalities should be detected with this screen, including

- Neural tube defects (such as anencephaly and spina bifida)
- Renal malformations
- Lethal forms of short-limbed skeletal dysplasias
- Gut malformations (e.g., obstruction)
- Diaphragmatic hernia

Maternal cell-free fetal DNA (cffDNA) testing:

Since the 1997 discovery of free fetal DNA in maternal plasma researchers have been searching for a reliable method of isolating these cells and using them to identify genetic defects in the fetus. However, the fact that fetal DNA represents only a minor fraction of total DNA in maternal plasma, has offered considerable challenge. Currently, there are at least two techniques for isolating fetal DNA from maternal DNA:

- Massively parallel signature sequencing (MPSS) is a random analysis of millions of cffDNA fragments. This technique sequences short segments of cffDNA from the mother and the fetus and assigns them to specific chromosomes. The number of chromosome counts is then compared to a control value of other chromosomes and if there is an excess of a particular chromosome (e.g., 21), trisomy is suspected. This technique requires analysis of a very large number of DNA fragments per sample – current estimates are about 25 million, although this may change as the technology continues to advance.
- The other technique is directed DNA analysis. The goal of directed DNA analysis is to selectively sequence relevant chromosomes. Digital analysis of selected regions (DANSR) is a recently developed process of analyzing counts from assays targeted against selected genomic regions on particular chromosomes. This technique is touted as being potentially more efficient than MPSS because it used fewer genetic fragments.

The detection of Down syndrome remains the primary goal of prenatal screening. However first and second trimester screening for trisomy 18 and first trimester screening for trisomy 13 are part of the current prenatal screening practice. Therefore it is reasonable to review maternal cell-free fetal DNA sequencing to determine if it has the capability to detect other aneuploidies, such as trisomy 18 and 13.

Definitions

Aneuploidy: A condition in which there is an extra or missing chromosome which leads to a genetic disorder. (E.g. Down syndrome)

Cell free fetal DNA testing (cffDNA): A screening test that uses a sample of a pregnant woman's blood to screen for three of the most common genetic disorders in the fetus: trisomy 13 (Patau syndrome), trisomy 18 (Edwards syndrome), and trisomy 21 (Down syndrome).

Chorionic Villus Sampling (CVS): A diagnostic test to detect genetic and other inherited disorders. It is performed by removing a small sample of chorionic villi cells from the placenta at the point it attaches to the wall of the uterus. This can be done by a transcervical or transabdominal approach.

Nuchal Translucency Ultrasound (NT Scan): An ultrasound performed during the first trimester of the collection of fluid under the skin behind the fetal neck (nuchal fold) which can detect potential chromosomal abnormalities by measuring thickness.

Policy

Noninvasive prenatal testing for fetal aneuploidy using maternal cell-free fetal DNA (cffDNA) requires prior authorization from Fallon Health. These requests must be supported by the treating provider(s) medical records. One of the below criteria must be met:

- Maternal age 35 years or older at delivery
- Fetal ultrasonographic findings indicating an increased risk of aneuploidy
- History of a prior pregnancy with a trisomy
- Positive test result for aneuploidy, including first trimester, sequential, or integrated screen, or a quadruple screen.
- Parental balanced robertsonian translocation with increased risk of fetal trisomy 13 or trisomy 21.

For Genetic testing related to Cystic Fibrosis and Spinal Muscular Atrophy (which is not part of a panel test) please see Fallon's Genetic Testing Policy.

Due to lack of evidence supporting its use multiple gestation pregnancies are not covered and coverage is limited to single gestation pregnancies.

Fallon Health covers the following prenatal screening tests for all women who are adequately counseled on the risks and benefits of diagnostic procedures such as chorionic villus sampling (CVS) and amniocentesis. These tests do not require prior authorization.

Independent first-trimester prenatal screening:

1. Fallon Health covers first-trimester combined maternal serum screening (PAPP-A and hCG) and nuchal translucency (NT) measurement for fetal aneuploidy between 10 weeks 3 days and 13 weeks 6 days gestation.
 - First-trimester screening should not be repeated when the results are abnormal.
 - Women who have first-trimester screening should not be offered independent second-trimester maternal serum screening during the same pregnancy.
2. Fallon Health covers first-trimester NT measurement (i.e., without maternal serum screening) in the evaluation of multifetal gestations for which serum screening is not as accurate (twins) or is unavailable (triplets or higher).

Independent second trimester prenatal screening:

1. Fallon Health covers second-trimester maternal serum alpha-fetoprotein (AFP) screening for open neural tube defects only, not for Down syndrome, optimally between 16 and 18 weeks gestation, for women who have had first-trimester combined screening (NT, PAPP-A and hCG) and/or CVS.
2. Fallon Health covers second-trimester ultrasound at approximately 18 to 20 weeks gestation to screen for fetal structural abnormalities, including but not limited to fetal maternal evaluation of the number of fetuses, amniotic/chorionic sacs, survey of intracranial, spinal, and abdominal anatomy, evaluation of a 4-chamber heart view, assessment of the umbilical cord insertion site, assessment of amniotic fluid volume, and evaluation of maternal adnexa when visible when appropriate.
3. Fallon Health covers second-trimester maternal serum screening (AFP, hCG, uE3, and inhibin A), optimally between 15 and 16 weeks gestation.

Combined first-trimester and second-trimester prenatal screening

1. Fallon Health covers combined first-trimester and second-trimester prenatal screening (integrated, step-wise sequential or contingent sequential), where available, for women who seek prenatal care in the first-trimester.
 - Physicians must ensure that nondisclosure is acceptable to patients if they choose to offer integrated screening.

Exclusions

- Nasal bone assessment via ultrasound as an aneuploidy screening test.
- The use of invasive trophoblast antigen (ITA) as a biochemical marker for aneuploidy screening alone or in combination with other markers (e.g., penta screen).
- Three-dimensional (3-D) or four-dimensional (4-D) ultrasound for any indication including but not limited to measurement of fetal nuchal translucency, detection of fetal abnormalities, and prediction of birth weight.
- Maternal cell-free fetal DNA testing for plan members who are not at increased risk of aneuploidy.
- Noninvasive prenatal testing for fetal aneuploidy using maternal cell-free fetal DNA (cffDNA) for multiple gestation pregnancies

Codes

If there is no specific CPT or HCPCS code for a cffDNA test, the unlisted CPT code 84999 (Unlisted chemistry procedure) should be used and requires prior authorization.

Code type	Code	Description
CPT	59000	Amniocentesis; diagnostic
	59001	Amniocentesis; therapeutic amniotic fluid reduction (includes ultrasound guidance)
	59015	Chorionic villus sampling, any method
	76805	Ultrasound, pregnant uterus, real time with image documentation, fetal and maternal evaluation, after first trimester (> or = 14 weeks 0 days), transabdominal approach; single or first gestation
	76810	Ultrasound, pregnant uterus, real time with image documentation, fetal and maternal evaluation, after first trimester (> or = 14 weeks 0 days), transabdominal approach; each additional gestation
	76813	Ultrasound, pregnant uterus, real time with image documentation, first trimester fetal nuchal translucency measurement, transabdominal or transvaginal approach; single or first gestation
	76814	Ultrasound, pregnant uterus, real time with image documentation, first trimester fetal nuchal translucency measurement, transabdominal or transvaginal approach; each additional gestation (List separately in addition to code for primary procedure)
	81420	Fetal chromosomal aneuploidy (e.g., trisomy 21, monosomy X) genomic sequence analysis panel, circulating cell-free fetal DNA in maternal blood, must include analysis of chromosomes 13, 18, and 21
	81507	Fetal aneuploidy (trisomy 21, 18, and 13) DNA sequence analysis of selected regions using maternal plasma, algorithm reported as a risk score for each trisomy
	0009M	Fetal aneuploidy (trisomy 21, and 18) DNA sequence analysis of selected regions using maternal plasma, algorithm reported as a risk score for each trisomy
	82105	Alpha-fetoprotein (AFP); serum
	82106	Alpha-fetoprotein (AFP); amniotic fluid
	82107	Alpha-fetoprotein (AFP); AFP-L3 fraction isoform and total AFP (including ratio)
	84163	Pregnancy-associated plasma protein-A (PAPP-A)
	84702	Gonadotropin, chorionic (hCG); quantitative

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Policy History

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