

APEC Guidelines Prenatal Screening for Fetal Birth Defects and Aneuploidy

Counseling

- Offer screening to all women who present for care < 20 weeks GA.
- Explain the difference between screening and diagnostic testing.
- Base screening test on: patient history, GA, number of fetuses, availability of nuchal translucency measurement. Provide information on each test including: purpose, detection and false positive rates, limitations, risks and benefits so the patient can make an informed decision.

Screening test	Test type	Screen for	Detection Rate
1st trimester (10-13.6 weeks)combined	PAPP-A, hCG, and nuchal translucency	Trisomy 21 Trisomy 18	85-90%
2nd trimester (14-22 weeks)	MSAFP	Neural tube defect	80-85%
2 nd trimester quad screen	AFP, hCG, estriol, and inhibin-A	Trisomy 21 Trisomy 18 Neural tube defect	80-85%
Integrated screen	1 st trimester PAPP-A and hCG plus NT ultrasound and 2 nd trimester quad	Trisomy 21 Trisomy 18 Neural tube defect	95%
Serum Integrated screen (blood only)	1 st trimester PAPP-A and hCG and 2 nd trimester quad	Trisomy 21 Trisomy 18 Neural tube defect	85-88%

Neural Tube Defects

- Preconception folic acid 400 µg/day for low-risk women or 4mg/day for high-risk women.
- Offer all women second trimester MSAFP screening for NTD or have a careful anatomic assessment of the CNS anatomy.
- Refer women with elevate AFP for genetic counseling and offer diagnostic testing (targeted sonar, amniocentesis).
- Fetus with NTD should be delivered at a tertiary care facility.

Fetal Aneuploidy

- Offer screening and diagnostic testing for aneuploidy to all women presenting for care < 20weeks GA.
- Refer women with screen positive results for comprehensive ultrasound and amniocentesis.
- Nuchal translucency (NT) measuring requires specific training, standardization, and special equipment thus, should be limited to centers with active certification status.
- First-trimester screening using both NT and biochemical markers is an effective screen for Down syndrome in the general population.
- Serum integrated (first and second trimester)screening is a useful option in pregnancies where NT is not available.
- NTD screening should be offered in the 2nd trimester to women who elect only 1st trimester screening for aneuploidy. This can be either in the form of MSAFP or careful sonographic evaluation of CNS anatomy.

Benchmark

Aneuploidy screening performed in > 50% of women with prenatal care prior to 20 weeks GA.

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Cell Free DNA

- At the present time, given the cost and testing limitations, offering cell free DNA testing should be limited to women at increased risk for fetal aneuploidy. Given the lack of cost effectiveness data, the use of cell free DNA testing is not recommended in the general obstetric population.
- Use of cell free DNA for detection of chromosomal microdeletions is not recommended as its performance has not been prospectively evaluated.
- Data on the performance of cell free DNA in multiple gestations is limited and its use is not recommended.
- Cell free DNA testing should not be part of routine prenatal laboratory assessment but should be an informed patient choice after pretest counseling.
- Pretest counseling should include a review that cell-free DNA testing is not a diagnostic test, although it has high sensitivity and specificity. The test will only screen for common trisomes and, at the present time, gives no other genetic information about the pregnancy. Patients should be counseled that the false positive and false negative results occur.
- If a fetal structural anomaly is identified on the ultrasound examination, prenatal diagnosis should be offered.
- A patient with a positive test result should be referred for genetic counseling and prenatal diagnosis for confirmation of test results recommended. Patients should be counseled that a positive result on cell free DNA does not mean that the fetus is affected.
- For patients who desire a diagnostic test, amniocentesis or CVS should be offered rather than cell free DNA.

Cystic Fibrosis

- While CF carrier screening should be offered to all couples in which at least one partner is Caucasian, it is reasonable to offer screening to all women of reproductive age, regardless of race or ethnicity. Although a long-standing recommendation from ACOG, many insurance providers do not cover asymptomatic carrier screening. Patients should be counseled regarding the availability of this testing, but should be advised about the potential limited coverage. Currently, Medicaid does not reimburse for this testing.
- If the patient has been previously screened for CF, the CF results should be documented but the test should not be repeated.
- Complete analysis of the CFTR gene by DNA sequencing is not appropriate for routine carrier screening.
- Newborn screening panels that include CF screening do not replace maternal carrier screening.
- For couples in which both partners are carriers, genetic counseling is recommended.
- For couples in which both partners are unaffected but one or both has a family history of CF, genetic counseling is recommended.
- If a women's partner has CF or apparently isolated congenital bilateral absence of the vas deferens, the couple should be referred for genetic counseling.

Sickle Cell Disease

- Women of African, Southeast Asian, and Mediterranean decent and those with a family history should be screened for sickle cell disease with a hemoglobin electrophoresis.
- Hgb S-S, Hgb S-C, and Hgb S-β Thal have sickle cell disease and should be referred for genetic counseling and to a MFM.
- Women with sickle cell trait should be screened for UTIs each trimester or more often as needed.

Carrier Screening in Jewish Individuals

- Patients of Ashkenazi Jewish decent or a positive family history should be offered carrier screening for Tay-Sachs, Canavan disease, Cystic fibrosis, and Familial dysautonomia.
- Refer positive screens for genetic counseling.