

Prenatal Cell-Free DNA Screening ACT Sheet

[Trisomy 21/Down Syndrome: Positive Cell Free DNA Screen]

Etiologies of Positive Screen: Fetal trisomy 21, fetal mosaic trisomy 21, confined placental mosaicism for trisomy 21, karyotypic abnormalities resulting in extra chromosome 21 material, vanishing twin.

Clinical Considerations: Trisomy 21 (Down syndrome) is a multi-system condition resulting in hypotonia, characteristic physical features, and intellectual disability. Other findings are variable, including structural birth defects, endocrine, and immune disorders; the majority of those who are liveborn survive to adulthood. Anticipatory support regarding medical and non-medical concerns and delivery coordination with the newborn nursery should be provided.

Screening Considerations: Prenatal Cell-Free DNA Screening is designed to detect fetal aneuploidy, including trisomy 21. The detection rate is approximately 99% with a false positive rate of less than 1%. The positive predictive value (PPV) of Prenatal Cell-Free DNA Screening for trisomy 21 varies with maternal age and ranges from about 50% at age 20 to about 95% at age 40 years. Prenatal ultrasound demonstrates an anomaly in about 50% of fetuses with confirmed trisomy 21. Major reproductive decisions should not be made without clinical or laboratory confirmation. Diagnostic testing should be offered to confirm a screen positive result. Expedited referrals to a genetics and/or maternal and fetal medicine (MFM) professional with prenatal genetics expertise should be made to ensure timely, informed decision making and management.

YOU SHOULD TAKE THE FOLLOWING IMMEDIATE ACTIONS:

- Inform the patient of the laboratory result and emphasize that, in order to confirm the results of the screening test, a referral to a genetics and/or MFM professional with prenatal genetics expertise will be offered for additional testing, including genetic counseling, fetal ultrasound, and diagnostic testing.
- Emphasize that the positive predictive value (PPV) of Prenatal Cell-Free DNA Screening for trisomy 21 ranges from approximately 50-95% and is dependent on maternal age.
- Every patient has the right to accept or decline genetic screening or diagnosis.

Diagnostic Evaluation: Karyotype or microarray analysis of chorionic villi or amniocytes is needed to confirm the diagnosis and may help distinguish between the various possible mechanisms listed above, which can inform clinical decision making and determine recurrence risk.

Patient Education Resources

[Kidshealth.org](https://kidshealth.org)
[Lettercase \(The National Center for Prenatal and Postnatal Resources\)](#)
[NLM: Medline Plus](#)
[National Down Syndrome Society](#)

Provider Education Resources

[ACMG: Noninvasive Prenatal Screening for Fetal Aneuploidy](#)
[Clinical Report: Health Supervision for Children with Down Syndrome](#)
[Down syndrome healthcare guidelines](#)
[ObG Project](#)
[Perinatal Quality Positive Predictive Value Calculator](#)
[UNC Positive Predictive Value Calculator](#)
[CDC Survival Data](#)

Referral (local, state, regional and national)

[ACMG: Find a Genetics Clinic Directory](#)
[NSGC: Find a Genetic Counselor](#)
[Society for Maternal Fetal Medicine: Find an MFM](#)

Disclaimer: This guideline is designed primarily as an educational resource for clinicians to help them provide quality medical care. It should not be considered inclusive of all proper procedures and tests or exclusive of other procedures and tests that are reasonably directed to obtaining the same results. Adherence to this guideline does not necessarily ensure a successful medical outcome. In determining the propriety of any specific procedure or test, the clinician should apply his or her own professional judgment to the specific clinical circumstances presented by the individual patient or specimen. Clinicians are encouraged to document the reasons for the use of a particular procedure or test, whether or not it is in conformance with this guideline. Clinicians also are advised to take notice of the date this guideline was adopted, and to consider other medical and scientific information that become available after that date.

Local Resources (Insert Local Website Links)

State Resource Site (Insert Website Information)

Name	
URL	
Comments	

Local Resource Site (Insert Website Information)

Name	
URL	
Comments	

Appendix (Resources with Full URL Addresses)

Patient Education Resources

Kidshealth.org

- <https://kidshealth.org/>

Lettercase (The National Center for Prenatal and Postnatal Resources)

- <https://www.lettercase.org/>

NLM: Medline Plus

- <https://medlineplus.gov/downsyndrome.html>

National Down Syndrome Society

- <https://www.ndss.org/>

Provider Education Resources

ACMG- Noninvasive Prenatal Screening for Fetal Aneuploidy

- <https://www.acmg.net/PDFLibrary/Fetal-Aneuploidy-Noninvasive-Prenatal-Screening-Update.pdf>

Clinical Report- Health Supervision for Children with Down Syndrome

- <https://pediatrics.aappublications.org/content/pediatrics/128/2/393.full.pdf>

Down syndrome healthcare guidelines

- <http://pediatrics.aappublications.org/content/128/2/393>

ObG Project

- <https://www.obgproject.com/2016/08/30/down-syndrometrisomy-21-what-is-it/>

Perinatal Quality Positive Predictive Value Calculator

- <https://www.perinatalquality.org/Vendors/NSGC/NIPT/>

UNC Positive Predictive Value Calculator

- <https://www.med.unc.edu/mfm/nips-calc/>

CDC Survival Data

- <https://www.cdc.gov/ncbddd/birthdefects/downsyndrome/data.html>

Referral (local, state, regional and national)

ACMG: Find a Genetics Clinic Directory

- <https://clinics.acmg.net>

NSGC: Find a Genetic Counselor

- <https://www.nsgc.org/page/find-a-genetic-counselor>

SMFM Find a Maternal and Fetal Medicine Specialist

- <https://www.smfm.org/members>

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