ACMG
American College of Medical Genetics and Genomics
Translating Genes Into Health®

ACT Sheet

Prenatal Cell-Free DNA Screening ACT Sheet

[45,X: Positive Cell Free DNA Screen]

Etiologies of Positive Screen: Fetal 45,X, abnormalities of the X chromosome; fetal, placental, or maternal mosaicism of 45,X, vanishing twin.

Clinical Considerations: Monosomy X (Turner Syndrome) is a multi-system condition resulting in varying birth defects with normal intelligence; intrauterine fetal demise is common. This result can be found in all fetal cells or it can be a mosaic finding. A 45,X result can be fetal or maternal in origin.

Screening Considerations: Prenatal Cell-Free DNA Screening is capable of detecting the sex chromosomes if elected by the patient. The detection rate is approximately 90% with a false positive rate of less than 1%. The positive predictive value (PPV) of Prenatal Cell-Free DNA Screening for 45, X is about 40% and does not vary with maternal age. Major reproductive decisions should not be made without clinical or laboratory confirmation. Diagnostic testing should be offered to confirm a screen positive test result; if the fetal karyotype is normal consideration should be given for maternal testing. 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 patient of the test result and emphasize that, to confirm the diagnosis, 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 45,X is about 40% and that the result cannot distinguish between fetal or maternal origin.
- Every patient has the right to accept or decline genetic screening or diagnostic testing.

Diagnostic Evaluation: Karyotype or microarray analysis of chorionic villi or amniocytes is needed to confirm the fetal 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
NLM: Medline Plus
Kidshealth.org
Turnersyndrome.org

Provider Education Resources
ACMG: Noninvasive Prenatal Screening for Fetal Aneuploidy
ObG Project
NHGRI
UNC Positive Predictive Value Calculator
Perinatal Quality Positive Predictive Value Calculator

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

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

NLM: Medline Plus
- https://medlineplus.gov/turnersyndrome.html

Kidshealth.org
- https://kidshealth.org/

Turnersyndrome.org
- https://www.turnersyndrome.org/

Provider Education Resources

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

ObG Project
- https://www.obgproject.com/2016/08/05/turner-syndrome-what-is-it/

NHGRI- About Turner Syndrome
- https://www.genome.gov/Genetic-Disorders/Turner-Syndrome

UNC Positive Predictive Value Calculator
- https://www.med.unc.edu/mfm/nips-calc/

Perinatal Quality Positive Predictive Value Calculator
- https://www.perinatalquality.org/Vendors/NSGC/NIPT/

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 Fetal Medicine Specialist
- https://www.smfm.org/members