Medical Policy

Molecular Cytogenetic Testing

Policy Number: PG0375
Last Review: 03/14/2023

PARAMOUNT

HMO AND PPO
ELITE (MEDICARE ADVANTAGE)
MARKETPLACE

GUIDELINES:

- This policy does not certify benefits or authorization of benefits, which is designated by each individual policyholder terms, conditions, exclusions, and limitations contract. It does not constitute a contract or guarantee regarding coverage or reimbursement/payment. Self-Insured group specific policy will supersede this general policy when group supplementary plan document or individual plan decision directs otherwise.
- Paramount applies coding edits to all medical claims through coding logic software to evaluate the accuracy and adherence to accepted national standards.
- This medical policy is solely for guiding medical necessity and explaining correct procedure reporting used to assist in making coverage decisions and administering benefits.

SCOPE:

X Professional
X Facility

DESCRIPTION:

Cytogenetics is the study of chromosomes. Chromosomes are packages of DNA, and DNA holds the instructions for the body to function. Humans typically have 23 pairs of chromosomes- they receive one pair from their biological mother and one pair from their biological father. When additional chromosomal material is present outside of the expected 23 pairs of chromosomes, or chromosomal material is absent, this can cause a variety of issues. Children with chromosomal abnormalities are at increased risk for birth defects, health problems, developmental disability, and intellectual disability.

For couples trying to conceive a pregnancy in which one of the partners has a chromosomal abnormality, they may have increased risks for miscarriage, stillbirth, and infertility. Additionally, for children who have a parent with a chromosomal abnormality may have an increased risk for the concerns listed above.

Changes or mutations that occur to genetic material after conception are called somatic mutations. Somatic changes are not heritable. Somatic changes can be found within cancers or malignant tumors.

Examples of molecular cytogenetic studies include karyotype analysis, FISH (Fluorescense in Situ Hybridization), and comparative genomic hybridization/chromosomal microarray analysis. A karyotype provides a picture of an individual's chromosomes; this test can look for extra or missing chromosomes as well as large deletions and duplications of genetic material. A comparative genomic hybridization/chromosomal microarray analysis has the ability to detect extra or missing chromosomes as well as look for smaller deletions and duplications than what a traditional karyotype is able to detect. FISH can determine how many copies of a specific piece of DNA are present in a cell; this testing methodology has the ability to look for submicroscopic deletions.

POLICY:

Paramount Commercial Insurance Plans and Elite (Medicare Advantage) Plans
Molecular cytogenetic testing does require prior authorization, except when used for Hematology/Oncology indications. Diagnosis codes supporting Hematology/Oncology indications listed below.

88230, 88233, 88235, 88237, 88239, 88240, 88241, 88245, 88248, 88249, 88261, 88262, 88263, 88264, 88267, 88269, 88271, 88272, 88273, 88274, 88275, 88280, 88283, 88285, 88289, 88291, 88299

Code 88271 has a limit of 25 units per 365 days.

For information regarding coverage of Comparative Genomic Hybridization/Chromosomal Microarray Analysis, please refer to Medical Policy PG0296.

COVERAGE CRITERIA:

Paramount Commercial Insurance Plans and Elite (Medicare Advantage) Plans

Paramount considers karyotype analysis of biological parents who have experienced recurrent pregnancy loss (i.e., two or more consecutive pregnancy losses) medically necessary to detect potential balanced chromosomal abnormalities.

Paramount considers karyotype analysis of the products of conception medically necessary after a couple has experienced two prior pregnancy losses.

Paramount considers Fluorescence in Situ Hybridization (FISH) testing medically necessary for the evaluation of recurrent pregnancy loss (i.e., two or more consecutive pregnancy losses) when there is an inability to perform conventional karyotype testing of the products of conception (e.g., lack of sufficient tissue sample, poor culture growth).

NOTE: CPT code 88271 (Molecular cytogenetic testing, DNA probe, each) should not be billed for Non-Invasive Prenatal Screening (NIPS). When billing for the NIPS, the appropriate CPT code is 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).

Paramount does not cover preimplantation genetic screening of common aneuploidy by testing methodology fluorescence in situ hybridization [FISH] for any indication, including but not limited to the following indications because it is considered not medically necessary:

- advanced maternal age (I.e., ≥ age 35 years)
- repeated in vitro fertilization (IVF) failures
- recurrent spontaneous abortions

Paramount considers cytogenetic studies medically necessary for prenatal diagnosis (via amniocentesis or chorionic villus sampling) following abnormal fetal ultrasound, high-risk maternal serum screening, or non-invasive prenatal screening (NIPS) indicating an increased risk for chromosomal abnormality in the fetus. Additionally, cytogenetic studies for prenatal diagnosis are considered medically necessary when an individual has had a previous livebirth or stillbirth with a chromosome abnormality.

Cytogenetic studies are covered by Paramount in the postnatal setting when they are medically necessary for the diagnosis and/or treatment of a suspected chromosomal abnormality (e.g., Down syndrome, disorder of sexual development, etc.).

Hematology/Oncology (Somatic) Cytogenetic Studies

Cytogenetic studies (i.e., karyotype, FISH, etc.) are covered by Paramount when they are medically necessary for the diagnosis and/or treatment of hematologic and/or oncologic conditions.

NOTE: Molecular cytogenetic testing, DNA probe each (88271) will have a limit of 25 units per 365 days. Modifier 91 will not allow for additional units.

CODING/BILLING INFORMATION:

The appearance of a code in this section does not necessarily indicate coverage. Codes that are covered may have selection criteria that must be met. Payment for supplies may be included in payment for other services rendered.

CPT CODE	
88230	Tissues culture for non-neoplastic disorders; lymphocyte
88233	Tissue culture for non-neoplastic disorders: skin or other solid tissue biopsy
88235	Tissue culture for non-neoplastic disorders; amniotic fluid or chorionic villus cells
88237	Tissue culture for neoplastic disorders; bone marrow, blood cells
88239	Tissue culture for neoplastic disorders; solid tumor
88240	Cryopreservation, freezing and storage of cells, each cell line
88241	Thawing and expansion of frozen cells, each aliquot
88245	Chromosome analysis for breakage syndromes; baseline Sister Chromotid Exchange, 20-25 cells
88248	Chromosome analysis for breakage syndromes; baseline breakage, score 50-100 cells, count 20 cells, 2 karyotypes
88249	Chromosome analysis for breakage syndromes; score 100 cells, clastogen stress
88261	Chromosome analysis; count 5 cells, 1 karyotype, with banding
88262	Chromosome analysis; count 15-20 cells, 2 karyotypes, with banding
88263	Chromosome analysis; count 45 cells for mosaicism, 2 karyotypes, with banding
88264	Chromosome analysis; analyze 20-25 cells
88267	Chromosome analysis; amniotic fluid or chorionic villus, count 15 cells, 1 karyotype, with banding
88269	Chromosome analysis, in situ for amniotic fluid cell, count cells from 6-12 colonies, 1 karyotype, with banding
88271	Molecular cytogenetics; DNA probe, each (e.g., FISH)
88272	Molecular cytogenetics; chromosomal in situ hybridization, analyze 3-5 cells (e.g., for derivatives and markers)
88273	Molecular cytogenetics; chromosomal in situ hybridization, analyze 10-30 cells (e.g., for microdeletions)
88274	Molecular cytogenetics; interphase in situ hybridization, analyze 25-99 cells
88275	Molecular cytogenetics; interphase in situ hybridization, analyze 100-300 cells
88280	Chromosome analysis; additional karyotypes, each study
88283	Chromosome analysis; additional specialized banding technique
88285	Chromosome analysis; additional cells counted, each study
88289	Chromosome analysis; additional high-resolution study
88291	Cytogenetics and molecular cytogenetics, interpretation, and report
88299	Unlisted cytogenetic study
DIAGNOSIS CODES supporting Hematology/Oncology indications	
C00 – D49	Neoplasms
D50 – D77	Diseases of the Blood and Blood-forming Organs
R16.0	Hepatomegaly
R16.1	Splenomegaly
R31.9	Hematuria, unspecified
Z85.6	Personal history of leukemia
Z94.0 – Z94.9	Transplanted organ and tissue status

REVISION HISTORY EXPLANATION: ORIGINAL EFFECTIVE DATE: 08/26/2016

Date	Explanation & Changes
08/26/2016	• Policy created to reflect most current clinical evidence per TAWG
07/09/2019	• Policy updated to reflect most current clinical evidence

	• Deleted 88271 from the title of the policy as there are many cytogenetics CPT codes • Elaborated on uses of cytogenetic testing in the description section • Changed the policy to reflect that all cytogenetic CPT codes need prior auth unless it is for hematology/oncology indications • Added criteria for use of constitutional cytogenetic studies. • Added section specific to hematology/oncology indications • Added CPT codes relevant to cytogenetics • Added references
12/22/2020	• Medical policy placed on the new Paramount Medical Policy Format
02/28/2023	• Medical Policy updated to reflect Medicaid coverage to Anthem as of 02/01/2023
03/14/2023	• Policy updated to reflect most current clinical evidence • No coverage criteria changes • Added DIAGNOSIS CODES supporting Hematology/Oncology indications
04/08/2024	• Medical Policy placed on the new Paramount Medical Policy format

Paramount reserves the right to review and revise our policies periodically when necessary. When there is an update, we will publish the most current policy to https://www.paramounthealthcare.com/providers/medical-policies/policy-library

REFERENCES/RESOURCES

Centers for Medicare and Medicaid Services, CMS Manual System and other CMS publications and services https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Internet-Only-Manuals-IOMs

American Medical Association, *Current Procedural Terminology (CPT®)* and associated publications and services https://www.ama-assn.org/amaone/cpt-current-procedural-terminology

Centers for Medicare and Medicaid Services, Healthcare Common Procedure Coding System, HCPCS Release and Code Sets https://www.cms.gov/Medicare/Coding/HCPCSReleaseCodeSets/HCPCS-Quarterly-Update

U.S. Preventive Services Task Force, https://www.uspreventiveservicestaskforce.org/uspstf/
Industry Standard Review

Hayes, Inc., https://www.hayesinc.com/

Industry Standard Review

American College of Medical Genetics (ACMG), Array-Based Technology and Recommendations for Utilization in Medical Genetics Practice for Detection of Chromosomal Abnormalities, 2010

American College of Medical Genetics (ACMG), ACMG Guideline on the Cytogenetic Evaluation of the Individual with Developmental Delay or Mental Retardation, 2005

European Journal of Human Genetics, European Guidelines for Constitutional Cytogenomic Analysis, 2017