Geisinger

Geisinger Health Plan Policies and Procedure Manual

Policy: MP255

Section: Medical Benefit Policy

Subject: Comparative Genomic Hybridization or Chromosomal Microarray Analysis (CMA)

Applicable Lines of Business

Commercial	**X**	**CHIP**	**X**
Medicare	**X**	**ACA**	**X**
Medicaid	**X**		

I. Policy: Comparative Genomic Hybridization or Chromosomal Microarray Analysis (CMA)

II. Purpose/Objective:
To provide a policy of coverage regarding Comparative Genomic Hybridization or Chromosomal Microarray Analysis (CMA)

III. Responsibility:
A. Medical Directors
B. Medical Management

IV. Required Definitions

1. Attachment – a supporting document that is developed and maintained by the policy writer or department requiring/authoring the policy.
2. Exhibit – a supporting document developed and maintained in a department other than the department requiring/authoring the policy.
3. Devised – the date the policy was implemented.
4. Revised – the date of every revision to the policy, including typographical and grammatical changes.
5. Reviewed – the date documenting the annual review if the policy has no revisions necessary.

V. Additional Definitions
Medical Necessity or Medically Necessary means Covered Services rendered by a Health Care Provider that the Plan determines are:

a. appropriate for the symptoms and diagnosis or treatment of the Member's condition, illness, disease or injury;
b. provided for the diagnosis, and the direct care and treatment of the Member's condition, illness disease or injury;
c. in accordance with current standards of good medical treatment practiced by the general medical community.
d. not primarily for the convenience of the Member, or the Member's Health Care Provider; and
e. the most appropriate source or level of service that can safely be provided to the Member. When applied to hospitalization, this further means that the Member requires acute care as an inpatient due to the nature of the services rendered or the Member's condition, and the Member cannot receive safe or adequate care as an outpatient.

Medicaid Business Segment
Medically Necessary — A service, item, procedure, or level of care that is necessary for the proper treatment or management of an illness, injury, or disability is one that:

- Will, or is reasonably expected to, prevent the onset of an illness, condition, injury or disability.
- Will, or is reasonably expected to, reduce or ameliorate the physical, mental or developmental effects of an

illness, condition, injury or disability.
- Will assist the Member to achieve or maintain maximum functional capacity in performing daily activities, taking into account both the functional capacity of the Member and those functional capacities that are appropriate for Members of the same age

DESCRIPTION:
Chromosomal Microarray Analysis (CMA) or Comparative Genomic Hybridization (CGH), is an array-based cytogenetic test that is used for the detection of submicroscopic genomic abnormalities or imbalances (e.g., deletions, duplications or amplifications). CMA with SNPs (single nucleotide polymorphism) allow for the detection of regions of homozygosity (ROH), which may result from uniparental disomy (UPD).

INDICATIONS: ***Requires Prior Authorization by a Plan Medical Director or designee**

Array-based comparative genomic hybridization or chromosomal microarray testing may be considered medically necessary when ordered by a Medical Geneticist*, Certified Genetic Counselor*, Pediatric Neurologist, Neonatal Hospitalist or Developmental Pediatrician for:

Pediatric
Evaluation of chromosomal abnormalities in children when all of the following criteria are met:

1. One of the following conditions apply:
   a. Child exhibits symptoms suspected of autism spectrum disorder; or
   b. Child has a history of epilepsy or a diagnosed seizure disorder and whole exome sequencing is negative; or
   c. Whole exome sequencing was completed and negative, but a there is a high degree of clinical suspicion for a missed CNV (e.g. small del/dups can be missed, whole exome report notes CNVs were not assessed)

   d. Child exhibits symptoms of a non-syndromic developmental delay(DD), intellectual disability(ID) or loss of developmental milestones; **or**
   e. Child exhibits congenital malformation(s), anomalies or dysmorphic features that are not specific to a well delineated genetic syndrome (for which specific or targeted studies could be ordered); or
   f. Child has a suspected whole-chromosome or segmental UPD related to an imprinting disorder or to an autosomal recessive disorder; or
   g. Consanguinity of up to 3rd degree relatives has been reported, regardless of diagnosis or reported clinical history;

   h. Determine breakpoints of chromosomal rearrangements previously detected by conventional cytogenetic methods (eg. karyotype) or technologies that do not provide genome-wide coverage (eg. multi-gene panel).

And

2. Fragile X (FMR1) gene analysis (unless clinically contraindicated) is negative; **and**
3. The genetic testing results have a reasonable potential to be useful in the clinical management or preventive surveillance strategies of the child; **and**
4. The parents or legal guardians have participated in in-person genetic counseling with a licensed or certified genetic counselor; Medical Geneticist, Pediatric Neurologist or Developmental Pediatrician who are involved in the child's care.

Adults
Chromosomal microarray testing is generally not considered medically necessary in an adult for evaluation of DD/ID.

Chromosomal microarray is medically necessary in the following scenarios:

1. Determine breakpoints of chromosomal rearrangements previously detected by conventional cytogenetic methods (eg. karyotype) or technologies that do not provide genome-wide or CNV coverage (eg. multi-gene panel or poor or no CNV coverage with whole exome sequencing) for the purpose of accurate characterization of abnormality and additional genetic risks to member.
2. Non-invasive prenatal screening (cffDNA) indicates an abnormality may be either fetal or parental in origin. Coverage for both mother and fetus is approved in this scenario.

Prenatal & Neonatal
Chromosomal microarray testing is considered medically necessary for prenatal or neonatal use if any one of the following criteria is met:

- Pregnant members choosing to undergo invasive testing for any reason (i.e. amniocentesis, chorionic villus sampling or fetal tissue sampling) for any indication (ACOG 2016) ; or

- Non- invasive prenatal screening (eg: cffDNA) results are screen positive, inconclusive, or unreportable and diagnostic confirmation is recommended; or
- Known deletion or duplication syndrome in at least one parent indicate risk to a fetus (eg: one parent has 22q11.2 deletion syndrome)
- Evaluation of a fetus with 1 or more structural abnormalities detected on fetal ultrasound; or
- Intrauterine fetal demise in any trimester; or
- Parental testing is covered when a CNV is identified in a fetus or pregnancy loss; or
- Testing the products of conception following pregnancy loss at any gestational age; or
- Diagnostic testing for fetal abnormalities when the in vitro embryo is at increased risk of an inherited disorder because one of the following is documented:
    - The parents are carriers of an autosomal recessive disease; or
    - One parent is a carrier of an autosomal dominant, sex-linked, or mitochondrial disorder

LIMITATIONS & CONSIDERATIONS:
In general, the following limitations apply to all genetic testing:

- Testing for the purposes of confirming a suspected diagnosis of a disorder that can be diagnosed based on clinical evaluations alone will not be covered.
- Testing for conditions for which the treatment plan cannot be impacted will not be covered.
- Testing solely for the purpose of informing the care or management of an insured individual's family member(s) will not be covered.
- Testing must be performed at a contracted laboratory when available.
- Clinicians should select CMA with SNP whenever possible to improve diagnostic yield.
- For prenatal use, maternal cell contamination should be ordered with CMA, whenever feasible, to decrease need for repeat testing or inconclusive result.

FOR MEDICAID BUSINESS SEGMENT:
This service is typically not covered. Requests for comparative genomic hybridization requires a program exception consideration.

SEE ALSO: MP232 Autism Spectrum Disorder – Evaluation and Medical Management

Genetic testing is appropriate only when offered in a setting where there are licensed or certified genetic counselor; Medical Geneticist, Pediatric Neurologist, Developmental Pediatrician or Newborn Hospitalists who is involved in the individual's care **and medical necessity is supported by <u>ALL</u>** of the following criteria:

The information is needed to adequately assess risk in the insured individual; **and**
The information will be used in the immediate care plan of the insured individual; **and**
Pedigree analysis establishes that the insured individual is in a high-risk group for the disease; **or**
Clinical presentation of symptomatology is evident but diagnosis cannot be established with conventional evaluation testing.

*A genetic counselor is considered by the Plan to be qualified if the following are met:

M.S. or Ph.D. degree from a genetic counseling program approved/ certified by the American Board of Genetic Counseling or the American Board of Medical Genetics

or

Board certified or board qualified/eligible in the orderly process of obtaining board certification by the American Board of Genetic Counseling or American Board of Medical Genetics
and
Proof of current competence and demonstrated ability (minimum of two years recent and continual experience within the past three years)

EXCLUSIONS:
The Plan does **NOT** provide coverage for the use of genetic testing for array based comparative genomic hybridization for the purposes of routine prenatal genetic testing in the absence of the recommendation of a geneticist or genetic counselor because it is considered experimental, investigational or unproven for routine screening purposes. The Geisinger Technology Assessment Committee evaluated this technology and concluded that there is insufficient evidence in the peer-reviewed published medical literature to establish the effectiveness of this test on health outcomes when compared to established tests or technologies.

The Plan does **NOT** provide coverage for the use of Comparative Genomic Hybridization or Chromosomal Microarray Analysis for the purposes of any of the following:

- Adults undergoing population screening
- Adults with a history of recurrent miscarriages
- When confirmation of a diagnosis, disorder or syndrome is readily apparent based on clinical evaluation alone.

The Plan does **NOT** provide coverage for the use of panel testing using advanced sequencing in all cases of suspected genetic abnormality in children with developmental delay/intellectual disability or autism spectrum disorder.

Medicaid Business Segment:

Any requests for services, that do not meet criteria set in the PARP, may be evaluated on a case by case basis.

Note: A complete description of the process by which a given technology or service is evaluated and determined to be experimental, investigational or unproven is outlined in MP 15 - Experimental Investigational or Unproven Services or Treatment.

CODING ASSOCIATED WITH: Comparative Genomic Hybridization or Chromosomal Microarray Analysis (CMA) for Evaluation of Developmental Delay

The following codes are included below for informational purposes and may not be all inclusive. Inclusion of a procedure or device code(s) does not constitute or imply coverage nor does it imply or guarantee provider reimbursement. Coverage is determined by the member specific benefit plan document and any applicable laws regarding coverage of specific services. Please note that per Medicare coverage rules, only specific CPT/HCPCS Codes may be covered for the Medicare Business Segment. Please consult the CMS website at www.cms.gov or the local Medicare Administrative Carrier (MAC) for more information on Medicare coverage and coding requirements.

S3870 Comparative genomic hybridization (CGH) microarray testing for developmental delay, autism spectrum disorder and/or mental retardation.
81228 CYTOGENOMIC (GENOME-WIDE) ANALYSIS FOR CONSTITUTIONAL CHROMOSOMAL ABNORMALITIES; INTERROGATION OF GENOMIC REGIONS FOR COPY NUMBER VARIANTS, COMPARATIVE GENOMIC HYBRIDIZATION [CGH] MICROARRAY ANALYSIS
81229 CYTOGENOMIC (GENOME-WIDE) ANALYSIS FOR CONSTITUTIONAL CHROMOSOMAL ABNORMALITIES; INTERROGATION OF GENOMIC REGIONS FOR COPY NUMBER AND SINGLE NUCLEOTIDE POLYMORPHISM (SNP) VARIANTS, COMPARATIVE GENOMIC HYBRIDIZATION (CGH) MICROARRAY ANALYSIS
81277 CYTOGENOMIC NEOPLASIA (GENOME-WIDE) MICROARRAY ANALYSIS, INTERROGATION OF GENOMIC REGIONS FOR COPY NUMBER AND LOSS-OF-HETEROZYGOSITY VARIANTS FOR CHROMOSOMAL ABNORMALITIES
0156U Copy number (e.g., intellectual disability, dysmorphology), sequence analysis
0209U Cytogenomic constitutional (genome-wide) analysis, interrogation of genomic regions for copy number, structural changes and areas of homozygosity for chromosomal abnormalities (CNGnome™ Testing)

LINE OF BUSINESS:
Eligibility and contract specific benefits, limitations and/or exclusions will apply. Coverage statements found in the line of business specific benefit document will supersede this policy. For Medicare, applicable LCD's and NCD's will supercede this policy. **For PA Medicaid Business segment, this policy applies as written.**

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This policy will be revised as necessary and reviewed no less than annually.

Devised: 5/11

Revised: 5/15; 1/17 (revise criteria); 1/20 (added prenatal criteria); 1/21(refine criteria); 1/23 (revise criteria); 1/24 (revise and expand criteria)

Reviewed: 5/12, 5/13, 5/14, 1/18, 1/19, 1/22,