Geisinger

Geisinger Health Plan Policies and Procedure Manual

Policy: MP356

Section: Medical Policy

Subject: Genetic Testing for Mitochondrial Disorders

Applicable Lines of Business

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

I. Policy: Genetic Testing for Mitochondrial Disorders

II. Purpose/Objective:

To provide a policy of coverage regarding Genetic Testing for Mitochondrial Disorders

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: Genetic Testing for Mitochondrial Disorders
Mitochondrial disorders may be caused by mutation of a mitochondrial DNA (mtDNA) gene or mutation of a nuclear gene (nDNA).

Mitochondrial dysfunction should be considered in the differential diagnosis of any progressive multisystem disorder. A full evaluation for a mitochondrial disorder is often warranted in individuals with a complex neurologic picture or a single neurologic manifestation and other system involvement. Mitochondrial disorders can affect most organ systems, but a particular emphasis on the neuromuscular system and cardiovascular system is important.

CRITERIA FOR COVERAGE: REQUIRES PRIOR AUTHORIZATION BY A PLAN MEDICAL DIRECTOR OR DESIGNEE

Genetic testing (whole mtDNA sequencing and deletion/duplication analysis) for mitochondrial disorders (e.g, Alpers' syndrome; Leigh syndrome; Leber's hereditary optic neuropathy (LHON); mitochondrial encephalopathy, lactic acidosis and stroke-like episodes (MELAS); Myoclonic Epilepsy and Ragged-Red Fibers (MERRF); Chronic Progressive External Ophthalmoplegia (CPEO); Kearns-Sayre syndrome) will be considered medically necessary when the following criteria are met:

- Genetic counseling by a genetics professional has been completed; **and**
- Relevant biochemical testing for the suspected disorder has been complete (examples: plasma or CSF lactic acid, ketone bodies, acylcarnitine, or urine organic acids); **and**
- Whole mtDNA testing has not been previously performed
- Member's clinical presentation does not fit a well-described mendelian disorder or genetic syndrome for which single-gene or targeted nDNA panel testing is available; **or**
- Member is being concurrently tested through whole exome sequencing; **or**
- Member has one or more of the following clinical features: progressive wasting, milestone regression, ataxia, encephalopathy, seizures, developmental regression, lactic acidosis, and stroke-like episodes (MELAS), pigmentary retinopathy (NARP), mitochondrial myopathy, diabetes mellitus, sensorineural hearing loss or bilateral deafness, early-onset peripheral neuropathy, optic neuropathy, optic atrophy, ophthalmoplegia, ptosis, cardiomyopathy, heart block; **or**
- Family history is strongly suggestive mitochondrial inheritance (e.g. paternal transmission has been ruled out); and

EXCLUSIONS:
Requests for mitochondrial DNA sequencing and deletion/duplication analysis not meeting the criteria outlined above will be considered **unproven** and therefore **NOT COVERED.**

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.

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.

CODING ASSOCIATED WITH:
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.***

81440 Nuclear encoded mitochondrial genes (e.g., neurologic or myopathic phenotypes), genomic sequence panel, must include analysis of at least 100 genes, including BCS1L, C10orf2, COQ2, COX10, DGUOK, MPV17, OPA1, PDSS2, POLG, POLG2, RRM2B, SCO1, SCO2, SLC25A4, SUCLA2, SUCLG1, TAZ, TK2, and TYMP
81460 Whole Mitochondrial Genome Sequencing
81465 Whole Mitochondrial Genome Deletion/Duplication Analysis

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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Lieber DS, Calvo SE, Shanahan K, et al. Targeted exome sequencing of suspected mitochondrial disorders. Neurology. May 07 2013; 80(19): 1762-70.

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Legati A, Reyes A, Nasca A, et al. New genes and pathomechanisms in mitochondrial disorders unraveled by NGS technologies. Biochim Biophys Acta. Aug 2016; 1857(8): 1326-1335.

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Riley LG, Cowley MJ, Gayevskiy V, et al. The diagnostic utility of genome sequencing in a pediatric cohort with suspected mitochondrial disease. Genet Med. Jul 2020; 22(7): 1254-1261.

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

Devised: 3/22

Revised: 3/23 (Revise criteria)

Reviewed: