Genetic Testing for Spinal Muscular Atrophy - Single Service

Clinical Guidelines for Medical Necessity Review

Version: 1.0
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Important Notices

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Guideline Information:

Specialty Area: Laboratory Testing
Guideline Name: Genetic Testing for Spinal Muscular Atrophy (Single Service)

Literature review current through: 12/8/2023
Document last updated: 12/8/2023
Type: [**X**] Adult (18+ yo) | [_] Pediatric (0-17yo)

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Medical Necessity Criteria

Service: Genetic Testing for Spinal Muscular Atrophy

General Guidelines

- **Units, Frequency, & Duration:** A single test is performed as needed for the defined criteria.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach:** None.
- **Exclusions:** None.

Medical Necessity Criteria

Indications

➔ **Genetic Testing for Spinal Muscular Atrophy (SMA)** (SMN1 and SMN2 genes) is considered appropriate if **ALL** of the following are **TRUE**:[1-3]

- ◆ Diagnostic/screening testing for SMA, including **ANY** of the following:
  - Carrier screening for asymptomatic individuals for **ANY** of the following:
    - The individual has a family history of SMA or SMA-like disease; **OR**
    - The individual has an affected or carrier blood relative in whom a disease-causing SMA mutation has been identified; **OR**
    - Screening is for the reproductive partner of an individual affected with or carrier of SMA or SMA-like disease; **OR**
    - Prior to gamete donation if gamete recipient is a carrier; **OR**
    - For preconception or prenatal testing to evaluate the risk of having a child with SMA; **OR**
  - To confirm diagnosis upon detection of SMN1 gene mutation during newborn screening[5]; **OR**
  - To establish a diagnosis when SMA is suspected; **OR**
  - To determine gene therapy/targeted therapy in patients who have a diagnosis of SMA; **OR**

- For a genetic diagnosis prior to implantation when both parents have an identified disease-causing mutation; **OR**
- For prenatal diagnosis when evidenced by **ANY** of the following:
    - Both parents have an identified disease-causing mutation in the SMN1 gene; **OR**
    - The mother is a confirmed carrier and the father's status is unknown (e.g., unavailable for testing)[6]; **AND**

◆ The patient has received genetic counseling as evidenced by **ALL** of the following:[7]

- Performed by a professional with training in genetic topics related to the tests under consideration; **AND**
- Counseling involves **ALL** of the following:
    - Purpose of testing to be performed (e.g., to confirm, diagnose, or exclude genetic condition); **AND**
    - Identification of the patient's medical issues as they relate to testing (e.g., available prevention, surveillance, and treatment options and understanding any implications); **AND**
    - Discussion and obtaining informed consent; **AND**
    - Natural history of the condition (e.g., role of heredity); **AND**
    - Calculated genetic risks of the patient's three-generation family history; **AND**
    - Potential benefits, risks, and limitations of testing; **AND**
    - Potential impacts of testing (e.g., psychological, social, limitations of nondiscrimination statutes; **AND**
    - Test outcome scenarios (e.g., positive, negative, variant of uncertain significance).

Non-Indications

➔ **Genetic Testing for Spinal Muscular Atrophy (SMA)** (SMN1 and SMN2 genes) is not considered appropriate if **ANY** of the following are **TRUE**:

◆ Individuals who do not meet the criteria above.

Level of Care Criteria

Outpatient.

Procedure Codes (HCPCS/CPT)

HCPCS/CPT Code	Code Description
0236U	SMN1 (survival of motor neuron 1, telomeric) and SMN2 (survival of motor neuron 2, centromeric) (e.g., spinal muscular atrophy) full gene analysis, including small sequence changes in exonic and intronic regions, duplications and deletions, and mobile element insertions
81329	SMN1 (survival of motor neuron 1, telomeric) (e.g., spinal muscular atrophy) gene analysis; dosage/deletion analysis (e.g., carrier testing), includes SMN2 (survival of motor neuron 2, centromeric) analysis, if performed
81336	SMN1 (survival of motor neuron 1, telomeric) (e.g., spinal muscular atrophy) gene analysis; full gene sequence
81337	SMN1 (survival of motor neuron 1, telomeric) (e.g., spinal muscular atrophy) gene analysis; known familial sequence variant(s)

Medical Evidence

Keinath et al. (2021) reviewed the clinical relevance of testing for spinal muscular atrophy (SMA). Strong evidence exists for screening to identify couples where one or both partners are carriers. Screening enables a couple to make informed decisions about reproductive choices as well as treatment decisions once a child with SMA is born. Early detection improves outcomes of newborns who start treatment before motor neuron loss.[4]

Mercuri et al. (2018) provide recommendations for the diagnosis and management of SMA. Topics include diagnosis and genetics, physical therapy and rehabilitation, orthopedic care, growth and bone healthcare, nutrition, pulmonary care, acute care in the hospital setting, other organ system involvement, medications for SMA, and ethics and palliative care. Regarding testing, the standard "is a quantitative analysis of both SMN1 and SMN2 using multiplex ligation-dependent probe amplification (MLPA), quantitative polymerase chain reaction (qPCR) or next generation sequencing (NGS)."[8]

National and Professional Organization

The American College of Obstetricians and Gynecologists (ACOG) published two committee opinions on carrier screening. The focus of screening is on patients with a family history of SMA; however, ACOG recommends expanded carrier screening for SMA for all pregnant women or women considering pregnancy. Testing includes a complete blood count and screening for thalassemia and hemoglobinopathies. [9-10]

References

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Clinical Guideline Revision History/Information

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Review History	