HEREDITARY PERIPHERAL NEUROPATHIES
A UNIQUE APPROACH TO IMPROVING DIAGNOSTIC YIELD & VALUE IN NEUROPATHY EVALUATION
WHAT ARE HEREDITARY PERIPHERAL NEUROPATHIES?

Hereditary peripheral neuropathies are a relatively common diverse group of disorders with heterogeneous genetic causes. Due to the considerable overlap in the clinical phenotypes of various neuropathies, it is often difficult to distinguish these specific inherited disorders from sporadic, idiopathic, or acquired forms of neuropathy without genetic testing.

MAJOR CATEGORIES OF HEREDITARY PERIPHERAL NEUROPATHIES

1. Hereditary motor and sensory neuropathy (HMSN), also referred to as Charcot-Marie-Tooth (CMT)
2. Hereditary sensory and autonomic neuropathy (HSAN), or hereditary sensory neuropathy (HSN), if autonomic dysfunction is absent
3. Distal hereditary motor neuropathy (dHMN)
4. Hereditary spastic paraplegia (HSP) with neuropathy (complicated form, also referred to as HSMN type 5)
5. Syndromic or metabolic disorders with diverse organ involvements including nerve, some with available or evolving therapies

EXTENT OF DISEASE AND OVERLAP

WHY SHOULD I ORDER A COMPREHENSIVE EVALUATION?

Hereditary peripheral neuropathies are quite varied in their presentations and even more diverse in terms of their specific genetic causes. While they can sometimes be framed in terms of the extent of weakness, sensory involvement, and/or autonomic involvements, it is difficult to discern the appropriate test for many patients. A comprehensive testing approach with next-generation sequencing has been studied to show greater value in testing, and is therefore recommended.

Furthermore, previous testing approaches required testing a huge list of etiologies for acquired possibilities, while at the same time, trying to guess what individual gene may be most likely responsible. Those methods are extremely challenging, provide a low diagnostic yield, and result in high costs.

MEANINGFUL RESULTS THROUGH A MULTI-DISCIPLINARY APPROACH

At Mayo Clinic, we integrate comprehensive genetic testing with a multidisciplinary team of clinical peripheral neuropathy experts, laboratory scientists, and genetic counselors to provide the highest standard for mutation detection.

Our targeted approach allows for optimal mutation detection and interpretation though targeted capture techniques and unique reporting methods. This process eliminates the risk of false negative results compared to whole-exome sequencing and other capture techniques, which provides physicians with the confidence that disease-specific mutations have not been missed.
TESTING FOR THE DIAGNOSIS OF HEREDITARY NEUROPATHIES

<table>
<thead>
<tr>
<th>MAYO TEST ID</th>
<th>TEST NAME</th>
<th>TURNAROUND TIME</th>
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</thead>
<tbody>
<tr>
<td>PNPAN</td>
<td>Peripheral Neuropathy Expanded Panel by Next-Generation Sequencing</td>
<td>10 weeks</td>
</tr>
<tr>
<td>PMP22</td>
<td>PMP22, Peripheral Neuropathy, FISH (Deletion/Duplication)</td>
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<tr>
<td>HMSNP</td>
<td>Hereditary Motor and Sensory Neuropathy Panel by Next-Generation Sequencing (NGS)</td>
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<tr>
<td>HMNP</td>
<td>Hereditary Motor Neuropathy Panel by Next-Generation Sequencing (NGS)</td>
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<tr>
<td>HSNP</td>
<td>Hereditary Sensory/Autonomic Neuropathy Panel by Next-Generation Sequencing (NGS)</td>
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<td>HSPP</td>
<td>Hereditary Spastic Paraplegia Neuropathy Panel by Next-Generation Sequencing (NGS)</td>
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<tr>
<td>MSNP</td>
<td>Metabolic or Syndromic Neuropathy Panel by Next-Generation Sequencing (NGS)</td>
<td>10 weeks</td>
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WHICH TEST SHOULD I ORDER?

COMPREHENSIVE EVALUATION

Peripheral Neuropathy Expanded Panel by Next-Generation Sequencing (Mayo ID: PNPAN)

PHENOTYPE-SPECIFIC EVALUATIONS

- HSNP: Hereditary Sensory & Autonomic Neuropathy
- HMSNP: Hereditary Motor & Sensory Neuropathy
- HSPP: Hereditary Spastic Paraplegia with Neuropathy
- HMNP: Distal Hereditary Motor Neuropathy
- MSNP: Metabolic or Syndromic Neuropathy

SENSORY ▪ MOTOR □ AUTONOMIC
EXPERTISE AT MAYO CLINIC

Our board-certified laboratory directors in collaboration with clinical neurologists and genetic counselors at Mayo Clinic provide expertise in molecular genetic testing for inherited peripheral neuropathies.

FOR MORE INFORMATION ABOUT HEREDITARY PERIPHERAL NEUROPATHIES, VISIT

MayoMedicalLaboratories.com/HPN

CONSULT WITH MAYO CLINICGENETIC COUNSELORS ABOUT TESTING OPTIONS

Genetic counselors bring real value to proper test utilization by ensuring the most appropriate test has been ordered. On average, Mayo Clinic genetic counselors modify 8% of all reviewed genetic test orders1, reducing health care costs and benefiting patient care.

Mayo Clinic genetic counselors are available to:
- Support the ordering process.
- Provide additional information about testing options.
- Offer results interpretation.
- Assist with case review and coordination.


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