Overview

Useful For
Supporting the diagnosis of an autoimmune neuropathy

Profile Information

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Reporting Name</th>
<th>Available Separately</th>
<th>Always Performed</th>
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</thead>
<tbody>
<tr>
<td>IGG_M</td>
<td>IgG Monos. GM1</td>
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<tr>
<td>IGM_M</td>
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<td>IGG_D</td>
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<td>IGM_D</td>
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Reflex Tests

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<tbody>
<tr>
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Testing Algorithm

Screening tests are performed for IgG and IgM antibodies to GM1 and GD1b. If positive, the appropriate titer will be performed at an additional charge.

See Ganglioside Antibody Panel Algorithm in Special Instructions.

Special Instructions

- Ganglioside Antibody Panel Algorithm

Method Name
Enzyme-Linked Immunosorbent Assay (ELISA)

NY State Available
Yes

Specimen
**Specimen Type**
Serum

**Specimen Required**
Container/Tube:

**Preferred:** Red top

**Acceptable:** Serum gel

**Specimen Volume:** 1 mL

**Forms**
If not ordering electronically, complete, print, and send a Neurology Specialty Testing Client Test Request (T732) with the specimen.

**Specimen Minimum Volume**
0.5 mL

**Reject Due To**

<table>
<thead>
<tr>
<th>Gross hemolysis</th>
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</thead>
<tbody>
<tr>
<td>Gross lipemia</td>
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<tr>
<td>Gross icterus</td>
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**Specimen Stability Information**

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<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<td>Serum</td>
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<tr>
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<td>Frozen</td>
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<tr>
<td></td>
<td>Ambient</td>
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**Clinical and Interpretive**

**Clinical Information**

Neuropathy patients have variable sensory disturbance (loss or exaggerated sensation including with pain), weakness and autonomic involvements (sweat abnormalities, gastrointestinal dysfunction, and lightheadedness on standing). These symptoms are a result of injury to the distal nerves, roots, and ganglia or their gathering points (nerve plexus in the thighs and arms). Patients may have symmetric or asymmetric involvements of the extremities, trunk, and head including extraocular muscles. Subacute onsets and asymmetric involvements favor inflammatory or immune causes over inherited or metabolic forms. Depending on the specific inflammatory or immune mediated causes other parts of the nervous system may also be affected (brain, cerebellum, spinal cord). Nerve conduction and needle electromyography can help to classify the neuropathy as either: 1) primary axonal; 2) primary demyelinating; or 3) mixed axonal and demyelinating.

Among the immune-mediated peripheral neuropathies, autoantibodies to gangliosides represent an important class
of noncancer-associated autoimmune peripheral neuropathies. Gangliosides are glycosphingolipids that contain sialic acid and are present in many cell types most abundantly within neural tissues along their linings (myelin). Depending on the specific ganglioside autoantibody found and the antibody titer, in the appropriate clinical context, these findings may be supportive of a specific clinical diagnosis and may also be prognostic for treatment response.(1,2)

Specifically, in multifocal motor neuropathy (MMN) and multifocal acquired demyelinating sensory and motor (MADSAM) neuropathy, also known as Lewis-Sumner syndrome or multifocal chronic immune demyelinating polyradiculoneuropathy (CIDP), the presence ganglioside autoantibodies, particularly high-titer GM1-IgM autoantibodies, maybe supportive of the diagnosis in the correct clinical context. Furthermore, ganglioside seropositivity has been associated with favorable response to immunotherapy amongst patients suspected to have MMN during the initial clinical evaluation.(1)

Additionally, the presence of ganglioside antibodies may support a diagnosis of Guillain-Barre syndrome (GBS) in the appropriate clinical context.(3) GBS is one class of autoimmune peripheral neuropathies, and comprises a spectrum of disorders including acute inflammatory demyelinating polyradiculoneuropathy, acute motor axonal neuropathy, and acute motor and sensory axonal neuropathy. This class of autoimmune neuropathies is generally characterized by an acute onset. Although the diagnosis of these disorders is dependent on clinical evaluation and electrophysiologic studies, assessment of ganglioside antibodies can further support the diagnosis.

**Reference Values**

**Profile Information:**

- IGG_M: Negative
- IGM_M: Negative
- IGG_A: Negative
- IGM_A: Negative
- IGG_D: Negative
- IGM_D: Negative

**Reflex Information:**

- IGMTS: <1:2000
- IMMTS: <1:4000
- IGATS: <1:16000
- IMATS: <1:8000
- IGDTS: <1:2000
- IMDTS: <1:2000

**Interpretation**

High titers (>1:8,000) favor the diagnosis of multifocal motor neuropathy (MMN) and multifocal acquired demyelinating sensory and motor (MADSAM) over motor neuron disease. About 30% to 50% of patients with these
clinical syndromes or the pure motor variant of chronic inflammatory demyelinating polyneuropathy have ganglioside autoantibodies. High-antibody titers appear to be a specific, but not sensitive, marker of those related disorders.

**Cautions**

Positive titer values less than 1:16,000 may be found in motor neuron disease, monoclonal gammopathy of uncertain significance (MGUS), and healthy individuals. High titers are very specific of an autoimmune neuropathy.

This test is not diagnostic and should be interpreted in the appropriate clinical context.

This test does not include testing for GD1a or GQ1b autoantibodies.

**Clinical Reference**


**Performance**

**Method Description**

Antiganglioside antibodies in serum are detected by enzyme-linked immunosorbent assays (ELISA). Ganglioside antigens (GM1, Asialo GM1, and GD1b) adsorbed to wells of ELISA plates are incubated with patient's serum or controls. The plates are washed and alkaline phosphatase conjugated antihuman IgG or IgM antibodies (ie, secondary) are added in a second incubation. The wash step is repeated and enzyme substrate is added. Absorbance is measured and results are expressed as antibody titer, ie, the greatest dilution at which the absorbance of wells that contain patient serum is greater than 2.0 times the mean absorbance of normal sera tested simultaneously.(Taylor BV, Gross L, Windebank AJ: The sensitivity and specificity of anti-GM1 antibody testing. Neurology 1996 October;47:951-955)

**PDF Report**

No

**Day(s) and Time(s) Test Performed**

Tuesday, Thursday; 12 p.m.

**Analytic Time**

5 days

**Maximum Laboratory Time**

8 days

**Specimen Retention Time**

28 days

**Performing Laboratory Location**

Rochester

**Fees and Codes**
Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

83516 x 6

83520 x 6 (if applicable)

LOINC® Information

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