Myelin Oligodendrocyte Glycoprotein (MOG) Antibody Evaluation

Diagnose Neuromyelitis Optica Spectrum Disorder sooner
Recent research and advances in technology have led to a better understanding of the role antibodies play in diagnosis, treatment, and prognosis of central nervous system disorders. Identifying antibodies that are contributing factors in diseases, such as Neuromyelitis Optica Spectrum Disorder (NMOSD), allows physicians to provide patients a clear diagnosis and implement an appropriate treatment regimen designed to reduce the risk of relapse.

Researchers have now discovered one particular antibody—Myelin Oligodendrocyte Glycoprotein (MOG)—that can be present in NMOSD and other autoimmune disorders. The new MOG antibody evaluation from Athena Diagnostics may help physicians and their patients navigate through the complexity of NMOSD on a streamlined path to a diagnosis.

What is NMOSD?

NMOSD is an immune-mediated chronic, often relapsing, inflammatory disease that predominantly affects the optic nerve and spinal cord. It can sometimes be mistaken for MS, because many of the symptoms overlap between the two diseases.

- NMOSD attacks generally have a sudden, severe onset, causing immediate disability, including blindness and paralysis
- MS episodes tend to be mild, especially in the early stages of the disease
- Patients with NMOSD often simultaneously present with optic neuritis and transverse myelitis
- NMOSD is generally mediated by anti-aquaporin (AQP4) antibodies. An AQP4 test is generally negative in MS patients.

The limitations of AQP4 antibody testing

Based upon the patient’s clinical presentation, testing for AQP4 is generally recognized as the first path to a diagnosis. A high AQP4 reading may indicate a more aggressive therapy is needed to prevent a relapse.

However, AQP4 is not the only antibody that can play a role in NMOSD. A growing body of research indicates that 10%–50% of patients with NMOSD still test negative for AQP4, and 15%–35% of these patients end up testing positive for MOG antibodies.
MOG antibody testing can provide insight

No one clinical characteristic is exclusive to NMOSD, so it can be difficult to make a definitive diagnosis. The patient’s presentation is the first step to an accurate diagnosis. Once their clinical symptoms have been reviewed, consider testing for AQP4 and MOG antibodies in the quest for an accurate diagnosis of NMOSD.

MOG-antibody positive and AQP4-antibody positive patients present differently

MOG-positive patients generally present with a different clinical phenotype than patients with AQP4 antibodies.

- More frequently male
- Had more bilateral, simultaneous optic neuritis attacks
- More often had a single attack
- Lower disability range via Expanded Disability Status Scale (EDSS)
- Lack of nausea/vomiting episode
- Patients with MOG antibodies usually have a better outcome than AQP4-positive patients.

MOG antibodies in NMOSD patients

While an understanding of MOG’s role in humans is still relatively new, the antibody can be present in a number of central nervous system inflammatory diseases, including NMOSD, acute disseminated encephalomyelitis (ADEM), and adult and pediatric MS. The NMOSD phenotype is most commonly observed in patients with MOG antibodies.

MOG antibodies are a component of myelin proteins in the central nervous system, predominantly located in the outermost surface of myelin sheaths and serving as a biologically accessible antigenic target for circulating antibodies.

While the percentage of patients with MOG antibodies in comparison to AQP4 antibodies remains around 10%, anti-MOG antibodies can serve as a diagnostic tool in patients with an AQP4-negative NMOSD phenotype, and these patients should be tested in accordance with the patient’s clinical presentation.
The MOG Antibody Evaluation streamlines the path to diagnosis and treatment for autoimmune diseases through every stage of care: screening, diagnosis, monitoring, and progress. Contact us by phone at 1.800.394.4493.

Test ordering information for MOG Antibody

<table>
<thead>
<tr>
<th>Test code</th>
<th>Test name</th>
<th>CPT code(s)*</th>
<th>Serum, red-top tube (no additives) or SST® Serum Separation Tubes</th>
<th>Turnaround time</th>
<th>Specimen Stability</th>
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<tbody>
<tr>
<td>1523</td>
<td>MOG Antibody Evaluation with reflex to titer</td>
<td>86255</td>
<td>Preferred: 2.5 mL (0.5 mL minimum) serum Alternate: 2 mL (0.5 mL minimum) CSF CSF should be collected in plastic screw cap vials.</td>
<td>3–7 days</td>
<td>Ambient 3 days, Refrigerated 45 days, Frozen 39 days</td>
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<tr>
<td>1287</td>
<td>NMO Spectrum Evaluation (AQP4, CBA reflex to MOG, CBA)</td>
<td>86255 to 86255</td>
<td>Preferred: 2 mL (0.5 mL minimum) serum Alternate: 2 mL (0.5 mL minimum) CSF CSF should be collected in plastic screw cap vials.</td>
<td>7–14 days</td>
<td>Ambient 72 hours, Refrigerated 30 days, Frozen 30 days</td>
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<tr>
<td>1284</td>
<td>NMO Spectrum Evaluation (AQP4, ELISA reflex to MOG, CBA)</td>
<td>83516 to 86255</td>
<td>Preferred: 2 mL (0.5 mL minimum) serum</td>
<td>7–14 days</td>
<td>Ambient 72 hours, Refrigerated 40 days, Frozen 39 days</td>
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<tr>
<td>1282</td>
<td>Aquaporin-4 (AQP4) (NMO-IgG) Antibody, CBA with reflex to titer</td>
<td>86255</td>
<td>Preferred: 2 mL (0.5 mL minimum) serum Alternate: 2 mL (0.5 mL minimum) CSF CSF should be collected in plastic screw cap vials.</td>
<td>3–7 days</td>
<td>Ambient 72 hours, Refrigerated 30 days, Frozen 30 days</td>
</tr>
<tr>
<td>103</td>
<td>Aquaporin-4 (AQP4) (NMO-IgG) Antibody, ELISA</td>
<td>83516</td>
<td>Preferred: 2 mL (0.5 mL minimum) serum</td>
<td>5–7 days</td>
<td>Ambient 72 hours, Refrigerated 40 days, Frozen 5 months</td>
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Special Transport Requirements: Samples may be shipped frozen, refrigerated, or at ambient temperature. Components of panel — Myelin Oligodendrocyte Glycoprotein (MOG) Antibody, CBA.

* The CPT codes provided are based on AMA guidelines and are for informational purposes only. CPT coding is the sole responsibility of the billing party. Please direct any questions regarding coding to the payer being billed.

Athena Diagnostics offers a comprehensive test menu for autoimmune diseases through every stage of care: screening, diagnosis, monitoring, and progress. Contact us by phone at 1.800.394.4493.

References