For your patients with NMOSD

KNOWING sooner is critical to effective treatment

What is NMOSD?

Neuromyelitis optica spectrum disorder (NMOSD) is an immune-mediated, chronic, and often relapsing inflammatory disease that predominantly affects the optic nerve and spinal cord.[1] It can sometimes be mistaken for multiple sclerosis (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, while MS episodes tend to be more variable or milder, especially in the early stages of the disease
- NMOSD patients often simultaneously present with optic neuritis and transverse myelitis[1]
- NMOSD is generally mediated by anti-aquaporin (AQP4) antibodies. An AQP4 test is generally negative in MS patients[2]

The limitations of AQP4 antibody testing

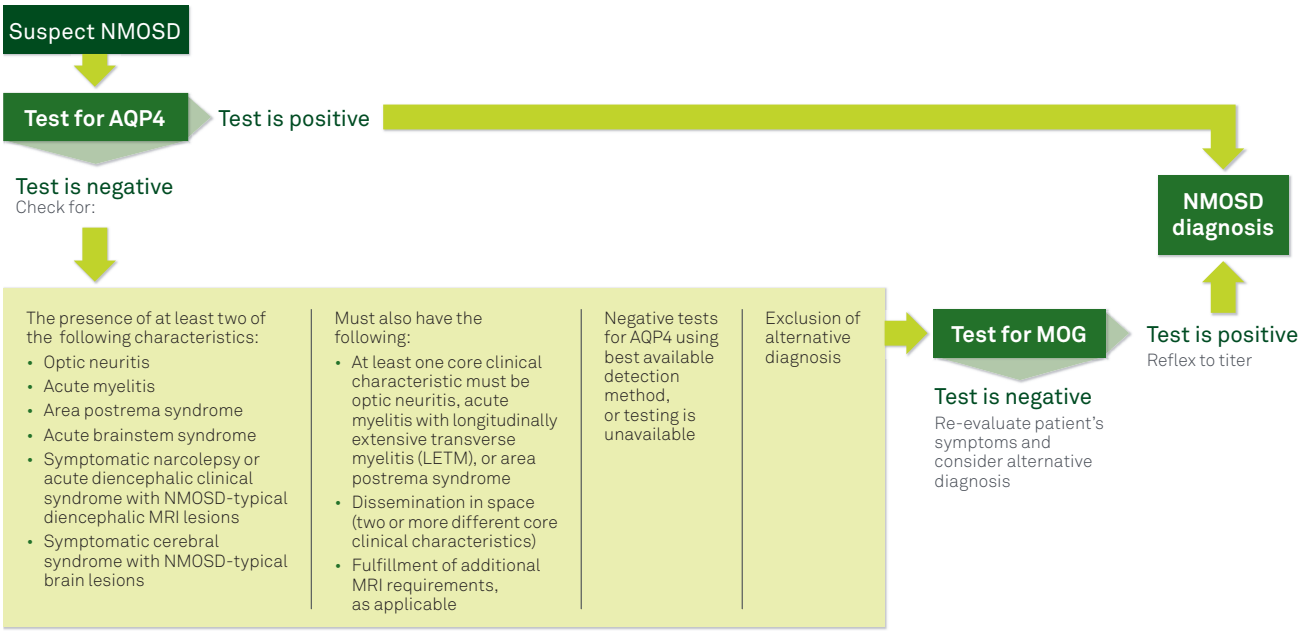
Based upon the patient's clinical presentation, testing for AQP4 is generally recognized in the literature as the fi rst path to diagnosis. However, AQP4 is not the only antibody that can play a role in NMOSD. A growing body of research indicates that 10%-50% of patients with NMOSD often test negative for AQP4,[3] and 15%-35% of these patients test positive for MOG antibodies.[1,4,5,6]

MOG antibody testing can provide insight and streamline the path to diagnosis and treatment

No one clinical characteristic is exclusive to NMOSD, 7 so it can be difficult to make a definitive diagnosis. The comprehensive test menu from Quest Diagnostics includes MOG, AQP4, and reflex options that can deliver clear, positive identification to help you diagnose NMOSD and treat patients sooner.

Early diagnosis is critical, because treatments that are effective for MS or other demyelinating disorders might be ineffective, or even harmful, for patients with NMOSD.5 When used in conjunction with other clinical testing, the NMO Spectrum Evaluation (AQP4 with reflex to MOG) can help physicians make an informed diagnosis, and aide in clinical decision management. 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 to help determine the diagnosis of NMOSD.

Diagnostic criteria for NMOSD without AQP4 or NMOSD with unknown AQP4-IgG status[7]



This algorithm is intended as a guide for using Quest Diagnostics laboratory tests for diagnosing neuromyelitis optica spectrum disorder (NMOSD), based on Wingerchuck et al, 2015. The algorithm is provided for informational purposes only and is not intended as medical advice. A physician's test selection and interpretation, diagnosis, and patient management decisions should be based on his/her education, clinical expertise and assessment of the patient.

Test-ordering information for MOG antibody, AQP4 antibody, and the new NMOSD Evaluation

Test code	Test name	CPT code(s)	Sample collection type	Sample specifications	Turnaround time	Specimen stability		
						Ambient	Refrigerated	Frozen
36952	Myelin Oligodendrocyte Glycoprotein (MOG) Antibody with Reflex to Titer, Serum	86362 with possible reflex to 86362	Serum	Preferred: 2 mL in red-top tube (no gel) 0.5 mL minimum	3-7 days	7 days	14 days	21days
36954	Myelin Oligodendrocyte Glycoprotein (MOG) Antibody with Reflex to Titer, CSF	86362 with possible reflex to 86362	CSF	Preferred: 2 mL in plastic screw-cap vial 0.5 mL minimum	3-7 days	7 days	14 days	21days
38321	Aquaporin-4 (AQP4) (NMO-IgG) Antibody with Reflex to Titer, Serum	86052 with possible reflex to 86052	Serum	Preferred: 2 mL in red-top tube (no gel) 0.5 mL minimum	3-7 days	7 days	14 days	21days
38323	Aquaporin-4 (AQP4) (NMO-IgG) Antibody with Reflex to Titer, CSF	86052 with possible reflex to 86052	CSF	Preferred: 2 mL in a screw-cap vial 0.5 mL minimum	3-7 days	7 days	14 days	21days
38312	NMO Spectrum Evaluation (AQP4 with Reflex to MOG), Serum	86052 with reflexes	Serum	Preferred: 2 mL in red-top tube (no gel) 0.5 mL minimum	7-10 days	7 days	14 days	21days
38313	NMO Spectrum Evaluation (AQP4 with Reflex to MOG), CSF	86052 with reflexes	CSF	Preferred: 2 mL in a screw-cap vial 0.5 mL minimum	7-10 days	7 days	14 days	21days

References
1. Kitley J, Waters P, Woodhall M, et al. Neuromyelitis optica spectrum disorders with aquaporin-4 and myelin-oligodendrocyte glycoprotein antibodies: a comparative study. *JAMA Neurol*. 2014;71(3):276-283. doi: 10.1001/jamaneurol.2013.5857 2. Kim SM, Kim SJ, Lee HJ, et al. Differential diagnosis of neuromyelitis optical spectrum disorders. *Ther Adv Neurol Disord*. 2017;10(7): 265-289. 3. Pröbstel AK, Rudolf G, Dornmair K, et al. Anti-MOG antibodies are present in a subgroup of patients with a neuromyelitis optica phenotype. *J Neuroinfl ammation*. 2015;12:46. doi: 10.1186/s12974-015-0256-1 4. Kezuka T, Usui Y, Yamakawa N, et al. Relationship between NMO-antibody and anti-MOG antibody in optic neuritis. *J Neuroophthalmol*. 2012;32(2):107-110. doi: 10.1097/WNO.0b013e31823c9b6c 5. Sato DK, Callegaro D, Lana-Peixoto MA, et al. Distinction between MOG antibody-positive and AQP4 antibody-positive NMO spectrum disorders. Neurology. 2014;82(6):474-481 6. Waters P, Woodhall M, O'Connor KC, et al. MOG cell-based assay detects non-MS patients with infl ammatory neurologic disease. *Neurol Neuroimmunol Neuroinfl amm*. 2015;2(3):e89. doi: 10.1212/NXI. 0000000000000089 7. Wingerchuck DM, Banwell B, Bennett JL, et al. International consensus diagnostic criteria for neuromyelitis optica spectrum disorders. *Neurology*. 2015;85(2):177-189. doi: 10.1212/WNL.0000000000001729 8. Höftberger R, Sepulveda M, Armangue T, et al. Antibodies to MOG and AQP4 in adults with neuromyelitis optica and suspected limited forms of the disease. *Mult Scler.* 2015;21(7):866-874. doi: 10.1177/1352458514555785 9. Hyun JW, Woodhall MR, Kim SH, et al. Longitudinal analysis of myelin oligodendrocyte glycoprotein antibodies in CNS infl ammatory diseases. *J Neurol Neurosurg Psychiatry*. 2017;88(10):811-817. doi: 10.1136/jnnp-2017-315998

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Test codes may vary by location. Please contact your local laboratory for more information.

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