Immunological testing for **autoimmune encephalitis**

Encephalitis Antibody Evaluation

Clinical clues to autoimmune encephalitis

Autoimmune encephalitis is a relatively new category of immune-mediated disease involving the central nervous system.[1] It can impair function, and present via a subacute onset of memory disturbance, cognitive impairment, seizures, psychosis, and a loss of consciousness or even coma.

The direct causes of autoimmune encephalitis are unknown; it is often accompanied by a paraneoplastic disorder or exposure to common bacteria (streptococcus or mycoplasma pneumonia, with or without active infection).

The importance of an early diagnosis

Autoimmune encephalitis can be a difficult clinical diagnosis for physicians due to:

- Overlapping clinical, imaging, and laboratory features that mimic other disorders
- Symptoms that can appear at various times and intensities

Following a complete clinical evaluation—including appropriate neuroimaging tests—screening tests that can identify the correct pathophysiology of autoimmune encephalitis can help physicians select an appropriate first-line therapy, which often consists of corticosteroids, IV immunoglobulin (IVIg), plasma exchange, or tumor removal.

Timely initiation of the appropriate therapy gives patients the best chance at a successful recovery.[1] Research shows that 50% of patients with anti-NMDA receptor encephalitis show improvement within 4 weeks of receiving treatment, and 80% of patients have partial or complete recovery following treatment.[2]

A comprehensive testing solution that streamlines the path to diagnosis

The Autoimmune Encephalitis Evaluation panel is built on 25 antibodies commonly found in autoimmune encephalitis. A 3- to 14-day turnaround can be significant, allowing physicians to establish an effective treatment protocol and halt the progression of devastating symptoms.

3 reasons to choose neuroimmunological testing from Quest Diagnostics

- **Turnaround time** of 3- to 14-days can help physicians make a differential diagnosis and initiate appropriate treatment
- **Cell-based assay (CBA) panel** is always performed, and includes NMDA antibodies that are consistent with limbic encephalitis
- This panel includes the **most prevalent encephalitis antibodies,** including Ma2/Ta

Quest Diagnostics®

Encephalitis Antibody Evaluation

The Encephalitis Antibody Evaluation with Reflex to Titer and Line Blot, Serum consists of 3 distinct panels, with the appropriate titer reflex if an antibody is positively identified.

Always performed		Reflex tests			
Tissue immunofluorescence (IFA) panel	If tissue pattern suggests one or more of the following analytes (ANNA1 (Hu), ANNA2 (Ri), PCA1 (Yo), Ma2/Ta, CV2 (CRMP5), Amphiphysin, AGNA (SOX1), GAD65, DNER)	Line blot of following analytes—ANNA1 (Hu), ANNA2 (Ri), PCA1 (Yo), Ma2/Ta, CV2 (CRMP5), Amphiphysin, AGNA (SOX1), GAD65, DNER, Zic4			
1 ANNA1 (Hu) Ab IFA					
2 ANNA2 (Ri) Ab IFA					
3 ANNA3 Ab IFA	If tissue IFA pattern suggests ANNA3	*ANNA3* Titer			
4 PCA1 (Yo) Ab IFA					
5 PCA2 Ab IFA	If tissue IFA pattern suggests PCA2	*PCA2* Titer			
6 PCA-Tr (DNER) Ab IFA	If tissue IFA pattern suggests PCA-Tr (DNER) and Western Blot DNER negative and Yo negative	*DNER* CBA IFA	If positive	*DNER* Titer	
7 AGNA(SOX1) Ab IFA					
8 Amphiphysin Ab IFA					
9 CRMP5(CV2) Ab IFA					
10 GAD65 Ab IFA					
11 Ma2/Ta Ab IFA					
12 Myelin Ab IFA	If tissue IFA pattern suggests Myelin	Myelin Antibody IFA, Titer MAG Western Blot	if positive	MAG-SGPG and MAG ELISA	
13 Aquaporin-4 Ab IFA					
Cell-based assay (CBA) panel					
1 NMDAR1 Ab CBA	If NMDAR1 is positive	NMDAR1 Titer			
2 AMPAR1 Ab CBA	if AMPAR1 is positive	AMPAR1 Titer			
3 AMPAR2 Ab CBA	if AMPAR2 is positive	AMPAR2 Titer			
4 GABABR Ab CBA	if GABABR is positive	GABABR Titer			
5 LGI-1 Ab CBA	if LGI-1 is positive	LGI-1 Titer			
6 CASPR2 Ab CBA	if CASPR2 is positive	CASPR2 Titer			
7 DPPX Ab CBA	if DPPX is positive	DPPX Titer			
8 Aquaporin 4 Ab CBA	if AQP4 is positive	AQP4 Titer			
Radioimmunoassay (RIA) panel					
1 AChr Ganglionic Ab RIA					
2 VGCC Type P/Q Ab, RIA					
3 VGCC Type N Ab, RIA					
4 VGKC Ab, RIA					

Test ordering information

Test code	Test name	CPT codes*	Preferred specimen	Turnaround time	Specimen stability		
					Ambient	Refrigerated	Frozen
94955	Encephalitis Antibody Evaluation with Reflex to Titer and Line Blot, Serum	86255 (x20), 86341, 83519 (x4)	Red-top tube Preferred volume: 6mL serum Minimum volume: 3.5mL serum	3–14 days	7 days	14 days	21 days
94958	Encephalitis Antibody Evaluation with Reflex to Titer and Line Blot, CSF	86255 (x20), 83519, 86341	Sterile leak-proof container Preferred volume: 6mL CSF Minimum volume: 3.5mL CSF	3–14 days	7 days	14 days	21 days

*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.

Quest Diagnostics offers a comprehensive test menu for autoimmune diseases through the stages of care: screening, diagnosis, monitoring, and progress. Contact us by phone at 1.866.MYQUEST (1.866.697.8378).

References

1. Kelley BP, Patel SC, Marin HL, Corrigan JJ, Mitsias PD, Griffith B. Autoimmune encephalitis: pathophysiology and imaging review of an overlooked diagnosis. *Am J Neuroradiol*.2017;38(6):1070-1078. doi: 10.3174/ajnr.A5086
2. Titulaer MJ, McCracken L, Gabilondo I, Armangue T, Glaser C, Iizuka T. Treatment and prognostic factors for long-term outcome in patients with anti-NMDA receptor encephalitis: an observational cohort study. *Lancet Neurol*. 2013;12(2):157-165. doi: 10.1016/s1474-4422(12)70310-1

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