

Overview

Useful For

Diagnosing multiple sclerosis, especially helpful in patients with equivocal clinical or radiological findings

Profile Information

Test ID	Reporting Name	Available Separately	Always Performed
OLIGC	CSF Bands	No, (Order OLIG, submit CSF and Serum)	Yes
OLIGS	Serum Bands	No, (Order OLIG, submit CSF and Serum)	Yes
SFINC	IgG Index, CSF	No, (Order SFIN, submit CSF and Serum or CASF for CSF only)	Yes
SFINS	IgG, S	No, (Order SFIN, submit CSF and Serum)	Yes

Method Name

OLIGC, OLIGS: Isoelectric Focusing (IEF) with IgG Immunoblot Detection

SFINC, SFINS: Nephelometry

NY State Available

Yes

Specimen

Specimen Type

CSF
Serum

Specimen Required

Both serum and spinal fluid are required. Spinal fluid must be obtained within 1 week of serum draw.

Specimen Type: Serum

Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Specimen Volume: 1 mL

Collection Instructions:Label specimen as serum.

Specimen Type: Spinal fluid

Container/Tube: Sterile vial

Specimen Volume: 1mL

Collection Instructions:Label specimen as spinal fluid.

Forms

If not ordering electronically, complete, print, and send a [Neurology Specialty Testing Client Test Request \(T732\)](#) with the specimen.

Specimen Minimum Volume

Serum, Spinal Fluid: 0.5 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	Reject
Gross icterus	OK
Criteria apply to serum specimens only. For CSF specimens, the criteria do not apply.	

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
CSF	Refrigerated (preferred)	14 days	
	Ambient	14 days	
	Frozen	14 days	
Serum	Refrigerated (preferred)	14 days	
	Ambient	14 days	
	Frozen	14 days	

Clinical and Interpretive

Clinical Information

Multiple sclerosis (MS) is a chronic inflammatory demyelinating disease characterized by visual, motor, and sensory disturbances. The diagnosis of MS is dependent on clinical, radiological, and laboratory findings. The detection of increased intrathecal immunoglobulin (Ig) synthesis is the basis for current diagnostic laboratory tests for MS. These tests include the cerebrospinal fluid (CSF) IgG index and CSF oligoclonal band detection.

Reference Values

OLIGOCLONAL BANDS

<4 bands

CSF INDEX

CSF IgG index: 0.00-0.85

CSF IgG: 0.0-8.1 mg/dL

CSF albumin: 0.0-27.0 mg/dL

Serum IgG

0-4 months: 100-334 mg/dL

5-8 months: 164-588 mg/dL

9-14 months: 246-904 mg/dL

15-23 months: 313-1,170 mg/dL

2-3 years: 295-1,156 mg/dL

4-6 years: 386-1,470 mg/dL

7-9 years: 462-1,682 mg/dL

10-12 years: 503-1,719 mg/dL

13-15 years: 509-1,580 mg/dL

16-17 years: 487-1,327 mg/dL

> or =18 years: 767-1,590 mg/dL

Serum albumin: 3,200-4,800 mg/dL

CSF IgG/albumin: 0.0-0.21

Serum IgG/albumin: 0.00-0.40

CSF IgG synthesis rate: 0-12 mg/24 hours

Interpretation

Oligoclonal banding (OCB): > or =4 cerebrospinal fluid (CSF)-specific bands are consistent with multiple sclerosis (MS).

CSF IgG index: >0.85 is consistent with MS.

Abnormal CSF IgG indexes and OCB patterns have been reported in 70% to 80% of MS patients. If both tests are performed, at least 1 of the tests has been reported to be positive in more than 90% of multiple sclerosis patients. A newer methodology for OCB detection, isoelectric focusing, is utilized in this test and has been reported to be more sensitive (90%-95%).

The presence of OCB or elevated CSF IgG index is unrelated to disease activity.

Cautions

Increased intrathecal Ig synthesis may occur in other inflammatory central nervous system diseases and, therefore, these assays are not specific for multiple sclerosis (specificity=95%).

Supportive Data

In early 2003, we compared the isoelectric focusing (IEF) oligoclonal banding (OCB) assay to our previous high-resolution agarose OCB assay, as well as the cerebrospinal fluid (CSF) IgG index. The IEF assay requires a smaller specimen volume and is easier to interpret than the agarose assay. Concordant normal samples usually had 0 bands by IEF, but 1 band by agarose. The concordant positive samples had an average of 11 bands by IEF and 2 bands on agarose. Among 19 cases of definite multiple sclerosis (MS), the IEF assay had a sensitivity of 95%, the agarose assay had a sensitivity of 63%, and the CSF index had a sensitivity of 74%. Among 57 consecutive non-MS cases, the IEF assay had a specificity of 95% and the agarose and CSF index assays had specificities of 97%. These data indicate a 32% increase in sensitivity and a 2% decrease in specificity for the IEF OCB assay.

Clinical Reference

1. Andersson M, Alvarez-Cermeno J, Bernardi G, et al: Cerebrospinal fluid in the diagnosis of multiple sclerosis: a consensus report. *J Neurol Neurosurg Psychiatry* 1994 Aug;57(8):897-902
2. Tourtellotte WW, Walsh MJ, Baumhefner RW, et al: The current status of multiple sclerosis intra-blood-brain-barrier IgG synthesis. *Ann NY Acad Sci* 1984;436:52-67

Performance**Method Description**

The oligoclonal banding (OCB) assay requires paired cerebrospinal fluid (CSF) and serum samples. Unconcentrated CSF and diluted serum are electrophoresed by isoelectric focusing. The separated IgG bands are visualized by an IgG immunoblot, and oligoclonal bands that are present in the CSF and not in the serum are reported. The assay uses reagents from Helena Laboratories.(Keir G, Luxton RW, Thompson EJ: Isoelectric focusing of cerebrospinal fluid immunoglobulin G: an annotated update. *Ann Clin Biochem* 1990 September;27[5]:436-443)

The CSF IgG index also requires paired CSF and serum samples. The CSF and serum IgG and albumin are determined by immunonephelometry on a Siemens Nephelometer II. The CSF IgG index and synthesis rate are calculated and reported. In addition, the serum IgG and albumin, CSF IgG and albumin, and serum and CSF IgG:albumin ratios are reported.(Markowitz H, Kokmen E: Neurologic diseases and the cerebrospinal fluid immunoglobulin profile. *Mayo Clin Proc* 1983 April;58[4]:273-274; instruction manual: Siemens Nephelometer II 1999)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Saturday; 7 a.m.-12 p.m.

Analytic Time

2 days

Maximum Laboratory Time

3 days

Specimen Retention Time

Stored serum and CSF: 2 weeks

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 has been cleared or approved by the U.S. Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

82040

82042

82784 x 2

83916 x 2

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
MSP2	Multiple Sclerosis Profile	55121-8

Result ID	Test Result Name	Result LOINC Value
2783	Serum Bands	56974-9
INDEX	IgG Index, CSF	14117-6
8017	CSF Bands	56764-4
IGG_S	IgG, S	2465-3
ALB_S	Albumin, S	1751-7
23611	CSF Olig Bands Interpretation	49852-7
IGG_C	IgG, CSF	2464-6
ALB_C	Albumin, CSF	1746-7
AIGAS	IgG/Albumin, S	6782-7
AIGAC	IgG/Albumin, CSF	2470-3
SRATE	Synthesis Rate, CSF	14116-8