

Overview

Useful For

Aiding in the diagnosis of multiple sclerosis and other central nervous system inflammatory conditions

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
SFINC	IgG Index, CSF	No	Yes
SFIGS	IgG, S	No	Yes
ALBS1	Albumin, S	Yes, (order ALB)	Yes

Method Name

SFINC, SFIGS: Nephelometry  
ALBS1: Photometric

NY State Available

Yes

Specimen

Specimen Type

CSF  
Serum

Specimen Required

- Both serum and spinal fluid are required.
- Spinal fluid must be obtained within 7 days of serum collection.
  - Two individual serum samples are required.

Collection Container/Tube:

Preferred: Serum gel  
Acceptable: Red top

Submission Container/Tube: 2 Plastic vials

Specimen Volume: 2 mL in 2 plastic vials, each vial containing 1 mL

Collection Instructions: Within 2 hours of collection, centrifuge and aliquot serum into 2 plastic vials.

Specimen Type: Spinal fluid

Container/Tube: Sterile vial

**Preferred:** Collection vial number 2  
**Specimen Volume:** 1 mL  
**Collection Instructions:** Label specimen as SFINC.

**Specimen Minimum Volume**  
Serum: 1 mL in 2 plastic vials, each vial containing 0.5 mL; Spinal fluid: 0.5 mL

Reject Due To

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

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
CSF	Refrigerated (preferred)	28 days	
	Ambient	14 days	
	Frozen	28 days	
Serum	Refrigerated (preferred)	14 days	
	Ambient	7 days	
	Frozen	28 days	

Clinical & Interpretive

Clinical Information

Elevation of IgG in the cerebrospinal fluid (CSF) of patients with inflammatory diseases of the central nervous system (CNS), such as multiple sclerosis, neurosyphilis, acute inflammatory polyradiculoneuropathy, and subacute sclerosing panencephalitis may be due to local (intrathecal) synthesis of IgG.

The CSF index is the CSF IgG to CSF albumin ratio compared to the serum IgG to serum albumin ratio. The CSF index is, therefore, an indicator of the relative amount of CSF IgG compared to serum. Any increase in the index reflects IgG production in the CNS. The IgG synthesis rate is a mathematical manipulation of the CSF index data and can also be used as a marker for CNS inflammatory diseases. The test is commonly ordered with oligoclonal banding or immunoglobulin kappa free light chains in CSF to aid in the diagnosis of demyelinating conditions.

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**Reference Values**

CSF index: 0.00-0.70

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**

> or =12 months: 3,500-5,000 mg/dL

Reference values have not been established for patients who are younger than 12 months.

CSF IgG/albumin: 0.00-0.21

Serum IgG/albumin: 0.0-0.4

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

Albumin quotient: <14

**Interpretation**

Cerebrospinal fluid (CSF) IgG synthesis rate indicates the rate of increase in the daily CSF production of IgG in milligrams per day. A result greater than 12 mg/24 h is elevated.

A CSF IgG index greater than 0.70 is elevated and indicative of increased synthesis of IgG.

**Cautions**

The cerebrospinal fluid IgG index can be elevated in other inflammatory demyelinating diseases, such as neurosyphilis, acute inflammatory polyradiculoneuropathy, and subacute sclerosing panencephalitis.

**Clinical Reference**

1. Tourtellotte WW, Walsh MJ, Baumhefner RW, Staugaitis SM, Shapshak P. The current status of multiple sclerosis intra-blood-brain-barrier IgG synthesis. Ann NY Acad Sci. 1984;436:52-67
2. Bloomer LC, Bray PF: Relative value of three laboratory methods in the diagnosis of multiple sclerosis. Clin Chem. 1981 Dec;27(12):2011-2013
3. Hische EA, van der Helm HJ: Rate of synthesis of IgG within the blood-brain barrier and the IgG index compared in the diagnosis of multiple sclerosis. Clin Chem. 1987 Jan;33(1):113-114

4. Thompson AJ, Banwell BL, Barkhof F, et al: Diagnosis of multiple sclerosis: 2017 revisions of the McDonald criteria. Lancet Neurol. 2018 Feb;17(2):162-73. doi:10.1016/S1474-4422(17)30470-2

5. Gurtner KM, Shosha E, Bryant SC, et al: CSF free light chain identification of demyelinating disease: comparison with oligoclonal banding and other CSF indexes. Clin Chem Lab Med. 2018 Jun 27;56(7):1071-1080. doi:10.1515/cclm-2017-0901

6. Rifai N, Chiu, RWK, Burnham, CD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023

7. Saadeh RS, Ramos PA, Algeciras-Schimmich A, Flanagan EP, Pittock SJ, Willrich MA. An update on laboratory-based diagnostic biomarkers for multiple sclerosis and beyond. Clin Chem. 2022;68(9):1134-1150

**Performance**

**Method Description**

CSF IgG and albumin, and Serum IgG:

The cerebrospinal fluid (CSF) IgG, CSF albumin, and serum IgG are determined by immunonephelometry. The CSF IgG index and synthesis rate are calculated and reported.(Instruction manual: Siemens BN II Nephelometer Operations. Siemens, Inc.; Version 2.4, 07/2019)

Serum albumin:

Serum albumin is measured by colorimetry. The dye, bromocresol green (BCG), is added to serum in an acid buffer. The color intensity of the blue-green albumin-BCG complex is directly proportional to the albumin concentration and is determined photometrically.(Package insert: ALB2. Roche Diagnostics; V 8.0, 06/2024)

**PDF Report**

No

**Day(s) Performed**

Monday through Friday

**Report Available**

2 to 5 days

**Specimen Retention Time**

See Individual Test IDs

**Performing Laboratory Location**

Mayo Clinic Laboratories - Rochester Superior Drive

**Fees & 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 account representative. For assistance, contact [Customer Service](#).

### Test Classification

This test has been cleared, approved, or is exempt by the US 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

### LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
SFIG	CSF IgG Index Profile	14116-8

Result ID	Test Result Name	Result LOINC® Value
INDEX	IgG Index, CSF	14117-6
IGG_C	IgG, CSF	2464-6
ALB_C	Albumin, CSF	1746-7
AIGAC	IgG/Albumin, CSF	2470-3
SRATE	Synthesis Rate, CSF	14116-8
ALB_S	Albumin, S	1751-7
IGG_S	IgG, S	2465-3
AIGAS	IgG/Albumin, S	6782-7
ALBQ	Albumin Quotient, CSF/Serum	1756-6