

## Overview

### Useful For

Investigating an undetectable total complement (CH50)

Confirming hereditary angioedema (with low C1 inhibitor)

Assessing disease activity in systemic lupus erythematosus, proliferative glomerulonephritis, rheumatoid arthritis, and autoimmune hemolytic anemia

### Method Name

Nephelometry

### NY State Available

No

## Specimen

### Specimen Type

Serum

### Specimen Required

#### Collection Container/Tube:

**Preferred:** Serum gel

**Acceptable:** Red top

**Submission Container/Tube:** Plastic vial

**Specimen Volume:** 1 mL

**Collection Instructions:** Centrifuge and aliquot serum into a plastic vial.

### Forms

If not ordering electronically, complete, print, and send a [Renal Diagnostics Test Request](#) (T830) with the specimen.

### Specimen Minimum Volume

0.5 mL

### Reject Due To

Gross hemolysis	OK
Gross lipemia	Reject
Gross icterus	OK

**Specimen Stability Information**

Specimen Type	Temperature	Time	Special Container
Serum	Ambient	72 hours	
	Refrigerated (preferred)	7 days	
	Frozen	28 days	

**Clinical & Interpretive**
**Clinical Information**

The complement system is an integral part of the immune defenses. It can be activated via immune complexes (classic pathway) or by bacterial polysaccharides (alternative pathway). The classic complement pathway consists of recognition, (C1q, C1r, C1s), activation (C2, C3, C4), and attack (C5, C6, C7, C8, C9) mechanisms with respect to their role in antibody-mediated cytolysis. C4 is one of the activation proteins of the classic pathway.

In the absence of C4, immune complexes will not be cleared by C3 activation peptides, but bacterial infections can still be defended via the alternative pathway.

C4 may be decreased in systemic lupus erythematosus, early glomerulonephritis, immune complex disease, cryoglobulinemia, hereditary angioedema, and congenital C4 deficiency.

**Reference Values**

14-40 mg/dL

**Interpretation**

C4 levels will be decreased in acquired autoimmune disorders, in the active phase of lupus erythematosus, and in rheumatoid arthritis.

An undetectable C4 level (with normal C3) suggests a congenital C4 deficiency.

Levels will be increased in patients with autoimmune hemolytic anemia.

**Cautions**

The results are dependent on appropriate specimen transport.

**Clinical Reference**

- Willrich MAV, Braun KMP, Moyer AM, Jeffrey DH, Frazer-Abel A: Complement testing in the clinical laboratory. *Crit Rev Clin Lab Sci.* 2021 Nov;58(7):447-478. doi: 10.1080/10408363.2021.19072972
- Wong EKS, Kavanagh D: Diseases of complement dysregulation-an overview. *Semin Immunopathol.* 2018 Jan;40(1):49-64. doi: 10.1007/s00281-017-0663-8
- Prohaszka Z, Kirschfink M, Frazer-Abel A: Complement analysis in the era of targeted therapeutics. *Mol Immunol.* 2018 Oct;102:84-88. doi: 10.1016/j.molimm.2018.06.001
- Brodzki N, Frazer-Abel A, Grumach AS, et al: European Society for Immunodeficiencies (ESID) and European Reference Network on Rare Primary Immunodeficiency, Autoinflammatory and Autoimmune Diseases (ERN RITA) Complement Guideline: Deficiencies, Diagnosis, and Management. *J Clin Immunol.* 2020 May;40(4):576-591. doi:

---

10.1007/s10875-020-00754-1

## Performance

### Method Description

Nephelometry.(Siemens Nephelometer II Operations Instruction Manual. Siemens, Inc., Newark, DE)

### PDF Report

No

### Day(s) Performed

Monday through Friday, Sunday

### Report Available

1 to 2 days

### Specimen Retention Time

14 days

### Performing Laboratory Location

Jacksonville

## 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

86160

### LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
C4	Complement C4, S	4498-2

Result ID	Test Result Name	Result LOINC® Value
-----------	------------------	---------------------

---

C4	Complement C4, S	4498-2
----	------------------	--------