MAYO CLINIC LABORATORIES

# Test Definition: ASO

Antistrep-O Titer, Serum

## Overview

### Useful For
Demonstration of acute or recent streptococcal infection

### Method Name
Nephelometry

### NY State Available
Yes

## Specimen

### Specimen Type
Serum

### Ordering Guidance
Patients with acute glomerulonephritis following skin infection (post-impetigo) have an attenuated immune response to streptolysin O. For these patients, performance of an alternative streptococcal antibody test such as ADNAS / Anti-DNase B Titer, Serum is recommended.

### Specimen Required
**Patient Preparation:** Fasting preferred but not required
**Supplies:** Sarstedt 5 mL Aliquot Tube (T914)
**Collections Container/Tube:**
**Preferred:** Serum gel
**Acceptable:** Red top
**Submission Container/Tube:** Plastic vial
**Specimen Volume:** 1 mL
**Collection Instructions:** Centrifuge and aliquot serum into plastic vial.

### 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 | Refrigerated (preferred) | 28 days | |
| | Frozen | 28 days | |
| | Ambient | 7 days | |

## Clinical & Interpretive

### Clinical Information

A number of bacterial antigens have been identified in cultures of group A streptococci. These extracellular products are primarily enzymatic proteins and include streptolysin O, streptokinase, hyaluronidase, deoxyribonucleases (DNases A, B, C, and D), and nicotinamide adenine nucleotidase.

Infections by the group A streptococci are unique because they can be followed by serious nonpurulent complications of rheumatic fever and glomerulonephritis. Recent information suggests that rheumatic fever is associated with infection by certain rheumatogenic serotypes (M1, M3, M5, M6, M18, and M19), while glomerulonephritis follows infection by nephritogenic serotypes (M2, M12, M49, M57, M59, and M60).

Glomerulonephritis and rheumatic fever occur following the infection, after a period of latency following the infection, during which the patient is asymptomatic. The latency period for glomerulonephritis is approximately 10 days, and the latency period for rheumatic fever is 20 days.

### Reference Values

<5 years: < or =70 IU/mL
5-17 years: < or =640 IU/mL
> or =18 years: < or =530 IU/mL

### Interpretation

Elevated values are consistent with an antecedent infection by group A streptococci.

### Cautions

The use of the antistreptolysin O (ASO) for the diagnosis of an acute group A streptococcal infection is rarely indicated, unless the patient has received antibiotics that would render the culture negative. There are certain limitations to the use of the ASO test in these circumstances due to the delay and attenuation of the immune response following early antibiotic therapy.

False-high titers may be obtained with sera that are contaminated by certain bacterial organisms during shipment or storage and in patients with liver disease where the presence of high lipoprotein concentrations in the serum may mimic antibody activity.

Although the antistreptolysin O (ASO) test is quite reliable, performing the anti-DNase is justified for 2 primary reasons. First, the ASO response is not universal. Elevated ASO titers are found in the sera of about 85% of individuals with rheumatic fever; ASO titers remain normal in about 15% of individuals with the disease. The same holds true for other streptococcal antibody tests: a significant portion of individuals with normal antibody titers for 1 test will have elevated antibody titers for another test. Thus, the percentage of false-negative results can be reduced by performing 2 or more

antibody tests. Second, skin infections, in contrast to throat infections, are associated with a poor ASO response. Patients with acute glomerulonephritis following skin infection (post-impetigo) have an attenuated immune response to streptolysin O. For such patients, performance of an alternative streptococcal antibody test such as anti-DNase B is recommended.

### Clinical Reference

1. Ayoub EM, Harden E: Immune response to streptococcal antigens: diagnostic methods. In: Rose NR, de Marco EC, Folds JD, et al, eds. Manual of Clinical and Laboratory Immunology. 5th ed. ASM Press; 1997
2. Antistreptolysin O (ASO). Testing.com; Updated July 24, 2020. Accessed February 11, 2022. Available at www.testing.com/tests/antistreptolysin-o-aso/

## Performance

### Method Description

In this Siemens Nephelometer II method, the light scattered onto the antigen-antibody complexes is measured. The intensity of the measured scattered light is proportional to the amount of antigen-antibody complexes in the sample under certain conditions. If the antibody volume is kept constant, the signal behaves proportionally to the antigen volume.

A reference curve is generated by a standard with a known antigen content on which the scattered light signals of the samples can be evaluated and calculated as an antigen concentration. Antigen-antibody complexes are formed when a sample containing antigen and the corresponding antiserum are put into a cuvette. A light beam is generated with a light-emitting diode, which is transmitted through the cuvette. The light is scattered onto the immuno-complexes that are present. Antigen and antibody are mixed in the initial measurement, but no complex is formed yet. An antigen-antibody complex is formed in the final measurement.

The result is calculated by subtracting value of the final measurement from the initial measurement. The distribution of intensity of the scattered light depends on the ratio of the particle size of the antigen-antibody complexes to the radiated wavelength.(Instruction manual: Siemens Nephelometer II. Siemens, Inc; Version 2.3, 2008; Addendum to the Instruction Manual 2.3, 08/2017)

### PDF Report

No

### Day(s) Performed

Monday through Friday

### Report Available

1 to 3 days

### Specimen Retention Time

14 days

### Performing Laboratory Location

Rochester

## 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

86060

### LOINC® Information

| Test ID | Test Order Name | Order LOINC® Value |
|---|---|---|
| ASO | Antistrep-O Titer, S | 5370-2 |

| Result ID | Test Result Name | Result LOINC® Value |
|---|---|---|
| ASO | Antistrep-O Titer, S | 5370-2 |