MAYO CLINIC LABORATORIES

Test Definition: ROM

Measles (Rubeola) Antibodies, IgM, Serum

Overview

Useful For

Determining acute-phase infection with rubeola (measles) virus using IgM antibody testing

Aiding in the identification of nonimmune individuals through IgM antibody testing

Method Name

Immunofluorescence Assay (IFA)

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Forms

If not ordering electronically, complete, print, and send Infectious Disease Serology Test Request (T916) with the specimen.

Specimen Minimum Volume

0.2 mL

Reject Due To

Gross hemolysis	Gross reject
Gross lipemia	Gross reject
Heat-inactivated specimen	Reject

Specimen Stability Information

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

Clinical & Interpretive

Clinical Information

The measles virus is a member of the Paramyxoviridae family of viruses, which include parainfluenza virus serotypes 1-4, mumps, respiratory syncytial virus (RSV), and metapneumovirus. The measles virus is one of the most highly contagious infectious diseases among unvaccinated individuals and is transmitted through direct contact with aerosolized droplets or other respiratory secretions from infected individuals. Measles has an incubation period of approximately 8 to 12 days, which is followed by a prodromal phase of high fever, cough, coryza, conjunctivitis, and malaise. Koplik spots may also be apparent on the buccal mucosa and can last for 12 to 72 hours.(1,2) Following this phase, a maculopapular, erythematous rash develops beginning behind the ears and on the forehead and spreading centrifugally to involve the trunk and extremities.

Immunocompromised individuals, pregnant women, and those with nutritional deficiencies, are particularly at risk for serious complications following measles infection, which include pneumonia and central nervous system involvement.(1,3)

Following implementation of the national measles vaccination program in 1963, the incidence of measles infection has fallen to below 0.5 cases per 1,000,000 population, and the virus is no longer considered endemic in the United States.(4) Measles outbreaks continue to occur in the United States, however, due to exposure of nonimmune individuals or those with waning immunity to infected travelers. The measles outbreak in 2011 throughout Western Europe emphasizes the persistence of the virus in the worldwide population and the continued need for national vaccination programs.(5)

The diagnosis of measles infection is often based on clinical presentation alone. The presence of IgM-class antibodies suggests recent infection but should not be used alone to diagnose measles infection. Screening for IgG-class antibodies to measles virus aids in identifying nonimmune individuals.

Reference Values

Negative
Reference values apply to all ages.

Interpretation

This assay tests only for IgM-class antibody. For both IgM and IgG antibody testing, see ROGM / Measles (Rubeola) Virus Antibody, IgM and IgG (Separate Determinations), Serum.

The presence of IgM-class antibodies, with or without the presence of IgG-class antibodies, to measles virus may support a clinical diagnosis of recent/acute phase infection with the virus. IgM results alone should not be used to diagnose measles virus infection.

The absence of IgM-class antibodies suggests lack of an acute phase infection with measles virus. However, serology may be negative for IgM-class antibodies in early disease, and results should be interpreted in the context of clinical findings.

Testing for IgM-class antibodies to measles should be limited to patients with clinically compatible disease.

The presence of detectable IgG-class antibodies, in the absence of IgM-class antibodies, indicates prior exposure to the measles virus through infection or immunization. These individuals are considered immune to measles infection.

The absence of detectable IgG-class antibodies suggests the lack of a specific immune response to immunization or no prior exposure to the measles virus. These individuals are considered nonimmune to measles virus infection.

Cautions

Grossly contaminated, hemolyzed, hyperlipemic, or icteric serum may yield unreliable results. Serum specimens must not be heat-inactivated prior to testing.

A serum specimen collected during the acute phase of infection when only low titers of IgM are present may yield negative results by this procedure.

Rare heterotypic responses with rubella virus and varicella virus have been reported from measles virus.(5)

Clinical Reference

1. Liebert UG: Measles virus infections of the central nervous system. Intervirology. 1997;40:176-184. doi: 10.1159/000150544
2. Norrby E, Kristensson K: Measles virus in the brain. Brain Res Bull 1997;44:213-220
3. Sable CA, Hayden FG: Orthomyxoviral and paramyxoviral infections in transplant patients. Infect Dis Clin North Am 1995;9:987-1003
4. Matsuzono Y, Narita M, Satake A, et al: Measles encephalomyelitis in a patient with a history of vaccination. Acta Paediatr Jpn 1995;37:374-376
5. Cremer, NE, Devlin VL, Riggs JL, Hagens SJ: 1984. Anomalous antibody responses in viral infection: specific stimulation or polyclonal activation? J Clin Microbio 1984;20:468-472
6. Gershon AA, Krugman S: Measles virus. In: Lennette EH, Schmidt NJ, eds Diagnostic Procedures for Viral, Rickettsial and Chlamydial Infections. 5th ed. American Public Health Association, Inc., 1979;665-693
7. Theel ES, Sorenson M, Rahman C, Granger D, Vaughn A, Breeher L: Performance characteristics of a multiplex flow immunoassay for detection of IgG-Class antibodies to measles, mumps, rubella, and Varicella-Zoster viruses in presumptively immune health care workers. J Clin Microbiol. 2020 Mar 25;58(4):e00136-20. doi: 10.1128
8. National Center for Immunization and Respiratory Diseases, Division of Viral Diseases; Centers for Disease Control and Prevention (CDC). Measles (Rubeola). CDC; Updated November 5, 2020. Accessed October 25, 2022. Available at www.cdc.gov/measles/hcp/index.html

Performance

Method Description

The presence of IgM-class antibody to measles is determined by an indirect immunofluorescence assay. After removal of IgG by specific immunoglobulin antibody, the serum is incubated with measles antigen, which is adhered to a glass microscope slide. Antibodies, if present, will bind to the antigen forming stable antigen-antibody complexes. If no antibodies are present, the complexes will not be formed, and the serum components will be washed away. Fluorescein-labeled antihuman-IgM antibody is added to the reaction side and binds to IgM antibodies if present. This results in a positive reaction of bright apple-green fluorescence when viewed with a fluorescence microscope.(Package insert: Measles Virus Antigen Substrate Slide. AESKU.BION; 09/2019)

PDF Report
No

Day(s) Performed
Monday through Saturday

Report Available
Same day/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
86765

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
ROM	Measles (Rubeola) Ab, IgM, S	35276-5

Result ID	Test Result Name	Result LOINC® Value
80979	Measles (Rubeola) Ab, IgM, S	35276-5