MAYO CLINIC LABORATORIES

Test Definition: RPRT1

Rapid Plasma Reagin (RPR) Screen with Reflex to Titer, Serum

Overview

Useful For

Determining the current disease status

Monitoring response to therapy for syphilis

Aid to diagnose congenital syphilis

This test **cannot be used** for testing spinal fluid specimens.

This test is **not intended for** medical-legal use.

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
RPRT2	RPR Titer,S	No	No

Testing Algorithm

If this test is positive, then the rapid plasma reagin titer will be performed at an additional charge.

Highlights

This assay provides a rapid plasma reagin (RPR) titer.
This test can be used to monitor response to therapy in patients treated for syphilis infection.
This assay can be used to help diagnose congenital syphilis when maternal and neonate sera are tested concurrently.

Method Name

Flocculation/Agglutination

NY State Available

No

Specimen

Specimen Type

Serum

Ordering Guidance

This test is for monitoring response to therapy in patients treated for syphilis infection. This test should not be used as a primary diagnostic approach for syphilis. To screen for undiagnosed syphilis infection, order SYPH1 / Syphilis IgG with

Reflex, Enzyme Immunoassay, Serum.

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
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

0.4 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject

Specimen Stability Information

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

Clinical & Interpretive

Clinical Information

Syphilis is caused by infection with the spirochete *Treponema pallidum* subspecies *pallidum*. The infection is systemic, and the disease is characterized by periods of latency. These features, together with the fact that *T pallidum* cannot be isolated in culture, mean that serologic techniques play a major role in the diagnosis and follow-up of treatment for syphilis.

Historically, the serologic testing algorithm for syphilis included an initial nontreponemal screening test, such as the rapid plasma reagin (RPR) or the VDRL tests. Because these tests measure the host's immune response to nontreponemal antigens, they lack specificity. Therefore, a positive result by RPR or VDRL requires confirmation by a treponemal-specific test, such as the fluorescent treponemal antibody-absorption (FTA-ABS) or microhemagglutination (MHA-TP) assay. Although the FTA-ABS and MHA-TP assays are technically simple to perform, they are labor intensive

and require subjective interpretation by testing personnel.

As an alternative to the traditional syphilis screening algorithm, many laboratories utilize the reverse syphilis screening algorithm. This algorithm starts with an automated treponemal assay to detect antibodies specific to *T pallidum*. If this screening assay is positive, the sample is reflexed for testing by RPR, which, if positive, is reported with a titer and is indicative of active or recent syphilis infection. If the RPR is negative, the sample is reflexed to a second treponemal assay, such as the *T pallidum* particle agglutination (TP-PA) assay. If the TP-PA is positive, this would indicate previously treated or late-stage syphilis infection. Alternatively, if the TP-PA is negative, the initial positive screen is interpreted as a false positive result.

Patients with primary or secondary syphilis are typically tested by RPR to monitor response to treatment. Typically, RPR titers decrease following successful treatment, but this may occur over a period of months to years. Additionally, testing of maternal and neonate serum, collected concurrently, by RPR can be used as an aid to diagnose congenital syphilis.

Reference Values

Negative
Reference values apply to all ages.

Interpretation

Negative:
Nontreponemal antibodies not detected.

Positive:
Specimen reflexed to determine rapid plasma reagin titer.

Cautions

This test should not be used as a primary diagnostic approach for syphilis. For patients with suspected, undiagnosed syphilis, a serum specimen should be submitted for a treponemal-specific antibody test (eg, SYPH1 / Syphilis IgG with Reflex, Enzyme Immunoassay, Serum).

Biological false-positive reactions with cardiolipin-type antigens have been reported in diseases such as infectious mononucleosis, leprosy, malaria, lupus erythematosus, vaccinia, and viral pneumonia. Pregnancy, autoimmune diseases, and narcotic addictions may give false-positive results. Pinta, yaws, bejel, and other treponemal diseases may also produce false-positive results with this test.

Clinical Reference

1. Centers for Disease Control and Prevention (CDC). Discordant results from reverse sequence syphilis screening-five laboratories, United States, 2006-2010. MMWR Morb Mortal Wkly Rep. 2011;60(5):133-137
2. Radolf JD, Tramont EC, Salazar JC. Syphilis *(Treponema pallidum*). In: Bennett JE, Dolin R, Blaser MJ, eds. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. 9th ed. Elsevier; 2020:2865-2892
3. Binnicker MJ, Jespersen DJ, Rollins LO. Direct comparison of the traditional and reverse syphilis screening algorithms in a population with a low prevalence of syphilis. J Clin Microbiol. 2012;50(1):148-150

Performance

Method Description

If the rapid plasma reagin (RPR) screen is reactive the RPR titer is performed. The RPR titer test is a macroscopic screening assay done with unheated serum. Reagin reacts with nontreponemal antigen containing colloidal charcoal particles. This reaction results in a visual flocculation of the black particles against the white card background. The test yields a positive or negative result, and all positive samples are titered to determine the highest positive dilution.(Huber TW, Storms S, Young P, et al: Reactivity of microhemagglutination, fluorescent treponemal antibody absorption, Venereal Disease Research Laboratory, and rapid plasma reagin tests in primary syphilis. J Clin Microbiol. 1983 Mar;17[3]:405-409; Kaur G, Kaur P: Syphilis testing in blood donors: an update. Blood Transfus. 2015 Apr;13[2]:197-204)

PDF Report

No

Day(s) Performed

Monday through Saturday

Report Available

Same day/1 to 4 days

Specimen Retention Time

14 days

Performing Laboratory Location

Mayo Clinic Jacksonville Clinical Lab

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

86592
86593-Rapid Plasma Reagin Titer (if appropriate)

Test Definition: RPRT1

Rapid Plasma Reagin (RPR) Screen with Reflex to Titer, Serum

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
RPRT1	RPR Screen w/ Reflex to Titer,S	20507-0

Result ID	Test Result Name	Result LOINC® Value
616863	RPR Screen w/ Reflex to Titer,S	20507-0