Test Definition: TXPG

Toxoplasma gondii Antibody, IgG, Serum

Overview

Useful For

Quantitative detection of IgG antibodies to *Toxoplasma gondii.*

This test is **not useful for** diagnosing infection in infants younger than 6 months of age. In that age group, IgG antibodies usually are the result of passive transfer from the mother.

Highlights

Detection of IgG-class antibodies to *Toxoplasma gondii* may be useful to assess the serological status of *T. gondii.* Presence of IgG antibody may be indicative of a latent or acute infection.

Method Name

Electrochemiluminescence Immunoassay (ECLIA)

NY State Available

Yes

Specimen

Specimen Type

Serum

Ordering Guidance

IgG antibodies in patients younger than 6 months of age are typically the result of passive transfer from the mother. To assess possible *Toxoplasma gondii* infection in patients younger than 6 months, order TXPM / *Toxoplasma gondii* Antibody, IgM, 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: 0.6 mL
Collection Instructions: Centrifuge and aliquot serum into plastic vial

Forms

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

Specimen Minimum Volume

0.6 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject
Additives (eg, biocides, antioxidants)	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	21 days	
	Ambient	72 hours	
	Frozen	90 days	

Clinical & Interpretive

Clinical Information

Toxoplasma gondii is an obligate intracellular protozoan parasite capable of infecting a variety of intermediate hosts, including humans. Infected definitive hosts (cats) shed oocysts in feces that rapidly mature in the soil and become infectious. Toxoplasmosis is acquired by humans through ingestion of food or water contaminated with cat feces or through eating undercooked meat containing viable oocysts. Vertical transmission of the parasite through the placenta can also occur, leading to congenital toxoplasmosis. Following primary infection, *T gondii* can remain latent for the life of the host; the risk for reactivation is highest among individuals who are immunosuppressed.

Seroprevalence studies performed in the United States indicate approximately 9% to 11% of individuals between the ages of 6 and 49 have antibodies to *T gondii*.

Infection of immunocompetent adults is typically asymptomatic. In symptomatic cases, patients most frequently present with lymphadenopathy and other nonspecific constitutional symptoms, making definitive diagnosis difficult to determine.

Severe-to-fatal infections can occur among patients with AIDS or individuals who are otherwise immunosuppressed. These infections are thought to be caused by reactivation of latent infections and commonly involve the central nervous system.

Transplacental transmission of the parasites resulting in congenital toxoplasmosis can occur during the acute phase of acquired maternal infection. The risk of fetal infection is a function of the time at which acute maternal infection occurs during gestation. The incidence of congenital toxoplasmosis increases as pregnancy progresses; conversely, the severity of congenital toxoplasmosis is greatest when maternal infection is acquired early during pregnancy. Many infants

infected in utero are asymptomatic at birth, particularly if maternal infection occurs during the third trimester, with sequelae appearing later in life. Congenital toxoplasmosis results in severe generalized or neurologic disease in about 20% to 30% of the infants infected in utero; approximately 10% exhibit ocular involvement only, and the remainder are asymptomatic at birth. Subclinical infection may result in premature delivery and subsequent neurologic, intellectual, and audiologic defects.

Reference Values

Negative
<1 IU/mL Negative
> or =1-<3 IU/mL Borderline
> or =3 IU/mL Positive
Reference values apply to all ages.

Interpretation

Negative:
Toxoplasma gondii IgG not detected. False-negative results may occur in immunocompromised patients or if testing was performed within 1 to 2 weeks of initial exposure. Repeat testing may be helpful. A single negative result should not be used to rule out toxoplasmosis, and repeat testing is recommended for patients at high risk for infection.

Borderline
Repeat testing on a new sample collected in 2-3 weeks is recommended to assess for seroconversion. Borderline *Toxoplasma* IgG results may be due to very low levels of circulating IgG during the acute stage of infection. Seroconversion from negative to positive IgG is indicative of *T gondii* infection after the first negative specimen.

Positive
Toxoplasma gondii IgG antibodies detected, indicating recent or past infection. A significant change in T. gondii IgG levels suggests recent infection. For confirmation of toxoplasmosis, the US Food and Drug Administration issued a Public Health Advisory (07/25/1997) that recommends sera found to be positive for *T gondii* IgM antibodies should be sent to a Toxoplasma reference laboratory.

Cautions

Diagnosis of recent or active infection by *Toxoplasma gondii* can only be established based on a combination of clinical and serological data. The result of a single serum sample does not constitute sufficient proof for diagnosis of recent infection.

A suspected diagnosis of central nervous system or congenital toxoplasmosis should be confirmed by detection of *T gondii* DNA by polymerase chain reaction (PCR) analysis of cerebrospinal fluid or amniotic fluid specimens, respectively (PTOX / *Toxoplasma gondii*, Molecular Detection, PCR, Varies).

To differentiate between a recently acquired and past infection in patients who are IgM and IgG positive for *Toxoplasma* antibodies, *Toxoplasma* IgG avidity testing should be considered. A high avidity index for IgG antibodies indicates that the infection occurred at least 4 months ago. No clinical interpretation can be deduced from a low avidity result.

A negative *Toxoplasma* IgM result in combination with a positive IgG result does not completely rule out the possibility of an acute infection with *Toxoplasma.*

The detection of Toxoplasma-specific IgG antibodies in a single specimen indicates a previous exposure to *T gondii* but is not sufficient to distinguish between an acute or latent infection (irrespective of the level of the IgG antibody titer).

Individuals may not exhibit any detectable IgG antibodies at the early stage of acute infection.

Elevated anti-IgM or IgG titers may be absent in patients who are immunocompromised. Results should be interpreted with caution in patients who are either HIV-positive, receiving immunosuppressive therapy, or have other disorders leading to immunosuppression.

The performance of the assay has not been established for cord blood testing. Specimens from neonates, pretransplant patients or body fluids other than serum and plasma, such as urine, saliva or amniotic fluid have not been tested.

Specimens should not be collected from patients receiving therapy with high biotin doses (ie, > 5 mg/day) until at least 8 hours following the last biotin administration.

The anti-Toxoplasma IgG results in a given specimen, as determined by assays from different manufacturers, can vary due to differences in assay and reagent methods. Results from assays of other manufacturers cannot be used interchangeably.

Clinical Reference

Matta SK, Rinkenberger N, Dunay IR, Sibley LD. Toxoplasma gondii infection and its implications within the central nervous system. Nat Rev Microbiol. 2021;19(7):467-480. doi: 10.1038/s41579-021

Performance

Method Description

The electrochemiluminescence immunoassay for the in vitro quantitative determination of IgG antibodies to *Toxoplasma gondii* in human serum is a sandwich test principle. During the first incubation, 6 mcL of sample a biotinylated recombinant *T. gondii*-specific antigen labeled with a ruthenium complex form a sandwich complex. In the second incubation, streptavidin-coated microparticles are added and the complex becomes bound to the solid phase via interaction of biotin and streptavidin. The reaction mixture is aspirated into the measuring cell where the microparticles are magnetically captured onto the surface of the electrode. Unbound substances are then removed with ProCell II M. Application of a voltage to the electrode then induces chemiluminescent emission which is measured by a photomultiplier. Results are determined by a calibration curve which is instrument-specifically generated by 2-point calibration and a master curve provided via the cobas link.(Package insert: Elecsys Toxo IgG, Roche Diagnostics GmbH, 02/2022)

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

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

86777

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
TXPG	Toxoplasma Ab, IgG, S	8039-0

Result ID	Test Result Name	Result LOINC® Value
GTXP	Toxoplasma Ab, IgG, S	40677-7
DEX04	Toxoplasma IgG Value	8039-0