

Borrelia

General:

Borrelia is a genus of Gram-negative spirochetal bacteria from the genus Borrelia, which has at least 37 known species, 12 of which are Lyme related, and an unknown number of genomic strains. Borrelia is transmitted to humans by the bite of infected hard ticks belonging to several species of the genus Ixodes and causes Lyme disease (*B. burgdorferi*) which is the most common tick-borne disease in the Northern Hemisphere.

The incubation period from infection to the onset of symptoms is usually 1– 2 weeks, but can be much shorter (days), or much longer (months to years). Early manifestations of infection may include fever, headache, fatigue, depression, and a characteristic skin rash called erythema migrans. Left untreated, late manifestations involving the joints, heart, and nervous system can occur. In a majority of cases, symptoms can be eliminated with antibiotics, especially if diagnosis and treatment occur early in the course of illness. Late, delayed, or inadequate treatment can lead to late manifestations of Lyme disease which can be disabling and difficult to treat.

Clinical symptoms	Serology
Early localized borreliosis: erythema migrans, lymphangitis, lymphadenitis, lymph-adenosis cutis benigna, solitary borrelia lymphocytoma	Prevalence of IgM antibodies (20-50%), specific IgG often detectable approx. 2-3 weeks after beginning of infection
Early disseminated borreliosis: multiple erythema migrans (rare, mostly in reinfection), neuroborreliosis: all symptoms meningoradicular neuritis, (Bannwarth syndrome), radicular myelitis, cranial nerve paralysis, uveitis, chorioretinitis, neuritis nervi opticus, N.status acusticus among others, rarely endo-myo-pericarditis (Lyme carditis), myositis, interstitial pneumonia	Prevalence of IgG antibodies, IgM antibodies increased mostly in the early stage: 70-90%, in neuroborreliosis examination of CSF and serum required (see CSF examination)
Chronic borreliosis: acrodermatitis chronica atrophicans (ACA), mono-, polyarthritis (synoviitis), rarely chronic encephalomyelitis, peripheral neuropathy (late complication of ACA)	Prevalence of IgG antibodies (90-100%), no IgM antibodies

The following tests are available:

- **Borrelia IgG antibodies (screening)**

Indication: screening test, suspicion of infection after tick bite

Material: 1 ml serum

TAT: 7-10 days*

Method: CLIA

Units: AU/ml

Ref.- range: positive: >15 borderline: 10-15

- **Borrelia IgM antibodies (screening)**

Indication: screening test, suspicion of infection after tick bite

Material: 1 ml serum

TAT: 7-10 days*

Method: CLIA

Units: AU/ml

Ref.- range: positive: >22 borderline: 18-22

- **Borrelia IgG immunoblot (confirmatory)**

Material: 1 ml serum

TAT: 7-10 days*

Method: Blot

- **Borrelia IgM immunoblot (confirmatory)**

Material: 1 ml serum

TAT: 7-10 days*

Method: Blot

- **Borrelia-DNA (PCR)**

Material: CSF, aspirate, biopsy, tick

TAT: 7-10 days*

Method: PCR

Note: Screening for *Borrelia burgdorferi sensu lato* (*B. burgdorferi sensu stricto*, *B. afzelii*, *B. garinii*) plus all other human pathogen *Borrelia* like *B. spielmanii*, *B. valaisiana*, *B. lusitanae*, *B. bissetii* which can cause Lyme disease.

- **Borrelia burgdorferi IgG antibodies index**

Indication: verification of a positive screening test

Material: 1 ml serum + 1 ml CSF

TAT: 7-10 days*

Method: EIA

Units: Index

Ref.- range: see report

- **Borrelia burgdorferi IgM antibodies index**

Indication: verification of a positive screening test

Material: 1 ml serum + 1 ml CSF

TAT: 7-10 days*

Method: EIA

Units: index

Ref.- range: see report

- **Borrelia burgdorferi CD3/CD57**

Material: 3 ml EDTA blood

TAT: 7-10 days*

Method: FCM

Units: %

Ref.- range: see report

- **Borrelia burgdorferi DNA in CSF (PCR)**

Material: 0.5 ml CSF

TAT: 7-10 days*

Method: PCR

For complete list of laboratory test offered at Freiburg Medical Laboratory, please visit
<http://www.fml-dubai.com/parameter-listings/>