2022 GUIDELINES FOR THE REPORTING OF LYME DISEASE CASES USING THE MICHIGAN DISEASE SURVEILLANCE SYSTEM (MDSS)

Table of Contents

2022 Guidelines for the Reporting of Lyme Disease Cases Using the Michigan Disease Surveillance System (MDSS)

INTRODUCTION

The following guidance is provided to aid the investigation and reporting of Lyme disease cases for surveillance purposes in the MDSS. For a complete description of Lyme disease reporting criteria, the updated 2021 CSTE Surveillance Case Definition for Lyme disease can be found at: https://cdn.ymaws.com/www.cste.org/resource/resmgr/ps/ps2021/21-ID-05_Lyme_Disease.pdf

For the purposes of national Lyme disease surveillance, Michigan is considered a **low-incidence jurisdiction[1].** Low-incidence jurisdictions are those that have not had an average Lyme disease incidence of ≥10 confirmed cases/100,000 population (at the state level) for a period of three consecutive years.

Note: This CSTE case definition is intended solely for public health surveillance purposes and does not recommend diagnostic criteria for clinical partners to utilize in diagnosing patients with potential Lyme Disease.

CHANGES FROM 2018 GUIDANCE

- Removed "other physician diagnoses" to improve specificity of the probable case classification
- Recategorized a single-tier IgG immunoblot as a presumptive test
- Expanded laboratory criteria for evidence of infection to include:
    1. A new FDA approved serologic test, called the Modified two-tier test (MTTT).
    2. PCR or NAAT assay (although it lacks sensitivity for most LD diagnosis, it is particularly useful for detecting *B. burgdorferi* in synovial fluid, and to detect *B. mayonii*, another *Borrelia* species that causes Lyme disease.)
    3. Direct detection of B. *burgdorferi* spirochetes in tissue (particularly useful for establishing Lyme disease-associated carditis deaths).

REQUIRED INFORMATION AND DOCUMENTATION

The following information is essential for determining case status:

- Date of illness onset
- Complete clinical presentation
- Detailed laboratory results

CLINICAL CRITERIA

An illness characterized by one of the following early or late-stage manifestations, **as reported by a healthcare provider,** and in the absence of another known etiology:

1. **Erythema migrans (EM) rash**
   For the purposes of surveillance, EM is defined as a skin lesion (**observed by a healthcare provider**) that typically begins as a red macule or papule and expands over

a period of days to weeks to form a large round lesion, often with partial central clearing. A single primary lesion must reach a size of ≥5 cm in diameter. Note: Secondary lesions also may occur.

2. **Musculoskeletal system**
   Recurrent, brief attacks (weeks or months) of objective joint swelling in one or a few joints. Note: Objective joint swelling may sometimes be followed by chronic arthritis in one or a few joints.

3. **Nervous system**
   Any of the following signs that cannot be explained by any other etiology, alone or in combination:
   - lymphocytic meningitis
   - cranial neuritis, particularly facial palsy (unilateral or bilateral)
   - radiculoneuropathy
   - encephalomyelitis

4. **Cardiovascular system**
   Acute onset of high-grade (2nd-degree or 3rd-dergree) atrioventricular conduction defects that resolve in days to weeks. Note: Atrioventricular conduction detects may sometimes be associated with myocarditis.

LABORATORY CRITERIA

Confirmatory laboratory evidence:

1. Isolation of *B. burgdorferi* sensu stricto or *B. mayonii* in culture, OR

2. Detection of *B. burgdorferi* sensu stricto or *B. mayonii* in a clinical specimen by a *B. burgdorferi* group-specific NAAT assay, OR

3. Detection of *B. burgdorferi* group-specific antigens by immunohistochemical assay on biopsy or autopsy tissues, OR

4. Positive serologic tests in a two-tier or equivalent format, including:
   a. Standard two-tier test (STTT): a positive or equivocal first-tier screening assay, often an enzyme immunoassay [EIA] or immunofluorescence assay [IFA] for IgM, IgG, or a combination of immunoglobulins, followed by a concordant positive IgM or IgG immunoblot interpreted according to established criteria, OR
   b. Modified two-tier test (MTTT): positive or equivocal first-tier screen, followed by a different, sequential positive or equivocal EIA in lieu of an immunoblot as a second-tier test.

Presumptive laboratory evidence:

1. Positive IgG immunoblot, interpreted according to established criteria, without positive or equivocal first-tier screening assay

CASE CLASSIFICATION: Low-Incidence Jurisdiction[1]

Confirmed: A clinically compatible case that meets confirmatory laboratory criteria.

Probable: A clinically compatible case that meets presumptive laboratory criteria.

Suspect:

- A case that meets confirmatory or presumptive laboratory criteria, but no clinical information is available, OR
- A case of erythema migrans rash (EM) with no laboratory evidence of infection.

[1] High-incidence jurisdictions are those that have had an average Lyme disease incidence of ≥10 confirmed cases/100,000 population for a period of three consecutive years. At the time of this statement (spring 2021), those jurisdictions are: Connecticut, Delaware, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia, Wisconsin, and the District of Columbia (http://www.cdc.gov/lyme/stats/tables.html).

Low-incidence jurisdictions are those that have not had an average Lyme disease incidence of ≥10 confirmed cases/100,000 population for a period of three consecutive years. Once ≥10 confirmed cases/100,000 population have been observed in a low-incidence jurisdiction for a period of three consecutive years, they become a high-incidence jurisdiction for the purposes of surveillance and should permanently switch reporting criteria.

For determining incidence for case classification and reporting purposes, calculations should be made at the state or territory level. Case classification for reporting should not be differentially applied at the subdivision level.

CRITERIA FOR ESTABLISHING A NEW CASE OF LYME DISEASE

A new case is one that has not been reported within the same calendar year (January through December).

ENTERING DATA INTO MDSS

- Case classification requires all the above information to be entered into the MDSS using the detailed Lyme Disease Case Report form in the MDSS. Tools to assist case investigation and classification are available on the CD info website, under "Communicable Diseases (A-Z)", Lyme Disease topic. LHD's can utilize the "Lyme Disease Case Report Form" (fillable PDF) attached to this guidance, or a similar tool to obtain case information from the patient's healthcare provider

- Once the necessary information is collected, the local level MDSS user can then determine if the reported case meets the 2021 CSTE Lyme Disease Surveillance Case Definition. Based on that assessment, choose the appropriate "Case Status" field: "Confirmed", "Probable","Suspect" (as described above), or "Not a Case".

- State epidemiologists will review case investigations based on clinical presentation and laboratory testing and may change "Case Status" or "Investigation Status" upon that review. The local health department will be notified when a change is made, either by notes left in the re-activated case investigation or by phone call or email to request further information.

MANAGING ELECTRONICALLY REPORTED TICK IDENTIFICATION RESULTS

MDHHS Bureau of Laboratories is no longer testing ticks for pathogens. However, they do continue to provide tick identification services. Occasionally, tick identification results may appear in MDSS. While these reports are often not associated with human illness, this information may be of interest to both local and state health authorities. Once noted, the entry can be completed as "Not a Case" in MDSS.

RESOURCES

Centers for Disease Control & Prevention Lyme Disease website

MDHHS Emerging Diseases Lyme Disease website

Michigan Lyme Disease Risk Map

CSTE Lyme Disease Case Definition 21-ID-05

NNDSS Lyme Disease 2022 Case definition

MMWR (1995): Recommendations for Test Performance and Interpretation from the Second National Conference on Serologic Diagnosis of Lyme Disease

MMWR (2005): Caution Regarding Testing for Lyme Disease

EID (2016): Current Guidelines, Common Pitfalls, and Future Directions for Laboratory Diagnosis of Lyme Disease, United States

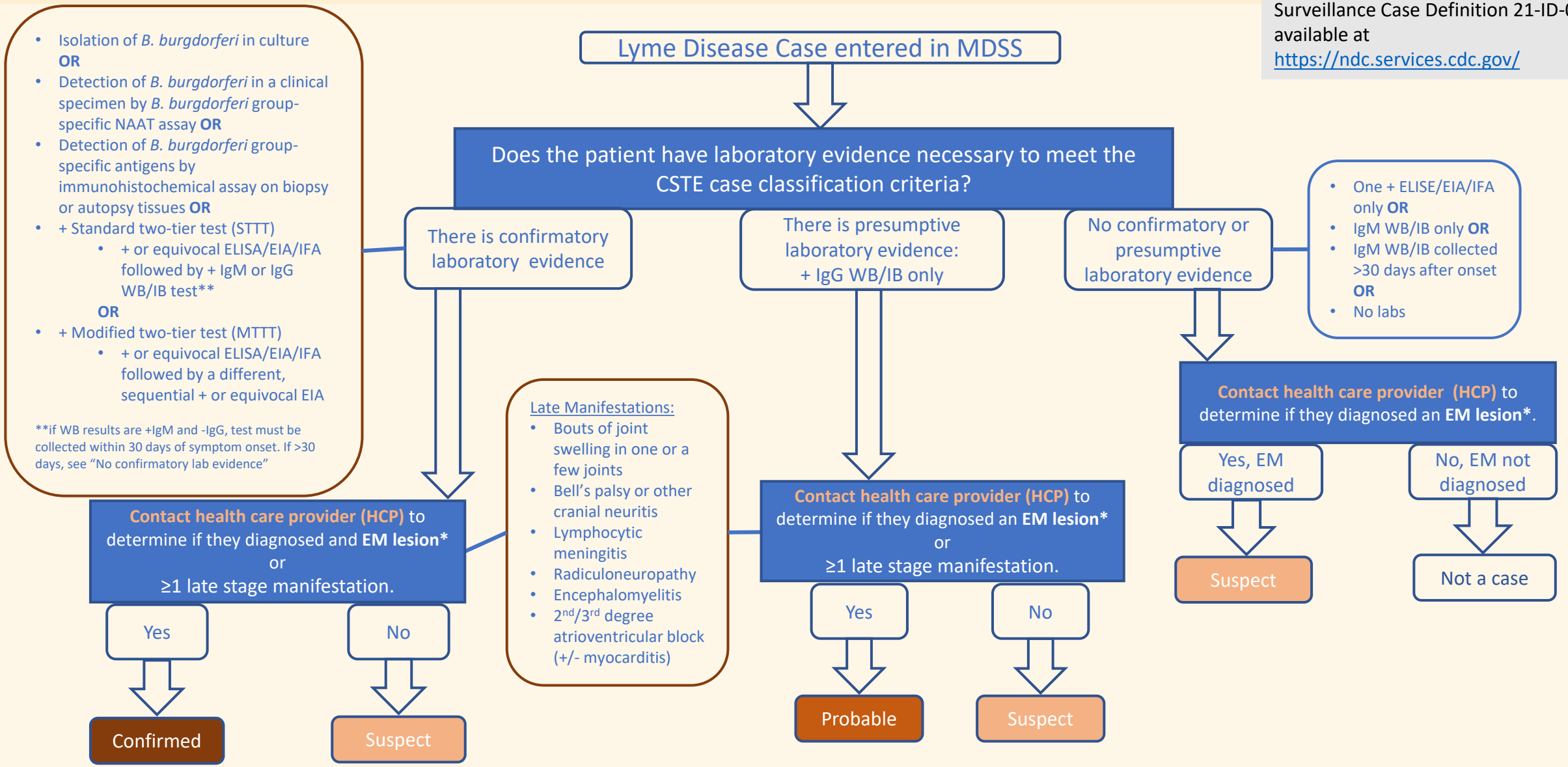
MMWR (2019): Updated CDC Recommendations for Serologic Diagnosis of Lyme Disease

Association of Public Health Laboratories: Suggested Reporting Language, Interpretation and Guidance Regarding Lyme Disease Serologic Test Results, May 2021

Michigan Department of Health and Human Services

Guidance for Local Health Department Lyme Disease Case Investigation and Classification

Revised January 2022
Adapted from the CSTE National Surveillance Case Definition 21-ID-05 available at https://ndc.services.cdc.gov/



* An erythema migrans (EM lesion) is defined as a skin lesion (observed by a healthcare provider) that typically begins as a red macule of papule and expands over a period of days to weeks to form a large round lesion, often with partial central clearing. A single primary lesion must reach a size of ≥ 5 cm in diameter. *Note: Secondary lesions may also occur.*

Lyme Disease Case Classification Matrix

Serologic* Lab Evidence (choose topmost category that applies)

EIA screening test	IgM EIA or WB	IgG EIA or WB	Additional criteria	Category
Positive or equivocal	Positive	Positive		A
Positive or equivocal	Negative	Positive		A
Positive or equivocal	Positive	Negative	within 30 days of symptom onset	A
Unknown or Neg	Positive	Positive WB		B
Unknown or Neg	Negative	Positive WB		B
Positive or equivocal	Positive	Negative	more than 30 days after onset	C
Positive or equivocal	Negative	Negative		C
Unknown or Neg	Pos or Neg	Positive EIA		C
Unknown or Neg	Positive	Negative		C
Unknown or Neg	Negative	Negative		C
Unknown or not done				C

Symptoms (choose topmost category that applies)

Symptom	Category
Erythema migrans (physician confirmed)	1
Arthritis - objective joint swelling in one or more joints	2
Lymphocytic meningitis	2
Cranial neuritis	2
Facial palsy	2
Radiculoneuropathy	2
Encephalomyelitis	2
2nd or 3rd degree heart block	2
Other (fever, arthralgia, fatigue, headache, other rash)	3
No information/Lost to follow-up (after reasonable effort)	3

Using the lab category (rows) and symptom category (columns), find the appropriate case classification using the matrix below:

	1	2	3
A	Confirmed	Confirmed	Suspect
B	Probable	Probable	Suspect
C	Suspect	Not a case	Not a case

*Non-serologic lab tests for Lyme disease may include:
- Isolation of *B. burgdorferi* or *B. mayonii* in culture,
- Detection of *B. burgdorferi* or *B. mayonii* by specific NAAT assay
- Detection of *B. burgdorferi* group-specific antigens by immunohistochemical assay on biopsy or autopsy tissues.

When positive, these labs can be considered equivalent to category A lab evidence for the purposes of this matrix.

MDHHS Michigan Department of Health & Human Services

EMERGING & ZOONOTIC INFECTIOUS DISEASE

Updated Jan 2022

Lyme Disease/*Borrelia burgdorferi* Laboratory Results Interpretation Key

Jan 2022 NOTE: This interpretation key is in the process of being updated and as of this version may be missing some of the new laboratory assays, particularly the modified two-tier testing algorithm. This will be updated as further laboratory reporting information can be included.

Lyme disease laboratory results can be confusing, since the language used by various commercial laboratories is not standardized. This document is meant to support the case investigator by providing a clear connection between the reported laboratory results and the laboratory criteria listed in the 2022 CSTE National Surveillance Case Definition. Laboratory criteria for diagnosis of Lyme disease, according to the case definition, are shown below.

Laboratory evidence includes:

- **Isolation of *B. burgdorferi* or *B. mayonii* in culture**
- **Detection of *B. burgdorferi* or *B. mayonii* by specific NAAT assay**
- **Detection of *B. burgdorferi* group-specific antigens by immunohistochemical assay on biopsy or autopsy tissues**
- **A positive two-tier test. (This is defined as a positive or equivocal enzyme immunoassay (EIA) or immunofluorescent assay (IFA) followed by a positive Immunoglobulin M (IgM)* or Immunoglobulin G (IgG) western immunoblot (WB) for Lyme disease)**
- **A positive modified two-tiered test. (This is defined as a positive or equivocal screening EIA followed by a positive IgM* or IgG EIA for Lyme disease)**
- **A positive single-tier IgG WB for Lyme disease**

  * IgM results for specimens collected >30 days after symptom onset are unreliable and do not meet case definition criteria.

In the table below, the left column contains electronic commercial laboratory results, as typically displayed in the MDSS. The middle column ("Test type") identifies the test methodology for each, so that case investigators can more easily determine if the laboratory criteria for a case of Lyme disease is met. The right column contains any additional notes or comments about that particular assay.

"**Disregard**" is used for results that relate to individual components of a serologic panel (for example, individual Western Blot bands), which on their own may be uninterpretable. Typically these reports will also contain a summary interpretation, for example, "*B. burgdorferi* IgG Immunoblot; positive", which can be used to help classify the case.

This table does not include all possible Lyme disease test result names, therefore, if the case investigator needs assistance with interpreting a particular lab result not listed below, please contact the MDHHS EZID Section (517-335-8165).

Laboratory Test Result name, by reporting laboratory	Test type	Notes/Comments
ARUP LABORATORIES		
B. burgdorferi Antibody IgM Immunoblot/	Western Blot IgM	
B. burgdorferi Antibody IgM Immunoblot/null	Western Blot IgM	
B. burgdorferi IgG Immunoblot/	Western Blot IgG	
B. Burgdorferi, IgG WB/	Western Blot IgG	
B. Burgdorferi, IgG WB/null	Western Blot IgG	
B.Burgdorferi Antibody, IgM By WB/	Western Blot IgM	
B.Burgdorferi Antibody, IgM By WB/null	Western Blot IgM	
Borrelia burgdorferi C6 Pep Abs, ELISA/null	C6 peptide	
Aspirus (All locations)		
B burgdor Ab XXX EIA-aCnc/LYME INDEX VALUE	Screening EIA	
B burgdor IgG Ser Ql IB/LYME IgG WEST BLOT	Western Blot IgG	
B burgdor IgG+IgM Ser EIA-Imp/LYME ANTIBODY	Screening EIA	
B burgdor IgM Ser Ql IB/LYME IgM WEST BLOT	Western Blot IgM	
Beaumont Royal Oak		
Borrelia burgdorferi IgG Ab [Presence] in Serum by Immunoblot (IB)/MDCH-Lyme Antibodies IgG Immunoblot	Western Blot IgG	
Borrelia burgdorferi IgM Ab [Presence] in Serum by Immunoblot (IB)/MDCH- Lyme Antibodies IgM Immunoblot	Western Blot IgM	
Borgess Medical Center		
BORRELIA BURGDORFERI AB.IGG:ACNC:PT:SER:ORD:IB/Lyme disease (Borrelia burgdorferi) Western Blot IgG Qualitative Serum	Western Blot IgG	
BORRELIA BURGDORFERI AB.IGG+IGM:ACNC:PT:SER:ORD:/Lyme disease (Borrelia burgdorferi) Antibody	Screening EIA	
BORRELIA BURGDORFERI AB.IGM:ACNC:PT:SER:ORD:IB/Lyme disease (Borrelia burgdorferi) Western Blot IgM Qualitative Serum	Western Blot IgM	
Lyme disease (Borrelia burgdorferi) Antibody/Lyme disease (Borrelia burgdorferi) Antibody	Screening EIA	
Bronson (all locations)		
Borrelia burgdorferi Ab.IgG band pattern:Imp:Pt:Ser:Nom:IB/IgG BAND(S)	disregard	
Borrelia burgdorferi Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG IMMUNOBLOT	Western Blot IgG	
Borrelia burgdorferi Ab.IgM band pattern:Imp:Pt:Ser:Nom:IB/IgM BAND(S)	disregard	
Borrelia burgdorferi Ab.IgM:ACnc:Pt:Ser:Ord:IB/IgM IMMUNOBLOT	Western Blot IgM	
Borrelia burgdorferi IgG and IgM [interpretation] in Serum by Immunoassay/LYME IGG IGM	Screening EIA	

Covenant HealthCare		
BORRELIA BURGDORFERI AB.IGG:ACNC:PT:SER:ORD:IB/Lyme disease (Borrelia burgdorferi) Western Blot IgG Qualitative Serum	Western Blot IgG	
BORRELIA BURGDORFERI AB.IGM:ACNC:PT:SER:ORD:IB/Lyme disease (Borrelia burgdorferi) Western Blot IgM Qualitative Serum	Western Blot IgM	
BORRELIA BURGDORFERI AB:ACNC:PT:SER:ORD:EIA/Lyme disease (Borrelia burgdorferi) Antibody	Screening EIA	
BORRELIA BURGDORFERI AB:PRTHR:PT:SER:ORD:IA/Lyme disease (Borrelia burgdorferi) Antibody	Screening EIA	
IGeneX, Inc.		
Lyme Western Blot IgG (CDC Interpretation ONLY***)	Western Blot IgG	***IGeneX provides multiple interpretations for Western blot testing. ONLY "CDC interpretation criteria" are valid for case classification
Lyme Western Blot IgG (IGeneX interpretation)	disregard	
Lyme Western Blot IgM (CDC Interpretation ONLY***)	Western Blot IgM	
Lyme Western Blot IgM (IGeneX interpretation)	disregard	
LABCORP		
Borrelia burgdorferi Ab.IgG band pattern/Lyme IgG WB Interp.	Western Blot IgG	
Borrelia burgdorferi Ab.IgG+IgM/Lyme IgG/IgM Ab	Screening EIA	
Borrelia burgdorferi Ab.IgM band pattern/Lyme IgM WB Interp.	Western Blot IgM	
Borrelia burgdorferi Ab.IgM/Lyme Disease Ab, Quant, IgM	Screening EIA	
Borrelia burgdorferi C6 Ab/C6 Borrelia burgdorferi (Lyme)	C6 peptide	
Borrelia burgdorferi Ab.IgG+IgM	Screening EIA	
Borrelia burgdorferi Ab.IgG	Confirmatory EIA IgG	
Borrelia burgdorferi Ab.IgM	Confirmatory EIA IgM	
Marquette General Hospital		
Borrelia burgdorferi 18kD Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG P18 Ab	disregard	
Borrelia burgdorferi 23kD Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG P23 Ab	disregard	
Borrelia burgdorferi 23kD Ab.IgM:ACnc:Pt:Ser:Ord:IB/IgM P23 Ab	disregard	
Borrelia burgdorferi 28kD Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG P28 Ab	disregard	
Borrelia burgdorferi 30kD Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG P30 Ab	disregard	
Borrelia burgdorferi 39kD Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG P39 Ab	disregard	
Borrelia burgdorferi 39kD Ab.IgM:ACnc:Pt:Ser:Ord:IB/IgM P39 Ab	disregard	
Borrelia burgdorferi 41kD Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG P41 Ab	disregard	
Borrelia burgdorferi 41kD Ab.IgM:ACnc:Pt:Ser:Ord:IB/IgM P41 Ab	disregard	
Borrelia burgdorferi 45kD Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG P45 Ab	disregard	
Borrelia burgdorferi 58kD Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG P58 Ab	disregard	
Borrelia burgdorferi 66kD Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG P66 Ab	disregard	
Borrelia burgdorferi 93kD Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG P93 Ab	disregard	
Borrelia burgdorferi Ab.IgG band pattern:Imp:Pt:Ser:Nom:IB/Lyme IgG WB Interp	Western Blot IgG	
Borrelia burgdorferi Ab.IgG+IgM:ACnc:Pt:Ser:Qn/Lyme Antibody	Screening EIA	
Borrelia burgdorferi Ab.IgM band pattern:Imp:Pt:Ser:Nom:IB/Lyme IgM WB Interp	Western Blot IgM	

MAYO CLINIC DEPT OF MED AND PATHOLOGY		
BORRELIA BURGDORFEI IGG BAND PATTERN/IGG BAND(S)	disregard	
BORRELIA BURGDORFEI IGM BAND PATTERN/IGM BAND(S)	disregard	
BORRELIA BURGDORFERI AB BAND PATTERN/INTERPRETATION	disregard	
BORRELIA BURGDORFERI AB IGM/IGM IMMUNOBLOT	Western Blot IgM	
BORRELIA BURGDORFERI IGG BAND PATTERN/IGG BAND(S)	disregard	
BORRELIA BURGDORFERI IGM BAND PATTERN/IGM BAND(S)	disregard	
BORRELIA BURGODORFERI AB, IGG/IGG IMMUNOBLOT	Western Blot IgG	
McLaren Main Lab - Flint		
Borrelia burgdorferi Ab.IgG:ACnc:Pt:Ser:Ord/Lymes Antibody	Screening EIA	
Borrelia burgdorferi Ab.IgG:ACnc:Pt:Ser:Qn/Lymes AB Unit	Screening EIA	
MDHHS REGIONAL LAB - LANSING		
Borrelia burgdorferi Ab band pattern/Lyme Western Blot	Screening EIA*, Western Blot IgM and IgG	*MDHHS BOL does not report results of screening EIA test, but you can assume it was positive if the confirmatory tests were performed
Borrelia burgdorferi Ab.IgG/IgG	Screening EIA*, Confirmatory EIA IgG	
Borrelia burgdorferi Ab.IgM/IgM	Screening EIA*, Confirmatory EIA IgM	
MidMichigan Medical Center-(all locations)		
B burgdor Ab Patrn Ser IB-Imp/INTERPRETATION (LYME)	disregard	
B burgdor IgG Patrn Ser IB-Imp/IgG BAND(S)	disregard	
B burgdor IgG Ser Ql IB/LYME IgG WESTERN BLOT	Western Blot IgG	
B burgdor IgM Patrn Ser IB-Imp/IgM BAND(S)	disregard	
B burgdor IgM Ser Ql IB/LYME IgM WESTERN BLOT	Western Blot IgM	
Quest Diagnostic Wood Dale		
B BURGDOR AB SER QL EIA/LYME AB SCREEN	EIA	
B BURGDOR AB SER EIA-ACNC/LYME AB SCREEN	EIA	
B BURGDOR IGG SER QL IB/LYME DISEASE AB(IGG),BLOT	Western Blot IgG	
B BURGDOR IGM SER QL IB/LYME DISEASE AB(IGM),BLOT	Western Blot IgM	
B BURGDOR18KD IGG SER QL IB/18 KD (IGG) BAND	disregard	
B BURGDOR23KD IGG SER QL IB/23 KD (IGG) BAND	disregard	
B BURGDOR23KD IGM SER QL IB/23 KD (IGM) BAND	disregard	

B BURGDOR28KD IGG SER QL IB/28 KD (IGG) BAND	disregard
B BURGDOR30KD IGG SER QL IB/30 KD (IGG) BAND	disregard
B BURGDOR39KD IGG SER QL IB/39 KD (IGG) BAND	disregard
B BURGDOR39KD IGM SER QL IB/39 KD (IGM) BAND	disregard
B BURGDOR41KD IGG SER QL IB/41 KD (IGG) BAND	disregard
B BURGDOR41KD IGM SER QL IB/41 KD (IGM) BAND	disregard
B BURGDOR45KD IGG SER QL IB/45 KD (IGG) BAND	disregard
B BURGDOR58KD IGG SER QL IB/58 KD (IGG) BAND	disregard
B BURGDOR66KD IGG SER QL IB/66 KD (IGG) BAND	disregard
B BURGDOR93KD IGG SER QL IB/93 KD (IGG) BAND	disregard
South Haven Hospital	
Borrelia burgdorferi Ab.IgG band pattern:Imp:Pt:Ser:Nom:IB/IgG BAND(S)	disregard
Borrelia burgdorferi Ab.IgG:ACnc:Pt:Ser:Ord:IB/IgG IMMUNOBLOT	Western Blot IgG
Borrelia burgdorferi Ab.IgM band pattern:Imp:Pt:Ser:Nom:IB/IgM BAND(S)	disregard
Borrelia burgdorferi Ab.IgM:ACnc:Pt:Ser:Ord:IB/IgM IMMUNOBLOT	Western Blot IgM
Borrelia burgdorferi IgG and IgM [interpretation] in Serum by Immunoassay/LYME IGG IGM	Screening EIA
Sparrow Labs	
Borrelia burgdorferi IgG+IgM Ab [Presence] in Serum/STATE ELR Lyme Ab, Result	Screening EIA
Borrelia burgdorferi Ab band pattern [Interpretation] in Serum by Immunoblot/STATE ELR Lyme IgG Western Blot	Western Blot IgG
Borrelia burgdorferi IgM Ab [Presence] in Serum by Immunoblot/STATE ELR Lyme IgM Western Blot	Western Blot IgM
Spectrum Butterworth	
BORRELIA BURGDORFERI AB.IGG BAND PATTERN:IMP:PT:SER:NOM:IB/Lyme disease (Borrelia burgdorferi) Western Blot IgG Qualitative Serum	Western Blot IgG
BORRELIA BURGDORFERI AB.IGG:ACNC:PT:SER:ORD:IB/Lyme disease (Borrelia burgdorferi) Western Blot IgG Qualitative Serum	Western Blot IgG
BORRELIA BURGDORFERI AB.IGG+IGM:ACNC:PT:SER:ORD:/Lyme disease (Borrelia burgdorferi) Antibody	Screening EIA
BORRELIA BURGDORFERI AB.IGM BAND PATTERN:IMP:PT:SER:NOM:IB/Lyme disease (Borrelia burgdorferi) Western Blot IgM Qualitative Serum	Western Blot IgM
BORRELIA BURGDORFERI AB.IGM:ACNC:PT:SER:ORD:IB/Lyme disease (Borrelia burgdorferi) Western Blot IgM Qualitative Serum	Western Blot IgM
St. Mary's of Saginaw	
Borrelia burgdorferi Ab.IgG IgM:Imp:Pt:Ser:Nom:EIA/Lyme Disease Antibody	Screening EIA
University of Michigan	
B burgdor IgG Ser Ql IB/LYME IgG WEST BLOT	Western Blot IgG
B burgdor IgG Ser Ql IB/LYME IgM WEST BLOT	Western Blot IgM
Warde	
Borrelia Burgdorferi Total IgG/IgM Antibody	Screening EIA
B. burgdorferi Ab IgG/IgM IB	Western Blot IgM and IgG

LYME DISEASE CASE REPORT FORM

Patient Information

First Name: _____ **Last Name:** _____

Address: _____
Street City State Zip Code

Date of Birth: Mo. ☐☐ Day ☐☐ Year ☐☐☐☐ **Sex:** ❑ Male ❑ Female ❑ Unspecified

Date of Onset: Mo. ☐☐ Day ☐☐ Year ☐☐☐☐ **Date of Diagnosis:** Mo. ☐☐ Day ☐☐ Year ☐☐☐☐

Symptoms and Signs of Current Episode (Select all that apply)

- ❑ Erythema migrans
- ❑ Atrioventricular block
- ❑ Bell's Palsy
- ❑ Other cranial neuritis
- ❑ Encephalitis
- ❑ Encephalomyelitis
- ❑ Arthritis
- ❑ Lymphocytic meningitis
- ❑ Radiculoneuropathy
- ❑ Other_____

Does the patient recall a tick bite? ❑ Yes ❑ No

Did the patient travel in the 30 days prior to onset? ❑ Yes ❑ No

If yes, where? _____

Are diagnostic laboratory tests pending? ❑ Yes ❑ No

Were antibiotics prescribed? ❑ Yes ❑ No

If yes, what was prescribed and for how long? _____

Physician Information

Physician Name: _____ **Practice:** _____

Phone #: _____