

# Lyme disease

## Surveillance Protocol

Lyme disease was first recognized in the United States in 1977, after an unusual outbreak of arthritis among children near Lyme, Connecticut<sup>1</sup>. Public health surveillance for Lyme disease began in 1980, and was nationally notifiable beginning in 1991<sup>1</sup>. Today, it is the most commonly reported vector-borne disease in the United States.

### **Provider Responsibilities**

1. Report suspect and confirmed cases of Lyme disease (including copies of lab results) to the local health department within one week of diagnosis.
2. Follow national guidelines for Lyme disease testing<sup>2,3,4</sup>. Appropriate Lyme disease testing should include a two-tier testing approach that includes EIA or IFA screening with Western blot confirmation.

### **Laboratory Responsibilities**

1. Report positive laboratory results for Lyme disease to the local health department within 1 week.
2. Follow national guidelines for Lyme disease testing<sup>2,3,4</sup>. Appropriate Lyme disease testing should include a two-tier testing approach that includes an EIA or IFA screening of serum with Western blot confirmation.

### **Local Health Responsibilities**

1. Conduct an appropriate case investigation. For each case:
  - a. Contact the physician that either reported the case or ordered Lyme disease testing
  - b. Using “Form A” from the Lyme disease case investigation toolkit (see **Appendix A** of this document), collect the clinical information necessary to perform case ascertainment. Local forms may be used, as long as the same information is collected. A provider “quick sheet” on Lyme disease has been developed (also in **Appendix A**), and may accompany “Form A” if faxed or mailed.
  - c. If the patient had physician-diagnosed erythema migrans measuring 5 cm or greater, contact the patient to determine relevant exposure information. . Patients without EM do not need to be contacted. For patients with EM, use “Form B” from the Lyme disease case investigation toolkit (see **Appendix A** of this document) to collect the information about exposure. Local forms may be used, as long as the same information is collected.
  - d. Educate the patient and the patient’s family on Lyme disease prevention; reinfection is possible and has been documented<sup>5</sup>.
  - e. Report all case data using WVEDSS.

---

### **Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease

## Surveillance Protocol

### **State Health Responsibilities**

1. Educate the public about Lyme disease, especially regarding the mode of tick transmission and use of personal protection. Cases of Lyme disease usually occur between April and November in West Virginia and there is an endemic focus of Lyme disease in the eastern panhandle; increased public education should be targeted toward this time frame and location, with the understanding that Lyme disease may be reported year-round. Additionally, the eastern panhandle of West Virginia borders sections of 3 states (Maryland, northern Virginia, and southeastern Pennsylvania) that have considerable Lyme disease activity<sup>6</sup>.
2. Educate providers and laboratories to report cases of Lyme disease to the local health department in the patient's county of residence within one week of diagnosis.
3. Educate providers and laboratories about appropriate laboratory confirmation of Lyme disease using the recommended two-tiered testing approach (EIA/IFA screening using serum samples with Western blot confirmation).
4. Conduct tick surveillance when ticks are most active:
  - a. Determine areas of West Virginia where *Ixodes scapularis* are located
  - b. As able, test ticks for the causative agent of Lyme disease, *Borellia burgdoferi*.

### **Disease Control Objectives**

1. Increase the number of patients treated with antibiotics in the early stages of Lyme disease to reduce the number of patients with disseminated and late disease.

### **Disease Prevention Objectives**

1. Reduce disease risk through public education by encouraging use of personal protective measures that prevent tick bites.

### **Disease Surveillance Objectives**

1. To identify and monitor the epidemiologic characteristics (including demographics and risk factors) of Lyme disease in West Virginia.
2. To identify areas endemic for Lyme disease in West Virginia.
3. To assess the use of appropriate testing by physicians diagnosing Lyme disease in WV

---

#### **Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease

## Surveillance Protocol

---

### **Public Health Significance**

Lyme disease is transmitted to humans by the bite of infected deer ticks<sup>7</sup>. In the United States, endemic foci of Lyme disease exist along the Atlantic coast and are concentrated between Massachusetts and Maryland; in the upper midwest, an expanding focus is currently concentrated in Wisconsin and Minnesota. Cases are also identified in some areas of California and Oregon. Lyme disease continues to increase nationally. State health departments reported 28,921 confirmed cases of Lyme disease to CDC in 2008, compared with just over 15,000 confirmed cases in 1999<sup>6</sup>.

Initial infection occurs primarily during summer, with a peak in June and July, but may occur throughout the year, depending on the seasonal abundance of the tick in different geographic areas<sup>7</sup>. The distribution of most cases coincides with the distribution of *Ixodes scapularis* (formerly called *I. dammini*) ticks in the eastern and midwestern United States. The explosive repopulation of white-tailed deer in the eastern USA has been linked to the spread of Lyme disease in this region<sup>7</sup>. The patient age groups most commonly affected include children aged 2 through 15 years of age and adults aged 30 to 59 years of age<sup>8</sup>.

### **Clinical Description**

This tickborne disease is characterized by a distinctive skin lesion, systemic symptoms and neurologic, rheumatologic and cardiac involvement that occur in varying combinations over a period of months to years<sup>8</sup>. An initial skin lesion occurs in 60-80% of patients and appears as a red macule or papule that expands slowly in an annular manner, often with central clearing. This distinctive skin lesion is called erythema migrans (EM) or may sometimes be referred to as a “bull’s eye rash.” EM may be single or multiple. To be considered significant for case surveillance purposes, the EM lesion must be physician diagnosed and measure at least 5 cm in diameter<sup>9</sup>. According to the Infectious Disease Society of America (IDSA), EM is the only objective sign of Lyme disease in the United States that is considered to be characteristic enough to allow clinical diagnosis of Lyme disease in the absence of laboratory confirmation<sup>9</sup>. With or without EM, early systemic manifestations of Lyme disease may include malaise, fatigue, fever, headache, stiff neck, myalgia, migratory, arthralgias and/or lymphadenopathy, all of which may last several weeks or more in untreated patients<sup>9</sup>.

Within weeks to months after onset of the EM lesion, neurologic abnormalities such as aseptic meningitis and cranial neuritis—including cranial nerve palsy, radiculopathy, cerebellar ataxia, motor or sensory radiculoneuritis, myelitis and, rarely, encephalitis may develop; symptoms fluctuate, may last for months and may become chronic. In the United States, cranial neuropathy is the most common manifestation of early neurologic Lyme disease<sup>9</sup>. Cardiac abnormalities

---

### **Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease

## Surveillance Protocol

(including atrioventricular block and rarely, acute myopericarditis or cardiomegaly) usually occur around 2 months after onset of EM<sup>9</sup>. Weeks to years after initial disease onset, intermittent episodes of swelling and pain in large joints, especially the knees, may develop and recur for several years; chronic arthritis may occasionally result. Similarly, sometimes following long periods of latent infection, chronic neurologic manifestations may develop and include encephalopathy, polyneuropathy or leukoencephalitis; the CSF often shows lymphocytic pleocytosis and elevated protein levels, while the electromyogram is usually abnormal.

It should be noted that in recent years, the number of cases with documented late manifestations of Lyme disease (including neurologic, rheumatologic and cardiac complications) have appeared to decline compared with earlier reports of the prevalence of these manifestations. IDSA suggests these declines may be due to ascertainment bias in earlier studies, or more successful treatment of early Lyme disease due to better recognition of EM<sup>9</sup>.

### **Etiologic Agent**

The bacterium that causes Lyme disease is *Borrelia burgdorferi*, a spirochete.

### **Reservoir**

Ixodid ticks are reservoirs for Lyme disease through transstadial transmission, meaning *B. burgdorferi* can be transmitted from one tick stage to the next<sup>7</sup>. Wild rodents, especially *Peromyscus* spp. (deer mice) in the northeastern and midwestern USA and *Neotoma* spp. (pack rats) in the western USA maintain the enzootic transmission cycle. Deer serve as important maintenance mammalian hosts for vector tick species. Larval and nymphal ticks feed on small mammals, and adult ticks feed primarily on deer. The majority of Lyme disease cases result from bites by infected nymphs.

### **Mode of Transmission**

The most important and by far the most common mode of transmission is through the bite of an infected tick. In experimental animals, transmission by *I. scapularis* and *I. pacificus* usually does not occur until the tick has been attached for more than 36 hours; this may also be true in humans<sup>7</sup>. Additionally, *B. burgdorferi* can survive in blood products; therefore, patients with suspected Lyme disease should refrain from donating blood until after completing adequate antibiotic therapy<sup>7,10</sup>. Information on the current criteria for blood donation is available on the Red Cross website <http://www.redcross.org/donate/give/>. Transmission from infected blood products is theoretically possible; however, to date there have been no reports of cases acquiring Lyme disease through blood products<sup>10</sup>.

---

### **Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease

## Surveillance Protocol

---

Lyme disease acquired during pregnancy may lead to infection of the placenta and possible stillbirth, however, no negative effects on the fetus have been found when the mother receives appropriate antibiotic treatment<sup>10</sup>. There are no reports of Lyme disease transmission from breast milk. Although dogs and cats can get Lyme disease, there is no evidence that they spread the disease directly to their owners. However, pets can bring infected ticks into your home or yard. Consider protecting your pet through the use of tick control products for animals<sup>10</sup>.

There is no evidence of natural transmission from person to person. There are rare case reports of congenital transmission.

### **Incubation Period**

For EM, the incubation period ranges from 3 to 32 days (mean 7 to 10 days) after tick exposure<sup>7</sup>; however, the early stages of the illness may be unapparent, and the patient may present with later manifestations weeks to months after becoming infected.

### **Outbreak Recognition**

Outbreaks would be recognized as an increase in the usual number of cases clustered in place and time.

### **Case Definition**

This surveillance case definition was developed for national reporting of Lyme disease; it is not intended to be used in clinical diagnosis<sup>11</sup>.

#### ***Clinical presentation***

A systemic, tick-borne disease with protean manifestations, including dermatologic, rheumatologic, neurologic, and cardiac abnormalities. The best clinical marker for the disease is erythema migrans (EM), the initial skin lesion that occurs in 60%-80% of patients.

For surveillance purposes, EM is defined as a skin lesion 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 greater than or equal to 5 cm in size across its largest diameter. Secondary lesions also may occur. Annular erythematous lesions occurring within several hours of a tick bite represent hypersensitivity reactions and do not qualify as EM. For most patients, the expanding EM lesion is accompanied by other acute

---

#### **Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease

## Surveillance Protocol

symptoms, particularly fatigue, fever, headache, mildly stiff neck, arthralgia, or myalgia. These symptoms are typically intermittent. The diagnosis of EM must be made by a physician. Laboratory confirmation is recommended for persons with no known exposure.

For surveillance purposes, late manifestations include any of the following when an alternate explanation is not found:

***Musculoskeletal system.*** Recurrent, brief attacks (weeks or months) of objective joint swelling in one or a few joints, sometimes followed by chronic arthritis in one or a few joints. Manifestations not considered as criteria for diagnosis include chronic progressive arthritis not preceded by brief attacks and chronic symmetrical polyarthritis. Additionally, arthralgia, myalgia, or fibromyalgia syndromes alone are not criteria for musculoskeletal involvement.

***Nervous system.*** Any of the following, alone or in combination: lymphocytic meningitis; cranial neuritis, particularly facial palsy (may be bilateral); radiculoneuropathy; or, rarely, encephalomyelitis. Encephalomyelitis must be confirmed by demonstration of antibody production against *Borrelia burgdorferi* in the cerebrospinal fluid (CSF), evidenced by a higher titer of antibody in CSF than in serum. Headache, fatigue, paresthesia, or mildly stiff neck alone, are not criteria for neurologic involvement.

***Cardiovascular system.*** Acute onset of high-grade (2<sup>nd</sup> degree or 3<sup>rd</sup> degree) atrioventricular conduction defects that resolve in days to weeks and are sometimes associated with myocarditis. Palpitations, bradycardia, bundle branch block, or myocarditis alone are not criteria for cardiovascular involvement.

### ***Laboratory evidence***

For the purposes of surveillance, the definition of a qualified laboratory assay is

- (1) a positive culture for *B. burgdorferi*, or
- (2) two-tier testing interpreted using established criteria [1], or
- (3) single-tier IgG immunoblot seropositivity interpreted using established criteria [1-4].

### ***Exposure***

Exposure is defined as having been (less than or equal to 30 days before onset of EM) in wooded, brushy, or grassy areas (i.e., potential tick habitats) in a county in which Lyme disease is endemic. A history of tick bite is not required.

### ***Disease endemic to county***

---

#### **Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease

## Surveillance Protocol

A county in which Lyme disease is endemic is one in which at least two confirmed cases have been acquired in the county or in which established populations of a known tick vector are infected with *B. burgdorferi*. (refer to map of endemic counties in West Virginia in **Appendix B** of this document).

### *Case classification*

Confirmed: a) a case of EM with a known exposure (as defined above), or b) a case of EM with laboratory evidence of infection (as defined above) and without a known exposure or c) a case with at least one late manifestation that has laboratory evidence of infection.

Probable: any other case of physician-diagnosed Lyme disease that has laboratory evidence of infection (as defined above).

Suspected: a) a case of EM where there is no known exposure (as defined above) and no laboratory evidence of infection (as defined above), or b) a case with laboratory evidence of infection but no clinical information available (e.g. a laboratory report).

Lyme disease reports will not be considered cases if the medical provider specifically states this is not a case of Lyme disease, or the only symptom listed is "tick bite" or "insect bite."

### *References [for case definition section only]*

1. Centers for Disease Control and Prevention. Recommendations for test performance and interpretation from the Second National Conference on Serologic Diagnosis of Lyme Disease. MMWR Morb Mortal Wkly Rep 1995; 44:590–1.
2. Dressler F, Whalen JA, Reinhardt BN, Steere AC. Western blotting in the serodiagnosis of Lyme disease. J Infect Dis 1993; 167:392–400.
3. Engstrom SM, Shoop E, Johnson RC. Immunoblot interpretation criteria for serodiagnosis of early Lyme disease. J Clin Microbiol 1995; 33:419–27.
4. Centers for Disease Control and Prevention. Notice to readers: caution regarding testing for Lyme disease. MMWR Morb Mortal Wkly Rep 2005; 54:125–6.
5. Centers for Disease Control and Prevention. Lyme disease — United States, 2003–2005. MMWR Morb Mortal Wkly Rep 2007; 56:573–6.

## Preventive Interventions

---

### **Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease

## Surveillance Protocol

1. Avoid potential tick habitat (such as woody, brushy, or grassy areas) when possible.
2. Minimize exposure by wearing light-colored clothing that covers legs and arms so that ticks are more easily seen; tuck pants into socks and apply tick repellent such as 20% DEET to the skin (according to label directions) or permethrin (a repellent and contact acaricide) to pant legs and sleeves (not skin).
3. Many infections from tickborne diseases happen at home — create tick-free zones. Remove leaf litter and brush around your home and at the edges of lawns. Place wood chips or gravel between lawns and wooded areas. Mow the lawn and clear brush regularly. Keep playground equipment, decks and patios away from yard edges and trees.
4. If working or playing in potential tick habitats, search the total body area daily, including haired areas. Remove ticks promptly. Keep in mind ticks may be very small and difficult to see.
5. Remove any attached ticks by grasping the tick with tweezers as close to the skin as possible. Pull upward using gentle, steady pressure to avoid leaving mouth parts in the skin; protect hands with gloves, cloth or tissue when removing ticks from humans or animals. Following tick removal, cleanse the attachment site with soap and water.
6. Check pets for ticks regularly; consult with a veterinarian regarding medications effective for controlling ticks.

### **Treatment**

The National Institutes of Health (NIH) has funded several studies on the treatment of Lyme disease. These studies have shown that most patients can be cured with a few weeks of antibiotics taken by mouth. Antibiotics commonly used for oral treatment include doxycycline, amoxicillin, or cefuroxime axetil. Patients with certain neurological or cardiac forms of illness may require intravenous treatment with drugs such as ceftriaxone or penicillin<sup>4</sup>.

Patients treated with antibiotics in the early stages of the infection usually recover rapidly and completely. A few patients, particularly those diagnosed with later stages of disease, may have persistent or recurrent symptoms. The authors of studies sponsored by the NIH have concluded that these patients may benefit from a second 4-week course of therapy; however, longer courses of antibiotic treatment are not beneficial. Longer courses of antibiotics have been linked to serious complications, including death<sup>13</sup>.

Studies of women infected during pregnancy have found that there are no negative effects on the fetus if the mother receives appropriate antibiotic treatment for her Lyme disease. In general, treatment for pregnant women is similar to that for non-pregnant persons, although certain

---

### **Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease

## Surveillance Protocol

antibiotics are not used because they may affect the fetus. If in doubt, discuss treatment options with your healthcare provider.

To view treatment guidelines developed by the Infectious Disease Society of America, click [here](#)<sup>9</sup>.

### Surveillance Indicators

1. Proportion of cases with complete demographic information.
2. Proportion of cases with complete clinical information (i.e., presence of physician-diagnosed EM or late manifestations).
3. Proportion of cases reported with physician-diagnosed EM that also contain information on county of exposure.
4. Proportion of cases with appropriate laboratory testing (as defined by the CDC case definition as “Laboratory Evidence”) including copies of lab results submitted to DIDE.

---

#### **Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease

## Surveillance Protocol

---

### References

1. Centers for Disease Control and Prevention (CDC). Surveillance for Lyme disease—United States, 1992 – 2006. *MMWR* 2008; 57:1-9.
2. CDC. Notice to Readers Recommendations for Test Performance and Interpretation from the Second National Conference on Serologic Diagnosis of Lyme Disease. *MMWR* 1995;44:590--1.
3. CDC. Notice to Readers: Caution Regarding Testing for Lyme Disease. *MMWR* 2005; 54(05):125.
4. CDC. Lyme disease diagnosis and treatment. Available at: <http://www.cdc.gov/lyme/diagnosistesting/index.html> Accessed 17 Dec 2011.
5. PJ Krause, Foley DT, Burke GS, et al. Reinfection and relapse in early Lyme disease. *Am J Trop Med Hyg* 2006; 75(6): 1090–1094
6. CDC. Lyme disease statistics. Available at: <http://www.cdc.gov/lyme/stats/index.html> 17 Dec 2012.
7. Heyman, H.L., Ed. (2004). Control of communicable diseases manual, 19th ed. American Public Health Association, Washington D.C. p. 366.
8. Depeitropaolo DL, JH Powers, and JM Gill. Diagnosis of Lyme disease. *Am Fam Phys* 2005; 72(2): 297-304.
9. Wormser GP, RJ Dattwyler, ED Shaprio, et al. The clinical assessment, treatment and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Disease Society of America. *CID* 2006; 43: 1089-134.
10. CDC. Lyme disease transmission. Available at: <http://www.cdc.gov/lyme/transmission/index.html> Accessed 17 Dec 2012.
11. CDC. NDDSS case definition for Lyme disease. Available at: <http://wwwn.cdc.gov/NNDSS/beta/bcasedef.aspx?CondYrID=752&DatePub=1/1/2011 12:00:00 AM> Accessed 17 Dec 2012.
12. Holzbauer SM, MM Kemperman and R Lynfield. Death due to community-associated *Clostridium difficile* in a woman receiving prolonged antibiotic therapy for suspected Lyme disease. *CID* 2010;51; 369.

---

### Division of Infectious Disease Epidemiology

350 Capitol Street, Room 125, Charleston, WV 25301-3715  
Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease Surveillance Protocol



## Appendix A: Lyme disease case Investigation Toolkit.

### Form A: – Tool to assess clinical characteristics of Lyme Disease for healthcare providers

Dear Healthcare Provider:

The \_\_\_\_\_ County Health Department has been notified of a positive laboratory report of Lyme disease for patient \_\_\_\_\_ (DOB: \_\_\_\_/\_\_\_\_/\_\_\_\_). In order to comply with state and federal infectious disease reporting requirements, we are requesting the following clinical details about this patient’s Lyme disease (LD) symptoms, if present. Please respond to the following questions and return this completed sheet via fax to (304) \_\_\_\_\_ - \_\_\_\_\_ within 72 hours of receipt.

A. Date of first symptom onset (month/day/year): \_\_\_\_ / \_\_\_\_ / \_\_\_\_\_

B. Was an erythema migrans measuring at least 5 cm in diameter documented for this patient?

YES       NO

C. Did patient exhibit any of the following symptoms of late-stage Lyme disease?

I. **Rheumatologic/musculoskeletal** (mark one):

- |   |  |
|---|--|
| <input type="checkbox"/> Migratory pain in joints, bone, or muscle                                  | <input type="checkbox"/> Brief arthritis attacks |
| <input type="checkbox"/> Prolonged arthritis  | <input type="checkbox"/> Chronic arthritis       |
| <input type="checkbox"/> No rheumatologic/musculoskeletal symptoms associated with LD were observed |  |

II. **Neurologic** (mark all that apply):

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Meningitis        | <input type="checkbox"/> Bell’s palsy  | <input type="checkbox"/> Cranial neuritis |
| <input type="checkbox"/> Radiculoneuritis  | <input type="checkbox"/> Encephalopathy  | <input type="checkbox"/> Polyneuropathy   |
| <input type="checkbox"/> Leukoencephalitis | <input type="checkbox"/> No neurologic symptoms associated with LD were observed |   |

III. **Cardiovascular** (mark one):

- |   |                                      |   |
|---|--------------------------------------|---|
| <input type="checkbox"/> Myopericarditis                                      | <input type="checkbox"/> Pancarditis | <input type="checkbox"/> Atrioventricular block |
| <input type="checkbox"/> No cardiac symptoms associated with LD were observed |                                      |   |

D. Was this patient diagnosed with Lyme disease?       YES       NO

E. Why was the Lyme disease test ordered for this patient? Mark all that apply.

- |   |   |
|---|---|
| <input type="checkbox"/> Patient had clinical evidence of infection | <input type="checkbox"/> Patient requested Lyme testing |
| <input type="checkbox"/> Patient had exposure to tick habitats      | <input type="checkbox"/> Other: _____                   |

F. Was an antibiotic prescribed?       YES       NO

If yes, indicate type of antibiotic and # of days: \_\_\_\_\_

Comments: \_\_\_\_\_

Thank you for your cooperation.

### Division of Infectious Disease Epidemiology

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease Surveillance Protocol



**Appendix A: Lyme disease Investigation Toolkit.**

**Form B: - tool to assess patient exposure (call patients with EM)**

**\*\* THIS STEP SHOULD BE LIMITED TO CASES WITH DOCUMENTED EM BY HEALTHCARE PROVIDER**

**Optional Script**

“Hello, this is (**your name**), a (**nurse/sanitarian**) from (**county name**) County Health Department. I am following up on a recent report our department received about (**case name**)’s Lyme disease illness. In order for us to better understand the risk for Lyme disease in our county, I would like to ask you a few questions about the time leading up to your illness.”

A. One what date were symptoms first noticed? (month/day/year): \_\_\_\_/\_\_\_\_/\_\_\_\_

B. Did you travel outside of your home county within 30 days of the start of your symptoms?  
 YES       NO

*a. If yes, report travel information:*

Destination (city, state)	Date of departure (month/day/year)	Date of return (month/day/year)

C. Did you recall finding any ticks on your body during the 30 days prior to the start of your symptoms?  
 YES     NO

*b. If yes, enter tick bite details:*

Patient’s location when tick found (city, state)	Was tick attached? (yes/no/unknown)	Date tick found (month/day/year)

Thank the patient, and end the call.

**Appendix A: Lyme disease case Investigation Toolkit.**

**Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease

## Surveillance Protocol

---

### PROVIDER QUICKSHEET: LYME DISEASE

#### **IMPORTANT INFORMATION ABOUT SELECTING LABORATORY TESTS**

1. CDC recommends a two-tier approach for testing serological specimens: IFA/EIA antibody screen, followed by IgM and IgG western blot if IFA/EIA is positive or equivocal.
2. Other CDC recommended diagnostic assays for Lyme disease include:
  - a. A positive culture for *Borrelia burgdorferi*
  - b. Single-tier IgG western blot
  - c. CSF antibody positive for *B. burgdorferi* by EIA or IFA, when the titer is higher than it was in serum

**\*THE USE OF SINGLE-TIER IGM WESTERN BLOT TESTING IS NOT RECOMMENDED\***

#### **RESOURCES FOR PATIENTS**

- CDC website has several brochures and info sheets for patients: <http://www.cdc.gov/lyme/>.
- MedLine Plus website contains several categories of information from credible sources: <http://www.nlm.nih.gov/medlineplus/lymedisease.html>.

#### **RESOURCES FOR HEALTHCARE PROVIDERS**

- CDC has a “Resources for Clinicians” page available at: <http://www.cdc.gov/lyme/healthcare/clinicians.html>
- Information about two-tier testing for Lyme disease is available at: <http://www.cdc.gov/lyme/diagnostesting/LabTest/TwoStep/index.html>
- The Infectious Disease Society of America (IDSA) has developed a FREE online CME case study about the diagnosis and management of Lyme disease available at: <http://lymecourse.idsociety.org/>
- The American Academy of Family Physicians (AAFP) provides a diagnostic guideline to aid healthcare providers in diagnosing Lyme disease available at: <http://www.aafp.org/afp/2005/0715/p297.pdf>
- The West Virginia Department of Health and Resources provides information about the state’s Lyme disease surveillance system as well as links to useful resources available at: <http://www.dhhr.wv.gov/oeps/disease/Zoonosis/Tick/Pages/Lyme.aspx>.

---

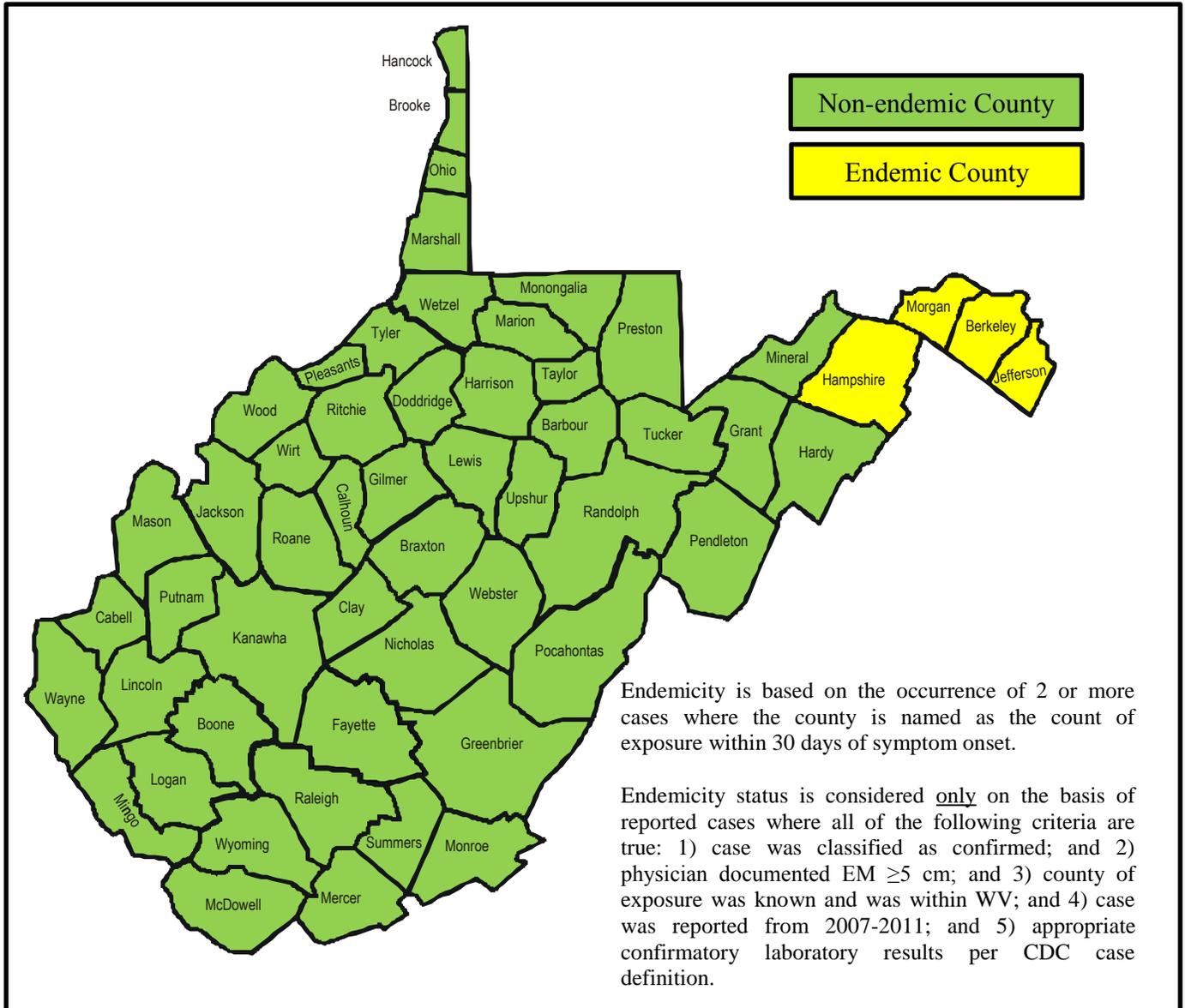
#### **Division of Infectious Disease Epidemiology**

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)

# Lyme disease Surveillance Protocol

## Appendix B: Counties considered endemic for Lyme disease – West Virginia, 2013



### Division of Infectious Disease Epidemiology

350 Capitol Street, Room 125, Charleston, WV 25301-3715

Phone: (304)-558-5358 or 800.423.1271 Fax: 304.558.6335 [www.dide.wv.gov](http://www.dide.wv.gov)