The Centers for Disease Control (CDC) updated its website to include information regarding maternal-fetal transmission of Lyme disease.

Updates from the CDC website:

- **Lyme disease Transmission page** under “Are there other ways to get Lyme disease?”: “Untreated Lyme disease during pregnancy can lead to infection of the placenta. Spread from mother to fetus is possible but rare. Fortunately, with appropriate antibiotic treatment, there is no increased risk of adverse birth outcomes. There are no published studies assessing developmental outcomes of children whose mothers acquired Lyme disease during pregnancy.”

- **Lyme Disease FAQ page** under “I am pregnant and think I have Lyme disease, what should I do?”: “If you are pregnant and suspect you have contracted Lyme disease, contact your physician immediately. Untreated Lyme disease during pregnancy can lead to infection of the placenta. Spread from mother to fetus is possible but rare. Fortunately, with appropriate antibiotic
treatment, there is no increased risk of adverse birth outcomes.* There are no published studies assessing developmental outcomes of children whose mothers acquired Lyme disease during pregnancy.”

- Pregnancy and Lyme disease poster: information on symptoms, diagnosis, and treatment. Regarding breastfeeding the poster states, “There are no reports of Lyme disease transmission through breast milk.”

LDA President, Pat Smith, said this about the CDC’s recent update, “The maternal-fetal aspect of Lyme disease, mother to baby transmission, has long been known but not well-publicized. The new CDC focus on this Lyme transmission method has been missing in Lyme disease education. A number of advocacy groups, including the LDA, have had information on their websites. LymeHope in Canada has been strongly advocating for wider recognition of this aspect, in particular nurse Sue Faber, who spoke before the HHS TBD Working Group in DC in January 2020. Now it is up to all of us to call attention to this CDC focus to ensure health departments and physicians are aware of the situation and that they take appropriate steps to ensure pregnant women get the necessary care.”

Visit the CDC Lyme disease website.

View the LDA’s Pregnancy, Breastfeeding & Lyme Bibliography.
Lyme Bibliography

Any woman who has Lyme disease and is considering becoming pregnant or who is pregnant, or who is bitten by a tick during pregnancy, should see a Lyme disease doctor, one who understands the serious medical implications of Lyme during pregnancy. The Lyme bacteria, *Borrelia burgdorferi*, can cross the placenta and can cause death of the fetus. The Lyme Disease Association (LDA) has compiled the following list of articles related to Lyme and pregnancy and Lyme and breastfeeding for informational purposes only, for your review and review by your physician.

NEW in 2020! [CDC Focus on Maternal-Fetal Transmission of Lyme Disease](https://www.lymehope.ca/advocacy-updates/sharing-our-research-findings-on-lyme-and-pregnancycongenital-transmission-with-)


Carlomagno G; Luksa V; Candussi G; Rizzi GM; Trevisan G Acta Eur Fertil 1988 Sep-Oct;19(5):279-81 Dept. of Obstetrics and Gynecology, University of Trieste School of Medicine. Lyme *Borrelia* positive serology associated with spontaneous abortion in an endemic Italian area.


The opinions presented in the video are those of the presenter and not necessarily of the Lyme Disease Association.


Lavoie PE; Lattner BP; Duray PH; Barbour AG; Johnson HC. Arthritis Rheum 1987; Culture positive seronegative transplacental Lyme borreliosis infant mortality. Volume 30, Number 4, 3(Suppl): S50.


Markowitz, L. E., Steere AC, et al. (1986). “Lyme disease during pregnancy.” JAMA 255(24): 3394-6. Because the etiologic agent of Lyme disease is a spirochete, there has been concern about the effect of maternal Lyme disease on pregnancy outcome.


Breastfeeding


Pregnancy & Breastfeeding

Centers for Disease Control & Prevention (CDC) website

During Pregnancy & While Breastfeeding

“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. There are no reports of Lyme disease transmission from breast milk.”

http://www.cdc.gov/ncidod/dvbid/LYME/ld_transmission.htm
About Lyme Disease Symptoms

Click here for Lyme disease symptoms – Complete list

Approximately 50% of patients may get a rash with Lyme disease, but only 9% get the classic bull’s eye rash. Symptoms may occur days or months after a tick bite. Rash at other than bite site may be disseminated disease.

General Early Lyme disease Symptoms and Signs may include: Erythema Migrans (EM rash), the Bull’s Eye rash (a subset of EM rash), or no rash. The EM rash may appear on other places on your body than the bite site (Disseminated disease). It may begin as a single circular red mark that spreads outwards. As it disseminates over the skin, sometimes it becomes lighter in the area nearer to the center of the bite—this central clearing is what distinguishes a Bull’s eye rash from other EM rashes. In people of color, the rash may appear more like a bruise. The rash is usually not itchy. The rash can be mistaken for a spider bite.

According to the Centers for Disease Control & Prevention (CDC) surveillance criteria, an erythema migrans (EM) rash in an endemic area, means Lyme disease. In a non-endemic area, a rash requires a positive test. The CDC criteria are for surveillance purposes, not diagnosis.

Studies vary as to how long the tick must be attached in order to transmit Lyme disease. The longer an infected tick is attached, the greater the chance of contracting Lyme disease.

Since Lyme disease is a multi-systemic illness there are a multitude of Lyme disease symptoms including:

- Flu-like illness
- Fever
History of Tick Bite (Not all patients recall a bite)

- Headache
- Extreme Fatigue
- EM Rash, Other Rashes (Only found in 50% of patients)
- Malar Flush, Red Ear Lobes
- TMJ/TMJD Jaw Pain (Temporomandibular joint dysfunction)
- Neck & Back Pain
- Joint Pain & Swelling, Bone Pain
- For the full list of symptoms visit the Lyme Disease Association’s Signs and Symptoms List.

Other resources for Lyme disease symptoms on the LDA website:

Dr. Burrascano’s 2005 Lyme Disease Symptom List Chart

En Espanol Enfermedad De Lyme

To see a gallery of EM, Bull’s Eye, and other tick borne disease related rashes go here.

Click here for a Printable Pdf list of Lyme Disease Signs and Symptoms
Lyme Rash Poster

A Lyme disease rash may be a symptom of Lyme disease. About 50% of people bitten by a deer tick develop an erythem migrans (EM) rash at the bite site. A classic bull’s eye rash with a central clearing is a type of an EM rash, and only about 9% develop that classic bull’s eye, other EM rashes look different. Some of those who are bitten by a tick do not develop any rash. Rashes at other than a bite site means disseminated diseases.

The Lyme Disease Association gave a grant to Columbia University to develop and distribute a poster to physicians. With Columbia’s permission, we have made the poster available here for anyone to print and distribute. It must be printed in its entirety.

Click here for printable pdf


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Click here for an updated Cardiac Manifestations of Lyme Poster for your use. (PDF)

The LDA has developed this Cardiac Manifestations of Lyme Poster for your use. You may download it for free and print it out or have it copied at Staples or another office supply store as a large poster for educational use. It must be copied in its entirety. You may NOT sell any material produced from this work. Stores may require a letter from LDA to copy it. Email LDA@LymeDiseaseAssociation.org for the document.
At the [LDA/Columbia University 17th Annual CME Lyme Conference on Oct. 15 & 16th](#), Dr. Elizabeth Maloney presented a cardiac Lyme case and then moved to a broader discussion of Lyme carditis. Dr. Maloney’s presentation traced the evolution of the patient’s clinical picture from multiple erythema migrans lesions to third degree heart block. [Click here for Dr. Maloney’s Bio and Talk Summary](#).

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**What is Lyme Disease?**

Lyme disease is caused by a spiral-shaped bacteria, *Borrelia burgdorferi* (Bb), or by newly discovered *Borrelia mayonii*. It is usually transmitted by the bite of an infected tick—*Ixodes scapularis* in the East, *Ixodes pacificus* in the West.

![Borrelia RML, cyst form](image)

*Photo by: Allen MacDonald, MD*

**How is Lyme disease transmitted?**

In the USA, the bacteria are transmitted to people and animals by the bite of an infected tick, *Ixodes scapularis*, (commonly called the blacklegged or deer tick), and *Ixodes pacificus* (western blacklegged tick) in the West. Although other types of ticks such as the *Dermacentor variabilis* (American dog) and some insects have been shown to carry the Lyme bacteria, to date, transmission of Lyme through those vectors has not
been proven. The longer a tick is attached, the greater risk of disease transmission.

The Lyme bacteria has been proven to survive blood banking conditions; however, to date, no transmission has been proven through blood transfusions in humans. Studies have shown transmission through this route in mice in the lab. Note: Other tick-borne diseases have been transmitted through the blood supply.

The bacteria can also be passed through the placenta of a pregnant woman to the fetus—congenital transmission. The DNA of the bacteria has been found in breast milk, but no transmission has been proven to date in humans.

There is no proof to date that Lyme is sexually transmitted, although some preliminary studies have found PCR positives for the DNA of the Lyme bacteria in semen and in cervical tissue. These findings do not prove sexual transmission, but some physicians feel because the Lyme and syphilis spirochete (bacteria) are similar, Lyme may be sexually transmitted.

Lyme disease is found in approximately 80 plus countries worldwide, and 50 states in the USA, although different types of ticks and different strains of bacteria may be involved. In the USA the number of new cases of Lyme disease contracted each year is approaching 400,000. Many of those cases will include co-infections.
Where can Lyme disease be found in the body?
Lyme is a multi-systemic disease, and the Lyme disease bacterium, *Borrelia burgdorferi* (Bb), may be found in many different organs, although it is often difficult to test for and to culture. To the left is an image that shows *Borrelia burgdorferi* (Bb) in the human colon.

Image *Borrelia burgdorferi* (Lyme disease bacterium) in the Human Colon. Courtesy of Martin Fried, MD
© LDA. 2015, 2016. This website provides practical and useful information on the subject matters covered. It is distributed with the understanding that LDA is not engaged in rendering medical or other professional services. Seek professional services if necessary.

Lyme Disease Treatment Guidelines

Clinical practice guidelines are often used as reference by physicians for Lyme disease treatment and treatment of other tick-borne diseases. The LDA provides some links here for informational purposes only, as LDA does not make specific treatment recommendations.
The only Lyme disease treatment guidelines posted on the National Guidelines Clearinghouse (NGC), under the auspices of the US Department of Health & Human Services, are those adhering to newly revised National Academy of Medicine (NAM), formerly the Institute of Medicine (IOM), standards for guidelines: the International Lyme & Associated Diseases Society (ILADS) Lyme Guidelines, which address usefulness of antibiotic prophylaxis for tick bite, effectiveness of EM treatment, and antibiotics’ role in treatment of persistent Lyme disease symptoms. You can also checkout our handy infographic for treatment guidelines.

**ILADS Guidelines for the Management of Lyme Disease**

**ILADS press release on the new guidelines**

Other Lyme treatment guidelines of note are those developed by one of the most recognized pioneers in Lyme treatment, Dr. Joseph Burrascano, now retired as a treating physician.

Link: [Burrascano Diagnostic Hints & Guidelines*](#) (16th edition, 10/2008)

Primary care physicians and other healthcare providers seeking continuing medical education (CME) credits for Lyme disease diagnosis and treatment can now approach the non-profit Partnership for Tick-Borne Diseases Education (PTDE) led by Elizabeth Maloney, MD, a physician with longstanding experience in speaking about tick-borne diseases, organizing Lyme disease conferences, and co-authoring treatment guidelines on Lyme and other tick-borne diseases.

**Partnership for Tick-Borne Diseases Education, CME for Doctors**

*In order to download this file, you will need Adobe Acrobat Reader 5.0 or greater. Please feel free to [download the latest version](#) for FREE.*
How CDC Surveillance Criteria Impact Lyme Treatment

The Centers for Disease Control & Prevention (CDC) has a case definition for Lyme disease which is developed by the Council of State & Territorial Epidemiologists (CSTE). This definition is meant to be used for surveillance purposes only, not for diagnosis. Surveillance is the collection, analysis and interpretation of data for public health, e.g., comparing case numbers in different states: In 2015, PA is number one in Lyme case numbers, NJ is number two, etc. Below, is the current case definition used for surveillance.

Depending upon what state you live in, surveillance reporting of cases might be mandatory. Some states require doctors to report cases that meet this surveillance criteria to the State, and some also require laboratories to report these Lyme cases or maybe only labs who do electronic reporting.

Doctors are not supposed to use the surveillance criteria to diagnose so Lyme treatment should not be based on surveillance criteria. Insurance companies should not base their payment on surveillance criteria.

Click here: Lyme Disease | 2017 Case Definition

DISCLAIMER: The LDA is not a medical organization. The LDA does not make specific recommendations for treatment. Whenever medical advice is needed, the services of a qualified medical provider should be sought. The guidelines on the web sites above are the products of the guidelines’ authors who are solely responsible for their content.
Robert C. Bransfield, MD, Department of Psychiatry, Rutgers-RWJ Medical School, published an article on 8-25-18, which demonstrates an association between Lyme borreliosis and neuropsychiatric impairments — considered a major advance in psychiatry. Entitled *Neuropsychiatric Lyme Borreliosis: An Overview with a Focus on a Specialty Psychiatrist’s Clinical Practice*, the article was published in a special issue of *Healthcare – Lyme Disease: The Role of Big Data, Companion Diagnostics and Precision Medicine*, with guest editor, Raphael B. Stricker, MD.

According to Dr. Bransfield, “Lyme borreliosis, possibly with
other interactive infections in the body can evade and suppress the immune system and cause immune effects and biochemical changes in the brain causing neuropsychiatric symptoms.” The results can include developmental disorders, autism spectrum disorders, schizoaffective disorders, bipolar disorder, depression, anxiety disorders (panic disorder, social anxiety disorder, generalized anxiety disorder, post-traumatic stress disorder, intrusive symptoms), eating disorders, sleep disorders, decreased libido, addiction, opioid addiction, cognitive impairments, dementia, seizure disorders, suicide, violence, anhedonia, depersonalization, dissociative episodes, derealization and other impairments.

Dr. Bransfield is a member of the Lyme Disease Association’s Scientific & Professional Advisory Board.

Abstract:

There is increasing evidence and recognition that Lyme borreliosis (LB) causes mental symptoms. This article draws from databases, search engines and clinical experience to review current information on LB. LB causes immune and metabolic effects that result in a gradually developing spectrum of neuropsychiatric symptoms, usually presenting with significant comorbidity which may include developmental disorders, autism spectrum disorders, schizoaffective disorders, bipolar disorder, depression, anxiety disorders (panic disorder, social anxiety disorder, generalized anxiety disorder, posttraumatic stress disorder, intrusive symptoms), eating disorders, decreased libido, sleep disorders, addiction, opioid addiction, cognitive impairments, dementia, seizure disorders, suicide, violence, anhedonia, depersonalization, dissociative episodes, derealization and other impairments. Screening assessment followed by a thorough history, comprehensive psychiatric clinical exam, review of systems, mental status exam, neurological exam and physical exam relevant to the patient’s complaints and findings with clinical judgment, pattern recognition and knowledgeable
interpretation of laboratory findings facilitates diagnosis. Psychotropics and antibiotics may help improve functioning and prevent further disease progression. Awareness of the association between LB and neuropsychiatric impairments and studies of their prevalence in neuropsychiatric conditions can improve understanding of the causes of mental illness and violence and result in more effective prevention, diagnosis and treatment.

[Click here for full journal article]

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**Printable List of Lyme Disease Symptoms and Signs**

Lyme disease is a Multi-Systemic Disease caused by the bacteria called *Borrelia burgdorferi* (Bb) which normally is a bacterial spirochete (spiral) shape. General Early Lyme disease Symptoms & Signs: Erythema Chronicum Migrans (EM) also called the Bull’s Eye Rash, at bite site. Rash only found in 50% of patients. Other Types of Rashes anywhere on the body (rash at other than bite site signals disseminated disease). Fever & Flu like Symptoms/Illness.

[Click here for Printable Pdf]

Lyme disease is a Multi-Systemic Disease caused by the bacteria called *Borrelia burgdorferi* (Bb) which normally is a
Bacterial spirochete (spiral) shape.

General Early Lyme disease Symptoms & Signs:
The Erythema Migrans (EM) rash is only found in 50% of patients at the site of the bite. The classic bulls eye rash is a type of EM rash that has a central clearing and is found in about 9% of cases. Some patients have no rash at all. Other types of rashes anywhere on the body — signals disseminated disease. Fever & Flu like Symptoms/Illness.

Musculoskeletal: joint pain or swelling or stiffness, muscle pain, shin splints, neck or back stiffness, migrating muscle pain or cramps, TMJ, neck creaks & cracks, tender soles.

Reproductive: testicular pain/pelvic pain, menstrual irregularity, unexplained milk production (lactation), sexual dysfunction or loss of libido.

Cardiac/Pulmonary: Chest pain or rib soreness, shortness of breath, heart palpitations, pulse skips, slow pulse, heart block, heart murmur, valve prolapse.

Neurological: muscle twitching, headache, tingling, numbness, burning or stabbing sensations, facial paralysis (that looks like Bell’s palsy), dizziness, poor balance, increased motion sickness, light-headedness, wooziness, difficulty walking, tremor, confusion, difficulty thinking/concentrating/ reading, forgetfulness, poor short term memory, disorientation (getting lost, going to wrong place), difficulty with speech, double or blurry vision, eye pain, blindness, increased floaters, increased sensitivity to light or sound or smell, buzzing or ringing in ears, ear pain, decreased hearing or deafness,
difficulty swallowing, seizure activity, white matter lesions, low blood pressure.

**Neuropsychiatric:** mood swings, irritability, depression, disturbed sleep (too much, too little, early awakening), personality changes, Obsessive Compulsive Disorder (OCD), violent outbursts, paranoia, panic/anxiety attacks, hallucinations.

**Gastrointestinal:** Nausea or vomiting, difficulty eating, change in bowel function. Constipation, diarrhea, gastritis, abdominal cramping, irritable bladder or bladder dysfunction, cystitis.

**Other:** fever, sweats, or chills, weight change (loss or gain), fatigue, tiredness, hair loss, swollen glands, sore throat, difficulty swallowing, swelling around the eyes, & swelling in feet.


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**Lyme Study Recruitment**

At times, researchers are looking to recruit patients for studies on Lyme and other tick-borne diseases. LDA may choose to post details on where patients can apply to become study subjects.

[Click here for information on 3 new studies at Columbia University Lyme Research Center](#)