Name: _____ Date:_____

This list is provided by Joseph Burrascano, MD, Internist, (Ret.)
Board of Directors, International Lyme & Associated Diseases Society

CHECK LIST OF ***CURRENT*** SYMPTOMS: This is not meant to be used as a diagnostic scheme, but is provided to streamline the office interview. Note the format- complaints referable to specific organ systems and specific co-infections are clustered to clarify diagnoses and to better display multisystem involvement.

Have you had any of the following in relation to this illness? (CIRCLE "NO" OR "YES")

Tick bite	*N Y*	*"EM" rash (discrete circle)*	*N Y*
Spotted rash over large area	*N Y*	*Linear, red streaks*	*N Y*

	CURRENT SEVERITY				CURRENT FREQUENCY				
SYMPTOM OR SIGN	NONE	MILD	MODERATE	SEVERE	NA	NEVER	OCCASIONAL	OFTEN	CONSTANT
Persistent swollen glands									
Sore throat									
Fevers									
Sore soles, esp. in the AM									
Joint pain									
Fingers, toes									
Ankles, wrists									
Knees, elbows									
Hips, shoulders									
Joint swelling									
Fingers, toes									
Ankles, wrists									
Knees, elbows									
Hips, shoulders									
Unexplained back pain									
Stiffness of the joints or back									
Muscle pain or cramps									
Obvious muscle weakness									
Twitching of the face or other muscles									
Confusion, difficulty thinking									
Difficulty with concentration, reading, problem absorbing new information									
Word search, name block									
Forgetfulness, poor short term memory, poor attention									
Disorientation: getting lost, going to wrong places									
Speech errors- wrong word, misspeaking									
Mood swings, irritability, depression									
Anxiety, panic attacks									
Psychosis (hallucinations, delusions, paranoia, bipolar)									
Tremor									
Seizures									
Headache									
Light sensitivity									
Sound sensitivity									
Vision: double, blurry, floaters									
Ear pain									

Name: _____ Date:_____

	CURRENT SEVERITY				CURRENT FREQUENCY				
SYMPTOM OR SIGN	NONE	MILD	MODERATE	SEVERE	NA	NEVER	OCCASIONAL	OFTEN	CONSTANT
Hearing: buzzing, ringing, decreased hearing									
Increased motion sickness, vertigo, spinning									
Off balance, "tippy" feeling									
Lightheadedness, wooziness, unavoidable need to sit or lie									
Tingling, numbness, burning or stabbing sensations, shooting pains, skin hypersensitivity									
Facial paralysis-Bell's Palsy									
Dental pain									
Neck creaks and cracks, stiffness, neck pain									
Fatigue, tired, poor stamina									
Insomnia, fractionated sleep, early awakening									
Excessive night time sleep									
Napping during the day									
Unexplained weight gain									
Unexplained weight loss									
Unexplained hair loss									
Pain in genital area									
Unexplained menstrual irregularity									
Unexplained milk production; breast pain									
Irritable bladder or bladder dysfunction									
Erectile dysfunction									
Loss of libido									
Queasy stomach or nausea									
Heartburn, stomach pain									
Constipation									
Diarrhea									
Low abdominal pain, cramps									
Heart murmur or valve prolapse?									
Heart palpitations or skips									
"Heart block" on EKG									
Chest wall pain or ribs sore									
Head congestion									
Breathlessness, "air hunger", unexplained chronic cough									
Night sweats									
Exaggerated symptoms or worse hangover from alcohol									
Symptom flares every 4 wks.									
Degree of disability									

Name: _____ Date:_____

DIAGNOSTIC CHECKLIST

To aid the clinician, a workable set of diagnostic criteria were developed with the input of dozens of front line physicians. The resultant document, refined over the years, has proven to be extremely useful not only to the clinician, but it also can help clarify the diagnosis for third party payers and utilization review committees.
It is important to note that the CDC's published reporting criteria are for surveillance only, not for diagnosis. They should not be misused in an effort to diagnose Lyme or set guidelines for insurance company acceptance of the diagnosis, nor be used to determine eligibility for coverage.

LYME BORRELIOSIS DIAGNOSTIC CRITERIA	RELATIVE VALUE
Tick exposure in an endemic region	1
Historical facts and evolution of symptoms over time, consistent with Lyme	2
Systemic signs & symptoms consistent with Bb infection (other potential diagnoses excluded):	
Single system, e.g., monoarthritis	1
Two or more systems, e.g., monoarthritis and facial palsy	2
Erythema migrans, physician confirmed	7
Acrodermatitis Chronica Atrophicans, biopsy confirmed	7
Seropositivity	3
Seroconversion on paired sera	4
Tissue microscopy, silver stain	3
Tissue microscopy, monoclonal immunofluorescence	4
Culture positivity	4
B. burgdorferi antigen recovery	4
B. burgdorferi DNA/RNA recovery	4

DIAGNOSIS

Lyme Borreliosis Highly Likely	7 or above
Lyme Borreliosis Possible	5-6
Lyme Borreliosis Unlikely	4 or below

I suggest that when using these criteria, you state Lyme Borreliosis is “unlikely”, “possible”, or “highly likely” based upon the following criteria"- then list the criteria.

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***JOSEPH J. BURRASCANO JR., M.D.* Copyright, September, 2005**

For complete Burrascano Guidelines:
http://www.lymediseaseassociation.org/drbguide200509.pdf

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CIRCLE SYMPTOMS OR SIGNS HAD RECENTLY (PAST FEW MONTHS)

NOTE DATES IF SYMPTOMS OR SIGNS OCCURRED IN THE PAST

Babesia

Mental/emotional

Head

Short term memory deficits, concentration, progressive disabling memory

Difficulties with direction, gets lost familiar place

Difficulty simple linear thinking

Severe depression

Suicidal ideation

Fear, fear, fear, ocd, anxiety to panic

Pressure sensation (more than headache) occipital, crown and behind eyes

Sensations in head, hot spots, numbness, crawling, crown tenderness

Hypothalamic dysregionation

Severe sleep disturbance, delayed sleep onset, frequent waking, difficulty falling back to sleep

Weird dreams to nightmares

Temp intolerance hot and cold with chill dominant

Occasional fever

Sweats, drenching, worse at night

Mild fluid imbalance overloaded, dehydrated

Appetite swings
Autonomic dysregulation-dizziness vertigo, racing heart (worse at night) to pvc's tachycardia

Short of breath

Intermittent blurred vision to ocular migraines
Tinnitus

Gastrointestinal dysmotility

Orthostatic hypotension to rare hypertension

Wrist/hands/ankles/feet: temp diff, pain diff, burning, numbness

Vice like to wrist, ankles.

Paresthesias hand and feet

Bartonella (not deep, stays skin connect tissue)

Pain joint pain (knees, large or small jts) wandering, unilateral, can be swollen, seldom not, periarticular, minor joint trauma forever to heal, and /or headache

Headache severe ice pick in and around eyes, migraine

Milder problem with cognitive, memory, emotion sx but not as disabling as babesia

Lymphatic, mild spenomegaly, boggy lymphadenopathy , seldom hard but often painful

Worse cervical chains, popliteal fossa, thoracic duct, vague tightness chest, puffy supraclavicular L>R

Eyes conjunctivitis pain in and around eyes, intermittent blurred vision

Throat: soar

Liver: mildly elevated liver enzymes (AST, ALF), mild hepatomegaly, gallbladder dysfunction, gerd, upper right belly pain

Skin: rashes, papualr, stria abdomen and upper legs, acne crusty

Subcutaneous nodules, can be tender

Crawling, burning, multiple sensations

Feet: sensitive, painful soles, worse getting out of bed and standing usually bilateral

Painful bones of feet, foota and ankle can both be painful

Bartonella-sole pain, ankle pain

Babesia foot pain

Borrelia heel specific pain

SORTING OUT LYME AND ASSOCIATED CO-INFECTIONS

Joseph J. Burrascano, Jr., M.D.

In addition to *Borrelia burgdorferi* (Bb), ticks may carry and transmit other infections. Furthermore, patients with disseminated Lyme complicated by these co-infections are usually immunocompromized and may also manifest signs and symptoms of reactivated latent infections and opportunists. All can add to morbidity and may need to be treated.

Because of the large number of these other infections, the cost of reliably testing for all of them as a matter of routine is prohibitive. Also, as in the case with Bb infection, laboratory tests for them are often insensitive. Thus there is a need to sort it all out clinically to provide guidance in testing and treatment. Here are some clues:

CLASSIC LYME (Bb infection)-

- Gradual onset of initial (viral-like) symptoms- this often makes it difficult to pinpoint when the infection began

- Multisystem- almost always, in disseminated stages, involves more than one part or system (i.e. joint pain plus cognitive dysfunction).

- Migratory- first a knee will hurt, then over time this may lessen and the elbow or shoulder acts up, and later the joints calm down but headaches worsen.

- Stiff joints and loud joint crepitus, especially the neck (“Lyme shrug”).

- Headaches are often nuchal and associated with stiff, painful and crepitant neck.

- Afternoon fevers, often unnoticed- most Lyme patients have subnormal temperatures in the AM but rise to 99+ by early to mid-afternoon. No obvious sweats.

- Tiredness and limited stamina- often is a strong need to rest or even nap in the afternoon, especially when the flushed face and elevated temperature appears.

- 4-week cycles- Bb activity, and thus symptoms, wax and wane in a cycle that repeats roughly every four weeks. This cycle, if clear, can guide your treatments.

- Slow response to treatment, with an initial symptom flare in most (“Jarisch-Herxheimer-like reaction”) then improvement over weeks, punctuated by the monthly symptom flares. Likewise, if treatment is ended too soon, an initial period of well-being will gradually, over a few weeks, be replaced by a return of
symptoms.

- EM rash in 25% to 50%

BARTONELLA & ”BARTONELLA-LIKE ORGANISMS”-

- Gradual onset of initial illness.

- CNS symptoms are out of proportion to the musculoskeletal ones- if a patient has no or minimal joint complaints but is severely encephalopathic (see below), then think of Bartonella/BLO.

- Obvious signs of CNS irritability can include muscle twitches, tremors, insomnia, seizures, agitation, anxiety, severe mood swings, outbursts and antisocial behavior.

- GI involvement may present as gastritis or abdominal pain (mesenteric adenitis).
- Sore soles, especially in the morning.

- Tender sub-cutaneous nodules along the extremities, especially outer thigh, shins, and occasionally along the triceps.

- Occasional lymphadenopathy.

- Morning fevers, usually around 99. Occasionally light sweats are noted.

- Elevated vascular endothelial growth factor (VEGF) occurs in a minority, but the degree of elevation correlates with activity of the infection and may be used to monitor treatment.

- Rapid response to treatment changes- often symptoms improve within days after antibiotics are begun, but relapses occur also within days if medication is withdrawn early.

- May have papular or linear red rashes (like stretch marks that do not always follow skin planes), especially in those with GI involvement.

BABESIA SPECIES-

- Rapid onset of initial illness, often with sudden onset of high fever, severe headaches, sweats and fatigue, thus it is easy to know when infection began.

- Obvious sweats, usually at night, but can be day sweats as well.

- Air hunger, need to sigh and take a deep breath; dry cough without apparent reason.

- Headaches can be severe - dull, global (involves the whole head, described like the head is in a vise).

- Fatigue is prominent, does not clear with rest, and is made worse with exercise.

- Mental dullness and slowing of reactions and responses.
- Dizziness- more like a tippy feeling, and not vertigo or purely orthostasis.

- Symptoms cycle rapidly, with flares every four to six days.

- Hypercoaguable states are often associated with *Babesia* infections.
- Rarely, splenomegaly

- Very severe Lyme Disease can be a clue to *Babesia* infection, as it will make Lyme symptoms worse and Lyme treatments less effective.

EHRLICHIA/ANAPLASMA-

- Rapid onset of initial illness with fever, headache, prostration.

- Headaches are sharp, knife-like, and often behind the eyes.

- Muscle pain, not joint pain, and can be mild or severe.

- Low WBC count, elevated liver enzymes, and (rarely) inclusions seen in the WBCs.

- Rarely see diffuse vasculitic rash, including palms and soles (less than 10%).

- Rapid response to treatment.

DNA VIRUSES (HHV-6, EBV, CMV)

- Persistent fatigue, made worse with exercise.

- Sore throat, lymphadenopathy, and other viral-like complaints.

- May see elevated liver enzymes and low WBC counts.

- Autonomic dysfunction.

BARTONELLA-LIKE ORGANISMS

It has been said that Bartonella is the most common of all tick-borne pathogens. Indeed, there seems to be a fairly distinct clinical syndrome when this type of organism is present in the chronic Lyme patient. However, several aspects of this infection seem to indicate that this tick-associated strain of Bartonella is different from that described as “cat scratch disease”. For example, in patients who fit the clinical picture, standard Bartonella blood testing is commonly non-reactive. Furthermore, the usual Bartonella medications do not work for this- they suppress the symptoms but do not permanently clear them. For these reasons I like to refer to this as a “Bartonella-like organism” (BLO), rather than assume it is a more common species.

Indicators of BLO infection include CNS symptoms out of proportion to the other systemic symptoms of chronic Lyme. There seems to be an increased irritability to the CNS, with agitation, anxiety, insomnia, and even seizures, in addition to other unusually strong symptoms of encephalitis, such as cognitive deficits and confusion. Other key symptoms may include gastritis, lower abdominal pain (mesenteric adenitis), sore soles, especially in the AM, tender subcutaneous nodules along the extremities, and red rashes. These rashes may have the appearance of red streaks like stretch marks that do not follow skin planes, spider veins, or red
papular eruptions. Lymph nodes may be enlarged and the throat can be sore.

Because standard Bartonella testing, either by serology or PCR, may not pick up this BLO, the blood test is very insensitive. Therefore, the diagnosis is a clinical one, based on the above points. Also, suspect infection with BLO in extensively treated Lyme patients who still are encephalitic, and who never had been treated with a significant course of specific treatment.

The drug of choice to treat BLO is levofloxacin. Levofloxacin is usually never used for Lyme or Babesia, so many patients who have tick-borne diseases, and who have been treated for them but remain ill, may in fact be infected with BLO. Treatment consist of 500 mg daily (may be adjusted based on body weight) for at least one month. Treat for three months or longer in the more ill patient. It has been suggested that levofloxacin may be more effective in treating this infection if a proton pump inhibitor is added in standard doses.

Another subtlety is that certain antibiotic combinations seem to inhibit the action of levofloxacin, while others seem to be neutral. I advise against using an erythromycin-like drug, as clinically such patients do poorly. On the other hand, combinations with cephalosporins, penicillins and tetracyclines are okay. Alternatives to levofloxacin include rifampin, gentamicin and possibly streptomycin. A very recent article suggests that prior use of quinine-like drugs including atovaquone (Mepron, Malarone) may render Levaquin less effective. Therefore, in a co-infected patient, treat the BLO before you address Babesia species.

Levofloxacin is generally well tolerated, with almost no stomach upset. Very rarely, it can cause confusion- this is temporary (clears in a few days) and may be relieved by lowering the dose. There is, however, one side effect that would require it to be stopped- it may cause a

painful tendonitis, usually of the largest tendons. If this happens, then the levofloxacin must be stopped or tendon rupture may occur. It has been suggested that loading the patient with magnesium may prevent this problem, and if the tendons do become affected, parenteral high dose vitamin C (plus parenteral magnesium) may afford rapid relief.

Unfortunately, levofloxacin and drugs in this family cannot be given to those under the age of 18, so other alternatives, such as azithromycin, are used in children.

Incidentally, animal studies show that Bartonella may be transmitted across the placenta. No human studies have been done