Uveitis: **Lyme**

**Basics**

*What is the causative organism in Lyme?*
Uveitis: **Lyme**

**Basics**

*What is the causative organism in Lyme?*
*Borrelia burgdorferi*
Uveitis: **Lyme**

**Basics**

What is the causative organism in Lyme?
*Borrelia burgdorferi*

What are its basic properties (i.e., what sort of organism is it in a microbiology sense)?
Uveitis: **Lyme**

**Basics**

*What is the causative organism in Lyme?*
*Borrelia burgdorferi*

*What are its basic properties (ie, what sort of organism is it in a microbiology sense)?*
*It is a spirochete*
Uveitis: **Lyme**

**Basics**

*What is the causative organism in Lyme?*
*Borrelia burgdorferi*

*What are its basic properties (ie, what sort of organism is it in a microbiology sense)?*
*It is a spirochete*

*Is it Gram positive, or Gram negative?*
Uveitis: **Lyme**

**Basics**

What is the causative organism in Lyme?
*Borrelia burgdorferi*

What are its basic properties (ie, what sort of organism is it in a microbiology sense)?
It is a spirochete

Is it Gram positive, or Gram negative?
It is neither
Uveitis: **Lyme**

**Basics**

*What is the causative organism in Lyme?*
*Borrelia burgdorferi*

*What are its basic properties (ie, what sort of organism is it in a microbiology sense)?*
It is a spirochete

*Is it Gram positive, or Gram negative?*
It is neither

*How are humans infected?*
Uveitis: **Lyme**

## Basics

**What is the causative organism in Lyme?**  
*Borrelia burgdorferi*

*What are its basic properties (ie, what sort of organism is it in a microbiology sense)?*  
It is a spirochete

*Is it Gram positive, or Gram negative?*  
It is neither

*How are humans infected?*  
Via a bite from a tick of the *Ixodes* genus
Uveitis: **Lyme**

**Basics**

*What is the causative organism in Lyme?*
*Borrelia burgdorferi*

*What are its basic properties (ie, what sort of organism is it in a microbiology sense)?*
*It is a spirochete*

*Is it Gram positive, or Gram negative?*
*It is neither*

*How are humans infected?*
*Via a bite from a tick of the *Ixodes* genus*

*What animals serve as the reservoir for the disease?*
Uveitis: **Lyme**

**Basics**

What is the causative organism in Lyme?
Borrelia burgdorferi

What are its basic properties (ie, what sort of organism is it in a microbiology sense)?
It is a spirochete

Is it Gram positive, or Gram negative?
It is neither

How are humans infected?
Via a tick of the *Ixodes* genus

What animals serve as the reservoir for the disease?
Chiefly deer, but horses, cows, rodents, cats and dogs, and certain bird species do as well
Uveitis: *Lyme*

**Basics**

*What is the causative organism in Lyme?*
*Borrelia burgdorferi*

*What are its basic properties (ie, what sort of organism is it in a microbiology sense)?*
*It is a spirochete*

*Is it Gram positive, or Gram negative?*
*It is neither*

*How are humans infected?*
*Via a bite from a tick of the *Ixodes* genus*

*What animals serve as the reservoir for the disease?*
*Chiefly deer, but horses, cows, rodents, cats and dogs, and certain bird species do as well*

*What regions of the US have the highest annual incidence of Lyme disease (LD)?*
*--*

*--*
Uveitis: **Lyme**

**Basics**

*What is the causative organism in Lyme?*
*Borrelia burgdorferi*

*What are its basic properties (ie, what sort of organism is it in a microbiology sense)?*
*It is a spirochete*

*Is it Gram positive, or Gram negative?*
*It is neither*

*How are humans infected?*
*Via a bite from a tick of the *Ixodes* genus*

*What animals serve as the reservoir for the disease?*
*Chiefly deer, but horses, cows, rodents, cats and dogs, and certain bird species do as well*

*What regions of the US have the highest annual incidence of Lyme disease (LD)?*
--The Northeast, especially Connecticut
--The Minnesota/Wisconsin region
Uveitis: **Lyme**

**Basics**

What is the causative organism in Lyme?
*Borrelia burgdorferi*

What are its basic properties (i.e., what sort of organism is it in a microbiology sense)?
It is a spirochete

Is it Gram positive, or Gram negative?
It is neither

How are humans infected?
Via a bite from a tick of the *Ixodes* genus

What animals serve as the reservoir for the disease?
Chiefly deer, but horses, cows, rodents, cats and dogs, and certain bird species do as well

What regions of the US have the highest annual incidence of Lyme disease (LD)?
--The Northeast, especially Connecticut
--The Minnesota/Wisconsin region

What time of year is LD most likely to occur?
Uveitis: Lyme

Basics

What is the causative organism in Lyme?
Borrelia burgdorferi

What are its basic properties (ie, what sort of organism is it in a microbiology sense)?
It is a spirochete

Is it Gram positive, or Gram negative?
It is neither

How are humans infected?
Via a bite from a tick of the Ixodes genus

What animals serve as the reservoir for the disease?
Chiefly deer, but horses, cows, rodents, cats and dogs, and certain bird species do as well

What regions of the US have the highest annual incidence of Lyme disease (LD)?
--The Northeast, especially Connecticut
--The Minnesota/Wisconsin region

What time of year is LD most likely to occur?
Summer--May to August
Uveitis: **Lyme**

**Basics**

*What is the causative organism in Lyme?*
*Borrelia burgdorferi*

*What are its basic properties (ie, what sort of organism is it in a microbiology sense)?*
*It is a spirochete*

*Is it Gram positive, or Gram negative?*
*It is neither*

*How are humans infected?*
*Via a bite from a tick of the *Ixodes* genus*

*What animals serve as the reservoir for the disease?*
*Chiefly deer, but horses, cows, rodents, cats and dogs, and certain bird species do as well*

*What regions of the US have the highest annual incidence of Lyme disease (LD)?*
--The Northeast, especially Connecticut
--The Minnesota/Wisconsin region

*What time of year is LD most likely to occur?*
*Summer--May to August*

*What age group(s) is/are most likely to be affected?*
**Uveitis: Lyme**

**Basics**

What is the causative organism in Lyme?
*Borrelia burgdorferi*

What are its basic properties (ie, what sort of organism is it in a microbiology sense)?
It is a spirochete

Is it Gram positive, or Gram negative?
It is neither

How are humans infected?
Via a bite from a tick of the *Ixodes* genus

What animals serve as the reservoir for the disease?
Chiefly deer, but horses, cows, rodents, cats and dogs, and certain bird species do as well

What regions of the US have the highest annual incidence of Lyme disease (LD)?
--The Northeast, especially Connecticut
--The Minnesota/Wisconsin region

What time of year is LD most likely to occur?
Summer--May to August

What age group(s) is/are most likely to be affected?
The age distribution is bimodal, with peaks at # to # years, and again at # to #
Uveitis: **Lyme**

**Basics**

*What is the causative organism in Lyme?*
*Borrelia burgdorferi*

*What are its basic properties (ie, what sort of organism is it in a microbiology sense)?*  
It is a spirochete

*Is it Gram positive, or Gram negative?*  
It is neither

*How are humans infected?*  
Via a bite from a tick of the *Ixodes* genus

*What animals serve as the reservoir for the disease?*  
Chiefly deer, but horses, cows, rodents, cats and dogs, and certain bird species do as well

*What regions of the US have the highest annual incidence of Lyme disease (LD)?*  
--The Northeast, especially Connecticut  
--The Minnesota/Wisconsin region

*What time of year is LD most likely to occur?*  
Summer--May to August

*What age group(s) is/are most likely to be affected?*  
The age distribution is bimodal, with peaks at 5-15 years, and again at 50-60
Uveitis: **Lyme**

### Basics

*LD passes through three stages--what are they?*

---

---

---

---
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they?*

--The **Local disease** stage

--The **Disseminated disease** stage

--The **Persistent disease** stage
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they?*

--- The **Local disease** stage  

--- The **Disseminated disease** stage  

--- The **Persistent disease** stage

*Broadly speaking, what eye manifestations are associated with each stage?*
Uveitis: *Lyme*

**Basics**

*LD passes through three stages--what are they?*

--The **Local disease** stage  *Follicular conjunctivitis*

--The **Disseminated disease** stage  *Intraocular inflammatory dz (ie, uveitis; aka the stuff we’re talking about in this slide-set)*

--The **Persistent disease** stage  *Usually little eye involvement, although may be present*
Uveitis: **Lyme**

**Basics**

LD passes through three stages--what are they?

---The Local disease stage  **Follicular conjunctivitis**

---The Disseminated disease stage  **Intraocular inflammatory dz (ie, uveitis; aka the stuff we’re talking about in this slide-set)**

---The Persistent disease stage  **Usually little eye involvement, although keratitis may be present**
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they?*

*How much time typically passes between the bite and the onset of Local disease?*

--The **Local disease** stage

--The **Disseminated disease** stage

--The **Persistent disease** stage
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? (2-28 days post-inoculation)*

--The **Local disease** stage

--The **Disseminated disease** stage

--The **Persistent disease** stage
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest? (2-28 days post-inoculation)*

--The **Local disease** stage is characterized by…

--The **Disseminated disease** stage

--The **Persistent disease** stage
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest? (2-28 days post-inoculation)*

--The **Local disease** stage is characterized by...the appearance of **three Latin words** at the bite site

--The **Disseminated disease** stage

--The **Persistent disease** stage
Uveitis: *Lyme*

**Basics**

*LD passes through three stages--what are they? How do they manifest? (2-28 days post-inoculation)*

--The **Local disease** stage is characterized by...the appearance of *erythema chronicum migrans* at the bite site

--The **Disseminated disease** stage

--The **Persistent disease** stage
**Basics**

*LD passes through three stages--what are they? How do they manifest? (2-28 days post-inoculation)*

--The **Local disease** stage is characterized by...the appearance of *erythema chronicum migrans* at the bite site

--The **Disseminated disease** stage

--The **Persistent disease** stage

What is the classic appearance of the ECM rash?
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest? (2-28 days post-inoculation)*

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

--The **Disseminated disease** stage

--The **Persistent disease** stage

What is the classic appearance of the ECM rash? That of a ‘bull’s eye’
**Uveitis: Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest? (2-28 days post-inoculation)*

--The **Local disease** stage is characterized by...the appearance of *erythema chronicum migrans* at the bite site

--The **Disseminated disease** stage

---*What is the classic appearance of the ECM rash? That of a ‘bull’s eye’*

---*Is it macular, papular, or maculopapular?*

--The **Persistent disease** stage
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*(2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of **erythema chronicum migrans** at
the bite site

--The **Disseminated disease** stage

--The **Persistent disease** stage

What is the classic appearance of the ECM rash?
That of a ‘bull’s eye’

*Is it macular, papular, or maculopapular?*
*Macular*
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest? (2-28 days post-inoculation)*

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

- The skin
- The heart
- The CNS
- The joints
- The eye (5+ months post-inoculation)--The **Persistent disease** stage

*In addition to the ECM rash, what other signs/symptoms characterize this stage?*
Uveitis: **Lyme**

**Basics**

LD passes through three stages--what are they? How do they manifest?

(2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of **erythema chronicum migrans** at the bite site

In addition to the ECM rash, what other signs/symptoms characterize this stage?

So-called ‘constitutional’ findings such as fever, fatigue, malaise and body aches

--The **Disseminated disease** stage

--The **Persistent disease** stage
**Uveitis: Lyme**

**Basics**

*LD passes through three stages—what are they? How do they manifest? (2-28 days post-inoculation)*

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

*How much time typically passes between the bite and the Disseminated disease stage?*

--The **Disseminated disease** stage

--The **Persistent disease** stage
Uveitis: *Lyme*

**Basics**

*L. burgdorferi* passes through three stages—what are they? How do they manifest?

(2-28 days post-inoculation)

---The **Local disease** stage is characterized by...the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

---The **Disseminated disease** stage

---The **Persistent disease** stage
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

- The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

- The **Disseminated disease** stage is characterized by…

(5+ months post-inoculation)

- The **Persistent disease** stage
**Basics**

*LD passes through three stages--what are they? How do they manifest?*
(2-28 days post-inoculation)
--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site
(1-4 months post-inoculation)
--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:
--
--
--
--
--

--The **Persistent disease** stage
Uveitis: Lyme

**Basics**

*L.D* passes through three stages—what are they? How do they manifest?

(2-28 days post-inoculation)

--- The **Local disease** stage is characterized by… the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--- The **Disseminated disease** stage is characterized by… hematogenous spread to different sites, including:

--- The skin
--- The heart
--- The CNS
--- The joints
--- The eye

--- The **Persistent disease** stage

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: Lyme

Basics

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

---**The skin**

---**The heart**

---**The CNS**

---**The joints**

---**The eye**

--The **Persistent disease** stage

---**What skin finding is typical at this stage?**
Uveitis: Lyme

**Basics**

*LD passes through three stages---what are they? How do they manifest?*

(2-28 days post-inoculation)
---The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)
---The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:
---The **skin**
---The heart
---The CNS
---The joints
---The eye

---The **Persistent disease** stage

---What skin finding is typical at this stage?
The appearance of ECM rash at locations remote from the bite site
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*
(2-28 days post-inoculation)
--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site
(1-4 months post-inoculation)
--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:
--The skin
--**The heart**
--The CNS
--The joints
--The eye
--The **Persistent disease** stage is characterized by one of three patterns:
----Benign tertiary syphilis
----Cardiovascular syphilis
----Neurosyphilis

*How does cardiac involvement manifest?*

If the examinee suspects cardiac involvement, what is the correct response?
Hospitalization on a telemetry unit (with appropriate consultations of course)
LD passes through three stages--what are they? How do they manifest?
(2-28 days post-inoculation)
--The Local disease stage is characterized by...the appearance of erythema chronicum migrans at the bite site
(1-4 months post-inoculation)
--The Disseminated disease stage is characterized by...hematogenous spread to different sites, including:
--The skin
--The heart
--The CNS
--The joints
--The eye
--The Persistent disease stage is characterized by one of three patterns:
----Benign tertiary syphilis
----Cardiovascular syphilis
----Neurosyphilis

How does cardiac involvement manifest?
As a conduction problem
Uveitis: **Lyme**

**Basics**

Lyme disease (LD) passes through three stages—what are they? How do they manifest?

(2-28 days post-inoculation)

--- The Local disease stage is characterized by...the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--- The Disseminated disease stage is characterized by...hematogenous spread to different sites, including:

--- The skin
--- The heart
--- The CNS
--- The joints
--- The eye
--- The Persistent stage is characterized by one of three patterns:

--- Benign tertiary syphilis
--- Cardiovascular syphilis
--- Neurosyphilis

How does cardiac involvement manifest?

As a conduction problem

What should the OKAP/Boards examinee be on the lookout for?
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*  
(2-28 days post-inoculation)  
--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site  
(1-4 months post-inoculation)  
--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:  
--The skin  
--The **heart**  
--The CNS  
--The joints  
--The eye  
--The Persistent disease stage is characterized by one of three patterns:  
----Benign tertiary syphilis  
----Cardiovascular syphilis  
----Neurosyphilis

*How does cardiac involvement manifest?*  
As a conduction problem

*What should the OKAP/Boards examinee be on the lookout for?*  
Signs/symptoms suggestive of conduction issues--syncope, irregular heartbeat, SOB
Uveitis: *Lyme*

**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

--- *The Local disease* stage is characterized by...the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--- *The Disseminated disease* stage is characterized by...hematogenous spread to different sites, including:

--- *The skin*

--- *The heart*

--- *The CNS*

--- *The joints*

--- *The eye*

--- *The Persistent disease* stage is characterized by one of three patterns:

---- *Benign tertiary syphilis*

---- *Cardiovascular syphilis*

---- *Neurosyphilis*

*How does cardiac involvement manifest?*

As a conduction problem

*What should the OKAP/Boards examinee be on the lookout for?*

Signs/symptoms suggestive of conduction issues--syncope, irregular heartbeat, SOB

*If the examinee suspects cardiac involvement, what is the correct response?*

Hospitalization on a telemetry unit (with appropriate consultations of course)
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

--- The **Local disease** stage is characterized by...the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--- The **Disseminated disease** stage is characterized by...hematogenous spread to different sites, including:

--- The skin

--- The **heart**

--- The CNS

--- The joints

--- The eye

--- The **Persistent disease** stage is characterized by one of three patterns:

---- Benign tertiary syphilis

---- Cardiovascular syphilis

---- Neurosyphilis

*How does cardiac involvement manifest?*

As a conduction problem

*What should the OKAP/Boards examinee be on the lookout for?*

Signs/symptoms suggestive of conduction issues--syncope, irregular heartbeat, SOB

*If the examinee suspects cardiac involvement, what is the correct response?*

Hospitalization on a telemetry unit (with appropriate consultations of course)
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*
(2-28 days post-inoculation)
--The *Local disease* stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site
(1-4 months post-inoculation)
--The *Disseminated disease* stage is characterized by…hematogenous spread to different sites, including:
--The skin
--The heart
--The brain
--The CNS
--The joints
--The eye
--The Persistent disease stage is characterized by one of three patterns:
----Benign tertiary syphilis
----Cardiovascular syphilis
----Neurosyphilis

*Is CNS involvement common?*

Yes; as many as 40% of LD pts will manifest neurologic findings

What neurologic findings are typical at this stage?
--Meningitis
--Encephalitis
--Cranial nerve palsies
Uveitis: *Lyme*

**Basics**

*LD passes through three stages--what are they? How do they manifest?* 
(2-28 days post-inoculation)
--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site
(1-4 months post-inoculation)
--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:
--The skin
--The heart
--The **CNS**
--The joints
--The eye
--The **Persistent disease** stage is characterized by one of three patterns:
----Benign tertiary syphilis
----Cardiovascular syphilis
----Neurosyphilis

**Is CNS involvement common?**
Yes; as many as % of LD pts will manifest neurologic findings
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

--- **The Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--- **The Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

--- The skin

--- The heart

--- **The CNS**

--- The joints

--- The eye

--- The Persistent disease stage is characterized by one of three patterns:

--- Benign tertiary syphilis

--- Cardiovascular syphilis

--- Neurosyphilis

--- **Is CNS involvement common?**

Yes; as many as **40%** of LD pts will manifest neurologic findings
**Uveitis: Lyme**

**Basics**

Lyme disease (LD) passes through three stages—what are they? How do they manifest?

(2-28 days post-inoculation)

---The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

---The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

---The skin
---The heart
---The **CNS**
---The joints
---The eye

---The **Persistent disease** stage is characterized by one of three patterns:

---Benign tertiary syphilis
---Cardiovascular syphilis
---Neurosyphilis

**Is CNS involvement common?**

Yes; as many as 40% of LD pts will manifest neurologic findings

**What neurologic findings are typical at this stage?**

---Meningitis
---Encephalitis
---Cranial nerve palsies
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*  
(2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

--The skin
--The heart
--The **CNS**
--The joints
--The eye
--The Persistent disease stage is characterized by one of three patterns:

---Benign tertiary syphilis
---Cardiovascular syphilis
---Neurosyphilis

**Is CNS involvement common?**

Yes; as many as 40% of LD pts will manifest neurologic findings

**What neurologic findings are typical at this stage?**

--Meningitis
--Encephalitis
--Cranial nerve palsies
Uveitis: **Lyme**

### Basics

*Lyme disease* (LD) passes through three stages—what are they? How do they manifest?

- **Local disease** stage (2-28 days post-inoculation)
  - Characterized by the appearance of *erythema chronicum migrans* at the bite site
- **Disseminated disease** stage (1-4 months post-inoculation)
  - Characterized by hematogenous spread to different sites, including:
    - Skin
    - Heart
    - CNS
    - Joints
- **Persistent disease** stage (5 months post-inoculation)
  - Characterized by one of three patterns:
    - Benign tertiary syphilis
    - Cardiovascular syphilis
    - Neurosyphilis

Is joint involvement common?

Yes; if left untreated, as many as 80% of LD pts will develop joint issues.

Does LD tend to affect large joints, or small?

Large

Does it tend to affect multiple joints, or only a few?

Few; in fact, it is often a monoarthritis

Which joint is its 'favorite'?

The knee
**Basics**

*LD passes through three stages—what are they? How do they manifest?* (2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

--The skin
--The heart
--The CNS
--The joints
--The eye

(5+ months post-inoculation)

--The **Persistent disease** stage is characterized by one of three patterns:

----Benign tertiary syphilis
----Cardiovascular syphilis
----Neurosyphilis

---Is joint involvement common? Yes; if left untreated, as many as **%** of LD pts will develop joint issues
Uveitis: **Lyme**

### Basics

*LD passes through three stages—what are they? How do they manifest?*

(2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

--The skin
--The heart
--The CNS
--The joints
--The eye

(5+ months post-inoculation)

--The **Persistent disease** stage is characterized by one of three patterns:

----Benign tertiary syphilis
----Cardiovascular syphilis
----Neurosyphilis

Is joint involvement common?

Yes; if left untreated, as many as  80%  of LD pts will develop joint issues
Lyme

**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

---The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

---The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

---The skin
---The heart
---The CNS
---**The joints**
---The eye
---The **Persistent disease** stage is characterized by one of three patterns:

----Benign tertiary syphilis
----Cardiovascular syphilis
----Neurosyphilis

**Is joint involvement common?**

Yes; if left untreated, as many as 80% of LD pts will develop joint issues

**Does LD tend to affect large joints, or small?**

Large
Uveitis: **Lyme**

**Basics**

LD passes through three stages--what are they? How do they manifest?
(2-28 days post-inoculation)
--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site
(1-4 months post-inoculation)
--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:
--The skin
--The heart
--The CNS
--The joints
--The eye

--The **Persistent disease** stage is characterized by one of three patterns:
----Benign tertiary syphilis
----Cardiovascular syphilis
----Neurosyphilis

**Is joint involvement common?**
Yes; if left untreated, as many as 80% of LD pts will develop joint issues

**Does LD tend to affect large joints, or small?**
Large

---
Uveitis: *Lyme*

**Basics**

*LD passes through three stages--what are they? How do they manifest?*
(2-28 days post-inoculation)
---The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site
(1-4 months post-inoculation)
---The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:
---The skin
---The heart
---The CNS
---**The joints**
---The eye
---The **Persistent disease** stage is characterized by one of three patterns:
----Benign tertiary syphilis
----Cardiovascular syphilis
----Neurosyphilis

**Is joint involvement common?**
Yes; if left untreated, as many as 80% of LD pts will develop joint issues

**Does LD tend to affect large joints, or small?**
Large

**Does it tend to affect multiple joints, or only a few?**
Uveitis: **Lyme**

**Basics**

*LD passes through three stages—what are they? How do they manifest?*

(2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

--The skin
--The heart
--The CNS
--The **joints**
--The eye

(5+ months post-inoculation)

--The **Persistent disease** stage is characterized by one of three patterns:

----Benign tertiary syphilis
----Cardiovascular syphilis
----Neurosyphilis

---Is joint involvement common?
Yes; if left untreated, as many as 80% of LD pts will develop joint issues

---Does LD tend to affect large joints, or small?
Large

---Does it tend to affect multiple joints, or only a few?
Few; in fact, it is often a monoarthritis
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

--- The **Local disease** stage is characterized by...the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--- The **Disseminated disease** stage is characterized by...hematogenous spread to different sites, including:

--- The skin
--- The heart
--- The CNS
--- The **joints**
--- The eye
--- The **Persistent disease** stage is characterized by one of three patterns:

---- Benign tertiary syphilis
---- Cardiovascular syphilis
---- Neurosyphilis

*Is joint involvement common?*

Yes; if left untreated, as many as 80% of LD pts will develop joint issues

*Does LD tend to affect large joints, or small?*

Large

*Does it tend to affect multiple joints, or only a few?*

Few; in fact, it is often a monoarthritis

*Which joint is its ‘favorite’?*
**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

--The skin

--The heart

--The CNS

--**The joints**

--The eye

--The **Persistent disease** stage is characterized by one of three patterns:

----Benign tertiary syphilis

----Cardiovascular syphilis

----Neurosyphilis

---Is joint involvement common?

   Yes; if left untreated, as many as 80% of LD pts will develop joint issues

---Does LD tend to affect large joints, or small?

   Large

---Does it tend to affect multiple joints, or only a few?

   Few; in fact, it is often a monoarthritis

---Which joint is its ‘favorite’?

   The knee
Uveitis: **Lyme**

**Basics**

LD passes through three stages--what are they? How do they manifest?

(2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:
--The skin
--The heart
--The CNS
--The joints

--The **eye in LD** will be discussed in detail later in this slide-set!

--The **Persistent disease** stage
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest? (2-28 days post-inoculation)*

--- The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

--- The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

--- The skin
--- The heart
--- The CNS
--- The joints
--- The eye

*How much time typically passes between the bite and the Persistent disease stage?*

--- The **Persistent disease** stage
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

--The **Local disease** stage is characterized by...the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by...hematogenous spread to different sites, including:

  --The skin
  --The heart
  --The CNS
  --The joints
  --The eye

(5+ months post-inoculation)

--The **Persistent disease** stage
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:
  --The skin
  --The heart
  --The CNS
  --The joints
  --The eye

(5+ months post-inoculation)

--The **Persistent disease** stage is characterized by…
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

--The **Local disease** stage is characterized by…the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by…hematogenous spread to different sites, including:

--The skin
--The heart
--The CNS
--The joints
--The eye

(5+ months post-inoculation)

--The **Persistent disease** stage is characterized by…episodic or even chronic
Uveitis: **Lyme**

**Basics**

*LD passes through three stages--what are they? How do they manifest?*

(2-28 days post-inoculation)

--The **Local disease** stage is characterized by...the appearance of *erythema chronicum migrans* at the bite site

(1-4 months post-inoculation)

--The **Disseminated disease** stage is characterized by...hematogenous spread to different sites, including:
  --The skin
  --The heart
  --The CNS
  --The joints
  --The eye

(5+ months post-inoculation)

--The **Persistent disease** stage is characterized by...episodic or even chronic arthritis
1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

Uveitis

Anterior

Intermediate

Posterior

Panuveitis

Lyme

LD uveitis can present in any form...
Uveitis

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

Anterior
Posterior
Intermediate
Panuveitis

...including as an anterior uveitis.

Lyme
Uveitis: **Anterior**

- Key distinction *(not uni- vs bilateral)*

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: *Anterior*

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

Granulomatous

(NOT uni- vs bilateral)

Nongranulomatous

Key distinction
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

**Key distinction** (not uni- vs bilateral)

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
  - Chronic

1. The uveitis is profiled
2. The profiled case is meshed
3. A differential diagnosis list is generated
4. Studies are obtained to identify the etiology
5. Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

- **Granulomatous**
- **Nongranulomatous**
  - **Acute**
  - **Chronic**

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
    - Unilateral
  - Chronic
    - Bilateral

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
    - Unilateral
    - Bilateral
  - Chronic

When LD presents as an anterior uveitis, in which form is it most likely to occur?
Uveitis: Anterior

When LD presents as an anterior uveitis, in which form is it most likely to occur? As a **granulomatous uveitis**
Intermediate uveitis is a common presentation of LD, and this diagnosis should be given careful consideration in any pt presenting in this manner!
1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

LD is also well-known for presenting as a **posterior uveitis**.
Uveitis: **Posterior**

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

*What are the four manifestations of posterior uveitis?*
Uveitis: *Posterior*

- Choroiditis
- Chorioretinitis or Retinochoroiditis
- Retinitis
- Neuroretinitis

What are the four manifestations of posterior uveitis?
Uveitis: *Posterior*

- Choroiditis
- Chorioretinitis or Retinochoroiditis
- Retinitis
- Neuroretinitis

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

What is the classic posterior manifestation of LD?
Uveitis: **Posterior**

- Chorioretinitis or Retinochoroiditis
- Choroiditis
- Retinitis
- Neuroretinitis

What is the classic posterior manifestation of LD? A peripheral multifocal choroiditis
What is the classic posterior manifestation of LD?
A peripheral multifocal choroiditis

Are the lesions...
...large, or small?
What is the classic posterior manifestation of LD?
A peripheral multifocal choroiditis

Are the lesions…
…large, or small? Small
Uveitis: *Posterior*

What is the classic posterior manifestation of LD?
A peripheral multifocal choroiditis

*Are the lesions...*
*...large, or small? Small*
*...round, or irregular in shape?*
What is the classic posterior manifestation of LD?
A peripheral multifocal choroiditis

Are the lesions...
…large, or small? Small
…round, or irregular in shape? Round
What is the classic posterior manifestation of LD? A peripheral multifocal choroiditis

Are the lesions...
...large, or small? Small
...round, or irregular in shape? Round
...intact, or ‘punched out’ in appearance?
What is the classic posterior manifestation of LD?
A peripheral multifocal choroiditis

Are the lesions…
…large, or small? Small
…round, or irregular in shape? Round
…intact, or ‘punched out’ in appearance? Punched out
What is the classic posterior manifestation of LD?
A peripheral multifocal choroiditis

Are the lesions...
...large, or small? Small
...round, or irregular in shape? Round
...intact, or ‘punched out’ in appearance? Punched out

In addition to choroiditis, in what other manner does LD posterior uveitis often manifest?
What is the classic posterior manifestation of LD?
A peripheral multifocal choroiditis

Are the lesions...
...large, or small? Small
...round, or irregular in shape? Round
...intact, or 'punched out' in appearance? Punched out

In addition to choroiditis, in what other manner does LD posterior uveitis often manifest?
As a retinal vasculitis
Uveitis

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

Anterior

Intermediate

Posterior

And of course, LD can present as a panuveitis.
Uveitis: **Lyme**

**Neuro-Ophthalmic Manifestations**

What neuro-ophthalmic condition is LD notorious for (it was alluded to an earlier)?
Uveitis: Lyme

Neuro-Ophthalmic Manifestations

What neuro-ophthalmic condition is LD notorious for (it was alluded to an earlier)?
Cranial nerve (CN) palsies
Uveitis: **Lyme**

**Neuro-Ophthalmic Manifestations**

What neuro-ophthalmic condition is LD notorious for (it was alluded to an earlier)? Cranial nerve (CN) palsies

Of the CNs affecting the eye (ie, II - VII), which can be involved?
Uveitis: **Lyme**

**Neuro-Ophthalmic Manifestations**

*What neuro-ophthalmic condition is LD notorious for (it was alluded to an earlier)?*
Cranial nerve (CN) palsies

*Of the CNs affecting the eye (ie, II - VII), which can be involved?*
Any/all of them
Uveitis: **Lyme**

**Neuro-Ophthalmic Manifestations**

*What neuro-ophthalmic condition is LD notorious for (it was alluded to an earlier)?*
Cranial nerve (CN) palsies

*Of the CNs affecting the eye (ie, II - VII), which can be involved?*
Any/all of them

*Of CNs II - VII, which is most likely to be affected?*
Uveitis: **Lyme**

**Neuro-Ophthalmic Manifestations**

What neuro-ophthalmic condition is LD notorious for (it was alluded to an earlier)?
Cranial nerve (CN) palsies

Of the CNs affecting the eye (ie, II - VII), which can be involved?
Any/all of them

Of CNs II - VII, which is most likely to be affected?
CN VII. It is estimated that in areas endemic for LD, as many as % of new Bell’s palsies are due to LD!
Uveitis: **Lyme**

**Neuro-Ophthalmic Manifestations**

*What neuro-ophthalmic condition is LD notorious for (it was alluded to an earlier)?*

Cranial nerve (CN) palsies

*Of the CNs affecting the eye (ie, II - VII), which can be involved?*

Any/all of them

*Of CNs II - VII, which is most likely to be affected?*

CN VII. It is estimated that in areas endemic for LD, as many as 25% of new Bell's palsies are due to LD!
Uveitis: **Lyme**

**Neuro-Ophthalmic Manifestations**

*What neuro-ophthalmic condition is LD notorious for (it was alluded to an earlier)?*
Cranial nerve (CN) palsies

*Of the CNs affecting the eye (ie, II - VII), which can be involved?*
Any/all of them

*Of CNs II - VII, which is most likely to be affected?*
CN VII. It is estimated that in areas endemic for LD, as many as 25% of new Bell’s palsies are due to LD!

*Does LD Bell’s palsy present unilaterally, or bilaterally?*
Uveitis: **Lyme**

**Neuro-Ophthalmic Manifestations**

*What neuro-ophthalmic condition is LD notorious for (it was alluded to earlier)?*  
Cranial nerve (CN) palsies

*Of the CNs affecting the eye (ie, II - VII), which can be involved?*  
Any/all of them

*Of CNs II - VII, which is most likely to be affected?*  
CN VII. It is estimated that in areas endemic for LD, as many as **25%** of new Bell’s palsies are due to LD!

*Does LD Bell’s palsy present unilaterally, or bilaterally?*  
It can present either way
Uveitis: **Lyme**

Neuro-Ophthalmic Manifestations

**What neuro-ophthalmic condition is LD notorious for (it was alluded to an earlier)?**
Cranial nerve (CN) palsies

**Of the CNs affecting the eye (ie, II - VII), which can be involved?**
Any/all of them

**Of CNs II - VII, which is most likely to be affected?**
CN VII. It is estimated that in areas endemic for LD, as many as 25% of new Bell’s palsies are due to LD!

**Does LD Bell’s palsy present unilaterally, or bilaterally?**
It can present either way

**In what ways can the optic nerve be affected?**

---

---
Uveitis: **Lyme**

**Neuro-Ophthalmic Manifestations**

*What neuro-ophthalmic condition is LD notorious for (it was alluded to an earlier)?*  
Cranial nerve (CN) palsies

*Of the CNs affecting the eye (ie, II - VII), which can be involved?*  
Any/all of them

*Of CNs II - VII, which is most likely to be affected?*  
CN VII. It is estimated that in areas endemic for LD, as many as 25% of new Bell’s palsies are due to LD!

*Does LD Bell’s palsy present unilaterally, or bilaterally?*  
It can present either way

*In what ways can the optic nerve be affected?*  
--An optic neuritis can occur  
--If ICP increases because of a meningitic/encephalitic process, papilledema may be present
Uveitis: Lyme

Diagnosis

How is the diagnosis of LD made?
How is the diagnosis of LD made?
The diagnosis can be made clinically (eg, the presence of an ECM is considered diagnostic in the proper clinical setting). The diagnosis can also be made serologically, but this can be challenging, as there is a lack of consensus concerning what lab values should be considered positive. The CDC recommends ELISA testing for Ig levels, followed by Western blot testing.
Uveitis: Lyme

Diagnosis

How is the diagnosis of LD made?
The diagnosis can be made clinically (e.g., the presence of an ECM is considered diagnostic in the proper clinical setting). The diagnosis can also be made serologically, but this can be challenging, as there is a lack of consensus concerning what lab values should be considered positive. The CDC recommends ELISA testing for Ig levels, followed by Western blot testing.

Treatment

How is LD treated?
Uveitis: Lyme

**Diagnosis**

*How is the diagnosis of LD made?*

The diagnosis can be made clinically (eg, the presence of an ECM is considered diagnostic in the proper clinical setting). The diagnosis can also be made serologically, but this can be challenging, as there is a lack of consensus concerning what lab values should be considered positive. The CDC recommends ELISA testing for Ig levels, followed by Western blot testing.

**Treatment**

*How is LD treated?*

Treatment depends upon the stage of disease, and what organ-systems are involved.
Uveitis: Lyme

**Diagnosis**

*How is the diagnosis of LD made?*

The diagnosis can be made clinically (eg, the presence of an ECM is considered diagnostic in the proper clinical setting). The diagnosis can also be made serologically, but this can be challenging, as there is a lack of consensus concerning what lab values should be considered positive. The CDC recommends ELISA testing for Ig levels, followed by Western blot testing.

**Treatment**

*How is LD treated?*

Treatment depends upon the stage of disease, and what organ-systems are involved

*OK, how should LD uveitis be treated?*
Uveitis: **Lyme**

**Diagnosis**

*How is the diagnosis of LD made?*
The diagnosis can be made clinically (eg, the presence of an ECM is considered diagnostic in the proper clinical setting). The diagnosis can also be made serologically, but this can be challenging, as there is a lack of consensus concerning what lab values should be considered positive. The CDC recommends ELISA testing for Ig levels, followed by Western blot testing.

**Treatment**

*How is LD treated?*
Treatment depends upon the stage of disease, and what organ-systems are involved

*OK, how should LD uveitis be treated?*
As with syphilitic uveitis, the presence of intraocular inflammation in the context of LD should be considered presumptive evidence of CNS involvement, and thus LD uveitis should be managed as suspected CNS LD
Uveitis: Lyme

**Diagnosis**

*How is the diagnosis of LD made?*

The diagnosis can be made clinically (e.g., the presence of an ECM is considered diagnostic in the proper clinical setting). The diagnosis can also be made serologically, but this can be challenging, as there is a lack of consensus concerning what lab values should be considered positive. The CDC recommends ELISA testing for Ig levels, followed by Western blot testing.

**Treatment**

*How is LD treated?*

Treatment depends upon the stage of disease, and what organ-systems are involved.

*OK, how should LD uveitis be treated?*

As with syphilitic uveitis, the presence of intraocular inflammation in the context of LD should be considered presumptive evidence of CNS involvement, and thus LD uveitis should be managed as suspected CNS LD.

*How is suspected CNS LD managed?*
Uveitis: **Lyme**

### Diagnosis

*How is the diagnosis of LD made?*

The diagnosis can be made clinically (e.g., the presence of an ECM is considered diagnostic in the proper clinical setting). The diagnosis can also be made serologically, but this can be challenging, as there is a lack of consensus concerning what lab values should be considered positive. The CDC recommends ELISA testing for Ig levels, followed by Western blot testing.

### Treatment

*How is LD treated?*

Treatment depends upon the stage of disease, and what organ-systems are involved.

**OK, how should LD uveitis be treated?**

As with syphilitic uveitis, the presence of intraocular inflammation in the context of LD should be considered presumptive evidence of CNS involvement, and thus LD uveitis should be managed as suspected CNS LD.

**How is suspected CNS LD managed?**

LP with CSF studies should be performed to confirm the diagnosis. If CNS involvement is confirmed, IV ceftriaxone should be administered per protocol.
Uveitis: **Lyme**

**Diagnosis**

*How is the diagnosis of LD made?*
The diagnosis can be made clinically (e.g., the presence of an ECM is considered diagnostic in the proper clinical setting). The diagnosis can also be made serologically, but this can be challenging, as there is a lack of consensus concerning what lab values should be considered positive. The CDC recommends ELISA testing for Ig levels, followed by Western blot testing.

**Treatment**

*How is LD treated?*
Treatment depends upon the stage of disease, and what organ-systems are involved

*OK, how should LD uveitis be treated?*
As with syphilitic uveitis, the presence of intraocular inflammation in the context of LD should be considered presumptive evidence of CNS involvement, and thus LD uveitis should be managed as suspected CNS LD

*How is suspected CNS LD managed?*
LP with CSF studies should be performed to confirm the diagnosis. If CNS involvement is confirmed, IV ceftriaxone should be administered per protocol

*What if CSF analysis fails to confirm the presence of CNS LD?*
**Uveitis: Lyme**

**Diagnosis**

*How is the diagnosis of LD made?*

The diagnosis can be made clinically (e.g., the presence of an ECM is considered diagnostic in the proper clinical setting). The diagnosis can also be made serologically, but this can be challenging, as there is a lack of consensus concerning what lab values should be considered positive. The CDC recommends ELISA testing for Ig levels, followed by Western blot testing.

**Treatment**

*How is LD treated?*

Treatment depends upon the stage of disease, and what organ-systems are involved.

*OK, how should LD uveitis be treated?*

As with syphilitic uveitis, the presence of intraocular inflammation in the context of LD should be considered presumptive evidence of CNS involvement, and thus LD uveitis should be managed as suspected CNS LD.

*How is suspected CNS LD managed?*

LP with CSF studies should be performed to confirm the diagnosis. If CNS involvement is confirmed, IV ceftriaxone should be administered per protocol.

*What if CSF analysis fails to confirm the presence of CNS LD?*

In this case, treatment of LD uveitis is a function of the severity of the dz. Less-severe uveitis can be managed with PO antibiotics (first line: doxycycline; if pediatric or pregnant/lactating, amoxicillin or cefuroxime). On the other hand, severe posterior-segment LD uveitis should be treated with IV antibiotics regardless of the outcome of CSF studies.