

# PHYSICIANS PREFERENCES IN THE DIAGNOSIS AND TREATMENT OF LYME DISEASE IN THE U.S.

Ziska M. H., M.D., Lyme Disease Foundation, Hartford, CT, USA; Demarest F., Zygo Corp., Middlefield, CT, USA,  
Donta S. T., M.D., Boston University Hospital and Boston VA Med. Ctrs, MA, USA.

## OBJECTIVE

To assess the preferences of physicians in diagnosing and treating Lyme disease (LD) in Lyme endemic areas of the U.S.

## METHOD

A survey containing questions on diagnostic and treatment choices was mailed to 200 randomly selected physicians, of various specialties, practicing in Lyme endemic areas of the U.S. Eighty responses were analyzed and tabulated using Quattro Pro and Statistica (Statsoft, Inc.) programs.

## SUMMARY AND DISCUSSION

There is discrepancy between recommended and actual physician decisions in diagnosing and treating LD.

**Laboratory diagnosis.** The limited reliability of serologic tests was reflected in the majority of responses. The two-trier recommendation (confirmation of only positive or equivocal ELISA's by Western blot) is not being followed. Disease exclusion is the preferred diagnostic method in about 1/3 of cases, further underscoring the previous statement.

**Clinical diagnosis** can be difficult to establish. About one-half of all patients do not recall a tick bite, and about 1/3 of patients do not exhibit an EM. However, the most frequent symptoms/signs are unspecific (fatigue, arthralgias, headache). This contributes to the difficulty in making a diagnosis, especially on the exclusion basis. Table II.4. confirms this view further.

**Treatment of LD.** The results of this part of the survey varied the most. Choices were influenced by both the physician's specialty and number of patients seen. The duration of therapy is of particular interest. About 1/3 of physicians treat EM longer than 4 weeks. Two thirds of physicians do not require laboratory confirmation of LD for treatment of post-EM LD. This further confirms previous results of limited reliability in laboratory testing. A combination therapy (combination of more than one antibiotic at the same time) is practiced by 40% of physicians. The post-EM LD (including chronic LD) is treated most aggressively (in terms of duration) by internists, followed by infectious disease specialists. Rheumatologists are the most conservative.

## CONCLUSION

The results of this survey show that physician choices in diagnosis and treatment of LD differ markedly from current recommendations. The limited reliance on laboratory results and duration of treatment are the most striking. A possible bias due to estimated responses is acknowledged. Further investigation is warranted for the apparent trends, as is an explanation as to why recommendations and physician practices vary to such a high degree.

## RESULTS

Summarized in Tables I. - III.

Table I. LABORATORY DIAGNOSIS OF LD

### 1. Laboratory tests ordered by physicians

ELISA	94%
Western blot	91%
ELISA + Western blot	31%
PCR	39%
More than 1 test	39%
More than 2 tests	62%
CSF analyses	No: 17% Yes: 17%
Sometimes:	70%

### 2. Reliability of ELISA tests

Percent Positive	Early LD	Post-EM LD	Chronic LD
<25%	49%	25%	24%
25% - 50%	34%	17%	28%
50% - 75%	9%	35%	23%
>75%	9%	23%	24%

### 3. Frequency of seronegative Lyme disease

Percent Seronegative	
<20%	47%
21% - 40%	24%
41% - 60%	19%
61% - 80%	10%
Median = 25%	Mean = 27.5% ± 22.5% (s.d.)

### 4. Reliability of diagnosis

	Most	Least
Clinical	80%	12%
Western blot	47%	18%
Epidemiology	33%	25%
ELISA/IFA	31%	24%
Disease exclusion	31%	31%
PCR	27%	25%
Urine antigen	11%	40%

Table II. CLINICAL DIAGNOSIS OF LD

### 1. Percent of patients with no known tick bite

<30	17%
31-60	56%
>60	27%
Median=50%	Mean=48.6% ± 20.9% (s.d.)

### 2. Percent of patients with erythema migrans

<30	43%
31-60	38%
>60	19%
Median=30%	Mean=35.5%

### 3. Frequency of symptoms / signs

	Median	Mean
Fatigue	90%	81%
Arthralgias	80%	72%
Headache	70%	62%
Cognitive	50%	47%
Behavioral	50%	46%
Paresthesias	40%	38%
Arthritis	25%	33%
Sweats	10%	20%
Sore throat	20%	25%
Cardiac	10%	16%
Recurring rash	10%	16%
Ocular	10%	22%

### 4. Fibromyalgia, Chronic fatigue, and Lyme disease

	Fibromyalgia	Chronic fatigue
Separate entity	26%	27%
Result of LD	25%	25%
Possibly both (?)	67%	66%

Table III. TREATMENT OF LYME DISEASE

### 1. Treatment of tick bites

	ALL (n=75)	IM (n=12)	ID (n=15)	RH (n=11)	<1 (n=19)	≥1 (n=55)
No	33%	8%	60%	36%	68%	20%
Yes	20%	25%	0%	9%	5%	25%
Sometimes	33%	58%	27%	45%	26%	36%
On request	16%	8%	20%	9%	0%	22%
At risk	17%	33%	7%	9%	5%	22%

IM= internist ID=infectious disease RH=rheumatologist  
<1<=1 new patient/week >1=1 or more new patient/week

### 3. Antibiotic therapy of Post-EM LD

	Yes	No
BASIS:	66%	34%
Clinical diagnosis	66%	72%
Require Lab confirmation	28%	72%
Treatment		
IV Ceftriaxone	78%	
Amoxicillin	69%	
Cefuroxime	69%	
Doxycycline	56%	
Clarithromycin	47%	
Azithromycin	39%	
IV Cefotaxime	22%	
Cefixime	22%	
Others	<10%	
Combination therapy:	Yes: 40% No: 60%	

### 4. Antibiotic therapy of chronic LD

	Yes: 42%	No: 58%
Repeat testing:	Yes: 16% No: 32%	Sometimes: 52%
% Patients symptom-free:	Median = 50%	
% Patients retreated:	Median=30% Mean=39%	

### 2. Antibiotic therapy of EM

Amoxicillin	81%	
Cefuroxime	81%	
Doxycycline	72%	
Azithromycin	34%	
Clarithromycin	22%	
Tetracycline	19%	
IV Ceftriaxone	13%	
IV Cefotaxime	6%	
Cefixime	6%	
Minocycline	3%	
Duration of therapy:	Median, Mean = 4 weeks	>4 weeks = 31%
Symptoms post-therapy:	Median = 15%	Mean = 25%

### 3.b. Duration of Antibiotic therapy of post-EM LD

	ALL (n=80)	IM (n=13)	ID (n=17)	RH (n=12)	<1 (n=54)	≥1 (n=54)
<2 weeks	1%	0%	0%	0%	7%	0%
2-4 weeks	31%	0%	41%	58%	53%	30%
1-3 months	26%	31%	24%	25%	27%	31%
3-6 months	20%	38%	12%	17%	7%	28%
>6 months	21%	31%	24%	0%	7%	28%

IM=internist ID=infectious disease RH=rheumatologist  
<1<=1 new patient/week >1=1 or more new patient/week

### 4. b. Duration of antibiotic therapy of chronic LD

	ALL (n=80)	IM (n=13)	ID (n=17)	RH (n=12)
<2 weeks	1%	0%	0%	0%
2-4 weeks	25%	0%	40%	43%
1-3 months	22%	15%	27%	29%
3-6 months	17%	38%	7%	21%
>6 months	34%	46%	27%	7%
Median = 3-6 month				
IM=internist ID=infectious disease RH=rheumatologist				