

IDSA knows that chronic Lyme exists

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The IDSA is aware that chronic Lyme exists. We know this because members of the 2000 and 2006 Lyme disease guideline panels wrote, in research articles and patents, that chronic Lyme exists.

Evidence about the existence of chronic Lyme borreliosis has increased since the 2006 LD guidelines were published.

Scientists in California recently reported that not only can Bb persist in mice despite treatment with ceftriaxone, but the Borrelia can also infect other ticks and mice. (1) This study buttresses previous studies that showed that Borrelia can persist in mice (2, 3), dogs (4, 5, 6), and ponies (7).

Studies have also shown that Bb can persist despite antibiotic treatment in the following human cells, tissues, organs, and body fluids:

- * Fibroblasts (8; Mark Klempner, an IDSA LD guideline panel member in 2006, is an author of this study)
- * Iris (9)
- * Synovium and synovial fluid (10, 11, 12, 13)
- * Ligaments (14)
- * Spleen (15)
- * Bladder/urine (16)
- * Skin (17, 18, 19, 20)
- * Blood and cerebrospinal fluid (21)

Allen Steere has also published studies that describe patients with persistent Bb infection following antibiotic treatment. In a JAMA article, he described a 67-year-old woman who had serologic tests that proved that she had an infection of recent onset with Borrelia burgdorferi, the agent that causes Lyme disease. During a two-month

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course of illness, her condition remained refractory to treatment with antibiotics, salicylates, and steroids. Ultimately, fatal adult respiratory distress syndrome developed; this was believed to be secondary to Lyme disease.? (22)

In another study, Steere found that 10 out of 38 patients, or 26.3%, relapsed within 1 year after antibiotic treatments for Lyme disease. Patient 12 died and had spirochetes in her brain at autopsy. (23, 24)

Other abstracts and studies also describe the persistence of *Borrelia burgdorferi* in patients treated with antibiotics (25, 26, 27, 28, for example).

Steere and Klempner aren't the only IDSA guideline authors who know that Bb can persist despite antibiotic treatment. Raymond Dattwyler, in patents awarded both before and after the IDSA's LD guidelines were published in 2006, wrote that Lyme disease can exist in a chronic form following antibiotic treatment.

In February 2007, Dr. Dattwyler was awarded a patent by the U.S. government in which he wrote the following:

?Currently, Lyme Disease is treated with a range of antibiotics, e.g., tetracyclines, penicillin and cephalosporins. However, such treatment is not always successful in clearing the infection. Treatment is often delayed due to improper diagnosis with the deleterious effect that the infection proceeds to a chronic condition, where treatment with antibiotics is often not useful. One of the factors contributing to delayed treatment is the lack of effective diagnostic tools.? (29)

Dattwyler's statements contradict the IDSA's positions that chronic Lyme does not exist following antibiotic treatment, and that current tests are effective in diagnosing Lyme disease.

Dattwyler has also published research that contradicts the IDSA's position that denies the existence of seronegative, chronic Lyme disease. (30) Studies by other medical researchers buttress his findings. (31, 32)

Still other research studies cast doubt on the IDSA guideline authors' contention—repeated in last fall's NEJM article—that Bb does not develop resistance to antibiotics. One study, published last year, found that not only could Bb develop resistance to some types of antibiotics, but it also could transfer the resistance genes to other species of bacteria, including *Bacillus subtilis* and *Enterococcus faecalis*. (33)

Another study found that Bb has an outer membrane protein, BesC, that is part of an efflux apparatus and is involved in antibiotic resistance. (34)

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Yet another study, by Yale researchers, asserted that calprotectin may modify the clearance of spirochetes at sites of inflammation. In particular, calprotectin prevents the eradication of Bb by therapeutic doses of penicillin G. (35)

A different study has described a mechanism by which Borrelia can evade beta-lactam antibiotics through pleomorphism into spheroplasts without cell walls. (36)

Other studies have shown that not only can Bb change into spheroplast L-forms (37, 38, 39, 40), including after exposure to penicillin (41, 42, 43), but the Borrelia can also revert back into motile forms. (44, 45, 46)

Stephen Malawista, a former colleague of Allen Steere at Yale, has also recently published a study showing that Bb can move upward of two orders of magnitude above the speed of a human neutrophil, the fastest cell in the body. This alacrity and its interpretation, in an organism with bidirectional motor capacity, may well contribute to difficulties in spirochete clearance by the host. (47)

Researchers from New York Medical College have also found that the extracellular matrix can provide a protective niche for Bb that allows the bacteria to evade robust host immune responses. (48)

ILADS has an online slide presentation that shows how the IDSA guideline authors' statements are contradicted by their own research studies. (49)

A CytoViva video of Borrelia also shows that the IDSA guideline authors' denial of the intracellularity of Borrelia is a pile of bull squeeze. (50)

Bottom line: there is considerable and growing evidence that Lyme borreliosis can become chronic, despite antibiotic treatment. Even the IDSA's Lyme disease experts know so.

1 <http://www.ncbi.nlm.nih.gov/pubmed/18316520>

2 <http://www.ncbi.nlm.nih.gov/pubmed/17436229>

3 <http://www.ncbi.nlm.nih.gov/pubmed/8913478>

4 <http://www.ncbi.nlm.nih.gov/pubmed/8968890>

5 <http://www.ncbi.nlm.nih.gov/pubmed/10834975>

6 <http://www.ncbi.nlm.nih.gov/pubmed/10720533>

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- 7 <http://www.ncbi.nlm.nih.gov/pubmed/15863289>
- 8 <http://www.ncbi.nlm.nih.gov/pubmed/1634816>
- 9 <http://www.ncbi.nlm.nih.gov/pubmed/8106639>
- 10 <http://www.ncbi.nlm.nih.gov/pubmed/9613343>
- 11 <http://www.ncbi.nlm.nih.gov/pubmed/8242938>
- 12 <http://www.ncbi.nlm.nih.gov/pubmed/10467661>
- 13 <http://www.ncbi.nlm.nih.gov/pubmed/8892586>
- 14 <http://www.ncbi.nlm.nih.gov/pubmed/8240439>
- 15 <http://www.ncbi.nlm.nih.gov/pubmed/2910019>
- 16 <http://www.ncbi.nlm.nih.gov/pubmed/8923044>
- 17 <http://www.ncbi.nlm.nih.gov/pubmed/15793100>
- 18 <http://www.ncbi.nlm.nih.gov/pubmed/16530006>
- 19 <http://www.ncbi.nlm.nih.gov/pubmed/11251580>
- 20 <http://www.ncbi.nlm.nih.gov/pubmed/8436647>
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- 24 <http://www.ncbi.nlm.nih.gov/pubmed/8085687>
- 25 <http://www.ncbi.nlm.nih.gov/pubmed/2613324>
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- 30 <http://www.ncbi.nlm.nih.gov/pubmed/3054554>
- 31 <http://www.ncbi.nlm.nih.gov/pubmed/8004045>

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- 32 <http://www.ncbi.nlm.nih.gov/pubmed/2613324>
- 33 <http://www.ncbi.nlm.nih.gov/pubmed/17905571>
- 34 <http://www.ncbi.nlm.nih.gov/pubmed/18389081>
- 35 <http://www.ncbi.nlm.nih.gov/pubmed/16552081>
- 36 <http://www.ncbi.nlm.nih.gov/pubmed/8811359>
- 37 <http://www.ncbi.nlm.nih.gov/pubmed/12194230>
- 38 <http://www.ncbi.nlm.nih.gov/pubmed/11081332>
- 39 <http://www.ncbi.nlm.nih.gov/pubmed/15859564>
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- 48 <http://www.ncbi.nlm.nih.gov/pubmed/17600717>
- 49 http://www.ilads.org/Presentation_ChronicLyme.html
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