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## LETTER TO THE EDITOR

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# RE: Endemic Tickborne Infectious Diseases in Louisiana and the Gulf South

*J La State Med Soc.* 2009 Nov-Dec; 161(6):325-339

### TO THE EDITOR:

The tickborne diseases review in the November/December 2009 issue is timely given the continued increase in incidence. Although the US Centers for Disease Control and Prevention (CDC) has been researching southern tick-associated rash illness (STARI), a non-reportable Lyme-like disease, a cause has still not been found. There is some evidence that *Borellia lonestari* is not the cause as an association has only been identified in one person.<sup>1,2</sup> In addition, microbial testing of ticks and skin biopsies of STARI patients has not found *B. burgdorferi* (*Bb*), though some researchers feel that southern strains of *Bb* may not respond to laboratory techniques based on northern strains. STARI behaves like Lyme disease, possibly milder. Contrary to statements in the article that there are no long-term effects, this is not actually known since there are no long-term studies of untreated STARI patients. The author is correct in stating that STARI should be treated like Lyme disease.

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**Dr. Marcia E. Herman-Giddens** is a child and family health consultant and adjunct professor in the School of Public Health at the University of North Carolina Chapel Hill. She is also the president of the Tick-borne Infections Council of North Carolina, Inc.

### AUTHOR'S RESPONSE TO LETTER TO THE EDITOR:

#### Southern Tick-Associated Rash Illness (STARI) Is Not Lyme Disease

I appreciate the comments made by Dr. Marcia E. Herman-Giddens, the president of the Tick-borne Infections Council of North Carolina, Inc., regarding my recent article in the *Journal*, "Endemic Tickborne Infectious Diseases in Louisiana and the Gulf South," and agree that the article is timely, given the increasing worldwide incidence of tickborne infectious diseases.<sup>1</sup> Unlike the North Carolina experience, both Lyme disease (LD) and southern tick-associated rash illness (STARI) are rare in Louisiana and the Gulf South, but do occur and must be differentiated. STARI remains a controversial and less well-studied tickborne infectious disease than LD and even its other common name, southern LD, often evokes confusion with LD. Like LD, STARI is characterized by erythema migrans at the tick bite site and similar, subacute constitutional symptoms. Although there have been no long-term studies on untreated STARI patients since its first description in 1998, there have been no reports of lingering arthritic, cardiovascular, or neurological manifestations of STARI, as have occurred following both treated and untreated LD.<sup>2,3,4</sup> My statements in the article comparing and contrasting STARI and LD were clear, concise, and in keeping with current clinical experience.

"First recognized in 1998, STARI manifests initially as erythema migrans as in LD, but occurs in regions of the Gulf South where *B. burgdorferi* is not endemic and follows the prolonged attachment of blood-feeding lone star ticks, more abundant in the southeast and south-central US. STARI may be difficult to distinguish from LD; causes fewer and milder constitutional symptoms than LD; and is not associated with delayed onset arthritis, target organ damage, or any other late manifestations. STARI should be treated initially with oral doxycycline or amoxicillin in the same schedules as LD."<sup>1</sup>

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Since the 2001 article cited by Dr. Herman-Giddens, there have been several additional clinical, epidemiological, microbiological, and molecular genetic investigations on the causative agent of STARI all of which support the conclusions that *Borrelia burgdorferi* is not the causative agent of STARI and that *B. lonestari* may be a causative agent of STARI.<sup>5,6-11</sup> In 2001, Burkot and co-investigators at the US Centers for Disease Control and Prevention (CDC), used polymerase chain reaction (PCR) to demonstrate DNA from the *B. lonestari* flagellin gene sequence in two *Amblyomma americanum* or lone star ticks collected in Alabama.<sup>6</sup> The authors concluded that *B. lonestari* might be a widespread pathogen in lone star ticks in the southeastern US.<sup>6</sup> In 2003, Moore and co-authors detected *B. lonestari* in white-tailed deer, a potential wild animal reservoir for STARI, in the southeastern US.<sup>7</sup> In 2003, Stegall-Faulk and coauthors detected *B. lonestari* in *A. americanum* ticks collected in Tennessee.<sup>8</sup> In 2004, Varela and co-investigators were the first group to culture-isolate *B. lonestari* from *A. americanum* ticks collected in Georgia.<sup>9</sup> In 2004, Varela, Moore, and Little used PCR with *Borrelia* genus-wide primers to assess *A. americanum* ticks collected in northeastern Georgia for *B. lonestari* infections and detected *B. lonestari* DNA in four out of 398 ticks tested.<sup>10</sup> The authors also used indirect fluorescent antibody testing with an anti-flagellin monoclonal antibody to directly visualize *Borrelia* species spirochetes in 10.7% (32/300) of lone star ticks collected in 2003.<sup>10</sup> The authors concluded that their results reconfirmed the presence of *B. lonestari* in questing adult *A. americanum* ticks in northeastern Georgia, and that regional residents were at risk of *B. lonestari* infections transmitted by lone star tick bites.<sup>10</sup> In 2008, Blanton and co-authors reported a case of STARI with erythema migrans and negative serum titers for LD in a South Carolina home inspector following

a tick bite.<sup>11</sup> The authors concluded that the acute and subacute systemic manifestations of STARI mimicked those of LD, and that STARI should be treated similarly as LD to ameliorate the clinical course of disease.<sup>11</sup> The authors also noted that unlike LD, no late manifestations of STARI have been recognized since STARI was first described in an outbreak among summer campers and staff in North Carolina in 1998.<sup>11</sup>

Thus, there is now clear evidence that *B. burgdorferi* is not the causative agent of STARI, and there is mounting evidence that *B. lonestari* isolated from *A. americanum* ticks in the southeastern United States is a causative agent of STARI. To satisfy Koch's postulates without an animal model for STARI, further refinement of the PCR test for *B. lonestari* flagellar DNA for human applications will be necessary to conclusively demonstrate *B. lonestari* as a causative agent for STARI. The role of non-governmental organizations, such as the Tick-borne Infections Council of North Carolina, Inc., headed by Dr. Herman-Giddens, will remain essential in educating the public about tickborne infections and their treatment and prevention.

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