

Health Care Provider Advisory

Date: April 22, 2013
To: Kitsap County Health Care Providers
From: Scott Lindquist, MD, MPH, Health Officer
Re: *Borrelia burgdorferi* Detection in Clallam, Jefferson, Kitsap and Mason Counties

Tick Surveillance in Washington State: For a number of years, the Washington State Department of Health (DOH) has been conducting tick speciation studies throughout the state. Citizens have been asked to submit ticks, which are then identified according to species. These studies have demonstrated that the vector species for Lyme Disease transmission, *Ixodes pacificus*, is widespread in Washington State, including Clallam, Jefferson, and Kitsap Counties. For the past two years, DOH has been conducting another study in which submitted ticks are tested for four different tick-borne disease pathogens: *Anaplasma phagocytophilum* (Granulocytic Anaplasmosis), *Borrelia burgdorferi* (Lyme Disease), *Babesia* species (Babesiosis), and *Ehrlichia chaffeensis* (Monocytic Ehrlichiosis). In 2012, three hundred and eighty tests were performed with two testing positive for *Borrelia burgdorferi*. **One of these positive *Borrelia burgdorferi* specimens was from Clallam County in an *Ixodes pacificus* tick collected in the area due east of Lake Crescent known locally as Indian Valley. The other positive *B. burgdorferi* specimen in 2012 came from Mason County.** In 2011, two out of 111 Washington State ticks tested positive for *B. burgdorferi*, both collected in Mason County.

Lyme Disease Cases in Washington State: Confirmed Lyme Disease cases in Washington State are rare. In 2011, there were 19 confirmed cases statewide: 15 with out-of-state exposures, one with an international exposure, and three with Washington State-only exposures. In the previous seven years (2004-2010), in-state exposure only cases ranged from 0-3 per year. Clallam County has not had a confirmed case of Lyme Disease reported although there have been anecdotal cases of rash illness following tick bites suggestive of tick-borne infection. In 2012, a probable case of Lyme Disease was reported in a Jefferson County resident without significant travel history. Since 2004, Kitsap County has reported six Lyme disease cases that have been confirmed, but all have had out-of-state exposure. Similarly to Jefferson County, Kitsap County also had one probable case without significant travel history.

Clinical Manifestations of Lyme Disease: Following 24-48 hours of attachment by a *B. burgdorferi* infected tick, transmission of the spirochete bacteria begins to occur. The classical presentation of this infection, occurring in 60-80% of cases, is the “target” (aka “bull’s-eye”) rash of Erythema Migrans (EM). The EM rash typically occurs in the first 7-14 days following infection. Systemic symptoms can develop during the 1-3 month period post-exposure including fevers, headache, swollen muscles and joints, and lymphadenopathy. Focal neuropathies such as Bell’s palsy can

also occur during this period. Late manifestations include arthritis, meningitis, and cardiac conduction abnormalities.

Diagnosis and Treatment: Serologic diagnosis can be complex and suffers from significant rates of false positive testing in low prevalence populations. A two-step diagnostic testing algorithm is recommended by the Centers for Disease Control (CDC) beginning with an EIA test, which, if positive, is confirmed with Western Blot of testing of IgM and IgG (if onset of symptoms is <30 days) or IgG alone (if onset >30 days). Other diagnostic tests are available (PCR, culture, urinary antigens) but suffer from poor sensitivity and specificity. Treatment of confirmed or probable Lyme Disease is with oral or parenteral antibiotics, depending on the stage of the disease.

Conditions known as “post Lyme Disease syndrome” and “chronic Lyme Disease” have created an unusual element of controversy regarding Lyme Disease evaluation and management, with some practitioners making the diagnosis based on non-specific symptoms (chronic fatigue, joint pain, cognitive impairment) and prescribing prolonged courses of parenteral antibiotics. Controlled studies have failed to document the efficacy of antimicrobial therapy for these conditions and the CDC and Infectious Disease Society of America strongly discourage this practice.

Prophylactic Antibiotics following Tick Exposure: Onset of a classical EM rash following a tick bite is a strong indication for antimicrobial treatment, with or without confirmatory testing. Serological tests can take up to four weeks to become positive after *B. burgdorferi* infection. An argument can be made for prophylactic treatment of tick bites in certain circumstances. These include a tick bite from an area where Lyme Disease is endemic (>20% of ticks test positive for *B. burgdorferi*), the tick is engorged (suggesting prolonged attachment), and prophylaxis can be started within 72 hours. Antibiotic prophylaxis generally consists of a single 200 mg dose of doxycycline in adults or 4 mg/kg in children eight years of age or older.

Is the Olympic Peninsula an Endemic Area for Lyme Disease? The simple answer is not at this time. The lack of confirmed Lyme Disease cases coupled with a single positive *B. burgdorferi* tick specimen (out of 11 tested over a two-year period) does not qualify Clallam County as an endemic area for Lyme Disease. The detection of three ticks in Mason County and one tick in Clallam County with *B. burgdorferi* infection over the last two years does raise the possibility that this pathogen is becoming established in the mouse population in some areas of the Olympic Peninsula. Typically mice serve as the reservoir host for *B. burgdorferi* with the West Coast tick vector *Ixodes pacificus*. The East Coast/Midwest vector *Ixodes scapularis* transmits infection from reservoir populations of mice and deer.

Clearly, ongoing tick sampling is needed on the Olympic Peninsula and efforts are underway to collect additional tick specimens for testing prior to the end of the grant period in June of 2013. Of special interest is the area around Lake Crescent where ticks have been known to be plentiful for many years.

Recommendations: The best prevention of Lyme Disease (and other tick-borne infections) involves protective clothing, insect repellants, and daily inspection and removal of ticks when in “tick country”. The Lyme Disease vector, *Ixodes pacificus* is definitely resident in Clallam,

Jefferson, and Kitsap Counties. Over the past two years, 12 ticks were submitted from Clallam County for speciation and eight were identified as *Ixodes pacificus*. In Jefferson County, eight ticks were submitted over the same time period and seven were identified as *Ixodes pacificus*. In Kitsap County, 25 ticks were submitted and 21 were identified as *Ixodes pacificus*.

Prophylactic use of antibiotics is not recommended at this time following uncomplicated tick bites. Development of an EM rash 7-14 days following attachment by an engorged tick is a strong indication for two weeks of oral antibiotic treatment (doxycycline, amoxicillin, or cefuroxime). Serological evaluation can also be valuable when signs and symptoms are present one or more months post-tick bite. Two-stage testing should begin with an approved EIA test followed by a confirmatory Western Blot study if the EIA test is positive. All suspect, probable, or confirmed cases of Lyme Disease should be reported to the local health department. Excellent online resources are available for the evaluation and management of Lyme Disease at <http://www.cdc.gov/lyme/healthcare/clinicians.html>.