

# Lyme Prophylaxis Risk Often Outweighs Benefit

*In a study involving prophylaxis with doxycycline, 30% of patients had adverse events.*

BY BRUCE JANCIN

FROM AN ANNUAL CONFERENCE  
ON PEDIATRIC INFECTIOUS DISEASES

VAIL, COLO. — Antimicrobial prophylaxis for Lyme disease should not be used when a patient arrives at the clinic with a recognized tick bite, according to Dr. Sean O'Leary.

"This is actually a fairly common call to our infectious diseases division in the



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DR. O'LEARY

summertime: 'I had a child come into the office. We've got the tick. What do we do?'" he said at the conference sponsored by the Children's Hospital, Denver.

The answer he and his pediatric infectious disease colleagues at the hospital almost always provide is a strong "no" to antimicrobial prophylaxis. That's consistent with detailed Infectious

Diseases Society of America (IDSA) guidelines on the topic, he noted.

The risk/benefit numbers argue against prophylaxis under most circumstances, he continued. If a 1.4% attack rate of Lyme disease following a tick bite in an endemic area is assumed, the number needed to treat in order to prevent 1 infection is 83 patients, said Dr. O'Leary of the Children's Hospital and the University of Colorado, both in Denver.

With the use of amoxicillin for prophylaxis, for every 10 cases of early Lyme disease prevented, it's to be expected that 1 patient would develop a severe, life-threatening drug reaction and 10 would experience a drug-induced rash. And, in a study involving prophylaxis with doxycycline, 30% of patients had adverse events.

The IDSA guidelines specify the limited circumstances in which prophylaxis is "moderately" favored.

The tick must be reliably identified as an adult or nymphal *Ixodes scapularis*, commonly known as the deer tick, that's been attached to the skin for more than 36 hours based upon the extent of engorgement with blood.

The local rate of infection of this tick species with *Borrelia burgdorferi* has to exceed 20%, as is generally true in areas

of New England, the Mid-Atlantic states, and the upper Midwest. And prophylaxis can be started less than 72 hours after removal of the tick.

When all those conditions are met, the IDSA guidelines state that it's reasonable to offer a single dose of doxycycline in patients without a contraindication to the drug. The dose for Lyme prevention is 200 mg in adults and 4 mg/kg up to a maximum of 200 mg in children above 8 years of age.

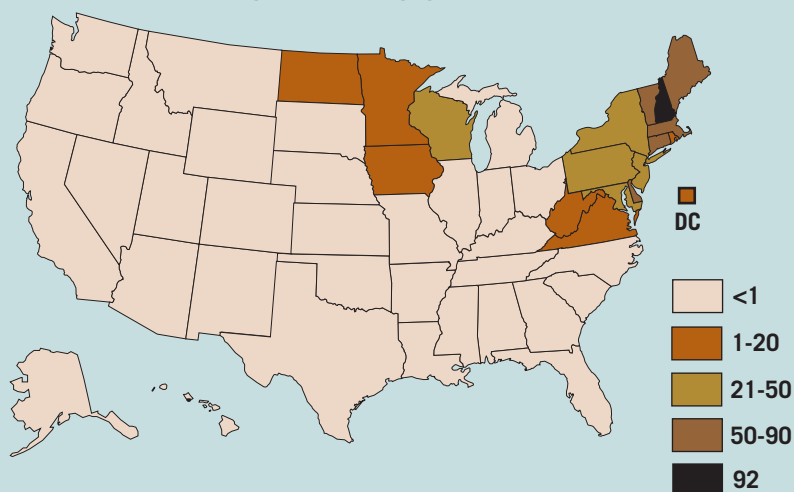
As for prophylaxis against other tick-

borne pathogens, Dr. O'Leary said that fewer than 1 in 1,000 *Dermacentor* ticks carry *Rickettsia rickettsii*, the cause of Rocky Mountain spotted fever. And while there are very few studies on other tick-borne diseases, the risk is considered "very, very low," he noted.

"In general, the risk of prophylaxis far outweighs any potential benefit," Dr. O'Leary stressed.

**Disclosures:** Dr. O'Leary said he had no relevant financial conflicts.

## New Hampshire Had Highest Lyme Disease Incidence in 2008 (per 100,000 population)



Source: Centers for Disease Control and Prevention

ELSEVIER GLOBAL MEDICAL NEWS

# Misdiagnosing Tick Paralysis Can Lead to Death in 10%

BY BRUCE JANCIN

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VAIL, COLO. — Tick paralysis is often misdiagnosed—with potentially dire consequences—as one of the other diseases that cause an acute ascending paralysis with preserved mental status.

The arthropod-inflicted paralysis is most often confused with Guillain-Barré syndrome. Other causes of an acute ascending paralysis with preserved mental status include spinal cord tumors and acute poliomyelitis. Botulism, in contrast, causes a descending paralysis with preserved mental status, Dr. Sean O'Leary said at the conference sponsored by the Children's Hospital, Denver.

Conducting a thorough search for an embedded tick is essential in a patient with an acute ascending paral-

ysis with preserved sensorium, particularly when there is a history consistent with potential tick exposure.

Treatment of tick paralysis is simple: Remove the tick. Clinical improvement will follow within hours.

In unrecognized and untreated cases of tick paralysis, however, the fatality rate is about 10%, with death typically occurring just 18-30 hours after symptom onset, according to Dr. O'Leary of the Children's Hospital and the University of Colorado, both in Denver.

Tick paralysis is more common in children than adults. The highest-risk group is young girls with long hair that can readily hide an engorged tick that's had a blood meal. At 3 days after attachment, the tick (usually a female) begins secreting the neurotoxin that causes the paralysis. Symptoms appear 4-7 days after attachment.

The peak time for tick paralysis is tick mating season: April through June.

The clinical scenario typically begins with loss of appetite and voice, followed by gait instability, ascending flaccid paralysis, excessive salivation, eye irritation, pupil asymmetry, and vomiting.

Death usually is from respiratory failure. For more than half a century, there have been post-mortem reports of ticks being found embedded in the skin of people who died suddenly of unexplained paralytic illnesses.



**The Rocky Mountain wood tick *Dermacentor andersoni* is a vector of Rocky Mountain spotted fever.**

COURTESY JAMES GATHANY/CDC

About 8% of the 870 named tick species have been associated with intoxication syndromes.

The species that cause the most cases of human, dog, and livestock paralysis in North America are *Dermacentor andersoni* and *D. variabilis*, both of which are vectors for the rickettsial disease Rocky Mountain spotted fever. In the United States, tick paralysis occurs most often in the Pacific Northwest and Rocky Mountain states.

The tick toxin's pathogenic mechanism isn't fully understood. Australian investigators have reported that the toxin inhibits acetylcholine release at the neuromuscular synapse, but tick paralysis there is caused by *Ixodes* species, and it's not clear that the same mechanism is at work in the paralysis caused by *Dermacentor* species, Dr. O'Leary said.

**Disclosures:** Dr. O'Leary said he had no relevant financial conflicts.

## The How-Tos of Proper Tick Removal

**T**he proper way to remove a tick is to grab it with blunt forceps as close to the skin as possible and pull it straight out with steady pressure, according to Dr. O'Leary.

Don't apply a hot nail or blown-out match to the critter's backside.

Don't use tweezers or sharp forceps.

Avoid using a twisting or corkscrew motion in removing the tick.

Don't crush or squeeze the tick's body, as that can cause the tick to

release more of the infectious organism or toxin, he noted.

Don't handle the tick barehanded.

"There have been documented cases of disease transmission" in people who did that, said Dr. O'Leary.

And although in bygone days, it was a popular practice to apply gasoline, lidocaine, petroleum jelly, or other substances to the embedded tick to encourage it to back out, the current thinking is, don't do it.