Now that spring is upon us, ticks are active again. People working and playing outdoors in wooded and weedy areas will be exposed to ticks and, possibly, tick-borne diseases, such as Rocky Mountain Spotted Fever, Lyme disease, and Ehrlichiosis.

**ROCKY MOUNTAIN SPOTTED FEVER**

Although Rocky Mountain Spotted Fever (RMSF) is known from 71 Ohio counties, 44% of all cases are reported from three; Clermont, Franklin, and Lucas. From 1956-2003, 765 cases were reported from Ohio, with 19 deaths since 1964 (one in the past 5 years). In 2003 there were 9 cases reported, which is slightly below Ohio’s average of 16 per year. Cases are seasonal in occurrence, with dates of onset between April and July.

Heightened awareness of tick-borne diseases has probably contributed to a decrease in the case rate over the past several years. However, ticks that transmit RMSF are still abundant in Ohio so the risk of infection has probably not changed. For those with RMSF, increased risk of fatal infection is associated with a delay in seeking medical attention after symptoms occur.

**SYMPTOMS**

Symptoms include: sudden onset of fever, headache, and muscle aches, usually followed by a maculopapular rash, first appearing on the arms and legs, and then spreading to the trunk, palms and soles. The incubation period for RMSF is 2-14 days after tick contact or bite. Early RMSF may be confused with ehrlichiosis, meningococcemia, and enteroviral infection.

**THE BACTERIUM**

RMSF is caused by the bacterium, *Rickettsia rickettsii*. It is related to species of *Rickettsia* which cause various types of typhus.

**THE VECTOR**

In Ohio, RMSF is transmitted by the American dog tick (*Dermacentor variabilis*). It is the most abundant and widespread Ohio tick species submitted to the Vector-Borne Disease Program (VBDP) for identification and testing. *Dermacentor variabilis* constituted 86.3% (892 of 1033) of the total number of ticks identified from Ohio in 2003 and was submitted from 74 of Ohio’s 88 counties. This species is not particular about which mammal they feed on.

**REPORTING**

Suspect cases of Rocky Mountain Spotted Fever must be reported by the end of the work week. Individual cases must be reported to the local health department. Local health departments then report cases via the Ohio Disease Reporting System (ODRS) to ODH. The Tick-borne Rickettsial Disease Case Report Form (CDC 55.1) must be completed and sent to Vector-borne Disease Program, 900 Freeway Drive North, Columbus, Ohio 43229 (Attention: Kim Winpisinger).
LYME DISEASE

There have been 873 cases of Lyme Disease reported to the Centers for Disease Control (CDC) from 82 Ohio counties during the period 1984-2003. In 2003, 61 cases were reported to the CDC.

Of the 149 cases reported during 2002 to 2003, 27 (18.1%) indicated tick exposure out-of-state, 29 (19.5%) reported exposure in Ohio, and 93 (62.4%) represented unknown exposure sites.

Two hundred sixty-three other suspect cases reported to VBDP between 2002 and 2003 were not reported to CDC because: 1) they did not meet the epidemiological case criteria established by CDC, 2) there was insufficient information provided in the case report, or 3) because the physician changed the final diagnosis.

Lyme Disease has not been proven to be endemic in Ohio because the bacterium, Borrelia burgdorferi, has never been isolated or identified from a resident animal or tick. Hundreds of Ixodes ticks and Ohio rodents have been tested for B. burgdorferi, all tests were negative. This does NOT mean that Lyme disease cannot be acquired in Ohio. We believe that it can. Eighteen Blacklegged ticks (Ixodes scapularis), the vector of Lyme disease in the eastern U.S., have been found in Ohio. They were probably brought into the state on migratory birds or other travelers. We can only guess at the real number of these vector ticks being brought into Ohio each year.

SYMPTOMS

An early Lyme Disease symptom is the “bull’s-eye” rash or ring lesion (called erythema migrans (EM) or erythema chronicum migrans) usually appearing at the site of the tick bite. Other symptoms include fatigue, headache, neck pain, stiffness in muscles or joints, fever, and swollen glands. The rash may not develop for over a month, if ever. Between 20-25% cases never develop an EM rash. Chronic disease may have a wide range of arthritic, cardiac, and neurological symptoms. These chronic symptoms may develop months or even years after infection. The incubation period for Lyme Disease is considered to be between 3-30 days.

THE BACTERIUM

Borrelia burgdorferi is the causative agent of Lyme Disease. It is a spirochete-type bacterium, similar to the causative agent of syphilis, and closely related to those species of Borrelia which cause relapsing fever.

THE VECTOR

Lyme Disease is transmitted in the eastern U.S. by the Blacklegged tick (Ixodes scapularis). No other tick species has been proven to be a vector of Lyme Disease to humans in the eastern U.S. However, there is evidence that the rabbit tick, Ixodes dentatus, may vector the disease in rabbits.

REPORTING

Lyme Disease cases must be reported by the end of the next business day. Individual cases must be reported to the local health department. Local health departments then report cases via the Ohio Disease Reporting System (ODRS) to ODH. Please be sure to complete the signs and symptoms section, and to note the geographic location of tick exposure.
**EHRLICHIOSIS**

Ehrlichiosis is an emerging infectious disease, but it has probably been around for a long time - just not recognized. In 1998, deer in 4 southern Ohio counties (Adams, Gallia, Jackson, and Lawrence counties) were found to be infected with bacteria that cause Human Monocytic Ehrlichiosis (HME). Eleven of 133 (8.3%) deer blood samples tested positive for the bacteria. In 2002, there were 3 human cases of Ehrlichiosis in Ohio (Ashtabula, Cuyahoga and Geauga counties) reported to CDC, while 8 human cases from Athens, Clermont, Geauga, Jackson, Montgomery, Portage, and Summit counties were reported in 2003.

**THE BACTERIUM**

Human Monocytic Ehrlichiosis is caused by the bacterium, *Ehrlichia chaffeensis*. It is a rickettsia-like organism; an extremely small bacterium that is an intracellular parasite of white blood cells.

The bacterium was first isolated in 1986 from the blood of a U.S. Army reservist at Fort Chaffee Arkansas, and was subsequently named *E. chaffeensis* after the locality of the first isolate.

**THE VECTOR**

HME is transmitted by the Lone Star tick, *Amblyomma americanum*. Within the past 2 years, populations of this tick have been discovered in 28 Ohio counties. We suspect it will continue to spread in Ohio.

*Amblyomma americanum*

**REPORTING**

Human Monocytic Ehrlichiosis cases must be reported by the end of the work week. Individual cases must be reported to the local health department. Local health departments then report cases via the Ohio Disease Reporting System (ODRS). The Tick-borne Rickettsial Disease Case Report Form (CDC 55.1) must be completed and sent to Vector-borne Disease Program, 900 Freeway Drive North, Columbus, Ohio 43229 (Attention: Kim).

**REMOVING TICKS**

The bacteria that cause Rocky Mountain Spotted Fever, Ehrlichiosis and Lyme Disease are transmitted in the saliva while a tick is feeding. However, feeding begins a relatively long time after attachment and risk of infection during this time is low. For this reason, early detection and correct removal of the tick will help to prevent infection.

Care should be exercised when removing ticks. If squeezed, the tick may involuntarily inject bacteria, like a mini-syringe. NEVER attempt to “burn off” a tick with a match. This will cause the tick to burst and inject more bacteria into the feeding site. Secretions and tick feces may also be infective, so it is best to avoid touching the tick. Grasp the tick as close to the skin as possible using fine-tipped tweezers or with fingers shielded with tissue or rubber gloves. Pull gently but firmly straight out until the tick pulls free. Wash the bite site with soap and water and apply an antiseptic. KEEP THE TICK ALIVE. Place it in a pill vial or film canister and attach a completed tick submission form indicating the county where the tick was picked up and the date it was found. It is also very important to include a small moistened piece of paper towel or napkin (one drop of water is sufficient) in the container with the tick. Without this, or with too much water, the tick may die prior to reaching the VBDP lab for testing.

We can only test live ticks. However, all ticks, dead or alive, will be identified. For identification and testing, send the tick to the Vector-Borne Disease Program’s Tick Identification and Testing Service at the address below. A tick submission form is at the bottom of the next page. Please make copies as necessary.

**SYMPTOMS**

Onset of symptoms of HME occurs between 1 and 21 days following infection and may resemble the symptoms of Rocky Mountain Spotted Fever. The spectrum of this disease ranges from illness so mild that no medical attention is sought to a severe, life threatening condition. Clinical features include high fever and headache, malaise, muscle aches, vomiting, and loss of appetite. A rash similar to that seen in cases of Rocky Mountain Spotted Fever is present in about 20% of cases. Since the bacterium invades white blood cells, the body’s immune system is also adversely affected.

**AMBLYOMMA AMERICANUM 2002-2003**

Total: 147
Counties: 28
**Tick Identification & Testing Service**

Tick identification and testing is currently available through the Vector-Borne Disease Program. The purpose of this service is to supply correct identification of ticks, results of pathogen testing and information about diseases transmitted by ticks in Ohio. Proper tick identification is essential to determine the potential risk of infection associated with a particular disease. For example, the American Dog Tick is a vector of Rocky Mountain Spotted Fever but **NOT** Lyme Disease. Tick testing at the Vector-borne Disease Program for Rocky Mountain Spotted Fever and Lyme Disease is not diagnostic of human illness, but indicate risk if the tick is infected.

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**Ohio Vector News is Compiled by the Staff of the Vector-borne Disease Program, ODH, 900 Freeway Drive North Columbus, Ohio 43229**

Phone: 614-752-1029; FAX: 614-752-1391

For additional information / comments etc., call or e-mail us at: zoonoses@gw.odh.state.oh.us

Information for items was abstracted from CDC’s VECTOR listserver and other sources. Ohio data and maps are original items.

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**Date Received:** ____________________________

**Identification:** ____________________________

**Results:** ____________________________

**Instructions for submitting ticks:**

1. **Keep ticks alive!** Dead ticks will be identified, but cannot be tested.

2. Moisten paper strip with **one** drop of water, place tick and paper strip in vial and close tightly.

3. Complete this form and send it with your tick to VBDP in the tube provided.

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**Collector/Patient:** ______________________________________

**Address:** ________________________________________________

**City/State/Zip:** __________________________________________

**Age:** ________ **Sex:** ______ **Phone:** ____________________

**Mail results to:** (if different from above)

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