



EHRlichiosis

(also called human monocytic ehrlichiosis [HME])

1. **Agent:** In the United States, *Ehrlichia chaffeensis* and *E. ewingii* bacteria, and a third species called *Ehrlichia E. muris eauclairensis* (EML).

2. **Identification:**

a. **Symptoms:** Symptoms are usually nonspecific; the most common complaints are fever, headache, anorexia, nausea, myalgia and vomiting. Symptoms can range from mild illness to a severe, life-threatening or fatal disease. The disease may be confused clinically with Rocky Mountain spotted fever (RMSF) but differs by rarity of a prominent rash. Rash is found in 30% of adults and 60% of children with *E. chaffeensis* infection, but less frequent in *E. ewingii* and EML infections.

Laboratory findings include leukopenia, anemia, thrombocytopenia, and elevation of one or more liver-function tests. In hospitalized cases, the laboratory findings may be only slightly abnormal on admission and become more abnormal during hospitalization.

b. **Differential Diagnosis:** RMSF, bacterial sepsis, Lyme disease, flea-borne typhus, toxic-shock syndrome, gastro-enteritis, viral syndromes, tick-borne encephalitis and other multi-system febrile illnesses.

c. **Diagnosis:** Preliminary diagnosis of ehrlichiosis in the US is based on clinical and laboratory findings. Confirmation is based on: the evaluation of a blood smear, development of serum antibodies to *E. chaffeensis* for ehrlichiosis, immunofluorescence test, PCR.

3. **Incubation:** 5 to 14 days.

4. **Reservoir:** White-tailed deer are a major host of lone star ticks and appear to represent one natural reservoir for *E. chaffeensis*.

Source: The lone star tick (*Amblyomma americanum*) in the southeastern and southcentral United States. The black-legged

(*Ixodes Scapularis*) is the tick vector for the EML organism and is widely distributed in the Eastern United States though EML has only been found in Wisconsin and Minnesota.

5. **Transmission:** Bite of an infected tick. Transmission has also been documented from blood transfusions.

6. **Communicability:** No evidence of person-to-person transmission.

7. **Specific Treatment:** A tetracycline such as doxycycline is the first line of treatment in children and adults.

8. **Immunity:** No data are available on protective immunity in humans from infections caused by these organisms. Reinfection is rare but has been reported.

REPORTING PROCEDURES

1. Reportable within 7 days of diagnosis (Title 17, Section 2500, *California Code of Regulations*).

[EHRlichiosis/ANAPLASMOSIS CASE REPORT \(CDPH 8573\)](#)

2. **Epidemiologic Data:**

- a. Recent travel to endemic areas.
- b. History of tick and other insect bites.
- c. History of possible exposure to ticks in wooded areas.
- d. Occupational exposure.

CONTROL OF CASE & CONTACTS:

CASE:

- 1. **Isolation:** None.
- 2. **Concurrent disinfection:** Remove any ticks.

CONTACTS: No restrictions.



PREVENTION-EDUCATION

1. Use of tick repellants in endemic areas.
2. Wear protective clothing in wooded areas.
3. Control ticks on domestic animals.
4. Avoid tick-infested areas when possible. Check skin periodically and remove attached ticks immediately.

DIAGNOSTIC PROCEDURES

1. **Blood smear:** During the acute phase of illness a morulae can be seen in the cytoplasm of white blood cells in about 20% of patients.
2. **Serology:** Serologic testing is available at many commercial laboratories and at CDC Rickettsial Zoonoses Branch (RZB) Reference Diagnostic Laboratory.

Laboratory Form: [CDC 50.34 Specimen Submission Form.](#)

Examination Requested: Ehrlichia Serology

Material: Serum.

Amount: 1 mL

Storage: Keep specimen at a refrigerated temperature (2-8°C) up to 7 days after draw.

If storing over 7 days, freeze at -20°C or lower up to 2 months, or -70°C or lower up to 1 year.

Remarks: Collect first (acute) blood specimen within 14 days of onset. Collect second (convalescent) blood specimen 2 to 10 weeks later.

3. **PCR:** PCR testing is available at many commercial laboratories and at CDC Rickettsial Zoonoses Branch Reference Diagnostic Laboratory.

Laboratory Form: [CDC 50.34 Specimen Submission Form.](#)

Examination Requested: Ehrlichia Molecular Detection

Material: Whole blood: EDTA-treated or ACD A treated OR Serum: Serum separator tube, or cryo-tubes. Vascularized tissue biopsies, including skin biopsy specimens from the site of rash or eschar. Swab specimen of eschar, using a dry, sterile cotton swab.

Amount: 1 ml.

Storage: Keep specimen at a refrigerated temperature (2-8°C) up to 7 days after draw. If storing over 7 days, freeze at -20°C or lower up to 2 months (35 days for tissue), or -70°C or lower up to 1 year (for serum, blood and tissue).