



# EHRlichiosis

(human monocytic ehrlichiosis [HME], human granulocytic ehrlichiosis [HGE])

1. **Agent:** The majority of cases of human monocytic ehrlichiosis (HME) found in the USA are caused by *E. chaffeensis*. Human granulocytic ehrlichiosis (HGE) is caused by *Anaplasma phagocytophila*, a related ehrlichial organism (formerly *Ehrlichia phagocytophila*, *E. equi*).

2. **Identification:**

a. **Symptoms:** Human ehrlichiosis is a newly recognized disease in USA. The spectrum of disease ranges from mild illness to a severe, life-threatening or fatal disease. Symptoms are usually nonspecific; the most common complaints are fever, headache, anorexia, nausea, myalgia and vomiting. The disease may be confused clinically with Rocky Mountain spotted fever (RMSF) but differs by rarity of a prominent rash.

Laboratory findings include leukopenia, 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, endemic (murine) 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 USA 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 HME or *A. phagocytophila* for HGE; immunofluorescence test; PCR.

3. **Incubation:** 7 to 21 days for ehrlichiosis.

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

and wild rodents are likely reservoirs of the agent of HGE.

5. **Source:** Ehrlichiosis in North America has been concentrated in the southeastern and south-central areas of the USA. More than 12 human cases, including 3 deaths, caused by a granulocytic *Ehrlichia*, have occurred in northern Minnesota, Wisconsin, Connecticut, Maryland and Florida. Rarely cases of ehrlichiosis have been diagnosed in California.

6. **Transmission:** In the United States, ehrlichiae are transmitted by the bite of an infected tick. The lone star tick (*Amblyomma americanum*), the blacklegged tick (*Ixodes scapularis*), and the western blacklegged tick (*Ixodes pacificus*) are known vectors of ehrlichiosis in the US. *Ixodes ricinus* is the primary vector in Europe. Most patients report a tick bite or association with wooded, tick-infested areas prior to onset of illness.<sup>1</sup>

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

8. **Specific Treatment:** A tetracycline such as doxycycline; chloramphenicol for pregnant women and children under 8 years of age.

9. **Immunity:** Susceptibility is believed to be general. No data are available on protective immunity in humans from infections caused by these organisms. Re-infection is rare but has been reported.

## REPORTING PROCEDURES

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

2. **Report Form: TICK-BORNE RICKETTSIAL DISEASE CASE REPORT (CDC 55.1, 1/01 fillable).**

3. **Epidemiologic Data:**

a. Recent travel to endemic areas.

<sup>1</sup> See <http://www.cdc.gov/ncidod/dvrd/ehrlichia/Q&A/Q&A.htm>.



- b. History of tick 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. **Serology:** Indirect immunofluorescence.

**Container:** Serum separator tube.

**Laboratory Form:** State special serology.

**Examination Requested:** Ehrlichiosis.

**Material:** Whole blood.

**Amount:** 10 ml.

**Storage:** Refrigerate until transported.

- 2. **PCR**

**Container:** Red top or red-grey top tube.

**Material:** Serum.

**Amount:** 1 ml.

**Storage:** Refrigerate or freeze until transported.