



ANAPLASMOSIS

(formerly termed ehrlichiosis; human granulocytic ehrlichiosis [HGE])

1. **Agent:** Anaplasmosis is caused by *Anaplasma phagocytophila*, an ehrlichial organism formerly known as *Ehrlichia phagocytophila*, *E. equi*.

2. **Identification:**

a. **Symptoms:** Human ehrlichiosis/anaplasmosis are newly recognized diseases 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/anaplasmosis 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 ehrlichiosis or *A. phagocytophila* for anaplasmosis; immunofluorescence test; PCR.

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

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/anaplasmosis 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/anaplasmosis 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/anaplasmosis 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.¹

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

3. **Epidemiologic Data:**

a. Recent travel to endemic areas.

¹ See <http://www.cdc.gov/anaplasmosis/>.



- 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/anaplasmosis.

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.