California Department of Public Health
Center for Infectious Diseases
Division of Communicable Disease Control
Infectious Diseases Branch
Surveillance and Statistics Section
MS 7306, P.O. Box 997377
Sacramento, CA 95899-7377

EHRLICHIOSIS / ANAPLASMOSIS CASE REPORT

Check one:
- ☐ *Ehrlichia chaffeensis infection (formerly Human Monocytic Ehrlichiosis [HME])*
- ☐ *Ehrlichia ewingii* infection (formerly Ehrlichiosis [unspecified, or other agent])
- ☐ *Anaplasma phagocytophilum* infection (formerly Human Granulocytic Ehrlichiosis [HGE])
- ☐ *Ehrlichi/Anaplasmosis, human, undetermined*

Jurisdictions that choose to use this form should send completed forms to the Surveillance and Statistics Section by mail through your communicable disease reporting staff. For jurisdictions participating in CalREDIE, entry of information into the CalREDIE form will facilitate investigations and surveillance. This form is only for cases of ehrlichiosis/anaplasmosis. Spotted fever rickettsioses (such as Rocky Mountain spotted fever) should be reported on the Spotted Fever Rickettsioses Case Report form. Cases of typhus and other non-spotted fever rickettsioses should be reported on the Typhus and Other Non-Spotted Fever Rickettsioses Case Report form.

PATIENT INFORMATION

Last Name	*First Name*	*Middle Name*	*Suffix*

Social Security Number (9 digits)	*DOB (mm/dd/yyyy)*	*Age*	☐ Years ☐ Months ☐ Days

Address Number & Street – Residence	*Apartment / Unit Number*

City / Town	*State*	*Zip Code*

Census Tract	*County of Residence*	*Country of Residence*

Country of Birth	*If not U.S. Born - Date of Arrival in U.S. (mm/dd/yyyy)*

Home Telephone	*Cellular Phone / Pager*	*Work / School Telephone*

E-mail Address	*Other Electronic Contact Information*

Work / School Location	*Work / School Contact*

Gender
☐ Female ☐ Trans female / transwoman ☐ Genderqueer or non-binary ☐ Unknown
☐ Male ☐ Trans male/ transman ☐ Identity not listed ☐ Declined to answer

Pregnant? ☐ Yes ☐ No ☐ Unknown	*If Yes, Est. Delivery Date (mm/dd/yyyy)*

Medical Record Number	*Patient's Parent/Guardian Name*

Occupation Setting (see list on page 8)	*Other Describe/Specify*

Occupation (see list on page 8)	*Other Describe/Specify*

Primary Language
☐ English
☐ Spanish
☐ Other: _____

Ethnicity (check one)
☐ Hispanic/Latino
☐ Non-Hispanic/Non-Latino
☐ Unknown

Race(s)
(check all that apply, race descriptions on page 7)

The response to this item should be based on the patient's self-identity or self-reporting. Therefore, patients should be offered the option of selecting more than one racial designation.

☐ American Indian or Alaska Native

☐ Asian *(check all that apply, see list on page 7)*
- ☐ Asian Indian
- ☐ Bangladeshi
- ☐ Cambodian
- ☐ Chinese
- ☐ Filipino
- ☐ Hmong
- ☐ Indonesian
- ☐ Japanese
- ☐ Korean
- ☐ Laotian
- ☐ Malaysian
- ☐ Pakistani
- ☐ Sri Lankan
- ☐ Taiwanese
- ☐ Thai
- ☐ Vietnamese
- ☐ Other: _____

☐ Black or African-American

☐ Native Hawaiian or Other Pacific Islander *(check all that apply, see list on page 7)*
- ☐ Native Hawaiian
- ☐ Samoan
- ☐ Fijian
- ☐ Tongan
- ☐ Guamanian
- ☐ Other: _____

☐ White

☐ Other: _____

☐ Unknown

First three letters of patient's last name: | | | |

ADDITIONAL PATIENT DEMOGRAPHICS

Sex Assigned at Birth
☐ Female ☐ Unknown
☐ Male ☐ Declined to answer

Sexual Orientation
☐ Heterosexual or straight ☐ Questioning, unsure, or patient doesn't know ☐ Declined to answer
☐ Gay, lesbian, or same-gender loving ☐ Orientation not listed ☐ Unknown
☐ Bisexual

CLINICAL INFORMATION

Physician Name - Last Name	*First Name*	*Telephone Number*

SIGNS AND SYMPTOMS

Symptomatic? ☐ Yes ☐ No ☐ Unknown	*Onset Date (mm/dd/yyyy)*	*Date First Sought Medical Care (mm/dd/yyyy)*

Signs and Symptoms	Yes	No	Unk	If Yes, Specify as Noted	
Fever				*Highest temperature (specify °F/°C)*	
Muscle pain					
Headache					
Nausea or vomiting					
Rash or other cutaneous lesion				*Location / size / appearance*	
Chills					
Sweats					
Joint pain				*Joint(s)*	
Eye pain					
Abdominal pain					
Diarrhea					
Cough					
Hypotension				*Date measured (mm/dd/yyyy)*	*Systolic / Diastolic*

Other signs / symptoms (specify)

HOSPITALIZATION

Did patient visit the emergency room for illness?
☐ Yes ☐ No ☐ Unknown

Was patient hospitalized? ☐ Yes ☐ No ☐ Unknown	*If Yes, how many total hospital nights?*	*During any part of the hospitalization, did the patient stay in an intensive care unit (ICU) or a critical care unit (CCU)?* ☐ Yes ☐ No ☐ Unknown

If there were any ER visits or hospital stays related to this illness, specify details in the Hospitalization – Details section on next page.

First three letters of patient's last name: | | | |

HOSPITALIZATION – DETAILS

Hospital Name 1	Street Address			Admit Date (mm/dd/yyyy)	
	City			Discharge / Transfer Date (mm/dd/yyyy)	
	State	Zip Code	Telephone Number	Medical Record Number	Discharge Diagnosis
Hospital Name 2	Street Address			Admit Date (mm/dd/yyyy)	
	City			Discharge / Transfer Date (mm/dd/yyyy)	
	State	Zip Code	Telephone Number	Medical Record Number	Discharge Diagnosis

TREATMENT / MANAGEMENT

Received treatment? ☐ Yes ☐ No ☐ Unknown	If Yes, specify the treatments below.

TREATMENT / MANAGEMENT DETAILS

Treatment Type 1 ☐ Antibiotic ☐ Other	If Antibiotic, specify route	Treatment Name	Date Started (mm/dd/yyyy)	Date Ended (mm/dd/yyyy)
Treatment Type 2 ☐ Antibiotic ☐ Other	If Antibiotic, specify route	Treatment Name	Date Started (mm/dd/yyyy)	Date Ended (mm/dd/yyyy)

OUTCOME

Outcome? ☐ Survived ☐ Died ☐ Unknown	If Survived, Survived as of _____(mm/dd/yyyy)	Date of Death (mm/dd/yyyy)

LABORATORY INFORMATION

LABORATORY RESULTS SUMMARY - SEROLOGY

Specimen Type 1	Collection Date (mm/dd/yyyy)	Type of Test	Antigen
	Results	Laboratory Name	Telephone Number
Specimen Type 2	Collection Date (mm/dd/yyyy)	Type of Test	Antigen
	Results	Laboratory Name	Telephone Number

LABORATORY RESULTS SUMMARY - OTHER

Hematology? ☐ Yes ☐ No ☐ Unknown	Collection Date (mm/dd/yyyy)	WBC	HCT	Hb	Platelets
Serum chemistry? ☐ Yes ☐ No ☐ Unknown	Collection Date (mm/dd/yyyy)	ALT		AST	
Other laboratory diagnostics performed (e.g., PCR, buffy coat smear)? ☐ Yes ☐ No ☐ Unknown		If Yes, describe			

First three letters of patient's last name: | | | |

EPIDEMIOLOGIC INFORMATION

INCUBATION PERIOD: UP TO 14 DAYS BEFORE ILLNESS ONSET

ANIMAL AND INSECT EXPOSURES

Observe any of the following during incubation period at or around home? ☐ Dogs ☐ Cats ☐ Rodents ☐ Opossums ☐ Fleas ☐ Ticks	*Describe*

If pets in the home, how often are they treated with flea prevention medication?	*Type(s) of Treatment*	*Date(s) of Last Treatment (mm/dd/yyyy)*

Observe any of the following during incubation period away from home? ☐ Dogs ☐ Cats ☐ Rodents ☐ Opossums ☐ Fleas ☐ Ticks	*Describe*
If any cats were observed, were they feral / stray, indoor, or outdoor cats? ☐ Feral / stray ☐ Indoor ☐ Outdoor ☐ Other:_____	
Did the patient spend any nights living outside, without shelter, in the past 21 days (including in a car, unsheltered on the street, or in a temporary shelter)? ☐ Yes ☐ No ☐ Unknown	*Describe*
Did patient recall any insect bites in the 10 days prior to illness? ☐ Yes ☐ No ☐ Unknown	*If Yes, specify all locations, type of insect bite, and dates on page 4.*

INSECT BITE HISTORY - DETAILS

Bite 1	*Location (city, county, state, country)*	*Date of Insect Bite (mm/dd/yyyy)*	*Type of Insect Bite* ☐ Flea ☐ Tick ☐ Other:_____
Bite 2	*Location (city, county, state, country)*	*Date of Insect Bite (mm/dd/yyyy)*	*Type of Insect Bite* ☐ Flea ☐ Tick ☐ Other:_____

EXPOSURES / RISK FACTORS – TRANSFUSION / TRANSPLANTATION

Was patient's infection transfusion or solid-organ-transplantation associated? ☐ Yes ☐ No ☐ Unknown	*If Yes, describe*
Was patient a blood donor identified during a transfusion investigation or a solid-organ donor identified during a transplantation investigation? ☐ Yes ☐ No ☐ Unknown	*If Yes, describe*

TRAVEL HISTORY

*Did patient travel **outside county of residence** during the **incubation period**?* ☐ Yes ☐ No ☐ Unknown	*If Yes, specify all locations and dates below.*

TRAVEL HISTORY – DETAILS

Travel Type	State	Country	Other location details (city, resort, etc.)	Date Travel Started *(mm/dd/yyyy)*	Date Travel Ended *(mm/dd/yyyy)*
☐ Domestic ☐ Unknown ☐ International					
☐ Domestic ☐ Unknown ☐ International					
☐ Domestic ☐ Unknown ☐ International					

First three letters of patient's last name: | | | |

ILL CONTACTS

Any contacts with similar illness (including household contacts)? ☐ Yes ☐ No ☐ Unknown	*If Yes, specify details below.*

ILL CONTACTS - DETAILS

Name 1	*Age*	*Gender*	*Telephone Number*	*Type of Contact / Relationship*	*Date of Contact (mm/dd/yyyy)*
	Street Address			*Exposure Event*	*Illness Onset Date (mm/dd/yyyy)*
	City	*State*	*Zip Code*	*Occupation*	
Name 2	*Age*	*Gender*	*Telephone Number*	*Type of Contact / Relationship*	*Date of Contact (mm/dd/yyyy)*
	Street Address			*Exposure Event*	*Illness Onset Date (mm/dd/yyyy)*
	City	*State*	*Zip Code*	*Occupation*	

EPIDEMIOLOGICAL LINKAGE

Epi-linked to known case? ☐ Yes ☐ No ☐ Unknown	*Contact Name / Case Number*

NOTES / REMARKS

REPORTING AGENCY

Investigator Name	*Local Health Jurisdiction*	*Telephone Number*	*Date (mm/dd/yyyy)*

First Reported By

☐ Clinician ☐ Laboratory ☐ Other (specify):_____

DISEASE CASE CLASSIFICATION

Case Classification (see case definition on page 6)

☐ Confirmed ☐ Probable ☐ Suspect

STATE USE ONLY

State Case Classification

☐ Confirmed ☐ Probable ☐ Suspect ☐ Not a case ☐ Need additional information

CASE DEFINITION

EHRLICHIOSIS/ANAPLASMOSIS (2010)

Ehrlichia chaffeensis infection (formerly Human Monocytic Ehrlichiosis [HME])
Ehrlichia ewingii infection (formerly Ehrlichiosis [unspecified, or other agent])
Anaplasma phagocytophilum infection (formerly Human Granulocytic Ehrlichiosis [HGE])
Ehrlichiosis/Anaplasmosis, human, undetermined

CLINICAL DESCRIPTION

Clinical presentation: A tick-borne illness characterized by acute onset of fever and one or more of the following symptoms or signs: headache, myalgia, malaise, anemia, leukopenia, thrombocytopenia, or elevated hepatic transaminases. Nausea, vomiting, or rash may be present in some cases.

Clinical evidence: Any reported fever and one or more of the following: headache, myalgia, anemia, leukopenia, thrombocytopenia, or any hepatic transaminase elevation.

LABORATORY CRITERIA FOR DIAGNOSIS

***Ehrlichia chaffeensis* infection (formerly Human Monocytic Ehrlichiosis [HME])**

Confirmatory laboratory evidence:

- Serological evidence of a fourfold change in immunoglobulin G (IgG)-specific antibody titer to *E. chaffeensis* antigen by indirect immunofluorescence assay (IFA) between paired serum samples (one taken in first week of illness and a second 2-4 weeks later), **OR**
- Detection of *E. chaffeensis* DNA in a clinical specimen via amplification of a specific target by polymerase chain reaction (PCR) assay, **OR**
- Demonstration of ehrlichial antigen in a biopsy or autopsy sample by immunohistochemical methods, **OR**
- Isolation of *E. chaffeensis* from a clinical specimen in cell culture.

Supportive laboratory evidence:

- Serological evidence of elevated IgG or IgM antibody reactive with *E. chaffeensis* antigen by IFA, enzyme-linked immunosorbent assay (ELISA), dot-ELISA, or assays in other formats (CDC uses an IFA IgG cutoff of ≥1:64 and does not use IgM test results independently as diagnostic support criteria.), **OR**
- Identification of morulae in the cytoplasm of monocytes or macrophages by microscopic examination.

***Ehrlichia ewingii* infection (formerly Ehrlichiosis [unspecified, or other agent]) Confirmatory laboratory evidence:**

- Because the organism has never been cultured, antigens are not available. Thus, *Ehrlichia ewingii* infections may only be diagnosed by molecular detection methods: *E. ewingii* DNA detected in a clinical specimen via amplification of a specific target by polymerase chain reaction (PCR) assay.

***Anaplasma phagocytophilum* infection (formerly Human Granulocytic Ehrlichiosis [HGE])**

Confirmatory laboratory evidence:

- Serological evidence of a fourfold change in IgG-specific antibody titer to *A. phagocytophilum* antigen by indirect immunofluorescence assay (IFA) in paired serum samples (one taken in first week of illness and a second 2-4 weeks later), **OR**
- Detection of *A. phagocytophilum* DNA in a clinical specimen via amplification of a specific target by polymerase chain reaction (PCR) assay, **OR**
- Demonstration of anaplasmal antigen in a biopsy/autopsy sample by immunohistochemical methods, **OR**
- Isolation of *A. phagocytophilum* from a clinical specimen in cell culture.

Supportive laboratory evidence:

- Serological evidence of elevated IgG or IgM antibody reactive with *A. phagocytophilum* antigen by IFA, enzyme-linked immunosorbent Assay (ELISA), dot-ELISA, or assays in other formats (CDC uses an IFA IgG cutoff of ≥1:64 and does not use IgM test results independently as diagnostic support criteria.), **OR**
- Identification of morulae in the cytoplasm of neutrophils or eosinophils by microscopic examination.

***Ehrlichiosis/Anaplasmosis,* human, undetermined**

- See case classification

EXPOSURE

History of having been in potential tick habitat in the 14 days prior to the onset of illness or history of tick bite or history of tick bite.

CASE CLASSIFICATION

Confirmed

- A clinically compatible case (meets clinical evidence criteria) that is laboratory confirmed..

Probable

- A clinically compatible case (meets clinical evidence criteria) that has supportive laboratory results. For ehrlichiosis/anaplasmosis – an undetermined case can only be classified as probable. This occurs when a case has compatible clinical criteria with laboratory evidence to support *Ehrlichia/Anaplasma* infection, but not with sufficient clarity to definitively place it in one of the categories previously described. This may include the identification of morulae in white cells by microscopic examination in the absence of other supportive laboratory results.

Suspect

- A case with laboratory evidence of past or present infection but no clinical information available (e.g. a laboratory report).

CASE DEFINITION (continued)

COMMENT

There are at least three species of bacteria, all intracellular, responsible for ehrlichiosis/ anaplasmosis in the United States: *Ehrlichia chaffeensis*, found primarily in monocytes, and *Anaplasma phagocytophilum* and *Ehrlichia ewingii*, found primarily in granulocytes. The clinical signs of disease that result from infection with these agents are similar, and the range distributions of the agents overlap, so testing for one or more species may be indicated. Serologic cross-reactions may occur among tests for these etiologic agents.

Four sub-categories of confirmed or probable ehrlichiosis/anaplasmosis should be reported: 1) human ehrlichiosis caused by *Ehrlichia chaffeensis*, 2) human ehrlichiosis caused by *E. ewingii*, 3) human anaplasmosis caused by *Anaplasma phagocytophilum*, or 4) human ehrlichiosis/anaplasmosis - undetermined. Cases reported in the fourth sub-category can only be reported as "probable" because the cases are only weakly supported by ambiguous laboratory test results.

Problem cases for which sera demonstrate elevated antibody IFA responses to more than a single infectious agent are usually resolvable by comparing the levels of the antibody responses, the greater antibody response generally being that directed at the actual agent involved. Tests of additional sera and further evaluation via the use of PCR, IHC, and isolation via cell culture may be needed for further clarification. Cases involving persons infected with more than a single etiologic agent, while possible, are extremely rare and every effort should be undertaken to resolve cases that appear as such (equivalent IFA antibody titers) via other explanations.

Current commercially available ELISA tests are not quantitative, cannot be used to evaluate changes in antibody titer, and hence are not useful for serological confirmation. Furthermore, IgM tests are not always specific and the IgM response may be persistent. Therefore, IgM tests are not strongly supported for use in serodiagnosis of acute disease.

RACE DESCRIPTIONS

Race	Description
American Indian or Alaska Native	Patient has origins in **any** of the original peoples of North and South America (including Central America).
Asian	Patient has origins in **any** of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent (e.g., including Bangladesh, Cambodia, China, India, Indonesia, Japan, Korea, Malaysia, Nepal, Pakistan, the Philippine Islands, Thailand, and Vietnam).
Black or African American	Patient has origins in **any** of the black racial groups of Africa.
Native Hawaiian or Other Pacific Islander	Patient has origins in **any** of the original peoples of Hawaii, Guam, American Samoa, or other Pacific Islands.
White	Patient has origins in **any** of the original peoples of Europe, the Middle East, or North Africa.

ASIAN GROUPS

- Bangladeshi
- Bhutanese
- Burmese
- Cambodian
- Chinese
- Filipino
- Hmong
- Indian
- Indonesian
- Iwo Jiman
- Japanese
- Korean
- Laotian
- Madagascar
- Malaysian
- Maldivian
- Nepalese
- Okinawan
- Pakistani
- Singaporean
- Sri Lankan
- Taiwanese
- Thai
- Vietnamese

NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER GROUPS

- Carolinian
- Chamorro
- Chuukese
- Fijian
- Guamanian
- Kiribati
- Kosraean
- Mariana Islander
- Marshallese
- Melanesian
- Micronesian
- Native Hawaiian
- New Hebrides
- Palauan
- Papua New Guinean
- Pohnpeian
- Polynesian
- Saipanese
- Samoan
- Solomon Islander
- Tahitian
- Tokelauan
- Tongan
- Yapese

First three letters of patient's last name: | | | |

OCCUPATION SETTING

- Childcare/Preschool
- Correctional Facility
- Drug Treatment Center
- Food Service
- Health Care - Acute Care Facility
- Health Care - Long Term Care Facility
- Health Care - Other
- Homeless Shelter
- Laboratory
- Military Facility
- Other Residential Facility
- Place of Worship
- School
- Other

OCCUPATION

- Agriculture - farmworker or laborer (crop, nursery, or greenhouse)
- Agriculture - field worker
- Agriculture - migratory/seasonal worker
- Agriculture - other/unknown
- Animal - animal control worker
- Animal - farm worker or laborer (farm or ranch animals)
- Animal - veterinarian or other animal health practitioner
- Animal - other/unknown
- Clerical, office, or sales worker
- Correctional facility - employee
- Correctional facility - inmate
- Craftsman, foreman, or operative
- Daycare or child care attendee
- Daycare or child care worker
- Dentist or other dental health worker
- Drug dealer
- Fire fighting or prevention worker
- Flight attendant
- Food service - cook or food preparation worker
- Food service - host or hostess
- Food service - waiter or waitress
- Food service - other/unknown
- Homemaker
- Laboratory technologist or technician
- Laborer - private household or unskilled worker
- Manager, official, or proprietor
- Manicurist or pedicurist
- Medical - emergency medical technician or paramedic
- Medical - health care worker
- Medical - medical assistant
- Medical - pharmacist
- Medical - physician assistant or nurse practitioner
- Medical - physician or surgeon
- Medical - registered nurse
- Medical - other/unknown
- Military - officer
- Military - recruit or trainee
- Protective service - police officer
- Protective service - other
- Professional, technical, or related profession
- Retired
- Sex worker
- Student - preschool or kindergarten
- Student - elementary or middle school
- Student - high (secondary) school
- Student - college or university
- Student - other/unknown
- Teacher/employee - preschool or kindergarten
- Teacher/employee - elementary or middle school
- Teacher/employee - high (secondary) school
- Teacher/instructor/employee - college or university
- Teacher/instructor/employee - other/unknown
- Unemployed - seeking employment
- Unemployed - not seeking employment
- Unemployed - other/unknown
- Other
- Refused
- Unknown