

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

Local ID Number _____

(Please use the same ID Number on the preliminary and final reports to allow linkage to the same case.)

Report Status (check one)

Preliminary Final

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])
 Ehrlichiosis/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	Primary Language	
Social Security Number (9 digits)		DOB (mm/dd/yyyy)	Age	<input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> Other: _____	
Address Number & Street - Residence			Apartment/Unit Number		
City/Town		State	Zip Code	Ethnicity (check one) <input type="checkbox"/> Hispanic/Latino <input type="checkbox"/> Non-Hispanic/Non-Latino <input type="checkbox"/> Unk	
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 <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Other: _____					
Pregnant?		If Yes, Est. Delivery Date (mm/dd/yyyy)			
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk					
Medical Record Number		Patient's Parent/Guardian Name			
Occupation Setting (see list on page 6)		Other Describe/Specify			
Occupation (see list on page 6)		Other Describe/Specify			
*Comment: self-identity or self-reporting 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.					
CLINICAL INFORMATION					
Physician Name - Last Name			First Name		Telephone Number

First three letters of
patient's last name:

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SIGNS AND SYMPTOMS						
Symptomatic? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk		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)		
Chills						
Sweats						
Headache						
Muscle pain						
Joint pain				Joint(s)		
Eye pain						
Abdominal pain						
Nausea or vomiting						
Diarrhea						
Rash or other cutaneous lesion				Location / size / appearance		
Cough						
Hypotension				Date measured (mm/dd/yyyy)	Systolic / Diastolic	
Other signs / symptoms (specify)						
HOSPITALIZATION						
Did patient visit emergency room for illness? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk			Was patient hospitalized? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk		If Yes, how many total hospital nights?	
If there were any ER or hospital stays related to this illness, specify details below.						
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	
OUTCOME						
Outcome? <input type="checkbox"/> Survived <input type="checkbox"/> Died <input type="checkbox"/> Unk		If Survived, Survived as of _____ (mm/dd/yyyy)			Date of Death (mm/dd/yyyy)	

First three letters of patient's last name:

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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? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk	Collection Date (mm/dd/yyyy)	WBC	HCT	Hb	Platelets
Serum chemistry? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk	Collection Date (mm/dd/yyyy)	ALT	AST		
Other laboratory diagnostics performed (e.g., PCR, buffy coat smear)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk		If Yes, describe			

EPIDEMIOLOGIC INFORMATION

ANIMAL AND INSECT EXPOSURES

Observe any of the following at or around home? <input type="checkbox"/> Dogs <input type="checkbox"/> Cats <input type="checkbox"/> Rodents <input type="checkbox"/> Opossums <input type="checkbox"/> Fleas <input type="checkbox"/> Ticks	Observe any of the following at place of employment? <input type="checkbox"/> Dogs <input type="checkbox"/> Cats <input type="checkbox"/> Rodents <input type="checkbox"/> Opossums <input type="checkbox"/> Fleas <input type="checkbox"/> Ticks
Did patient recall any insect bites in the 10 days prior to illness? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk	If Yes, specify all locations, type of insect bite, and dates below.

INSECT BITE HISTORY - DETAILS

Bite 1	Location (city, county, state, country)	Date of Insect Bite (mm/dd/yyyy)	Type of Insect Bite <input type="checkbox"/> Flea <input type="checkbox"/> Other: _____ <input type="checkbox"/> Tick
Bite 2	Location (city, county, state, country)	Date of Insect Bite (mm/dd/yyyy)	Type of Insect Bite <input type="checkbox"/> Flea <input type="checkbox"/> Other: _____ <input type="checkbox"/> Tick

TRAVEL HISTORY

Did patient travel out of county of residence during the incubation period ? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk	If Yes, specify all locations and dates in the Travel History - Details table.
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TRAVEL HISTORY - DETAILS

Location (city, county, state, country)	Date Travel Started (mm/dd/yyyy)	Date Travel Ended (mm/dd/yyyy)

First three letters of
patient's last name:

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NOTES / REMARKS			
REPORTING AGENCY			
<i>Investigator Name</i>	<i>Local Health Jurisdiction</i>	<i>Telephone Number</i>	<i>Date (mm/dd/yyyy)</i>
<i>First Reported By</i>			
<input type="checkbox"/> Clinician <input type="checkbox"/> Laboratory <input type="checkbox"/> Other (specify):			
DISEASE CASE CLASSIFICATION			
<i>Case Classification (see case definition below)</i>			
<input type="checkbox"/> Confirmed <input type="checkbox"/> Probable <input type="checkbox"/> Suspected			
STATE USE ONLY			
<i>State Case Classification</i>			
<input type="checkbox"/> Confirmed <input type="checkbox"/> Probable <input type="checkbox"/> Suspected <input type="checkbox"/> Not a case <input type="checkbox"/> Need additional information			
CASE DEFINITION			
<p><u>EHRlichiosis/ANAPLASMOSIS (2010)</u></p> <p><i>Ehrlichia chaffeensis</i> infection (formerly Human Monocytic Ehrlichiosis [HME]) <i>Ehrlichia ewingii</i> infection (formerly Ehrlichiosis [unspecified, or other agent]) <i>Anaplasma phagocytophilum</i> infection (formerly Human Granulocytic Ehrlichiosis [HGE]) <i>Ehrlichiosis/Anaplasmosis</i>, human, undetermined</p> <p>CLINICAL DESCRIPTION</p> <p>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.</p> <p>Clinical evidence: Any reported fever and one or more of the following: headache, myalgia, anemia, leukopenia, thrombocytopenia, or any hepatic transaminase elevation.</p> <p>LABORATORY CRITERIA FOR DIAGNOSIS</p> <p><i>Ehrlichia chaffeensis</i> infection (formerly Human Monocytic Ehrlichiosis [HME])</p> <p>Supportive:</p> <ul style="list-style-type: none"> • Serological evidence of elevated IgG or IgM antibody reactive with <i>E. chaffeensis</i> antigen by IFA, enzyme-linked immunosorbent assay (ELISA), dot-ELISA, or assays in other formats (CDC uses an IFA IgG cutoff of $\geq 1:64$ 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. <p>Confirmed:</p> <ul style="list-style-type: none"> • Serological evidence of a fourfold change in immunoglobulin G (IgG)-specific antibody titer to <i>E. chaffeensis</i> 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 <i>E. chaffeensis</i> 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 <i>E. chaffeensis</i> from a clinical specimen in cell culture. 			

(continued on page 5)

CASE DEFINITION (continued)**LABORATORY CRITERIA FOR DIAGNOSIS (continued)*****Ehrlichia ewingii* infection (formerly Ehrlichiosis [unspecified, or other agent])**

Confirmed:

- 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])**

Supportive:

- 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 $\geq 1:64$ 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.

Confirmed:

- 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 anaplasma antigen in a biopsy/autopsy sample by immunohistochemical methods, OR
- Isolation of *A. phagocytophilum* from a clinical specimen in cell culture.

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

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

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.

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

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.
OCCUPATION SETTING	
<ul style="list-style-type: none"> • Childcare/Preschool • Correctional Facility • Drug Treatment Center • Food Service • Health Care - Acute Care Facility • Health Care - Long Term Care Facility • Health Care - Other 	<ul style="list-style-type: none"> • Homeless Shelter • Laboratory • Military Facility • Other Residential Facility • Place of Worship • School • Other
OCCUPATION	
<ul style="list-style-type: none"> • Adult film actor/actress • 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 - server • 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 	<ul style="list-style-type: none"> • Medical - medical assistant • Medical - pharmacist • Medical - physician assistant or nurse practitioner • Medical - physician or surgeon • Medical - nurse • Medical - other/unknown • Military • Police officer • Professional, technical, or related profession • Retired • Sex worker • Stay at home parent/guardian • Student - preschool or kindergarten • Student - elementary or middle school • Student - high school • Student - college or university • Student - other/unknown • Teacher/employee - preschool or kindergarten • Teacher/employee - elementary or middle school • Teacher/employee - high school • Teacher/instructor/employee - college or university • Teacher/instructor/employee - other/unknown • Unemployed - seeking employment • Unemployed - not seeking employment • Unemployed - other/unknown • Volunteer • Other • Refused • Unknown