



Tick-Borne Rickettsial Disease Case Report

Use for: Rocky Mountain spotted fever (RMSF), Ehrlichiosis (*E. chaffeensis*, *E. ewingii*, & undet.), and Anaplasmosis

(*A. phagocytophilum* & undet.). Visit <http://www.cdc.gov> and use "Search" for complete Case Definition(s)

or to visit the disease web site(s) for a fillable/downloadable PDF version of this Case Report.

Form Approved
OMB 0920-0009

CDC# (1-4)

- PATIENT/PHYSICIAN INFORMATION -

Patient's name: _____ Date submitted: ___/___/___ (mm/dd/yyyy)
 Address: _____ Physician's name: _____ Phone no.: _____
 (number, street) NETSS ID No.: (if reported)
 City: _____ Case ID (13-18) Site (19-21) State (22-23)

- DEMOGRAPHICS -

1. State of residence: _____ 2. County of residence: (26-50) _____ 3. Zip code: (51-59) _____ 4. Sex: (60)
 Postal abrv: (24-25) Check, if history of travel outside county of residence within 30 days of onset of symptoms _____ 1 Male
 2 Female

5. Date of birth: ___/___/___ (mm/dd/yyyy) 6. Race: (69) 1 White 3 American Indian Alaskan Native 5 Pacific Islander 7. Hispanic ethnicity: 1 Yes
 (61-62) (63-64) (65-68) 2 Black 4 Asian 9 Not specified 2 No
 (70) 9 Unk

8. Indicate Disease (Presumed) To Be Reported: (71) 1 RMSF 3 Anaplasmosis - *A. phagocytophilum* 5 Ehrlichiosis/Anaplasmosis - Undetermined
 2 Ehrlichiosis - *E. chaffeensis* 4 Ehrlichiosis - *E. ewingii*

- CLINICAL SIGNS, SYMPTOMS, AND OUTCOMES -

9. Was a clinically compatible illness present? If there is no presence of clinical illness, then this is not a case of rickettsial disease (72)
 Clinical evidence - fever and one or more of the following: rash (primarily RMSF), headache myalgia, anemia, leukopenia (Ehrlich. & Anaplas.), thrombocytopenia, or elevated hepatic transaminases. 1 YES 2 NO 9 Unk 10. Date of Onset of Symptoms: ___/___/___ (mm/dd/yyyy)
 (73-74) (75-76) (77-80)

11. Was an underlying immunosuppressive condition present? (81) 1 YES 2 NO 9 Unk Specify condition(s): _____
 12. Specify any life-threatening complications in the clinical course of illness: (82) 1 Adult respiratory distress syndrome (ARDS) 3 Meningitis/encephalitis
 2 Disseminated intravascular coagulopathy (DIC) 4 Renal failure 9 None
 8 Other: _____

13. Was the patient hospitalized because of this illness? (83) (If yes, date) 1 YES 2 NO 9 Unk ___/___/___ (mm/dd/yyyy)
 (84-85) (86-87) (88-91)

14. Did the patient die because of this illness? (92) (If yes, date) 1 YES 2 NO 9 Unk ___/___/___ (mm/dd/yyyy)
 (93-94) (95-96) (97-100)

- LABORATORY DATA -

15. Name of laboratory: _____ City: _____ State: _____ Zip: _____
 Below, indicate Y (Yes) or N (No), ONLY if the test or procedure was performed. Lack of selection indicates that the test or procedure was not performed.

| 16. Serologic Tests | COLLECTION DATE (mm/dd/yyyy) | | | COLLECTION DATE (mm/dd/yyyy) | | |
|-----------------------|------------------------------|----------------------|--------------------------|------------------------------|-----------------------|-----------------------|
| | Serology 1 Titer | (101-2) Positive? | (103-4) Positive? | Serology 2* Titer | (109-10) Positive? | (111-12) Positive? |
| IFA - IgG | (_____) 1 YES 2 NO (117) | | (_____) 1 YES 2 NO (118) | | | |
| IFA - IgM | (_____) 1 YES 2 NO (119) | | (_____) 1 YES 2 NO (120) | | | |
| Other test: (121-130) | (_____) 1 YES 2 NO (131) | | (_____) 1 YES 2 NO (132) | | | |

| 17. Other Diagnostic Test? (Use # 16, S1 for collections dates) | Positive? | |
|---|------------------|--|
| PCR | 1 YES 2 NO (133) | |
| Morulae visualization* | 1 YES 2 NO (134) | |
| Immunostain | 1 YES 2 NO (135) | |
| Culture | 1 YES 2 NO (136) | |

* Visualization of morulae not applicable for RMSF.

* Was there a fourfold change in antibody titer between the two serum specimens? 1 YES 2 NO (137)

- FINAL DIAGNOSIS -

18. Classify case BASED ON the CDC case definition (see criteria below): (138) State Health Department Official who reviewed this report: _____
 1 RMSF 2 Ehrlichiosis - *E. chaffeensis* } 1 CONFIRMED (149) Name: _____
 3 Anaplasmosis - *A. phagocytophilum* 4 Ehrlichiosis - *E. ewingii* } 2 PROBABLE Title: _____ Date: ___/___/___ (mm/dd/yyyy)
 5 Ehrlichiosis/Anaplasmosis - Undetermined }
 (139-148)

COMMENTS:

Confirmed RMSF: A clinically compatible case with evidence of a fourfold change in IgG antibody titer reactive with *Rickettsia rickettsii* antigen by IFA between paired serum specimens, one taken during the first week of illness and a second 2-4 weeks later, OR detection of *R. rickettsii* DNA in a clinical specimen via amplification of a specific target by PCR assay, OR demonstration of spotted fever group antigen in a biopsy/autopsy specimen by IHC, OR isolation of *R. rickettsii* from a clinical specimen in cell culture.

Probable RMSF: A clinically compatible case evidence of elevated IgG or IgM antibody reactive with *R. rickettsii* antigen by IFA, enzyme-linked immunosorbent assay (ELISA), dot-ELISA, or latex agglutination (CDC uses an IFA IgG cutoff of $\geq 1:64$ and does not use IgM test results as independent diagnostic support criteria).

Note: Current commercially available ELISA tests cannot evaluate changes in antibody titer. IgM tests may be unreliable because they lack specificity. IgM antibody may persist for lengthy periods of time. When sera demonstrate elevated antibody responses to multiple infectious agents among rickettsial species, and between ehrlichial and anaplasma species, the greater antibody response is generally directed at the actual agent involved.

Confirmed Ehrlichiosis/Anaplasmosis: A clinically compatible case with evidence of a fourfold change in IgG antibody titer reactive with *Ehrlichia chaffeensis* or *Anaplasma phagocytophilum* antigen by IFA between paired serum specimens (one taken during the first week of illness and a second 2-4 weeks later) OR detection of *E. chaffeensis* or *A. phagocytophilum* DNA in a clinical specimen via amplification of a specific target by PCR assay, OR demonstration of ehrlichial or anaplasma antigen in a biopsy/autopsy specimen by IHC, OR isolation of *E. chaffeensis* or *A. phagocytophilum* from a clinical specimen in cell culture.

Probable Ehrlichiosis/Anaplasmosis: A clinically compatible case with evidence of elevated IgG or IgM antibody reactive with *E. chaffeensis* or *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 as independent diagnostic support criteria), OR identification of morulae in the cytoplasm of monocytes or macrophages (Ehrlichiosis) or in the cytoplasm of neutrophils or eosinophils (Anaplasmosis) by microscopic examination.

Public reporting burden of this collection of information is estimated to average 10 minutes per response. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Please send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to CDC/ATSDR Reports Clearance Officer, 1600 Clifton Rd., NE (MS D-74); Atlanta, GA 30333; ATTN: PRA (0920-0009).



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Ehrlichiosis (E. chaffeensis, E. ewingii, & undet.), and Anaplasmosis (A. phagocytophilum & undet.).

- PATIENT/PHYSICIAN INFORMATION -

Date submitted: ___/___/___ (mm/dd/yyyy)
Physician's name: _____ Phone no.: _____
NETSS ID No.: (if reported)
Case ID (13-18) Site (19-21) State (22-23)

- DEMOGRAPHICS -

1. State of residence: Postal abrv: (24-25)
2. County of residence: (26-50) _____
Check, if history of travel outside county of residence within 30 days of onset of symptoms
3. Zip code: (51-59) _____
4. Sex: (60)
1 Male
2 Female
5. Date of birth: ___/___/___ (mm/dd/yyyy)
(61-62) (63-64) (65-68)
6. Race: (69)
1 White 3 American Indian
2 Black 4 Asian 5 Pacific Islander
9 Not specified
7. Hispanic ethnicity: (70)
1 Yes
2 No
9 Unk
8. Indicate Disease (Presumed) To Be Reported: (71)
1 RMSF 3 Anaplasmosis - *A. phagocytophilum* 5 Ehrlichiosis/Anaplasmosis - Undetermined
2 Ehrlichiosis - *E. chaffeensis* 4 Ehrlichiosis - *E. ewingii*

- CLINICAL SIGNS, SYMPTOMS, AND OUTCOMES -

9. Was a clinically compatible illness present? If there is no presence of clinical illness, then this is not a case of rickettsial disease (72)
Clinical evidence - fever and one or more of the following: rash (primarily RMSF), headache, myalgia, anemia, leukopenia (Ehrlich. & Anaplas.), thrombocytopenia, or elevated hepatic transaminases.
1 YES 2 NO 9 Unk
10. Date of Onset of Symptoms: ___/___/___ (mm/dd/yyyy)
(73-74) (75-76) (77-80)
11. Was an underlying immunosuppressive condition present? (81)
1 YES 2 NO 9 Unk
Specify condition(s): _____
12. Specify any life-threatening complications in the clinical course of illness: (82)
1 Adult respiratory distress syndrome (ARDS) 3 Meningitis/encephalitis
2 Disseminated intravascular coagulopathy (DIC) 4 Renal failure 9 None
8 Other: _____
13. Was the patient hospitalized because of this illness? (83) (If yes, date)
1 YES 2 NO 9 Unk ___/___/___ (mm/dd/yyyy)
(84-85) (86-87) (88-91)
14. Did the patient die because of this illness? (92) (If yes, date)
1 YES 2 NO 9 Unk ___/___/___ (mm/dd/yyyy)
(93-94) (95-96) (97-100)

- LABORATORY DATA -

15. Name of laboratory: _____ City: _____ State: _____ Zip: _____
Below, indicate Y (Yes) or N (No), **ONLY** if the test or procedure was performed. **Lack of selection** indicates that the test or procedure was not performed.

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|-----------------------|------------------------------|----------------------|----------------------|------------------------------|-----------------------|-----------------------|
| | Serology 1 Titer | (101-2) Positive? | (103-4) Positive? | Serology 2* Titer | (109-10) Positive? | (111-12) Positive? |
| IFA - IgG | (_____) 1 YES 2 NO | (117) | (_____) 1 YES 2 NO | (118) | (_____) 1 YES 2 NO | (119) |
| IFA - IgM | (_____) 1 YES 2 NO | (120) | (_____) 1 YES 2 NO | (121) | (_____) 1 YES 2 NO | (122) |
| Other test: (121-130) | (_____) 1 YES 2 NO | (131) | (_____) 1 YES 2 NO | (132) | (_____) 1 YES 2 NO | (133) |

17. Other Diagnostic Test? (Use # 16, S1 for collection dates)

| Test | Positive? |
|------------------------|------------------|
| PCR | 1 YES 2 NO (133) |
| Morulae visualization* | 1 YES 2 NO (134) |
| Immunostain | 1 YES 2 NO (135) |
| Culture | 1 YES 2 NO (136) |

* Visualization of morulae not applicable for RMSF.

* Was there a fourfold change in antibody titer between the two serum specimens? 1 YES 2 NO (137)

- FINAL DIAGNOSIS -

18. Classify case BASED ON the CDC case definition (see criteria below):
1 RMSF 2 Ehrlichiosis - *E. chaffeensis*
3 Anaplasmosis - *A. phagocytophilum* 4 Ehrlichiosis - *E. ewingii*
5 Ehrlichiosis/Anaplasmosis - Undetermined

State Health Department Official who reviewed this report:
Name: _____ Title: _____ Date: ___/___/___ (mm/dd/yyyy)

1 **CONFIRMED** (149)
2 **PROBABLE**

COMMENTS:

CDC CASE DEFINITIONS

Confirmed RMSF: A clinically compatible case with evidence of a fourfold change in IgG antibody titer reactive with *Rickettsia rickettsii* antigen by IFA between paired serum specimens, one taken during the first week of illness and a second 2-4 weeks later, OR detection of *R. rickettsii* DNA in a clinical specimen via amplification of a specific target by PCR assay, OR demonstration of spotted fever group antigen in a biopsy/autopsy specimen by IHC, OR isolation of *R. rickettsii* from a clinical specimen in cell culture.

Probable RMSF: A clinically compatible case evidence of elevated IgG or IgM antibody reactive with *R. rickettsii* antigen by IFA, enzyme-linked immunosorbent assay (ELISA), dot-ELISA, or latex agglutination (CDC uses an IFA IgG cutoff of $\geq 1:64$ and does not use IgM test results as independent diagnostic support criteria).

Note: Current commercially available ELISA tests cannot evaluate changes in antibody titer. IgM tests may be unreliable because they lack specificity. IgM antibody may persist for lengthy periods of time. When sera demonstrate elevated antibody responses to multiple infectious agents among rickettsial species, and between ehrlichial and anaplasma species, the greater antibody response is generally directed at the actual agent involved.

Confirmed Ehrlichiosis/Anaplasmosis: A clinically compatible case with evidence of a fourfold change in IgG antibody titer reactive with *Ehrlichia chaffeensis* or *Anaplasma phagocytophilum* antigen by IFA between paired serum specimens (one taken during the first week of illness and a second 2-4 weeks later) OR detection of *E. chaffeensis* or *A. phagocytophilum* DNA in a clinical specimen via amplification of a specific target by PCR assay, OR demonstration of ehrlichial or anaplasma antigen in a biopsy/autopsy specimen by IHC, OR isolation of *E. chaffeensis* or *A. phagocytophilum* from a clinical specimen in cell culture.

Probable Ehrlichiosis/Anaplasmosis: A clinically compatible case with evidence of elevated IgG or IgM antibody reactive with *E. chaffeensis* or *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 as independent diagnostic support criteria), OR identification of morulae in the cytoplasm of monocytes or macrophages (Ehrlichiosis) or in the cytoplasm of neutrophils or eosinophils (Anaplasmosis) by microscopic examination.



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State Health Department Official who reviewed this report: _____
Name: _____ Title: _____ Date: ____/____/____ (mm/dd/yyyy)
(139-148)

COMMENTS:

| CDC CASE DEFINITIONS | Confirmed RMSF: | Confirmed Ehrlichiosis/Anaplasmosis: |
|----------------------|---|---|
| | A clinically compatible case with evidence of a fourfold change in IgG antibody titer reactive with <i>Rickettsia rickettsii</i> antigen by IFA between paired serum specimens, one taken during the first week of illness and a second 2-4 weeks later, OR detection of <i>R. rickettsii</i> DNA in a clinical specimen via amplification of a specific target by PCR assay, OR demonstration of spotted fever group antigen in a biopsy/autopsy specimen by IHC, OR isolation of <i>R. rickettsii</i> from a clinical specimen in cell culture. | A clinically compatible case with evidence of a fourfold change in IgG antibody titer reactive with <i>Ehrlichia chaffeensis</i> or <i>Anaplasma phagocytophilum</i> antigen by IFA between paired serum specimens (one taken during the first week of illness and a second 2-4 weeks later) OR detection of <i>E. chaffeensis</i> or <i>A. phagocytophilum</i> DNA in a clinical specimen via amplification of a specific target by PCR assay, OR demonstration of ehrlichial or anaplasma antigen in a biopsy/autopsy specimen by IHC, OR isolation of <i>E. chaffeensis</i> or <i>A. phagocytophilum</i> from a clinical specimen in cell culture. |
| | Probable RMSF: A clinically compatible case evidence of elevated IgG or IgM antibody reactive with <i>R. rickettsii</i> antigen by IFA, enzyme-linked immunosorbent assay (ELISA), dot-ELISA, or latex agglutination (CDC uses an IFA IgG cutoff of ≥1:64 and does not use IgM test results as independent diagnostic support criteria). | Probable Ehrlichiosis/Anaplasmosis: A clinically compatible case with evidence of elevated IgG or IgM antibody reactive with <i>E. chaffeensis</i> or <i>A. phagocytophilum</i> 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 as independent diagnostic support criteria), OR identification of morulae in the cytoplasm of monocytes or macrophages (Ehrlichiosis) or in the cytoplasm of neutrophils or eosinophils (Anaplasmosis) by microscopic examination. |
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