

CDC Health Alert Network

Severe and Fatal RMSF Among People with Recent Travel to Tecate, Mexico

Distributed via the CDC Health Alert Network

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Summary

The Centers for Disease Control and Prevention (CDC) is issuing this Health Alert Network (HAN) Health Advisory to notify healthcare providers and the public about an outbreak of Rocky Mountain spotted fever (RMSF) among people in the United States with recent travel to or residence in the city of Tecate, state of Baja California, Mexico. RMSF is a severe, rapidly progressive, and often deadly disease transmitted by the bite of infected ticks, although many patients do not recall being bitten by a tick. Doxycycline is the treatment of choice for patients of all ages. As of December 8, 2023, five patients have been diagnosed with confirmed RMSF since late July 2023; all had travel to or residence in Tecate within 2 weeks of illness onset. RMSF is endemic in multiple border states in northern Mexico, including but not exclusive to Baja California, Sonora, Chihuahua, Coahuila, and Nuevo León. Healthcare providers should consider RMSF in their differential diagnosis of patients who have reported recent travel to Tecate, Mexico, or other areas of northern Mexico and subsequently develop signs or symptoms of an unexplained severe febrile illness. Consider initiating doxycycline based on presumptive clinical and epidemiologic findings, and do not delay treatment pending the result of a confirmatory laboratory test. Early treatment with doxycycline saves lives. Use abbreviated reference in text to figures and keep reference of it in brackets [Fig. 1]. Use the references tab to get reference list in order.¹

Background

RMSF is endemic across northern Mexico and areas of the southwestern United States. In these regions,

the pathogen (*Rickettsia rickettsii*) can be transmitted by brown dog ticks (*Rhipicephalus sanguineus*) which are closely associated with domestic dogs in urban and peri-urban environments. From July to December 2023, CDC and the California Department of Public Health identified five patients with RMSF who developed the disease within 2 weeks following travel to the city of Tecate in the state of Baja California, Mexico. All patients presented to hospitals in southern California. Four patients were under the age of 18 years. Three patients were U.S. residents, and two were residents of Mexico. All five patients were hospitalized, and three died.

RMSF is a rapidly progressive disease and without early administration of doxycycline can be fatal within days. RMSF signs and symptoms <https://www.cdc.gov/rmsf/healthcare-providers/signs-symptoms.html> can be relatively mild and non-specific during the first 1–4 days of illness and include a low-moderate fever, headache, gastrointestinal symptoms, abdominal pain, myalgia, rash, and edema around the eyes and on the back of hands. Patients with more advanced disease, generally on or after day 5 of illness, may develop altered mental status, coma, cerebral edema, respiratory compromise, necrosis, and multiorgan system damage. The disease is rapidly progressive, and half of all people who die from this disease succumb within 8 days of illness onset. Untreated disease is often fatal, and the case fatality rate of RMSF in Mexico can exceed 40%.

Recommendations for Healthcare Providers

Diagnosis

- Know that RMSF signs and symptoms can include fever, headache, and rash.

- A faint macular rash usually appears on the arms and lower extremities on or about 2–4 days after onset of symptoms and becomes petechial on or about day 5 or 6 of illness. Some patients never develop a rash.
- The disease progresses rapidly if left untreated and is frequently deadly if not treated with doxycycline within the first 5 days of illness.
- Children younger than 10 years old are five times more likely than adults to die from RMSF. Doxycycline is the treatment of choice for patients of all ages, including young children.
- RMSF is a multisystem disease and can also involve the lungs, heart, kidneys, and central nervous system.
- Consider RMSF when evaluating patients presenting with RMSF signs and symptoms <https://www.cdc.gov/rmsf/healthcare-providers/signs-symptoms.html>, including fever, headache, and rash, especially those with a travel history to Tecate or other areas in northern Mexico endemic for RMSF in the past 2 weeks.
- The absence of a classical “spotted” rash does not exclude the diagnosis, particularly during the first few days of illness.
- Inquire about recent travel history and exposure to ticks or tick-infested dogs when evaluating patients with signs and symptoms suggestive of RMSF.

Diagnostic Testing

If RMSF is suspected, whole blood and serum samples obtained from acutely ill people should be evaluated for Rickettsia by molecular and serologic testing methods available at commercial laboratories, state public health laboratories, or CDC.

- **Do not delay or withhold treatment pending receipt of laboratory test results or based on an initial negative test result.**
- Polymerase chain reaction (PCR) amplification can be performed on whole blood, rash biopsy, or

postmortem tissue but has low sensitivity early in the disease.

- Serologic testing can also be performed on paired acute and convalescent serum samples collected 2–4 weeks apart. Serologic testing for detection of antibodies is frequently negative in the first week of illness.
- Diagnostic testing at CDC may allow retrospective laboratory confirmation in patients who die from the infection.
- If Rickettsia-specific testing is not available in a jurisdiction, specimen submission <https://www.cdc.gov/laboratory/specimen-submission/index.html> to CDC can be coordinated through your state or local health department.

Treatment

- Doxycycline <https://www.cdc.gov/rmsf/healthcare-providers/treatment.html> is the recommended antibiotic treatment for RMSF in adults and children of all ages, including pregnant people. Intravenous formulations are required for patients with severe nausea and vomiting and for patients who are obtunded.
- If RMSF is suspected, initiate treatment with doxycycline immediately. Do not delay treatment pending laboratory confirmation. Early treatment saves lives.
- In cases of severe doxycycline allergy, rapid desensitization procedures in an inpatient setting may be considered. Physicians should carefully weigh the benefits of doxycycline use and the risks of adverse effects on a case-by-case basis with an infectious disease or other specialist.

Reporting

- RMSF is a nationally notifiable disease. Healthcare professionals and clinical laboratories should report all cases to their local, state, territorial, or tribal health department.

Recommendations for the Public

- Seek medical attention if you or a family member has traveled <https://wwwnc.cdc.gov/travel/page/after-trip> to Tecate or another city in northern Mexico

where RMSF has been known to occur, and develops fever, headache, or rash within 2 weeks of return to the United States.

- Protect against tick bites by treating your dog for ticks
https://www.cdc.gov/ticks/avoid/on_pets.html, using [EPA-registered insect repellent](https://www.epa.gov/insect-repellents) <https://www.epa.gov/insect-repellents>, and wearing protective clothing.
- Perform thorough tick checks
https://www.cdc.gov/ticks/avoid/on_people.html on yourself and children after outdoor activities or when around dogs with ticks. Promptly remove any ticks
https://www.cdc.gov/ticks/removing_a_tick.html.
- Learn about RMSF symptoms
<https://www.cdc.gov/rmsf/symptoms/index.html> and seek medical help if you suspect that you or a family member may have this disease.

For More Information

RMSF

- Rocky Mountain Spotted Fever (RMSF) | CDC
<https://www.cdc.gov/rmsf/index.html>
- Diagnosis and Management of Tickborne Rickettsial Diseases: Rocky Mountain Spotted Fever and Other Spotted Fever Group Rickettsioses, Ehrlichioses, and Anaplasmosis — United States | MMWR | CDC
<https://www.cdc.gov/mmwr/volumes/65/rr/rr6502a1.htm>
- RMSF Training Module: Clinical Diagnosis and Treatment for Healthcare Providers (Continuing Education) | Rocky Mountain Spotted Fever (RMSF) | CDC
<https://www.cdc.gov/rmsf/resources/module.html>
- Health Department Directories – Public Health Professionals Gateway | CDC
<https://www.cdc.gov/publichealthgateway/healthdirectories/index.html>
- For Public Health Officials: Rocky Mountain Spotted Fever (RMSF) | CDC
<https://www.cdc.gov/rmsf/info/index.html>

Travelers' Health

- Mexico – Traveler view | Travelers' Health | CDC
<https://wwwnc.cdc.gov/travel/destinations/traveler/none/mexico>
- Rickettsial Diseases | CDC Yellow Book 2024
<https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/rickettsial-diseases>
- Avoid bug bites | Travelers' Health | CDC
<https://wwwnc.cdc.gov/travel/page/avoid-bug-bites>
- Rocky Mountain Spotted Fever in Mexico – Level 1 – Level 1 – Practice Usual Precautions – Travel Health Notices | Travelers' Health | CDC
<https://wwwnc.cdc.gov/travel/notices/level1/rmsf-mexico>
- [Health Advisory: Endemic Rocky Mountain Spotted Fever \(RMSF\) in Baja California Region | County of San Diego Health & Human Services Agency](https://www.sandiegocounty.gov/content/dam/sdc/hhsa/programs/phs/cahan/communications_documents/11-3-2023.pdf)
https://www.sandiegocounty.gov/content/dam/sdc/hhsa/programs/phs/cahan/communications_documents/11-3-2023.pdf

Department of Health and Human Services Information- HAN Message Types

- **Health Alert:** Conveys the highest level of importance about a public health incident.
- **Health Advisory:** Provides important information about a public health incident.
- **Health Update:** Provides updated information about a public health incident.

References

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- 2 Álvarez-Hernández G., Murillo-Benitez C., del Carmen Candia-Plata M., Moro M. Clinical profile and predictors of fatal Rocky Mountain spotted fever in children from Sonora, Mexico. *Pediatric Infect Dis J* 2015;34(2), 125–130.
<https://doi.org/10.1097/INF.0000000000000496>
- 3 Drexler N. A., Yaglom H., Casal M., Fierro M., Kriner P., Murphy B., et al. Fatal Rocky Mountain spotted fever along the United States-Mexico border, 2013–2016. *Emerg Infect Dis* 2017;23(10):1621–1626. <https://doi.org/10.3201/eid2310.170309>
- 4 Zazueta O. E., Armstrong P.A., Márquez-Elguea A., Milán N. S. H., Peterson A. E., Ovalle-Marroquín D.F., et al. Rocky Mountain spotted fever in a large metropolitan center, Mexico-United States border,

2009–2019. *Emerg Infect Dis* 2021;27(6):1567–

1576. <https://doi.org/10.3201/eid2706.191662>

5 Estrada-Mendizabal R.J., Tamez-Rivera O., Vela E.H., Blanco-Murillo P., Alanis-Garza C., Flores-Gouyonnet J., et al. Rickettsial disease outbreak, Mexico, 2022. *Emerg Infect Dis* 2023;29(9), 1944–

1947. <https://doi.org/10.3201/eid2909.230344>

6 Beristain-Ruiz D.M., Garza-Hernández J.A., Figueroa-Millán J.V., Lira-Amaya J.J., Quezada-Casasola A., Ordoñez-López S., et al.

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<https://doi.org/10.3390/pathogens11050552>

7 López-Castillo, D. C., Vaquera-Aparicio, D., González-Soto, M. A., Martínez-Ramírez, R., Rodríguez-Muñoz, L., & Solórzano-Santos, F.

Rocky mountain spotted fever: five years of active surveillance experience in a second level pediatric hospital in northeastern Mexico, 2018, [Fiebre manchada de montañas rocosas: experiencia en 5 años de vigilancia activa en un hospital pediátrico de segundo nivel en el noreste de México]. *Boletín médico del Hospital Infantil de México*, 2018, 75(5), 303–308. <https://doi.org/10.24875/BMHIM.M18000034>