



TIMELINE OF ROCKY MOUNTAIN SPOTTED FEVER (RMSF) SIGNS AND SYMPTOMS



RMSF can be fatal within 7-9 days. All patients with suspected RMSF should receive immediate antibiotic treatment with doxycycline. Use of antibiotics other than doxycycline is associated with a higher risk of fatal outcome from RMSF.

Incubation period of 3-12 days following the bite of an infected tick



Prophylactic use of doxycycline following tick bite is not recommended and may delay onset of illness

Brown dog tick American dog tick

Days from illness onset	Signs and symptoms	Laboratory indicators	Images
Days 1-2	<ul style="list-style-type: none"> • Abrupt onset of high fever • Headache, myalgia, and malaise 	Laboratory results (white blood cells [WBC], platelets, sodium) generally within normal limits	
Days 2-4	<ul style="list-style-type: none"> • Faint macular rash begins on wrists and ankles and spreads centrally • Abdominal pain, nausea/vomiting • Cough • Calf tenderness • Periorbital and peripheral edema (more common in children) 	<ul style="list-style-type: none"> • Mildly elevated transaminases and mild thrombocytopenia • WBC usually within normal limits 	 <p>Photo credit: G. Alvarez Hernandez</p>

Doxycycline is most effective at preventing severe illness and death if administered within the first 5 days of symptoms

Days 5-7	<p><i>Progression in symptoms from days 2-4:</i></p> <ul style="list-style-type: none"> • Fever typically $\geq 104^{\circ}\text{F}$ • Worsening respiratory status • Worsening abdominal pain (may mimic acute appendicitis or cholecystitis) • Rash becomes petechial and more widespread, typically involves palms and soles 	<ul style="list-style-type: none"> • Worsening thrombocytopenia • Elevated hepatic transaminases, mild to moderate • Hyponatremia 	
Days 7-9	<p><i>Further progression from days 5-7:</i></p> <ul style="list-style-type: none"> • Rash becomes diffuse and coalesces (forming purpura) • Necrosis of the digits leading to peripheral gangrene • Septic shock • Myocarditis and cardiac arrhythmias • Renal failure • Pulmonary edema or Acute Respiratory Distress Syndrome (ARDS) • Cerebral edema, meningoencephalitis, altered mental status, coma, seizures 	<ul style="list-style-type: none"> • Severe thrombocytopenia • Elevated creatinine, creatinine kinase and lactic acid • WBC mildly to moderately elevated 	

20-25% of untreated cases of RMSF will be fatal with most deaths occurring within the 7th to 9th day of illness.

People who survive could have severe sequelae, including necrosis necessitating amputation, profound neurologic deficits, and permanent organ damage.

Note: RMSF disease progression varies widely. Not all patients will develop all of the above-listed signs or symptoms or progress exactly as described in the above timeline.

Summary

- Doxycycline is the drug of choice for treating RMSF in people of all ages.
- Empiric treatment with doxycycline is recommended in patients of all ages with suspected RMSF.
- Treatment is most effective at preventing death and severe RMSF when doxycycline is started within the first 5 days of symptoms.
- Use of antibiotics other than doxycycline is associated with a higher risk of fatal outcome from RMSF.



For more information:

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