Appropriate Clinical Laboratory Specimens for Rickettsial Diseases

Test Category	Pathogen Group	Serum[a]	EDTA Blood[b]	Biopsy Tissue[b,c]	Available from Commercial Laboratories[d]	Available from State Laboratories or CDC[e]
Serology	*Rickettsia*	■			■	■
	Orientia	■			■	■
	Anaplasma	■			■	■
	Ehrlichia	■			■	■
	Coxiella	■			■	■
	Bartonella	■			■	■
PCR Assay	*Rickettsia*		■	■ Skin	■ limited	■
	Orientia		■	■ Skin		■
	Anaplasma		■		■ limited	■
	Ehrlichia		■		■ limited	■
	Coxiella		■	■ Valve		■
	Bartonella		■	■ Node, valve	■ limited	■
Culture	*Rickettsia*		■	■ Skin		■ limited
	Orientia		■	■ Skin		■ limited
	Anaplasma		■			■ limited
	Ehrlichia		■			■ limited
	Coxiella		■	■ Valve		■ limited
	Bartonella		■	■ Node, valve		■ limited

[a]Paired serum specimens should be taken within the first week of acute illness and then 2-4 weeks later. Early antibiotic therapy may blunt or delay the antibody response (infrequent occurrence), so a third sample taken 2 weeks after the second may be necessary to confirm cases. IFA is the recommended standard for test method. Testing should be IgG-specific as the usefulness of IgM is extremely limited. Current ELISA methods available commercially are qualitative only and results should not be misinterpreted as changes in antibody levels.

[b] EDTA blood and biopsy tissues should be collected during the first week of acute infection and prior to initiation of therapy with a tetracycline-class antibiotic. After 24-48 hours of appropriate antibiotic therapy is completed, the organisms are rarely detectable by PCR or culture.

[c]Biopsy tissue should be taken from affected tissue and delivered as fresh tissue to the laboratory. Skin biopsies should be taken from the site of any obvious rash or eschar. Lymph node biopsies should be taken from the swollen node(s). Lymph node aspirates have also been useful. Heart valve tissue from patients with endocarditis is often heavily infected and useful for culture attempts.

Fatal cases. Autopsy tissue specimens may be submitted to CDC. Blood, serum, and appropriate fresh tissues above for PCR and culture are preferred specimens, as are spleen, liver, and brain tissues. Formalin-fixed, paraffin-embedded tissues provide yet another avenue for detection and may be submitted for immunohistochemistry assays.

[d]Contact individual commercial laboratories for their specific offerings.

[e]Contact your state public health laboratory for more information on submission procedures. Specimens submitted to CDC must be approved by or shipped through the state public health laboratory.