Infectious Disease Serology Supplemental Information

Diagnostic and immune status serologic assays are performed for various viral, rickettsial, fungal, chlamydial, and mycoplasmal agents. The assay methods vary depending upon the specific agent for which testing is requested. For specific agents and assay methods refer to Chart III Serological Tests Available.

Serological testing for infectious agents that are not performed by the South Dakota Public Health Laboratory may be available at the Centers for Disease Control and Prevention (CDC) in Atlanta.

Specimen Acceptance Policy

Serologic testing is available to all public and private health care providers.

Type of Specimen Required

Immunity Screening – A single, whole clotted blood or serum is required for immunity screening.

Diagnostic Testing – As a rule, acute and convalescent sera must be submitted for diagnostic serological testing. The acute serum should be collected as soon after the onset of illness as possible. For most of the serological testing offered by the SDPH Laboratory, the convalescent serum should be collected 14 days from the time the acute specimen was collected.

Chart III
Serological Tests Available from the Laboratory

Testing for infectious agents not listed in this chart may be available at the CDC.
Consult with the Laboratory concerning testing not listed.

Agent or Disease Suspected	Specimen Needed	Test Method	Normal Reference Range
Francisella tularensis (tularemia)	Acute and convalescent sera	Agglutination	Negative
Hantavirus	Acute	EIA lgG EIA lgM	Negative Negative
Herpes simplex virus HSV I IgG, HSV II IgG	Serum	EIA	Negative
Human immunodeficiency virus Screen: HIV 1/2 and P24 Ag Confirmatory: HIV 1/2 Ab Differentiation	Whole blood, clotted blood, or serum.	Screening – EIA Confirmation – EIA	Non-Reactive Non-Reactive
Measles virus (Rubeola)	Immunity Screening – Whole clotted blood or serum	EIA (IgG)	Positive (Immune)
Measles virus (Rubeola)	Diagnostic – Acute and Convalescent (14 days) sera	EIA (IgM capture)	No Change in Titer Negative
Mumps virus	Immunity Screening – Whole clotted blood or serum	EIA (IgG)	Positive (Immune)

Chart III (continued)
Serological Tests Available from the Laboratory

Agent or Disease Suspected	Specimen Needed	Test Method	Normal Reference Range
Mumps virus	Diagnostic – Acute and convalescent (14 days) sera	IFA	No Change in Titer
Q Fever (Coxiella burnetii) Phases 1 and 2	Acute and convalescent (28 days) sera	IFA	<1:64
Rocky Mountain Spotted Fever (Rickettsia rickettsii)	Acute and convalescent (28 days) sera	IFA	<1:64
Rubella virus	Immunity Screening – Whole clotted blood or serum	EIA (IgG)	Positive (Immune)
West Nile Virus	Acute	EIA (IgG) EIA (IgM)	Negative Negative

Abbreviations

EIA	Enzyme Immunoassay	IgG	Class Immunoglobulin
IFA	Indirect Fluorescent Antibody	IgM	Class Immunoglobulin

Specimen Collection

Blood

1. Collect an acute serum as soon after the onset of the illness as possible. A convalescent serum should be collected 14 days after the collection of the acute serum. Exceptions to this general rule of collection of specimens are noted in Chart III.

2. Draw at least 5 - 7 ml of blood into a red-stoppered vacuum tube allowing the tube to fill completely. Allow the tube to stand at room temperature to ensure complete clotting of blood. Blood should not be taken for 1 hour after a meal to avoid chylous serum.

3. Store the specimen in a refrigerator until it is sent to the laboratory. If the serum is to be sent to the laboratory, separate the serum from the blood clot by centrifuging the whole clotted blood at 1500 - 2000 rpm at room temperature for 10 minutes. Pipette the serum into a new red-stoppered vacuum tube or a sterile plastic screw-capped vial. **A minimum of 1 ml of serum should be sent to the laboratory for testing.**

Serum-separating tubes may be used to collect the specimens for serological testing. These specimens should be sent to arrive in the laboratory within 48 - 72 hours of collection to avoid having the red blood cells hemolyze and "spill" into the upper portion of the tube.

4. Acute serum that is held until the collection of a convalescent serum should be separated from the blood clot and stored frozen until collection of the convalescent serum. Convalescent specimens may be run as stand-alone specimens in limited situations. Consultation before the convalescent serum will be tested singly.

Specimen Identification

1. **Complete all the information on the form.** Include pertinent clinical information with each specimen. Be specific about why the specimen is being submitted to the laboratory.

   For rubella, measles (rubeola), and mumps, indicate whether the specimen is for diagnosis of a current infection or for immunity screening.

2. Label each specimen with the patient's first and last name and the date of collection. Unlabeled specimens or specimens containing information that does not match the information on the accompanying test request form **will not be tested.**

Reporting Procedure and Interpretation

An interpretation of the results is given with each report. **For specimens sent to the CDC, the CDC will provide interpretation of test results.**

Paired acute and convalescent sera – When paired (acute and convalescent) sera are tested, the demonstration of a 4-fold increase in antibody titer from the acute to the convalescent serum strongly suggests recent infection with the agent for which the test was performed.

Final Reporting

The results of all specimen requests are reported to the provider who submitted the specimen.

If the result of the specimen is positive for a notifiable disease, this result is also reported to the Office of Disease Prevention.

Criteria for Unacceptable Specimens

1. The specimen is not properly identified with the patient's name or identifier and the date of collection.

2. The patient identifier on the specimen does not match the identifier on the form.

3. The specimen is broken or leaked in transit.

4. The specimen is extensively hemolyzed, lipemic (chylous), extremely turbid, or grossly contaminated with bacteria.

5. Whole, clotted blood was collected more than 7 days prior to receipt by the laboratory.

6. The quantity of the specimen received is not sufficient to allow accurate completion of test(s) requested. (QNS-Quantity Not Sufficient).

7. The convalescent serum was collected sooner than 10 days from the date of collection of the acute serum. (The provider will be notified and asked to provide a more appropriately timed convalescent serum.)

8. No test request form was received with the specimen, or no specimen was received with the form.

9. The specimen did not arrive in appropriate transport range.