

Rabies Serology Testing for Humans

For humans, the rapid fluorescent focus inhibition test (RFFIT) is recommended by the Advisory Committee on Immunization Practices (ACIP). Serology via enzyme linked immunosorbent assay (ELISA) is **not** recommended. The RFFIT is the only valid method at this time to verify rabies virus neutralizing antibodies.

In CDC studies, all healthy persons tested 2–4 weeks after completion of pre-exposure and post-exposure rabies prophylaxis in accordance with ACIP guidelines demonstrated an adequate antibody response to rabies. Therefore, no testing of patients completing pre-exposure or post-exposure prophylaxis is necessary to document seroconversion unless the person is immunosuppressed. Patients who are immunosuppressed by disease or medications should postpone pre-exposure vaccinations and consider avoiding activities for which rabies pre-exposure prophylaxis is indicated. When that is not possible, immunosuppressed persons who are at risk for exposure to rabies should be vaccinated and their virus neutralizing antibody titers checked. In these cases, failures to seroconvert after the third dose should be managed in consultation with appropriate public health officials. When titers are obtained, specimens collected 1–2 weeks after pre-exposure or post-exposure prophylaxis should completely neutralize challenge virus at a 1:5 serum dilution by the RFFIT. Antibody titers might decline over time since the last vaccination. Small differences (i.e., within one dilution of sera) in the reported values of rabies virus neutralizing antibody titer (most properly reported according to a standard as IU/mL) might occur among laboratories that provide antibody determination using the recommended RFFIT. Rabies antibody titer determination tests that are not approved by FDA are not appropriate for use as a substitute for RFFIT in suspect human rabies ante-mortem testing because discrepant results between such tests and measures of actual virus neutralizing activity by RFFIT have been observed.

Although virus neutralizing antibody levels might not definitively determine a person's susceptibility or protection from a rabies virus exposure, titers in persons at risk for exposure are used to monitor the relative rabies immune status over time. To ensure the presence of a primed immune response over time among persons at higher than normal risk for exposure, titers should be checked periodically, with booster doses administered only as needed. Two years after primary pre-exposure vaccination, a complete neutralization of challenge virus at a dilution of 1:5 (by the RFFIT) was observed among 93%–98% of persons who received the 3-dose pre-exposure series intramuscularly and 83%–95% of persons who received the 3-dose series intradermally. If the titer falls below the minimum acceptable antibody level of complete neutralization at a serum dilution of 1:5, a single pre-exposure booster dose of vaccine is recommended for persons at continuous or frequent risk for exposure to rabies. The following guidelines are recommended for determining when serum testing should be performed after primary pre-exposure vaccination:

- A person in the continuous-risk category should have a serum sample tested for rabies virus neutralizing antibody every 6 months.

- A person in the frequent-risk category should have a serum sample tested for rabies virus neutralizing antibody every 2 years.

Laboratories Performing RFFIT

Before sending a specimen, please call the lab for submission instruction and forms.

Rabies Laboratory/RFFIT

Mosier Hall

Kansas State University

1800 Denison Avenue

Manhattan, KS 66506-5600

Phone: (785) 532-4483

Website: <http://www.vet.ksu.edu/depts/rabies/rffit.htm>

Email: rabies@vet.k-state.edu

Contact: Susan Montgomery

Atlanta Health Associates

309 Pirkle Ferry Road, Suite D300

Cumming, GA 30040

Phone: (770) 205-9091 or (800) 717-5612

Fax: (770) 204-9021

Website: <http://Atlantahealth.net>

Email: rnewhouse@atlantahealth.net

Contact: Mary Yager