Virginia Guidelines for Rabies Prevention and Control: Attachment 10

Full text of Virginia Guidelines for Rabies Prevention and Control available at

https://www.vdh.virginia.gov/animal-contact-human-health/rabies-control/virginia-guidelines-for-rabies-prevention-and-control/

Human Rabies Vaccination and Titer Monitoring Basics for Animal Health Professionals

The Purpose of Rabies Primary or Pre-exposure Vaccination

The health department encourages those who work in professions at higher risk for rabies exposure, such as veterinarians, animal handlers, and certain laboratory workers to undergo a series of three rabies vaccines in order to be considered pre-exposure vaccinated in case they are ever exposed to rabies. Pre-exposure prophylaxis is administered for several reasons. First, if a person undergoes the pre-exposure series, it eliminates the need for Rabies Immune Globulin (RIG) if that person is ever considered exposed and needs to receive booster vaccinations. RIG is ONLY given to those who have NEVER received rabies vaccinations. Administering RIG to those who have been previously vaccinated may interfere with that person's response to booster vaccines. Pre-exposure prophylaxis recipients also require fewer doses of vaccine if exposed in contrast to those who have never received any vaccine. In addition, pre-exposure prophylaxis might protect persons whose post-exposure therapy is delayed and may also provide protection to persons at risk for unapparent exposures to rabies. While pre-exposure vaccines are important, all health professionals who are considered at higher risk for rabies exposures are also encouraged to take the appropriate precautions in regard to preventing rabies exposures. Use of barrier precautions to prevent penetrating wounds from bites, as well as other bite prevention techniques, and to prevent saliva or central nervous system tissue from a potentially rabid animal entering an open wound or mucous membrane is highly recommended.

Rabies Pre-exposure Vaccination Schedule

Three 1.0-mL injections of either a human diploid cell based (Imovax®) or a purified chick embryo based (RabAvert®) vaccine should be administered intramuscularly (deltoid area) — one injection per day on days 0, 7, and 21 or 28.

Titer Schedule

It is recommended that those who are pre-exposure vaccinated and are at continuous or frequent risk of rabies exposure undergo periodic serologic testing. Most veterinarians and veterinary hospital staff in Virginia would be considered at frequent risk of exposure and, therefore, titer assessment every 2 years is considered appropriate. Titers should be assessed using the rapid fluorescent focus inhibition test (RFFIT) which is available through both Atlanta Health Associates, Inc. (www.atlantahealth.net) and the Kansas State Veterinary Diagnostic Laboratory (KSU, http://www.ksvdl.org/rabies-laboratory/).*

There are currently two working guidelines (or recommended "cut-offs") for antibody titer levels below which a rabies-vaccinated person should receive a booster vaccination. The Advisory Committee on Immunization Practices (ACIP) recommends a single booster dose of vaccine if the titer is less than complete neutralization at a 1:5 serum dilution by the RFFIT. VDH generally recommends that the ACIP guidance be used. The World Health Organization (WHO) recommends that a single booster rabies vaccination be given when the titer drops below 0.5 IU/mL by the RFFIT.

Both laboratories that perform the RFFIT, KSU and Atlanta Health Associates, report results in terms of international units (IU) and both recommend booster doses according to the WHO protocol. Complete viral neutralization at a 1:5 dilution is approximately equal to a titer of 0.1-0.2 IU/mL, depending on the reporting laboratory. To decrease confusion in regard to the best course of action in response to a titer result, patients and providers may want to consider requesting an antibody "end point" as opposed to an antibody "screen." For patients whose titers fall below 0.5 IU but are above 0.1 IU, the health department encourages healthcare providers to consult with their local health department in regard to the best course of action. Considerations regarding the need for a routine, single booster dose of vaccine for those whose antibody measurement falls between 0.5 IU and 0.1 IU may include the patient's risk of exposure, time until the next titer assessment, previous rabies titer results, health status, and accessibility to healthcare should a potential exposure occur. More information about the RFFIT and the interpretation of RFFIT results can be found on the KSU Rabies Laboratory website at http://www.ksvdl.org/rabies-laboratory/rffit-test/index.html.

The only other time a person who is pre-exposure vaccinated should receive additional vaccines is if he is exposed to rabies. If a previously vaccinated person is exposed to rabies he is considered immunologically primed against rabies and only requires a series of 2 vaccines spaced three days apart. It is important to remember that titers should not be used in place of booster vaccines if a person is exposed. Titers do not directly correlate with protection because other immunologic factors also play a role in preventing rabies, and our abilities to measure and interpret those other factors are not well developed. It is hoped that if one maintains a high enough titer, that person will be protected if he is ever exposed to rabies, but is unaware of the exposure. However, if a person knows he has been exposed and/or is assessed by public health officials as meeting the health department's definition of exposure, a 2 dose booster series is recommended.

Potential human rabies exposures, questions concerning vaccine schedules and the clinical services available in this regard in your locality should be brought to the attention of your local health department. A directory of local health departments can be found at http://www.vdh.virginia.gov/local-health-districts/. For more information concerning this and other issues associated with rabies, including the latest versions of the guidelines for both human and animal rabies prevention, visit the Virginia Department of Health's Rabies Control page which can be found at https://www.vdh.virginia.gov/animal-contact-human-health/rabies-control/ and the Centers for Disease Control and Prevention Rabies page at www.cdc.gov/rabies.

Reference:

Centers for Disease Control and Prevention. Human Rabies Prevention—United States, 2008. Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2008; 57;1-26, 28. Available at https://www.cdc.gov/rabies/resources/acip_recommendations.html.

***Note:** The RFFIT is the only test that public health officials can readily interpret in regard to a patient's response to rabies vaccine and helps guide our recommendations in regard to assessing the need for a booster. While some healthcare providers may ship serology samples directly to the two laboratories that perform the RFFIT, many healthcare providers will submit these samples to a

commercial laboratory that has the option of outsourcing the testing to these other laboratories. Animal health professionals should discuss the importance of the RFFIT with their healthcare providers and, by extension, the importance of having serologic assessment performed via one of the two laboratories that perform this type. If an intermediate laboratory such as LabCorp or Quest Diagnostics is used to submit the serum sample, the request for an RFFIT should be clearly marked on the laboratory submission form and, if known, any specific code the intermediate laboratory uses to signify the RFFIT should be included on the form.

Last updated: 10/5/2021