

HANTAVIRUS

RECOMMENDED CLEANING AND WORK PROCEDURES

HEALTH EFFECTS

Hantavirus pulmonary syndrome (HPS) is a deadly disease transmitted by infected rodents through urine, droppings, or saliva. Humans can contract the disease when they breathe in aerosolized virus.

There is no specific treatment, cure, or vaccine for hantavirus infection. However, we do know that if infected individuals are recognized early and receive medical care in an intensive care unit, they may do better. In intensive care, patients are intubated and given oxygen therapy to help them through the period of severe respiratory distress.

HPS is a febrile illness characterized by bilateral interstitial pulmonary infiltrates and respiratory compromise usually requiring supplemental oxygen and clinically resembling acute respiratory disease syndrome (ARDS). The typical prodrome consists of fever, chills, myalgia, headache, and gastrointestinal symptoms.

The earlier the patient is brought in to intensive care, the better. If a patient is experiencing full distress, it is less likely the treatment will be effective.

DECONTAMINATION METHODOLOGY

Hantaviruses are surrounded by a lipid (fatty) envelope, so they are somewhat fragile. The lipid envelope can be destroyed and the virus killed by fat solvents, such as alcohol, ordinary disinfectants and household bleach. That is why one of the most important ways to prevent transmitting the disease is to carefully wet down dead rodents and areas where rodents have been with disinfectant and/or bleach. When you do this, you are killing the virus itself and reducing the chance that the virus will get into the air.

Why a 10% solution? Household bleach is made of 5.25% Sodium Hypochlorite (52,500 ppm); therefore, a 1% bleach solution is 525 ppm. Some experiments have shown that 200 ppm (or even less in some experiments) will inactivate most viruses. Therefore it would seem that a 1% solution of household bleach might be adequate. However, hypochlorite is substantially and quickly inactivated in the presence of organic matter. So, although 1% may be adequate for surface decontamination, a 10% dilution may be a better choice for inactivation of virus when one is cleaning out areas which have been infested by rodents.

RECOMMENDED CLEANING PROCEDURES

Don latex rubber gloves before cleaning up.

Do not stir up dust by sweeping up or vacuuming up droppings, urine or nesting materials.

Instead, thoroughly wet contaminated areas with detergent or liquid to deactivate the virus. Most general purpose disinfectants and household detergents are effective. However CDC Special Pathogens Branch recommends a 10% bleach solution be used to inactivate hantaviruses. A 10% solution corresponds to 1 and a half cups of household bleach per gallon of water, or 1 part bleach to nine parts water.

Once everything is wet, take up contaminated materials with a damp towel, then mop or sponge the area with disinfectant. If droppings are located on a loose or fibrous surface, any visible debris or droppings can be removed by vacuuming with a HEPA equipped vacuum. A HEPA vacuums is recommended to prevent aerosolization of any debris, dust or viable viruses.

Spray dead rodents with disinfectant, then double-bag along with all cleaning materials and bury or burn—or throw out in appropriate waste disposal system. If burning or burying isn't feasible, contact your local or state health department about other disposal methods.

Finally, disinfect gloves before taking them off with disinfectant or soap and water. After taking off the clean gloves, thoroughly wash hands with soap and warm water.

References:

Special Pathogens Branch, Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention; U.S. Department of Health and Human Services