

Hantavirus

For Service members and their Families

Important Facts

- Hantaviruses are found throughout the world. The viruses, which are found in some wild rodents, occasionally infect people, causing severe flu-like symptoms that primarily affect the kidneys, blood, or lungs.
- There are distinct regional strains of hantavirus in the United States, Asia, Western Russia, parts of Europe, and South and Central America. They cause slightly different symptoms but prevention measures are primarily the same.
- In the U.S., hantavirus pulmonary syndrome causes a severe infection of the lungs. This syndrome was first recognized in the U.S. in 1993 in the "Four Corners," an area shared by New Mexico, Arizona, Colorado, and Utah.
- From January 1993 to August 24, 2006, a total of 451 cases of hantavirus infection were confirmed by the U.S. Centers for Disease Control and Prevention (CDC) in residents of 32 states. About 35% of those people died of hantavirus pulmonary syndrome.



Photo credit: [U.S. Army Medical Research and Materiel Command](#)

How does a person get hantavirus?

- In the U.S., deer mice, cotton rats, rice rats, and white-footed mice all can carry hantavirus. Other rodent carriers in the U.S. include squirrels, chipmunks, and other types of rats and mice. In other countries, voles and other rodent species may also be carriers.
- Hantavirus can be present in the urine, the droppings (feces), and the saliva of infected rodents. When these substances dry, small particles form that easily become suspended in the air due to activities that create dusty conditions (sweeping, vacuuming, renovating, etc.)
- Breathing virus-laden dust particles into the lungs is the most common way of acquiring hantavirus. Infections can also occur by touching your mouth or nose after handling materials contaminated with the virus.
- Consuming food or water contaminated with rodent urine, droppings, or saliva contaminated with hantavirus bacteria. A bite by an infected rodent can also spread the virus through direct contact of an open wound with rodent saliva. With the exception of a hantavirus strain found in South

America (Andes strain), hantavirus is not spread from person to person.

What are the symptoms of hantavirus infections?

- The early, flu-like symptoms include excessive tiredness, fever (101-104°F), and muscle aches. These symptoms appear from 3 days to as late as 6 weeks after infection with the virus.
- Some patients experience headaches, dizziness, chills, nausea, vomiting, diarrhea, and abdominal pain.
- The most severe and life-threatening symptoms result from kidney failure or build-up of fluid in the lungs interfering with ability to breathe (strain found in the U.S.).
- If you think you are infected with hantavirus should contact their doctor or public health clinic immediately. Be sure to mention any exposure to rodents or time spent in buildings possibly inhabited by rodents.
- Hantavirus infections can be deadly and immediate care is essential once symptoms appear. Mortality rates for the various regional strains range from 1% in Scandinavia, to 5-20% in Asia, to 35% in the U.S.

How can I prevent hantavirus exposure indoors?

To reduce the risk of hantavirus infection, minimize contact with rodents. Rodents prefer buildings that are infrequently occupied, such as garages, barns, outbuildings, and summer cottages or cabins closed up for the season. To minimize contact with rodents follow these rules:

- Before occupying or cleaning abandoned or unused buildings, look for rodent droppings and nests. A rodent nest is usually a pile of materials, such as twigs, insulation, Styrofoam™, and grass under which the rodent lives. If possible, do not use these buildings if rodent infestation is known or suspected. Buildings or areas that have been closed up for several weeks or more should be aired out for at least 30 minutes prior to using or cleaning, preferably with cross-ventilation, to remove any virus in the air.
- Keep the area around buildings free from trash, litter, junk or debris, which attract rodents. Keep normal entry ways closed as much as possible and seal all entry holes that are 1/4 inch wide or wider with steel wool, cement or wire screening.

Your Suggestions: http://deploymenthealthlibrary.fhp.osd.mil/product_feedback.jsp



Visit the Deployment Health and Family Readiness Library: <http://deploymenthealthlibrary.fhp.osd.mil>

A collaborative effort between the Air Force Institute for Operational Health, the Deployment Health Clinical Center, Force Health Protection and Readiness, the Navy Environmental Health Center, the U.S. Army Center for Health Promotion and Preventive Medicine, and the OUSD(P&R)/Military Family and Community Policy

- Keep tight-fitting lids on garbage cans and eliminate all sources of garbage that can be eaten by rodents. Use spring-loaded rodent traps to control rodents. Bait the traps with peanut butter and set near baseboards inside buildings. Use an EPA-approved pesticide labeled for flea and tick control in the trap area. This is important since fleas and ticks will leave the dead rodents and seek out new hosts, including humans. (Such insects can also transmit other diseases from rodents to people.) After trapping, soak the traps thoroughly in disinfectant.

Those who clean rodent-infested buildings or handle dead rodents are at greatest risk of exposure to hantavirus and should always closely follow protective procedures.

- Always** wear rubber or vinyl gloves when handling dead rodents. Place carcasses in a plastic bag containing a sufficient amount of liquid bleach (3 tablespoons per gallon of water), Lysol™, or any other household disinfectant to thoroughly wet the carcasses. Seal the bag and then dispose of it by burying in a 2- to 3- foot-deep hole or by burning. Always disinfect gloves (wash gloved hands with disinfectant and then in soap and water) before removing them. After removing gloves, thoroughly wash hands with soap and warm water.
- People who clean up rodent-infested areas or buildings should wear rubber or plastic gloves. Spray disinfectant wherever rodent activity has been noted (look for droppings, urine staining, and nests). Soak all sweepings and other discarded materials with disinfectant and place in a plastic bag. Seal the bag, then place into a second plastic bag and seal.
- When cleaning floors do not vacuum. Minimize dust by spraying the area with disinfectant, mopping the floor once or twice with a soap and disinfectant solution. Carpets and upholstered furniture can be disinfected using commercial-grade steam cleaning or shampooing.
- Disinfect countertops, cabinets, drawers, and other surfaces by washing them with a solution of detergent, water, and disinfectant, followed by wiping down with a general-purpose household disinfectant. Decontaminate the cleanup equipment in the same way. Launder potentially

contaminated bedding and clothing with hot water and detergent, then machine dry on a high setting or hang it to air-dry in the sun.

AIR OUT, SEAL UP, TRAP OUT, CLEAN UP!

How can I prevent exposure to hantavirus outdoors?

Those who work outdoors or engage in outdoor activities are at a lower risk of acquiring hantavirus because infected rodent urine and droppings are not typically encountered in the air in concentrated amounts. In addition, direct sunlight will destroy hantaviruses after just a few minutes. You should, however, follow the following precautions when outdoors (Note: these precautions will offer protection against hantavirus and also for other rodent-borne diseases):

- When planning to sleep outdoors, check potential sites for rodent droppings or burrows. Do not disturb rodents, burrows or dens, and if present move to another spot.
- Avoid sleeping near woodpiles or garbage areas that may be frequented by rodents.
- Avoid sleeping on bare ground; use mats or elevated cots if they are available.
- Store foods in rodent-proof containers; all garbage should be promptly buried, burned or discarded in covered trash containers.
- Use only tap water, bottled water, or water that has been disinfected by filtration, boiling, chlorination, or iodination for drinking, cooking, washing dishes, and brushing teeth.

Special precautions (use of respirators, protective clothing, etc.) should be used for cleaning buildings with heavy rodent infestations in areas where hantavirus has been reported. The CDC recommends using a half-face air-purifying (or negative pressure) respirator equipped with an N-100 filter. Commercially, these are available at most home improvement centers. Also contact the responsible military, local, state, or federal public health agency for guidance.

Where Do I Get More Information?

Air Force Institute for Operational Health (AFIOH)
Phone: (888) 232-3764
<http://www.brooks.af.mil/afioh/>

DoD Force Health Protection & Readiness (FHP & R)
Phone: (800) 497-6261
<http://fhp.osd.mil>

U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM)
Phone: (800) 222-9698
<http://chppm-www.apgea.army.mil>

DoD Deployment Health Clinical Center (DHCC)
Phone: (866) 559-1627
<http://www.pdhealth.mil/>

Navy Environmental Health Center (NEHC)
Phone: (757) 953-0700
<http://www-nehc.med.navy.mil>

**Centers for Disease Control and Prevention
Special Pathogens Branch**
<http://www.cdc.gov/ncidod/dvrd/spb/mnpages/resources.htm>

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