

Seoul virus conference call notes - January 31, 2017

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Dr. Barbara Knust (CDC) - Recapped information available at <https://www.cdc.gov/hantavirus/outbreaks/seoul-virus/index.html>

- 11 laboratory-confirmed cases as of 2/9/17 (7 in Wisconsin, 3 in Illinois, 1 in Indiana), two hospitalizations.
- For a general comparison, Seoul virus is similar to measles in terms of the number of fatal cases.
- Human-human transmission is not a concern.
- Confirmed facility: rats or people tested positive for Seoul virus infection
- Suspected facility: owner recently acquired rats from or sold to a confirmed facility; rats from suspected facilities should be tested
- Investigation is focused on tracing movement of rats to and from confirmed facilities.
- Rats can be tested from a blood sample (not destructive) or a carcass; serology or PCR are used.
- For breeders in a confirmed facility, depopulation is recommended. Depopulation is not recommended for suspected facilities. Suspected rats should be isolated.
- States may have different requirements for dealing with confirmed cases of Seoul virus; people dealing with quarantine must wear Personal Protective Equipment.
- Labs offer testing for Seoul virus. IDEXX serologic and molecular tests produced results very similar to CDC's; the fecal and urine tests have NOT been evaluated.
- Important to keep detailed records of rat sales and transfers (in and out) including source, destination, dates, transportation mode.

Answers to questions:

- Frozen rodents may still transmit the virus to people handling them. Freezing does not kill the virus.
- No data to suggest this virus is endemic to U.S., but more testing is needed to increase confidence.
- Seoul virus is carried by Norway rat *Rattus norvegicus* and black rat *Rattus rattus*; does not cause disease in rats, but an exposed rat is considered to be a carrier for life and can infect other rats and people.
- Gamma and UV radiation will kill Seoul virus. Commercial disinfectants (bleach, quaternary ammonium) should kill hantavirus. Freezing does not kill the virus. Outside its host, Seoul virus has short environmental lifespan.
- CDC assay for hantavirus has no false positives or negatives.
- Follow PIJAC feeder rodent BMP guidelines to help prevent Seoul virus (and other zoonotic diseases): <http://pijac.org/sites/default/files/pdfs/FeederRodentIndustryBMPJuly2015.pdf>
- No plans to test wild rodents at this time; prior tests found infected wild rats in US, and we would assume all wild rats to be potential carriers.

- CDC is offering human testing for those who have handled rats in confirmed or suspected facilities even if the workers have no symptoms of Seoul virus infection. CDC recommends testing for symptomatic people who have handled rats anywhere.
- No timetable for how long the investigation will take, as CDC is still determining the extent of the outbreak.
- Recommend working with local vet, if state health department is not able to provide testing.
- Newborn rats may get temporary immunity via maternal antibodies that does not persist through adulthood, although time period varies. One study suggests 150-day persistence of immunity; CDC will review this literature.
- One study suggests shedding for four months; however, CDC asserts that those studies may not assess how long shedding can occur, as they have “four month” endpoints. Unless proven otherwise, it is safest to presume shedding may occur throughout the life of the infected animal, although shedding rate may vary (highest soon after infection).
- Depopulation is likely the fastest way to get rid of the virus in a confirmed facility; testing individual rats, followed by culling positive and exposed rats can be done but may be more costly in the long run.
- CDC does not quarantine; that falls under the authority of state health departments, or possibly FDA if feeder rodents are part of the operation.
- CDC is working to develop recommendations for testing rats in a facility (e.g., numbers, frequency).
- Local and state health agencies may be available to verify depopulation and disinfection.
- Dogs are NOT at risk of getting sick from Seoul virus. Dogs may develop antibodies after, for example, eating or chewing on an infected rat, but are not known to pass infectious virus to another animal or a person.
- Hantaviruses like Seoul virus are actually fragile viruses outside the host animal (rats), and can be killed, or more correctly, *deactivated* even by UV light, like sunlight. There is presently no peer-reviewed scientific data that we’re aware of on how long Seoul virus could remain on a surface, before becoming inactivated but a conservative estimate would be 7 – 10 days. Seoul virus can be inactivated by simple soap, such as hand soap, dish soap, or laundry detergent along with disinfectants or a mixture of 10:1 water/bleach.
- In barn hunts, the problem is not knowing whether wild rodents in the hunt area are carrying Seoul virus. If there is any chance of contact between the pet rodent and a wild rat (or its urine or feces), there is a chance of infection. As mentioned above, it is safest to assume the Seoul virus will continue to be infectious for 7-10 days. If an infected rat placed in a perforated PVC pipe (or similar apparatus) urinates or defecates, other rats placed in the pipe could become infected. To break this possible ‘chain of transmission,’ disinfect the pipe between rats, using a 1:10 bleach solution or similar disinfectant.
- Rat meetups and roundups where rats are close together and exchanged among breeders could pose a risk of transmission unless ALL rats tested negative for Seoul virus. Owners concerned about introducing Seoul virus to their colonies should take care to minimize situations where their rats may come in contact with others.

- Rat handlers testing negative does not necessarily indicate the rodents are not infected. For example, newly-arriving rats may be infected. Regular handwashing by breeders and owners is encouraged regardless of the health status of rats in the facility.
- Breeders in unaffected states should visit the CDC website, which is updated as additional Seoul virus outbreak information is gathered: <https://www.cdc.gov/hantavirus/outbreaks/seoul-virus/index.html>