

Two Decades of Hantavirus

[Announcer] *This program is presented by the Centers for Disease Control and Prevention.*

[Sarah Gregory] Today, I'm talking with Dr. Annabelle de St. Maurice, an EIS Officer with CDC, about hantavirus infections. Welcome, Dr. St. Maurice.

[Annabelle de St. Maurice] Thank you so much for having me.

[Sarah Gregory] First off, would you explain what hantavirus infection is?

[Annabelle de St. Maurice] Sure. Many people think that the word *hantavirus* is just one virus, but actually, that's not correct. Hantavirus is a whole family of viruses. There are hantaviruses in Asia, for example. These various hantaviruses are spread by different rodents to humans. The rodents can vary and the virus can vary. Rodents excrete the virus in their feces and urine and people can contract hantavirus if they unknowingly inhale or ingest virus particles, sometimes while sweeping up in a place where rodents have built their nests.

[Sarah Gregory] What are symptoms of hantavirus infection?

[Annabelle de St. Maurice] Even though getting sick with hantavirus is scary, the actual number of people who get sick is really tiny, about 25 to 40 per year in the U.S. Compare that to flu or the common cold and it's really not that many. Incidentally, the first symptoms of hantavirus look a lot like the flu. People will get fever and muscle aches. Some people will later develop difficulty breathing and may need to be admitted to the intensive care unit to get assistance with their breathing. When people get really sick, it's usually because the lungs can fill with fluid; this makes breathing difficult, and can lead to death in about a third of cases. This also means that people should get to the hospital as soon as possible.

[Sarah Gregory] Hantavirus is pretty new in the U.S., isn't it?

[Annabelle de St. Maurice] Hantaviruses have actually been around for a while, all around the world. In fact, an outbreak of hantavirus occurred during the Korean War in the 1950s, when several thousand troops became ill. However, hantavirus was first encountered in the U.S. in the early 90s when an outbreak in the Four Corners region in the southwestern U.S. The specific hantavirus causing disease was later named Sin Nombre virus, or Sin Nombre hantavirus. But there may actually have been cases of hantavirus in the U.S. prior to this outbreak. We didn't have the laboratory knowledge to test for it.

[Sarah Gregory] Tell us about your study. What time period did it cover?

[Annabelle de St. Maurice] Our study looked at exposures of hantavirus cases from 1993 to 2015, so over a little more than a 20 year time period.

[Sarah Gregory] And what did you find? What was the single most common reason people got hantavirus?

[Annabelle de St. Maurice] We found that most people (71 percent) were exposed to hantavirus at home. We did not always have the details of why a person was exposed at home, but we do know that 17 percent of them were exposed while cleaning an area with rodents. With this knowledge, we really place an emphasis on prevention—trying to keep people and rodents away from each other.

[Sarah Gregory] Because of your study, were you able to identify occupations and exposures that were more likely to lead to getting hantavirus?

[Annabelle de St. Maurice] We looked at the occupations of people who had hantavirus and found that nearly half of the hantavirus cases occurred in people who worked in occupations where they might be exposed to rodents. Most commonly, people worked in agriculture and ranching or construction and landscaping. We also found that people in the Eastern U.S. were more likely to be exposed in a recreational setting, such as while camping, than people in the Western U.S. People living in the Western U.S. were more likely to be exposed at home than people in the Eastern U.S.

[Sarah Gregory] The majority of the cases were white males. Why would this be?

[Annabelle de St. Maurice] Most cases we identified were in males. We don't exactly know why more cases were in white males, but it could be due to differences in types of exposure or activities that males participate in.

[Sarah Gregory] But American Indians are disproportionately affected on a population basis. Can you explain this to us?

[Annabelle de St. Maurice] We found that 18 percent of cases were in American Indians although American Indians only represent about two percent of the U.S. population. This could be because some American Indians live in the Southwestern U.S., where hantavirus is more common. The dry environment in the Southwestern U.S. may make it easier to inhale infected dust particles. We really need to study this more deeply.

[Sarah Gregory] What steps are being taken to make people aware of the dangers of this virus?

[Annabelle de St. Maurice] In states where there are or have been hantavirus cases, there are educational programs in place to educate people about hantavirus through news messages and social media. One creative county sends messages with electric bills in the springtime. There are also educational trainings for health care workers to improve awareness and diagnosis.

[Sarah Gregory] Are there things people can do to stop entry of rodents into home and work places?

[Annabelle de St. Maurice] Yes. People can check their house for any holes that rodents might use to enter into the house and seal them up. People can also put away food, especially pet food, in sealable tubs and containers so that rodents aren't attracted to come into their houses. If people do have rodents in their house, they should clean up after them in a safe way, by wearing gloves, using a disinfectant, and avoiding vacuuming the droppings. More information about rodent cleaning can be found on our website: cdc.gov/rodent/cleaning.

[Sarah Gregory] Are there further studies that need to be done?

[Annabelle de St. Maurice] Yes. Our group at CDC is planning several public health projects related to hantavirus. For example, we hope to start a home improvement and rodent proofing project in the southwest in 2017 to decrease the risk of hantavirus. We anticipate having the ability to monitor the relationship between rodent-proofing and people remaining healthy. Also, we have improved our case reporting form and our environmental assessment form so that we can capture more and better information about how and where people have been exposed.

[Sarah Gregory] Care to tell us about your job and why you were interested in doing this study?

[Annabelle de St. Maurice] Sure! I am an EIS officer, otherwise known as a disease detective, in the Viral Special Pathogens Branch. I've worked on a variety of viruses that can cause severe disease, including Ebola, Rift Valley Fever, and hantavirus. I'm also a pediatrician and infectious disease doctor. I wanted to do this study because I wanted to see if there were ways that we could prevent exposure related to hantavirus.

[Sarah Gregory] Thank you, Dr. de St. Maurice, for taking the time to talk with me today. Listeners can read the entire May 2017 article, Exposure Characteristics of Hantavirus Pulmonary Syndrome Patients, United States, 1993-2015, online at cdc.gov/eid.

[Announcer] For the most accurate health information, visit cdc.gov or call 1-800-CDC-INFO.