

Rodent-borne viruses

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Hantavirus Kills Second Yosemite National Park Camper

The National Park is urging campers with flu-like symptoms to get checked.

By KATIE MOISSE

28 August 2012, 14:43 • 3 min read

Argentina isolates hantavirus outbreak Dutch doctor dies of Lassa fever in Leiden, a second is being treated

An Argentine judge has ordered 85 residents of a remote Patagonian town to stay in their homes for at least 30 days to help halt an outbreak of hantavirus in which nine people have died

By The Associated Press

11 January 2019, 23:02

Hantavirus: Why you don't need to worry about misleading reports of a death in China from a 'new virus'

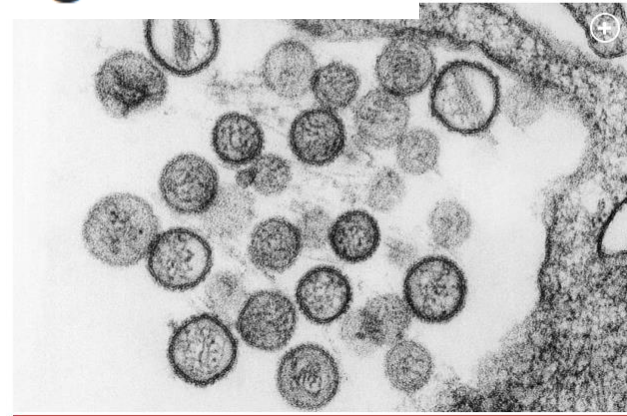
Hantavirus outbreak puzzles experts

YOSEMITE

The deadly outbreak of hantavirus in Yosemite National Park has sent disease experts and rodent researchers scrambling for answers as people across the country second-guess their plans to visit California's most famous landscape.

n China hantavirus'

March 24, 2020 | 12:53pm | Updated



Virus particles of a hantavirus
REUTERS

Nov 12 2020 – News

Hantavirus: First detection of human infection transmitted by a pet rat

Major study needed into fighting growing rat populations in NL, expert says



Which viruses are rodent-borne?

Virus	Rodent species
Hantaan hantavirus	Striped field mouse
Puumala hantavirus	Bank vole
Tula hantavirus	European common vole
Seoul hantavirus	Brown rat
Sin Nombre hantavirus	Deer mice
Andes hantavirus	Long-tailed pygmy rat
Lassa virus	Multi-mammate mouse
Lymphocytic choriomeningitis (LCMV)	House mouse
Hepatitis E virus	Norway rat
Junin virus	House mouse, Vesper mouse

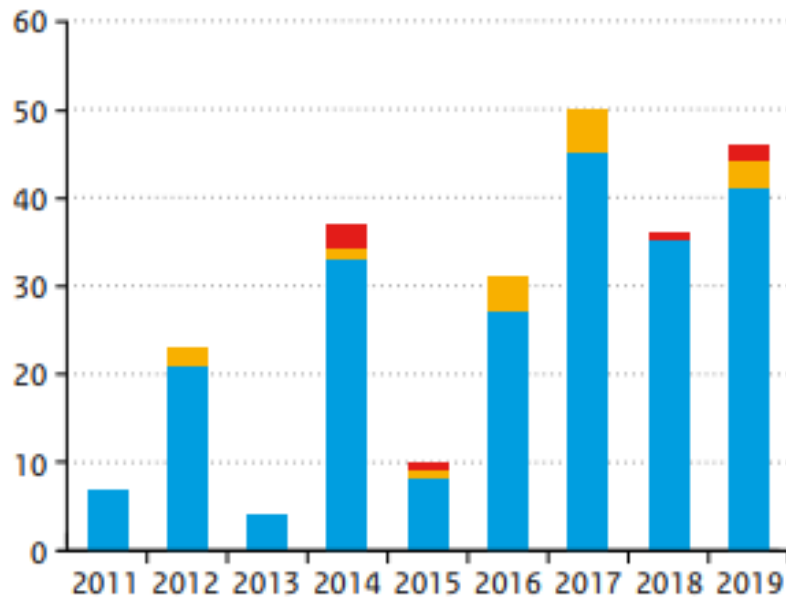
Worldwide spread of rodent-borne zoonotic viruses





Hantaviruses: also in the Netherlands

Virus	Rodent species
Puumala hantavirus	Bank vole
Tula hantavirus	European common vole
Seoul hantavirus	Brown rat



Registered hantavirus infections at the RIVM per year

How can you get hantaviruses?

- Not a lot of rodents actually carry hantaviruses (generally a low percentage)
- Rodents can get infected by biting and/or rodent excreta: urine, feces and saliva
- Humans can get infected by inhalation of rodent excreta: urine, feces and saliva





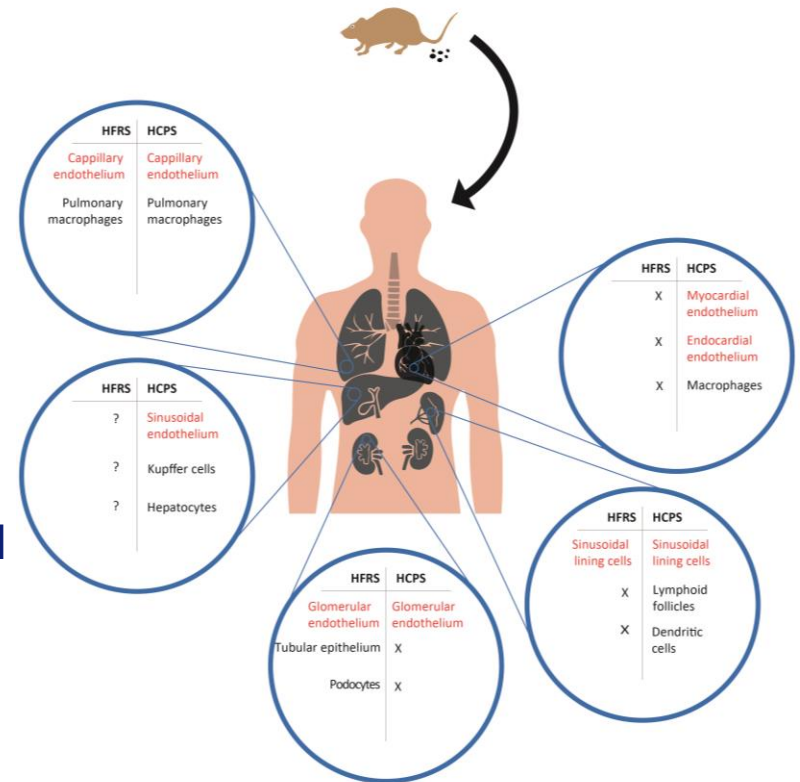
What disease do hantaviruses cause?

- Humans can get infected by inhalation of rodent excreta: urine, feces and saliva
- Hemorrhagic fever with renal syndrome (HFRS)
 - Fever, acute kidney injury, thrombocytopenia
 - Case fatality rate up to 15%
- Hantavirus cardiopulmonary syndrome (HCPS)
 - Fever, fluid in lungs, hypotension
 - Case fatality rate up to 40%
- Currently no antiviral treatments for hantaviruses

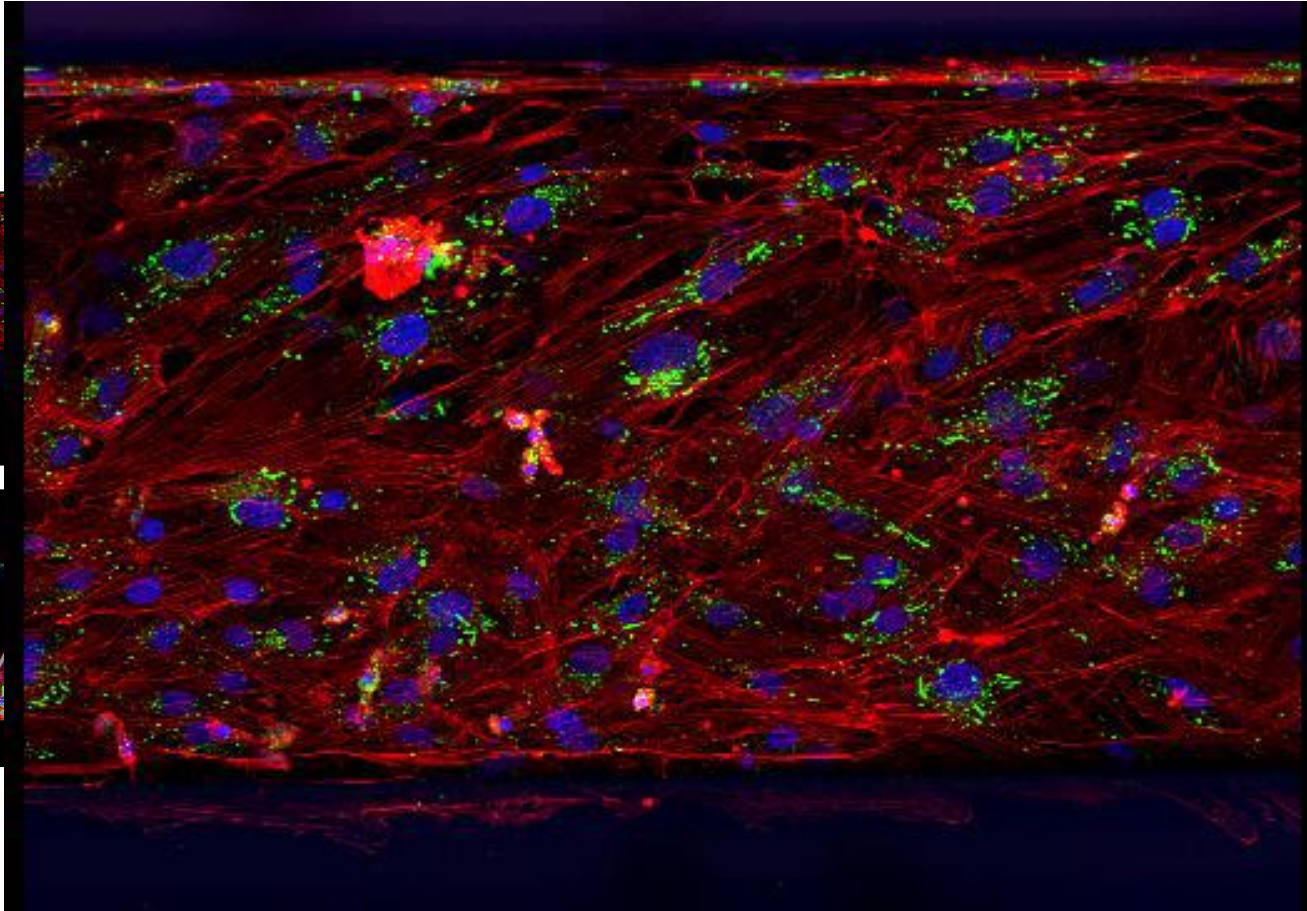
My research as a virologist

- Which cells are infected and how does that lead to disease?

- What happens after inhalation of hantaviruses?
- How are these viruses able to go to blood vessels of different organs?
- If they are in blood vessels of different organs, why do we mostly see either kidney (HFRS) or lung (HCPS) issues in these patients?
- Which events lead to disease in humans while rodents seem unaffected by these viruses?



My research as a virologist



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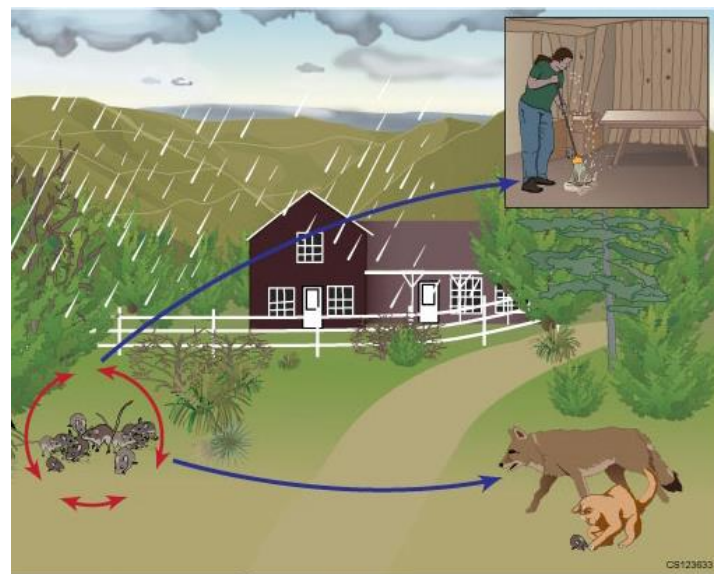
What can we do to prevent these syndromes?

■ Vaccine

- Currently no vaccine available
- Research is performed
- Research only under high biosafety levels (Lassa fever)
- Not a lot of attention: lessons from current pandemic

■ Prevention

- Eliminate or minimize contact with rodents
- Enhanced surveillance
- Environmental control measures (water etc.)
- Follow-up of contacts of infected patients



Challenges: climate change

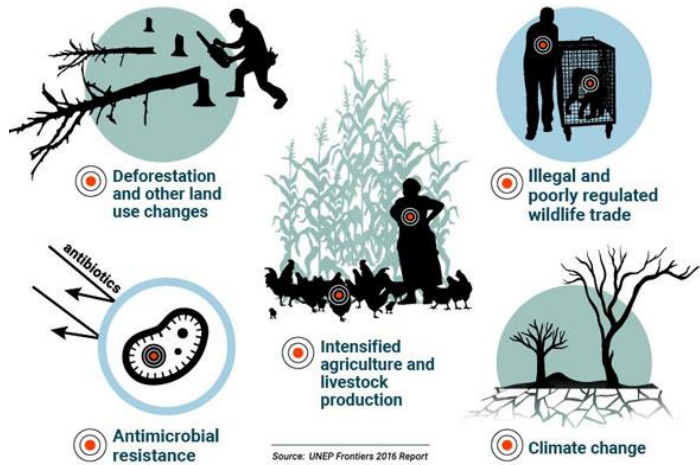
Climate Change Is Scary; 'Rat Explosion' Is Scarier

Scientists warn of global warming of 2 degrees Celsius. If you think that won't affect you, think how it may affect pests.

By [Faye Flam](#)

October 30, 2018, 4:02 PM GMT+1 *Corrected November 5, 2018, 7:37 PM GMT+1*

What factors are increasing zoonosis emergence?
(Diseases transmitted from animals to humans)



Denser Cities Could Spare Climate but Also Increase Virus Transmission

Though urban living has a smaller carbon footprint, it can make social distancing more difficult

By Daniel Cusick, E&E News on March 27, 2020

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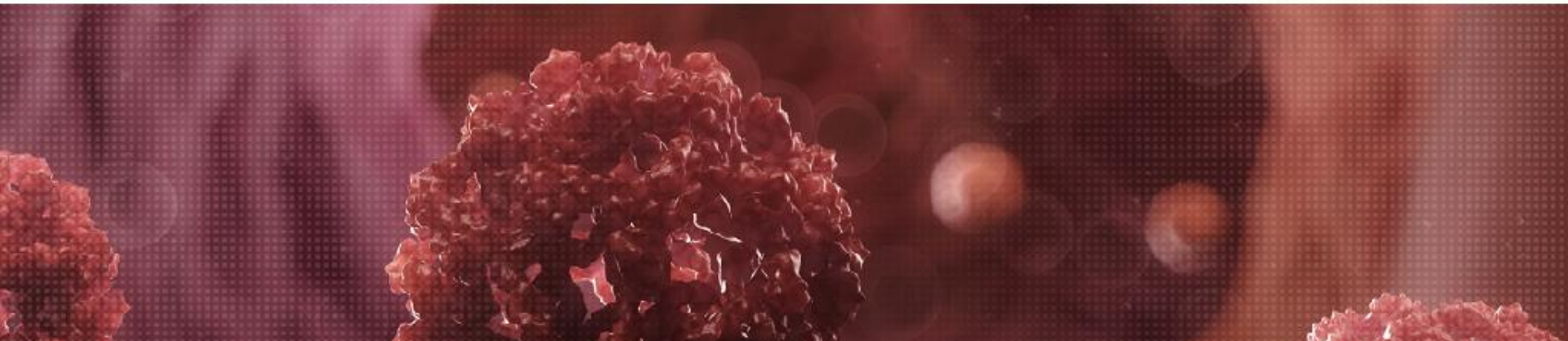
Questions?



If you have any remaining questions, you can always contact me at the Viruskenner Forum

<https://en.viruskenner.nl/e-learning/forum/>





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