

# West Nile virus infection may persist in kidneys years after initial infection

December 7 2009

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A new study shows that people who have been infected with West Nile virus may have persistent virus in their kidneys for years after initial infection, potentially leading to kidney problems. The research, which appears in the January 1 issue of *The Journal of Infectious Diseases*, is now available online.

Spread by infected mosquitoes, [West Nile virus](#) was first detected in the United States in 1999. Since then, approximately 25,000 human cases have been reported, causing more than 1,000 deaths. Many more have become infected without showing symptoms. Previous animal studies raised the possibility that patients may still be infected with the virus several years after recovering from their initial illness. Prior to this latest research, however, humans were thought to remain infected with West Nile virus only for the first few days of illness. The study, led by Kristy Murray, DVM, PhD at the University of Texas School of Public Health in Houston, demonstrates that not all individuals clear the virus from their system within the first few days—and that it can remain in the kidneys for years, potentially leading to kidney failure.

Dr. Murray and her colleagues followed more than 100 patients in Houston with severe initial West Nile virus infections for seven years. Individuals were evaluated and blood samples collected every six months. More than half continued to have infection-related symptoms years after their initial illness, although symptoms began to plateau around two years after infection. The deaths of five participants due to kidney failure led researchers to consider whether the kidney could be a

preferred replication site for the virus.

To test this hypothesis, Dr. Murray and her team collected urine samples from 25 patients from their original cohort and tested them for presence of West Nile virus. In this group, five patients (20 percent) tested positive for the virus. Viral RNA could be detected in the urine for at least six years following infection. Four of the five patients who tested positive for virus also experienced chronic symptoms. Of these five, one patient developed [kidney failure](#). These results show that West Nile virus is capable of long term persistence in patients, particularly when chronic symptoms are present.

In an accompanying editorial, Ernest Gould, PhD, of the Centre for Ecology and Hydrology in Oxford, England, points out that this study raises the additional concern that West Nile virus and other flaviviruses may be transmitted to mosquitoes by apparently healthy humans or animals. This possibility has the potential to start epidemics in new regions of the world.

According to Dr. Murray, patients who have been infected with West Nile virus should "have their kidneys monitored by their physician for any evidence of disease and be aware that persistent infection of the kidneys can happen." Dr. Murray also reminds the public to take proper precautions to protect themselves from mosquito bites during transmission seasons, typically the summer and fall, to avoid infection.

More research is needed to "understand the underlying mechanisms related to the shedding of virus particles in urine, whether shedding of the virus is constant or intermittent, and whether or not this represents true infection resulting in kidney disease," the investigators say. They continue to evaluate all study participants, particularly in regard to kidney function. In addition, they are focusing on developing treatment options for those who remain infected with the virus.

## Fast Facts

- Individuals who have had severe infections with West Nile virus may harbor the virus in their kidneys for many years.
- This study suggests that individuals infected with West Nile virus should have their kidneys monitored for disease and be aware that disease persistence can occur.

### More information:

<http://www.journals.uchicago.edu/doi/abs/10.1086/648731>

Source: Infectious Diseases Society of America ([news](#) : [web](#))

Citation: West Nile virus infection may persist in kidneys years after initial infection (2009, December 7) retrieved 25 April 2024 from <https://medicalxpress.com/news/2009-12-west-nile-virus-infection-persist.html>

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