



Kunjin West Nile Fever Virus Update

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- W. Ian Lipkin, M.D., Univ. of California at Irvine -

November 15, 1999 University of California-Irvine By the time the first frost touched Philadelphia this fall, dead crows and other birds in a couple of suburbs had been sent to laboratories to see if the Kunjin West Nile Fever Virus had spread from New Jersey, New York and Connecticut. The Pennsylvania test results are due soon and public health officials are concerned about the implications for next spring and summer. For the first time in history, this virus strain normally found only in Africa, Australia, the Middle East and Eurasia showed up in the United States. Fifty-six people in New York City were infected with the foreign virus and seven died, along with dozens of crows that are especially sensitive to the West Nile Virus. Transmission of the disease is through ticks, mites or mosquitoes that bite birds. Bird blood fills up with the virus rapidly over several days. During that time, insects can bite infected birds and then bite a human who can also become ill.



Photograph of *Culex pipiens* female mosquito, courtesy Entomology Image Gallery.

"The normal cycle for West Nile involves mosquito to bird to mosquito - just round and around and around," said James Meegan, an expert in the West Nile virus at the National Institutes of Health. "These mosquitoes aren't interested in biting humans. When the mosquito starts biting humans, the virus spills out of its natural cycle."

Birds bitten by infected mosquitoes are infectious from four to eight days. The virus incubation period in humans is five to fifteen days. Most people fight off

the West Nile Fever Virus without getting sick. For those who do get sick, the fatality rate is not very high, about ten to fifteen percent. But despite the low fatality rate and cumbersome transmission cycle, speculation emerged that the West Nile Fever virus might have been artificially engineered as a bioterrorism weapon by scientists working for Saddam Hussein or other U. S. enemies to deliberately hurt Americans.

That question and others were the subject of a meeting last week in Ft. Collins, Colorado. Attendees included the U. S. Army, the World Health Organization (WHO), the Center for Disease Control; and Ian Lipkin, M. D., the microbiologist who first sequenced enough of the virus from New York City fatalities to be confident in reporting the surprising news that it was Kunjin West Nile Fever.

Interview:

W. Ian Lipkin, M.D., Director of the Emerging Diseases Laboratory and Professor of Microbiology and Molecular Genetics, Anatomy and Neural Biology and Neurology, University of California-Irvine: "The data that is coming out of our lab and the CDC lab is fairly similar and suggests that the virus is indeed a West Nile Virus as reported. The actual analyses of sequences is very interesting, but unfortunately my understanding is that there is an embargo on that because there is an article the CDC has submitted to a major journal as have we, so nobody wants to say anything about it because that would jeopardize publication.

IS THIS AROUND THE IDEA AS TO WHETHER THE VIRUS WAS ARTIFICIALLY SEQUENCED?

No, it's not, actually. I don't think there is any data for that now. I think what has happened is that some sequences have been found that suggests its origins. At this point, I think it's very unlikely that it was an engineered virus. It looks much more like there are sequences very similar in another part of the world, but that doesn't tell us anything about how it might have been introduced. And that is obviously cause for some concern.

IF IT DOESN'T HAVE ANYTHING TO DO WITH BIOTERRORISM AND GENETIC MANIPULATION, WHY WOULD THERE BE AN EMBARGO ON ANY OTHER INFORMATION?

Because if something is released to the press before publication, most of the major journals won't accept the publication. That's just the way these journals are.

FROM YOUR POINT OF VIEW, THE DIRECTION YOU WOULD LIKE TO PUBLISH WOULD HAVE TO DO WITH THE SOURCE OF THIS VIRUS ORIGINALLY?

Right. That's correct.

AND THAT'S WHERE BOTH PARTIES ARE TRYING TO PUBLISH?

I would presume that. I couldn't speak for them (CDC). But just having coming back from this meeting where there were a number of press representatives, they were told they could not publish anything on the data presented. That was stated publicly.

AND THE SOURCE OF THE VIRUS WILL HAVE RELEVANCE IN TERMS OF TRYING TO DETERMINE HOW IT GOT INTO THIS COUNTRY?

Yes, it has relevance for that. But the other issue is that these things are instructive as we begin to think about the importance of global surveillance and understanding what needs to be done to protect the public.

ARE YOU SAYING IT MAY HAVE BEEN A VIRUS THAT WAS DELIBERATELY PLANTED?

I'm not saying that. We don't know how the virus got here. All we're saying is

that as a result of genetic analyses of sequences that are present here and elsewhere in the world, we may have some ideas as to where it originated. But these viruses can be spread by migrating birds, it can be spread by people, they can be spread by humans infected with the virus, or by a whole host of different mechanisms. So, it's going to be very difficult to figure out how this was introduced, deliberate or not (to the Northern Hemisphere).

WHEN MIGHT YOU BE PUBLISHED?

We have no idea. CDC and I are in competition. But what was clear is that when these data were presented that we have reached the same conclusion.

WOULD IT BE FAIR FOR ME TO REPORT THAT BASED ON A CONVERSATION WITH YOU THAT THERE IS NO EVIDENCE OF ARTIFICIAL GENOME SEQUENCING?

It's very reasonable for you to say that there is in fact no evidence that there's been an engineered virus. This West Nile Fever virus has now been sequenced independently by the CDC and the Univ. of Calif.-Irvine. CDC worked from a tissue culture isolate and ours was directly from the brain of infected humans. Now that we have the full sequence available, we have learned that there is no evidence for bio-engineering here and that we have other insights into the geographic origins of the virus."

More Information:

The Kunjin West Nile Fever Virus has been confirmed in **eighteen species** of birds, including robins, blue jays, bald eagles and crows in New York, New Jersey, Connecticut, Pennsylvania and Maryland. So many more infected species means the virus could spread as the birds migrate south.

The discovery of the Kunjin/West Nile virus in New York and surrounding communities underscores an issue of growing concern among public health experts the speed and frequency with which foreign microbes are entering the U. S. They are coming in through air travel, global tourism and international trade. For example, the number of malaria cases in New York has been going up a direct result of people bringing the disease back from the tropics. Humans make the problem worse by cutting down forests that force birds into more concentrated areas where disease can spread more easily.

This encephalitis outbreak and the associated human deaths show that when microbes are released into an environment where they have not been before, the microbes can be especially dangerous because what they infect has no immunity against them. Back in 1918, there was a world pandemic called "the swine flu" which killed an estimated **twenty million people** worldwide and more than half a million people in the United States. The reason was that a virus crossed over into pigs and then transferred into people who had no immunity. Could another pandemic occur?

Communication without delay has been stressed and hospitals have been asked to contact their particular State's Department of Health immediately if there are any suspected or confirmed cases of St. Louis Encephalitis or West Nile Fever virus. Individuals who find one or more dead birds should report the location to their local health department.

Websites:

<http://www.cdc.gov/>

<http://www.who.org/>

<http://www.health.state.ny.us/>

<http://www.state.nj.us/health>

<http://www.reutershealth.com/>

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