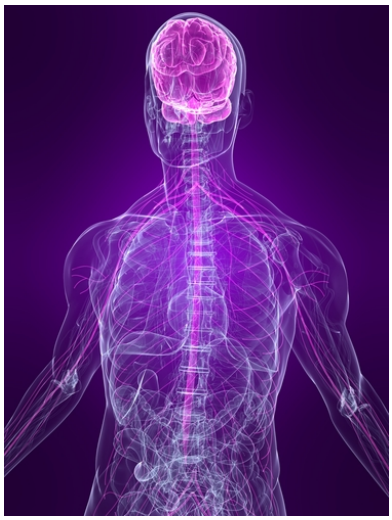
Factsheet about West Nile Virus



West Nile virus (WNV) is a Flavivirus and causes an arthropod-borne viral encephalitis, a disease in humans, horses and birds. The virus is carried from infected birds to people by mosquitoes.
To the same complex belongs: Alfuy, Cacipacore, Japanese encephalitis, Koutango, Kunjin, Murray Valley encephalitis, St. Louis encephalitis, Rocio, Stratford, Usutu and Yaounde viruses, which are distinguished based on its geographic distribution, clinical features, and laboratory findings. West Nile virus first gained attention in the U.S. in 1999 after an outbreak in New York City. Since then, outbreaks have occurred in 47 states.
WNV has emerged in recent years in temperate regions of Europe and North America, presenting a threat to public and animal health.
WNV is endemic in the Middle East, Africa, and Asia.

Global distribution of West Nile virus, 2006

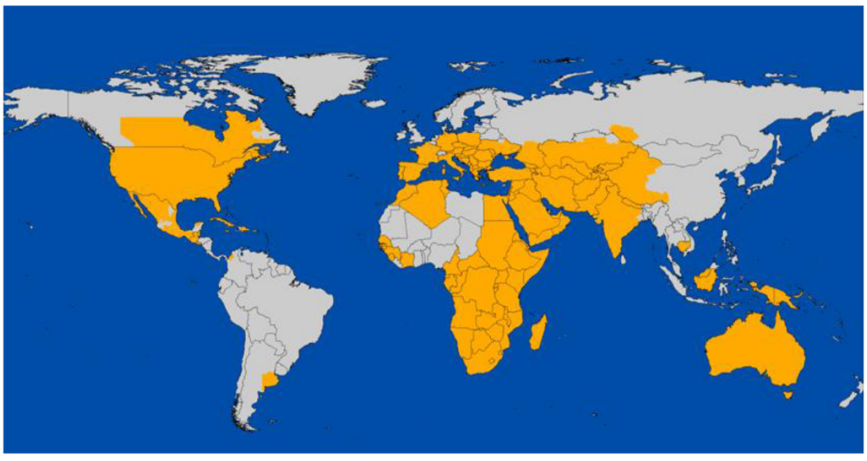


Figure courtesy of the US Centers for Disease Control and Prevention

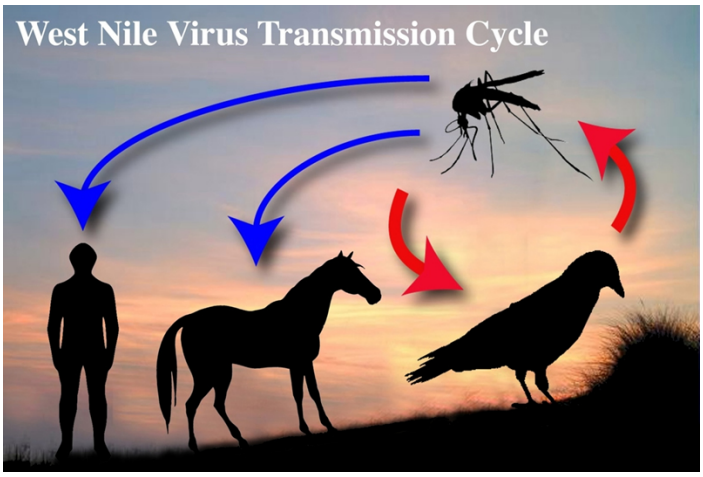
Most cases of West Nile virus are mild and go unreported. Symptoms and signs include fever, headache, body aches, skin rash, and swollen lymph glands. Severe symptoms may include stiff neck, sleepiness, disorientation, coma, tremors, convulsions, and paralysis. A key feature of neuroinvasive West Nile virus disease is encephalitis, an inflammation of the brain which can be fatal.

Transmission

This virus is transmitted by the bite of the *Culex* and *Aedes* mosquitoes. It cannot be transmitted person-to-person so being near ill-persons is not dangerous as long as no mosquito vectors are present.

West Nile virus is amplified during periods of adult mosquito blood-feeding by continuous transmission between mosquito vectors and bird reservoir hosts. Infectious mosquitoes carry virus particles in their salivary glands and infect susceptible bird species during blood-meal feeding. Competent bird reservoirs will sustain an infectious viremia (virus circulating in the bloodstream) for 1 to 4 days after exposure, after which these hosts develop life-long immunity. A sufficient number of vectors must feed on an infectious host to ensure that some survive long enough to feed again on a susceptible reservoir host.

People, horses, and most other mammals are not known to develop infectious-level viremia very often and are probably "dead-end" or incidental-hosts.



http://www.environment.ucla.edu/ctr/news/archives/articles/1261.html

Symptoms

Most people (70-80%) who become infected with West Nile virus do not develop any symptoms. About 1 in 5 people (roughly 20%) who are infected will develop a fever with other symptoms such as headache, body aches, joint pains, vomiting, diarrhea, or rash on the skin covering the trunk of the body.* Most people with this type of West Nile virus disease recover completely, but fatigue and weakness can last for weeks or months. Less than 1% (roughly 1 out of every 150 people infected, or 0.67%), of people who are infected will develop a serious neurologic illness such as encephalitis or meningitis (inflammation of the brain or surrounding tissues).

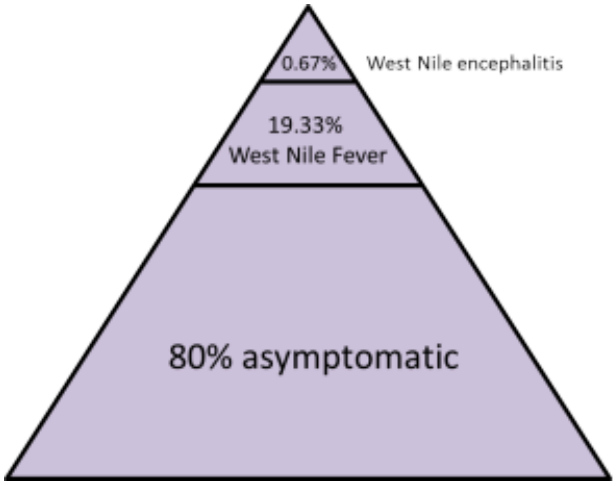
The symptoms of neurologic illness can include headache, high fever, neck stiffness, disorientation, coma, tremors, seizures, or paralysis.

People with certain medical conditions, such as cancer, diabetes, hypertension and kidney disease are also at greater risk for serious illness. Neurologic illness may also manifest as meningitis; an inflammation of the meninges that encases the brain. For reasons yet to be understood those over the age of 50 and immune compromised patients such as transplant recipients are at the highest risk of developing this disease after infection.

Recovery from severe disease may take several weeks or months. Some of the neurologic effects may be permanent.

About 10 percent of people who develop neurologic infection due to West Nile virus will die.

It is important to remember that while this disease does have significant clinical manifestations the actual disease burden in infected individuals is lower, 80% of persons will not experience symptoms.



Treatment

Currently there is no vaccine for West Nile and no specific therapies for West Nile virus encephalitis, which is the major cause of death for those infected. Clinical therapy is currently limited to supportive care making the search for novel therapeutics for this disease of high importance. Over-the-counter pain relievers can be used to reduce fever and relieve some symptoms. In severe cases, patients often need to be hospitalized to receive supportive treatment, such as intravenous fluids, pain medication, and nursing care.

History:

West Nile virus was first isolated from a febrile adult woman in the West Nile District of Uganda in 1937. The ecology was characterized in Egypt in the 1950s. The virus became recognized as a cause of severe human meningitis or encephalitis (inflammation of the spinal cord *and* brain) in elderly patients during an outbreak in Israel in 1957. Equine disease was first noted in Egypt and France in the early 1960s. West Nile virus has been described in Africa, Europe, the Middle East, west and central Asia, Oceania (subtype Kunjin), and most recently, North America.
(Some have suggested that Alexander the Great may have died from WNE.)(See Epidemiology.)
In 1999 there was an unexplained outbreak of disease among birds in city zoos which were later linked to fever cases throughout parts of the city reported in humans and horses and to several deaths in New York. It was discovered that these were linked by the West Nile virus, a member of the flavivirus family related to Japanese encephalitis virus. Since then the subsequent spread of West Nile virus to all of the lower 48 states in the United States was an important milestone in the evolving history of this virus.

By late summer 2002, West Nile virus has been identified throughout the eastern and southeastern United States. Following bird migration, the virus is presently extending westward, and by April 2003, virus activity had been detected in 46 states and the District of Columbia. The image below depicts the Culex mosquito, common in the eastern United States.

Outbreaks of WNV encephalitis in humans have occurred in Algeria in 1994, Romania in 1996-1997, the Czech Republic in 1997, the Democratic Republic of the Congo in 1998, Russia in 1999, the United States in 1999-2003, and Israel in 2000. Epizootics of disease in horses occurred in Morocco in 1996, Italy in 1998, the United States in 1999-2001 and France in 2000, and in birds in Israel in 1997-2001 and in the United States in 1999-2002. In the US since 1999 WNV human, bird, veterinary or mosquito activity have been reported from all states except Hawaii, Alaska, and Oregon.

References:

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