West Nile encephalitis

By Professor Tom Solomon, Chair of Neurological Science, University of Liverpool and Katherine Dodd, Specialist Registrar in Neurology and reviewed by Dr James Mitchell, Academic Clinical Fellow

Background
West Nile fever virus was first found in the blood of a person with a high temperature in Uganda in 1937. Since then the virus has been found to be distributed not only in Africa, but also southern Europe, the Middle East, America and even parts of the Far East. The first outbreak in the United States of America (USA) occurred in 1999, in New York. The virus spread throughout the country and in 2002 West Nile virus was declared endemic in the USA.

The virus has since spread across the North American continent into Canada and the Caribbean, although only very few cases have been reported in Latin America. Recently, outbreaks have also occurred in Europe, and in 2016 included Spain, Hungary, Serbia, Austria, Italy, Romania, Ukraine and Spain. Surveillance is currently taking place in the south east of the UK, however, the virus has not been found in any mosquitos in this country.

West Nile virus is an arbovirus. Viruses that are transmitted from one animal host to the next by insects (arthropods) are known as ‘arboviruses’ (arthropod-borne). Viruses comprise small pieces of genetic material (nucleic acid) whose sole purpose in life is to make more of themselves. Because they don’t have all the ability to do this alone, they have to muscle into ‘host’ cells and borrow bits of their machinery. The host develops an immune response to fight off this invasion and the rest follows as a consequence of this eternal struggle.

West Nile virus is transferred mainly between pigeons and crows by ‘Culex’ mosquitoes. People can get infected from the bite of a mosquito that is infected with the virus. The virus is
not transmitted from person to person. There is no evidence that a person can get the virus from handling live or dead infected birds. However, it is still recommended that barehanded contact with dead animals is avoided.

**Diagnosis**
The time from infection to developing symptoms of West Nile infection is usually 3 - 14 days. Mild infections are common and include a high temperature, headache and body aches, often with skin rash and swollen lymph glands. However, the majority of people who get infected do not have any symptoms at all. Diagnosis is made based on the symptoms and in most cases can be confirmed by urine, blood or spinal fluid tests.

Until recently brain problems after West Nile infection were thought to be rare, however, in recent years the virus is causing different types of disease. Approximately 1 in 100 people infected with the virus will develop brain complications as a result of infection. Encephalitis results when the virus invades the brain causing damage and an inflammation (swelling) response. The symptoms and signs of West Nile encephalitis range from muscle weakness and paralysis, mild confusion and behavioural changes (which may be mistaken for hysteria) to convulsions (fits) and deep coma. West Nile virus encephalitis is associated with considerable short-term and long-term risks of death and significant disability.

**Treatment and prevention**
There is no specific treatment for the cause of West Nile virus encephalitis. Treatment, in most cases, consists of treating the complications of the disease such as high fever and aches, low blood pressure, blood loss, convulsions (fits), or raised pressure within the skull.

The simplest preventative measure is to avoid bites from the mosquitoes that carry the virus. This means wearing long sleeves and trousers, especially during the evening when the mosquitoes bite more frequently and avoiding areas where stagnant water can be found as mosquito larvae need still water to develop. For further protection use an insect spray containing at least 30% DEET (N,N-diethyl-3-methybenzamide) and sleep under bed-nets.

There is no vaccine at present to protect against West Nile virus, although several are being developed and tested.
Future research
Current research is looking at ways to reduce resistance to insecticides used to eradicate mosquitos and develop the best possible treatments for the disease. Treatments that have been tried include anti-viral drugs and drugs that modulate the body’s immune system. It is hoped that a vaccine will soon be available for use, although work needs to be done to ensure that the effects are long lasting and safe. Much research is also being carried out on surveillance of the disease and to try to predict when and where outbreaks are going to happen.

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Thank you!

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