

Public Health

West Nile fever heads north

Epidemiology

West Nile fever is a mosquito-borne illness that can cause encephalitis or meningitis in 1% to 10% of cases.^{1,2} It is named after the West Nile region of Uganda, where it was first isolated in 1937. The virus usually circulates in a bird-mosquito-bird cycle that can spill over into humans. Outbreaks in humans have occurred in at least 17 countries in Africa and Europe. The 1996/97 outbreak of West Nile fever in and near Bucharest, Romania, which has a climate similar to Canada's, resulted in more than 500 clinical cases and a case-fatality rate approaching 10%.² An outbreak of viral encephalitis in New York City in 1999 that involved 62 people and resulted in 7 deaths was the first recognized introduction of the virus into North America.^{3,4} The virus was probably transported in a person who recently returned from an endemic region, in an imported, infected bird or in an infected mosquito.



Canada's front line of defence against the West Nile virus: sentinel chickens.

To estimate the public health impact of the outbreak in New York City, a seroprevalence survey of residents of North Queens, New York, was conducted in the fall of 1999. Of the 677 residents tested, 19 people (2.6% of the

population older than 5 years) showed evidence of previous infection,¹ suggesting that most human infections are asymptomatic. Elderly people appear to be more susceptible to severe neurological disease.³

Last summer New York City implemented a mosquito control and abatement plan that included mosquito surveillance, the elimination of breeding sites and pesticide spraying to kill adult mosquitoes and larvae. In January and February 2000, researchers found low but detectable levels of the virus in 3 of 69 mosquito breeding pools in New York City, suggesting that the virus was able to survive the winter. Subsequently, 38 mosquito breeding pools in New York state and 1 in Connecticut tested positive for the virus.⁵

On Aug. 4, 2000, the New York City Department of Health reported another case of infection in a 78-year-old man from south Richmond county on Staten Island, an area where the virus was not detected in 1999. As of Aug. 7, 188 birds infected with the virus had been identified in New York, New Jersey, Massachusetts and Connecticut, indicating an expanding zone of epizootic transmission of the virus.⁵ To date, the virus has not been detected in Canada.

Clinical management

Symptoms appear 3 to 12 days after a person has been bitten by an infected mosquito. Symptoms range from mild fever and headache, occasionally accompanied by a maculopapular rash that expands from the trunk to the extremities, to severe headache, fever, stiff neck, muscle weakness and disorientation.⁴ Many people remain asymptomatic. Diagnosis is based on a serum IgM result. Physicians who think a patient may be infected should phone their public health units for advice on

laboratory testing. Treatment is symptomatic; there is no vaccine.

Prevention

There are 4 components to prevention: surveillance, individual risk reduction, mosquito larval mapping and control, and adult mosquito control.⁵ Health Canada is working with the provinces and territories and with private industry to establish sentinel chicken surveillance. Coops have been placed in strategic locations from Saskatchewan to Atlantic Canada and tested weekly for the presence of West Nile virus. Wild birds, domestic animals and mosquito populations are also being monitored. Physicians are asked to report all cases of suspected viral encephalitis to their public health unit. Health Canada is currently establishing surveillance programs at selected hospitals in designated high-risk areas.

Individual risk can be reduced by using appropriate clothing and repellents and by eliminating mosquito breeding grounds, such as stagnant pools of standing water. Health Canada is coordinating the development of guidelines for mosquito abatement that include guidance on the use of pesticides.

Further information is available at www.nationalatlas.gov/virusmap.html, where maps are updated weekly with data from the US West Nile virus surveillance system. — *Erica Weir, CMAJ*

References

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