

HUMAN SURVEILLANCE

Objective:

To quickly detect human illness due to WNV.

Background:

In Peel there were no human cases of WNV in 2004. In 2003, there were 10 human cases in Peel, much lower than the 112 residents with laboratory evidence of WNV infection identified in 2002.

All WNV blood tests in the province will continue to be conducted at the Central Public Health Laboratory in Toronto. The first laboratory test performed on a potential blood sample is the Immunoglobulin M (IgM) Enzyme-Linked Immunosorbent Assay (ELISA), which, if positive, will be run a second time to rule out false positive results. These two tests are followed by the Plaque Reduction Neutralization Test (PRNT) to confirm the diagnosis in the first three cases within each public health jurisdiction. ELISA test results are available within 24 hours, while the PRNT confirmation testing takes an additional 7 days.

Peel Public Health staff investigates all suspect, probable and confirmed WNV cases among residents in Peel. Standardized medical information including demographics, symptoms, risk factors (such as travel history or having received blood products) and test results are entered into the Reportable Disease Information System (RDIS) by the Peel Surveillance Unit. In 2005, this system will be converted over to the Ministry of Health and Long-Term Care's new system called the integrated Public Health Information System (iPHIS). The cases will be mapped onto a Geographic Information System (GIS) according to postal code at a later date.

Planned Activities:

- In June, Peel Public Health will update physicians region-wide about the importance of immediately reporting all suspected cases of viral encephalitis and viral meningitis. The update will provide information on how to submit appropriate laboratory samples to determine if the cause is a mosquito-borne virus.
- From June through October, regular WNV updates will be sent to all local hospitals and infectious disease specialists to maintain awareness of human surveillance for encephalitis and meningitis cases. Peel Public Health will provide the criteria for reporting and submission of appropriate laboratory specimens for WNV testing.
- Beginning in July, Peel Public Health will implement enhanced surveillance for WNV encephalitis and viral meningitis through local hospitals and physicians.

- Peel Public Health will ensure active hospital-based surveillance will be implemented when WNV activity is identified in bridging vectors.
- Peel Public Health staff will investigate all suspect, probable and confirmed cases of WNV.
- Peel Public Health will maintain a database and map all probable and confirmed cases of WNV
- Peel Public Health will work closely with the Ministry of Health and Long Term Care to ensure that surveillance information is standardized and that personal medical information remains confidential. Cases that meet the case definition will be reported to the Infectious Disease Division.

BIRD SURVEILLANCE

Objective:

Utilize data on bird mortality associated with WNV as a means of early detection of WNV activity in the Region of Peel in order to predict the risk of human illness.

Background:

Bird surveillance is the most sensitive early detection system for the presence of the virus. Since August 2001 and in subsequent years the presence of a dead bird testing positive for WNV has been the first indicator that the virus was present in Peel.

While over 200 North American native bird species have been infected with WNV, the corvid bird family (crows, jays, and ravens) have been found to most likely die from the virus. Crows in particular will demonstrate an almost 100% mortality rate once infected with WNV. Consequently, crows continue to be the bird species of choice for most dead bird surveillance programs in Canada and the United States. In addition to crows, blue jays the other main corvid species found in Peel, were submitted for testing in 2004. Blue jays were included in the provincial dead bird surveillance program in part due to low crow population levels in some parts of Ontario.

Planned Activities:

- Beginning in May, Peel Public Health will ask the public to report the number and location of dead crow/blue jay sightings to Health Line Peel at 905-799-7700. This service will operate from 8 a.m. – 5 p.m. Monday to Friday and 10:00 a.m. – 5:00 p.m. on Saturday, Sunday and statutory holidays from May to September. Callers after hours will be instructed via a taped message to call back during operating hours.
- Dead birds (i.e. those meeting the criteria for accessibility, species, and state of preservation) will be picked up for possible testing. Peel Public Health will select dead crow and blue jay specimens for submission to the Canadian Cooperative Wildlife Health Centre (CCWHC) in Guelph. Specimens will be submitted in accordance with the CCWHC criteria. Peel Public Health will post WNV positive bird results on the Regional Web site www.peel-bugbite.ca.
- Persons reporting birds which are not crows or blue jays, and which are not suitable or required for surveillance purposes, will be advised how to safely dispose of the bird.
- Peel Public Health will use WNV positive bird test results as early indicators of virus activity. Trends in dead corvid (crow and blue jay) sightings will be monitored as an indicator of potential human health risk.

- Peel Public Health will continue to record sightings of dead birds other than crows that are reported through Health Line Peel. This information will be mapped and analyzed to determine if there is significant bird mortality in an area. This information is most useful in the years when the crow population is at low levels.

MOSQUITO SURVEILLANCE

Objective:

To monitor numbers, species and locations of adult and larval mosquito populations and to detect the presence of WNV.

Background:

Adult mosquitoes will be collected weekly from mosquito traps at 30 fixed locations throughout the Region of Peel from mid-June to late September. There are sixteen permanent trapping sites in Mississauga, nine in Brampton and five in Caledon. Temporary trap sites will be established in areas where positive birds or humans are identified. Mosquitoes collected from the traps will be delivered to the mosquito lab service provider for counting, species identification and viral testing. The purposes of adult mosquito surveillance programs are: to monitor mosquito populations associated with WNV; to determine the level of WNV activity among these species; and to use this information to make decisions regarding the risk of transmission to humans and the need to implement mosquito control plans.

Peel Public Health staff will monitor six ovipools which will be set up over the course of the mosquito season. Three will be located in Mississauga, two in Brampton and one in Caledon. Ovipools are designed to attract adult female *Culex* mosquitoes searching for suitable sites in which to lay their eggs. Peel Public Health staff will make regular visits to these sites and note the number of egg rafts, which will provide an indicator of the breeding activity of the *Culex* species.

Seasonal field staff will survey a wide range of aquatic habitats for the presence of mosquitoes in the larval stage from mid-May to October. Breeding sites will be located by referencing historical breeding site data collected in previous years, conducting field surveys and investigating stagnant water complaints. Larval surveillance will also involve the collection and identification of the larvae found at the breeding sites. This information will be used to determine mosquito species distribution, abundance and seasonal occurrence and will assist in guiding larviciding activities.

The risk of mosquito-borne disease depends on both the number of mosquitoes capable of transmitting the virus and the prevalence of the virus among these mosquitoes. Accurate and timely surveillance data on larval and adult mosquitoes will be important for guiding appropriate Prevention and Reduction activities.

Planned Activities:

- Peel Public Health will continue to work closely with other agencies to collect and map information on potential mosquito-breeding habitats.

- Peel Public Health will regularly inspect priority breeding sites and sites referred for assessment for the presence of larvae.
- Peel Public Health will record and assess all stagnant water complaints reported by the public. Peel Public Health will inspect and monitor the stagnant water reported on public property. Stagnant water reported on private property will continue to be referred to the municipal property standards by-law officers. In 2004, a stagnant water report form was available on the Peel WNV Web site to allow the public to make on-line submissions. The on-line stagnant water report will continue to be made available in 2005.
- From mid-June to late September, Peel Public Health will trap adult mosquitoes at 30 permanent sites throughout the three municipalities. Mississauga will have 16 trapping locations, Brampton and Caledon will have 9 and 5 respectively. Mosquitoes will be collected using CDC miniature light traps and gravid traps will be used at a few locations. The trapping season may be lengthened or shortened depending on the weather and the results of surveillance. Adult mosquitoes will be counted by species and tested for WNV by the mosquito lab service provider.
- A minimum of six ovipools will be placed in selected locations from May to October to monitor the egg laying activities of the *Culex* species.
- Peel Public Health will conduct a short study comparing two types of gravid traps and the use of different types of infusion media. The infusion mixture is designed to simulate the smell of stagnant water the gravid females prefer for egg laying.

PESTICIDE EFFECTS SURVEILLANCE

Objective:

To identify any unplanned impacts of pesticides used in mosquito control on human or ecosystem health.

Background:

In 2005, selective larviciding to reduce mosquito numbers will continue. Results from the 2003 Ministry of the Environment pesticide surveillance studies did not indicate any environmental or health concerns associated with the use of larvicides. It is not expected that larviciding carried out as planned will have any adverse impact on human health, or any significant adverse impact on the environment. Peel will continue to work with other agencies to ensure our larviciding program does not negatively impact the ecosystem. Peel will also continue to use larvicide products that have been identified as having the least environmental impact. Peel's contingency plan for adult mosquito reduction will include a plan for spraying of chemical pesticides if required. All possible measures will be taken to prevent any impacts of adulticiding on human health.

Planned Activities:

- Peel Public Health will work with other municipalities, conservation authorities and the Ontario Ministry of the Environment to evaluate the impact of pesticide application on the environment, and target and non-target species.
- Peel Public Health will collaborate with hospital emergency rooms and physicians to carry out surveillance for illness potentially associated with pesticide exposure.
- Health Line Peel will track calls related to concerns attributed to pesticides.