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2004 WEST NILE VIRUS CONTROL ACTIVITIES

The Health and Emergency Medical Services Committee recommends the adoption of the recommendation contained in the following report, November 12, 2004, from the Commissioner of Health Services:

1. RECOMMENDATION

It is recommended that:

1. Health and Emergency Medical Services Committee and Regional Council receive this report for information.

2. PURPOSE

The purpose of this report is to provide Health and Emergency Medical Services Committee and Regional Council with a summary of York Region activities related to the control of WNv in 2004.

3. BACKGROUND

WNv is a potentially fatal virus that spreads through a bird-mosquito-bird cycle. Humans can contract the virus through the bite of an infected mosquito. The virus has been detected in mosquitoes and birds throughout Ontario since 2001. Table 1 summarizes WNv detection in York Region from 2001 to 2004.

Table 1
York Region WNv Statistics 2001 to 2004*

	2001	2002	2003	2004
Human Cases**	0	7	2	1***
Birds	1	8	9	11
Mosquito Pools	0	14	6	1

* As of October 31, 2004.
** Only includes lab confirmed cases.
*** York Region resident contracted and died of WNv while visiting in Florida.

Table 2 shows a comparison of human cases of WNv in various jurisdictions from 2002 to 2004. There were no human cases in Ontario in 2001.

Table 2
2002 to 2004* WNv Human Cases**

Region	2002	2003	2004
York Region	7	2	1***
Toronto	127	44	6
Peel Region	38	10	0
Halton Region	56	0	0
Simcoe Region	0	0	0
Durham Region	0	0	0
Ontario	307	89	10
USA	4,156	9,862	1,951

* As of October 31, 2004.
** Only includes lab confirmed cases.
*** York Region resident contracted and died of WNv while visiting in Florida.

In 2001, the York Region Health Services Department, in partnership with area municipalities, initiated WNv control activities through surveillance and public education. In 2003, larvicide was applied in urban areas adding to the control measures targeting the mosquito larval population.

In 2003, Ontario Regulation 199/03 under the *Health Protection and Promotion Act*, was enacted requiring that the local Medical Officer of Health make a determination based on a local risk assessment whether action, including the use of larvicides or adulticides, is required to decrease the risk of WNv. The risk assessment is based on the most current evidence of local activity including WNv in the human population and non-human species.

4. ANALYSIS AND OPTIONS

In 2004, WNv control measures in York Region were continued and enhanced. Attachment 1 compares previous WNv activities with the 2004 WNv activities.

4.1 Education and Communication

In 2004, the public education and awareness campaign continued to focus on two key messages—personal protection (wearing of proper clothing and the use of insect repellents) and the importance of reducing mosquito breeding habitats (removing stagnant water). Information was made available through media releases, the York Region website and pamphlets distributed through various outlets. Media releases were circulated when positive WNv cases in mosquitoes, birds or humans were identified.

Fifteen presentations and three public meetings were provided by Health Protection Division staff to long term care facilities, public groups, companies employing outside workers and businesses. An interactive WNv display was presented at the York

Children's Water Festival and at the grand opening of the Georgina Water Treatment Plant.

The Rapid Risk Factor Surveillance System (RRFSS) survey demonstrated the success of educational initiatives in ensuring residents were aware of WNv. The percentage of York Region residents aged 18 years and older who were asked if they heard about WNv remained constant at 98% in 2003 and 97.9% in 2004.

One disturbing result of the RRFSS survey shows that only 35% of the population sampled in York Region were using insect repellents. Personal protection continues to be the most effective method of ensuring protection against mosquito bites.

4.2 Surveillance

4.2.1 Bird

Bird surveillance has been an integral component of the WNv program for the past four years in Ontario. Crows and blue jays are collected and tested as they are susceptible to WNv and act as an early warning system. In 2004 1,647 birds were collected in York Region, 140 were crows and blue jays that were appropriate for testing, and 11of these were positive for WNv (*see Attachment 2* for locations of positive birds).

4.2.2 Mosquito

The mosquito surveillance program consisted of three components: (1) responding to stagnant water complaints, (2) adult mosquito trapping, and (3) storm water management ponds survey.

While responding to 562 stagnant water complaints, Health Protection Division staff educated residents about the role of water as a potential breeding source for mosquitoes.

Thirty mosquito traps were set up—25 at "fixed sites" based on past WNv activity in the mosquito population and others as "roaming traps" as positive birds and/or human cases were identified.

During the summer, stagnant water on municipal and regional properties such as storm water management ponds were surveyed. Twenty-five ponds were found to contain larvae and were treated with a biological larvicide—Bacillus thuringiensis israelensis (Bti) that targets mosquito larvae and does not impact other insect species or aquatic life.

4.2.3 Human

WNv is diagnosed by blood specimens from patients exhibiting symptoms. York Region Health Services collects weekly statistics on the number of specimens sent for WNv testing from York Region's three local hospitals. In 2004, 66 blood specimens were sent for testing with no positive results for WNv.

As part of the 2004 WNv human surveillance and reporting program, York Region Health Services distributed letters and patient reporting forms to all York Region physicians and hospital infection control practitioners.

4.4 Mosquito Control

In 2004, York Region Health Services contracted the services of a pest control company to provide a larviciding program throughout York Region. Since catch basins have been identified by the Ministry of Health and Long-Term Care (MOHLTC) as primary targets for mosquito control of Culex pipiens/restuans (two major vector species of WNv), four rounds of larvicide (methoprene) was applied to public catch basins. Methoprene was also applied in municipal parks and some private rear yard catch basins. Application on private property was conducted upon request and based on a risk assessment.

4.5 Joint Studies

As part of last year's WNv program review it was identified that alternative engineering designs for storm water management ponds (SWMP) or catch basins should be explored in order to make these water retaining structures less attractive to breeding mosquitoes. In 2004 York Region partnered with the Town of Richmond Hill in a catch basins study using specialized traps and with the Town of Markham in a storm water management pond study using windmills. The findings are currently being reviewed to determine the success of these initiatives.

4.6 Comparative Findings

According to MOHLTC staff no jurisdiction in the United States has stopped their mosquito control programs.

Studies in the United States support the effectiveness of larviciding. A Michigan study, *Mosquito Management Programs and West Nile Virus in Michigan 2002,* compared mosquito control activities in five counties and showed a ten-fold increase in the risk of humans contracting WNv in counties with no larviciding activities versus counties with larviciding activities.

In 2002, Chicago had a limited larviciding program. A study, *Factors Impacting Effectiveness of Mosquito Abatement Operations 2002 and 2003,* showed evidence of a large number of back yard catch basins in the areas with clusters of human WNv cases. This study also showed evidence that the areas with the most intense and thorough treatment of catch basins and other culex sites had fewer human cases of WNv than other locations. In 2002, there were 884 human cases of WNv in Chicago and in 2003, with the implementation of an extensive larviciding program, the number of human cases dropped to 53.

In Ontario, confounding factors such as undiagnosed cases and seasonal temperature variations impose limits in evaluating the success of a larviciding program. A study is currently being proposed by Health Canada and MOHTLC to determine the effect of weather on the viral activity.

4.7 Relationship to Vision 2026

The York Region WNv control program supports the Vision 2026 goal of *Responding to the Needs of Our Residents.*

5. FINANCIAL IMPLICATIONS

Table 1 outlines the estimated costs incurred to deliver the 2004 WNv program in addition to several MOHLTC budget adjustments that occurred after York Region's 2004 budget process.

Table 1
Summary of WNv 2004 Expenditures and Funding

	2004 York Region Approved Budget	MOHLTC Budget Adjustments	2004 MOHLTC Revised Budget	Estimated Expenditures to Dec. 31/04
Purchase of Service*	$1,644,949	($ 74,801)	$1,570,148	$1,107,852
Advertising/Publicity	150,000	(21,300)	128,700	52,579
GIS/Planning	70,000	(15,400)	54,600	70,000
Supplies & Equipment	123,000	(56,984)	66,016	83,053
Mosquito Speciation**	150,000	(150,000)	-	114,479
Total Expenditures	$2,137,949	($318,485)	$1,819,464	$1,427,963
Funding Sources				
100% Provincial Funding	$ -	$ -	$ -	$ 114,479
50% Provincial Funding	1,068,975	(159,243)	909,732	656,742
Contribution from Reserve	1,068,974	(159,242)	909,732	656,742
Total Funding	$2,137,949	($318,485)	$1,819,464	$1,427,963

* Includes cost of larviciding, the pick-up of dead birds and standby contract for adulticiding.
** Funded 100% by MOHLTC.

Table 1 illustrates that the anticipated 2004 year end expenditures are projected to be under spent by $709,986. This under spending is a result of several factors. The MOHLTC advised York Region Public Health of a reduction of allowable WNv program cost-shared expenditures in the amount of $318,485. It also advised health units that it would fund 100% of the cost of mosquito speciation (approximately $114,479 for York Region) in 2004. In addition to these MOHLTC budget adjustments, larviciding costs (purchase of service) were significantly reduced through the Region's tendering process. Further cost reductions were realized as a result of fewer media releases being required in 2004.

6. LOCAL MUNICIPAL IMPACT

The Region and the area municipalities developed a successful working relationship throughout the 2004 WNv season. Monthly meetings were held with representatives from all nine area municipalities to discuss WNv control activities in York Region.

7. CONCLUSION

The efforts of the York Region Health Services Department to control the spread of WNv in the Region have contributed to minimize the impact of WNv on residents throughout the 2004 mosquito season. Continued surveillance, public education and larviciding activities are essential to the continued success of York Region's WNv program.

The Senior Management Group has reviewed this report.

(The attachments referred to in this clause were included in the Agenda for the December 2, 2004 Committee meeting.)