FLORIDA DEPARTMENT OF HEALTH

Epi Monthly Report

Office of Epidemiology and Disease Control

VOLUME 5. ISSUE 11

NOVEMBER 2004 PAGE-1

Miami-Dade County HEALTH DEPARTMENT

West Nile Virus Surveillance in Miami-Dade County, 2004

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Introduction

West Nile Virus (WVN) is an arthropod-borne infection transmitted primarily by mosquitoes within bird populations. Mosquitoes become infected when they feed on infected birds. Humans and horses are incidental hosts and are not part of the natural transmission cycle. WNV may affect other animals and has been identified in dogs and cats. Human and animal hosts may contract the virus through the bites of WNV infected mosquitoes. WNV causes an infection called West Nile Fever.

In humans, approximately 80% (4 out of 5) of persons infected with WNV may remain asymptomatic, whereas the other 20% may develop mild illness with symptoms such as fever, headache, body aches, skin rash, and swollen lymph glands. Less than 1% of all cases develop neuro-invasive conditions (aseptic meningitis and/or encephalitis). WNV infection may result in serious illness, especially in the elderly population, with symptoms such a high fever, stiff neck, joint pains, disorientation, tremors, convulsions, muscle weakness, paralysis, and occasionally death. The onset of symptoms may range from 3 to 15 days after exposure to the virus.

There is no evidence of person-to-persons transmission. There is evidence of transmission through blood transfusions and organ transplants. Blood collecting agencies now screen donated blood before it is used. So far this year, in the U.S, there have been 196 presumptive WNV blood donors with three (0.5%) being reported from Miami-Dade County.

Another possible means of transmission that is currently being studied is from mother to fetus. There has been documentation of a few cases of virus transmission during pregnancy and via breast milk. In 2002, there was one recorded case of trans-placental transmission in the United States, (MMWR Dec. 2002). There is however, insufficient evidence to indicate whether WNV may result in medical complications to an exposed fetus.

Inside this issue:

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Surveillance

Florida has surveillance programs to detect West Nile and other arboviral infections, including St. Louis encephalitis. These include dead bird surveillance; sentinel chicken surveillance, horse surveillance, and human surveillance. The Florida Department of Health (DOH) manages all four surveillance programs with the cooperation of other state and local agencies, such as the Department of Public Works (DPW)/Mosquito Control Division.

Dead Bird Surveillance: Dead bird surveillance is used for early detection of WNV activity within specific locations. This type of surveillance involves dead bird reporting and submission of bird carcasses for testing. Inspectors from the Miami-Dade County Health Department (MDCHD) Division of Environmental Health (EH) collect the bird samples that are in good condition (no decomposition) and dispatch them to the Tampa branch state laboratory for testing.

Chicken (captive bird) and Horse (Equine) Surveillance: Sentinel chicken surveillance is used to detect and monitor arbovirus transmission. The sentinel flock is usually placed near vector breeding sites or congregation sites of adult mosquitoes. Equine surveillance on the other hand, is useful for detecting epizootic activity and for determining the human risk for WNV in specific areas. Veterinarians and the state agricultural department are active participants in equine surveillance activities.

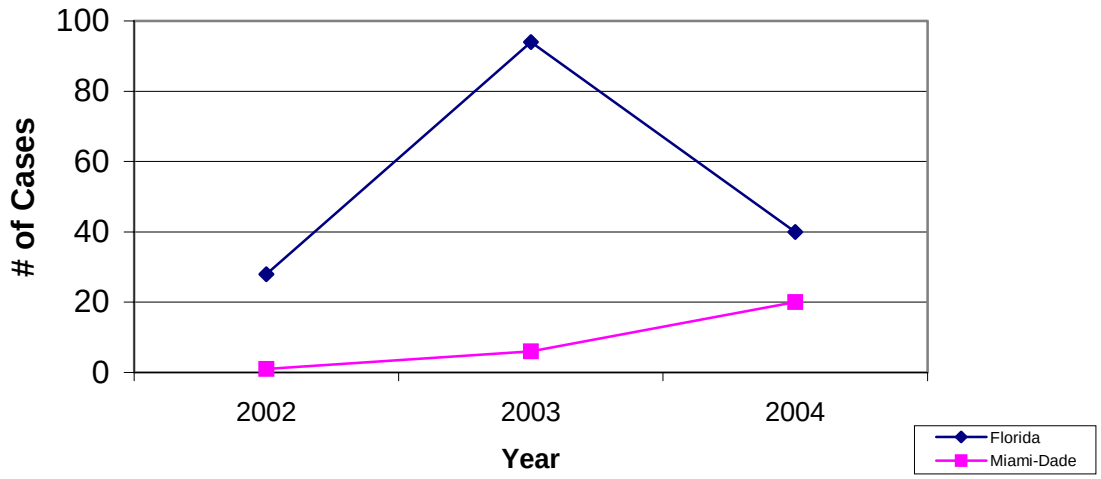
Human Surveillance: The MDCH Office of Epidemiology and Disease Control (OEDC) conducts human case surveillance to identify the risk factors

Trends

Human cases: For the period ending October 30, 2004, the number of WNV cases reported nationally was 2,233. Of the 2,233 cases, 40 cases (2%) were reported from the state of Florida. Of the Florida cases, 20 cases (50%) occurred in Miami-Dade County.

Between January 1, 2002 and October 31, 2004, the reported WNV human cases increased to 20 in 2004 from 1 in 2002 and 6 in 2003 in Miami-Dade County, and the cases in Florida declined to 40 in 2004 from 94 in 2003 (***Figure 1***).

Fig.1: WNV Human Incidence in Miami-Dade and Florida between 01/01/2002 and 10/31/2004



Among the 20 confirmed cases in Miami-Dade County, the age range was from 39 to 78 years, with the median of 53.5 years. Of them, 14 (70%) were males, 6 (30%) females, and, 15 (75%) were classified as WNV neuro-invasive and 5 (25%) as WNV fever. Fifteen (75%) of them recovered from the illness, 3 (15%) underwent rehabilitation and 2 (10%) expired from other complications.

Animals: Between January and October 2004, the lab confirmed 28 positive WNV dead birds in the county. Blue jays accounted for 71% (20 dead birds) of those birds. This finding is consistent with a national report, which stated that, in the southern regions of the country, blue jays are more sensitive to the WNV infection than the American crows. (Centers for Disease Control and Prevention, CDC: Epidemic/Epizootic WNV in the United States, 2003).

The number of WNV positive birds peaks in the month of July with a gradual decline from August to September. This trend is consistent with the results found for human infections in Miami-Dade County (***Figure 2***).

During the same period, there were 2 horses, and 8 sentinel chickens reported positive for WNV Miami Dade County (***Figure 3 map***).

Preventative and Control Measures

Intervention methods include public education, reduction of mosquito breeding sites, and control of adult mosquitoes.

In August 2004 the MDCHD, through the efforts of the staff from the OEDC and EH departments, conducted a series of WNV educational talks in both English and Spanish at eight senior centers (1,150 attendees) situated in zip codes where WNV activity was the greatest. It also involved distributions of WNV brochures; 5Ds (Dawn, Dust, Dress, DEET, Drain) laminated cards and repellents (with DEET), through a community-based organization.

In Miami-Dade County, control measures were initiated by OEDC and EH departments in conjunction with the DPW/mosquito control division. The locations of all positive human cases and dead birds were communicated, upon laboratory confirmation, to the mosquito control division, who then performs site inspection for presence of larvae and adult mosquitoes. The possibility of extended exposure was also assessed by the presence of standing water and extensive vegetation. Based on the findings, the affected and surrounding areas were sprayed, if necessary.

Fig.2 : Number of Positive Birds and Positive Human Cases in Miami-Dade between Jan-Oct., 2004

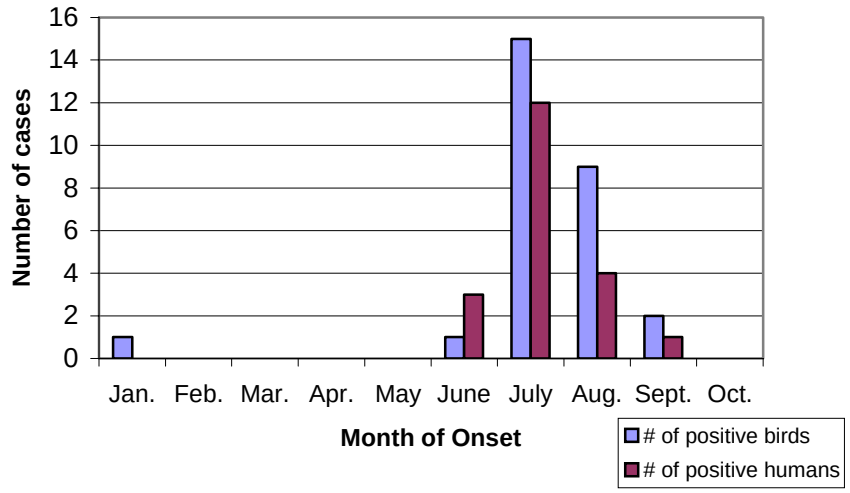
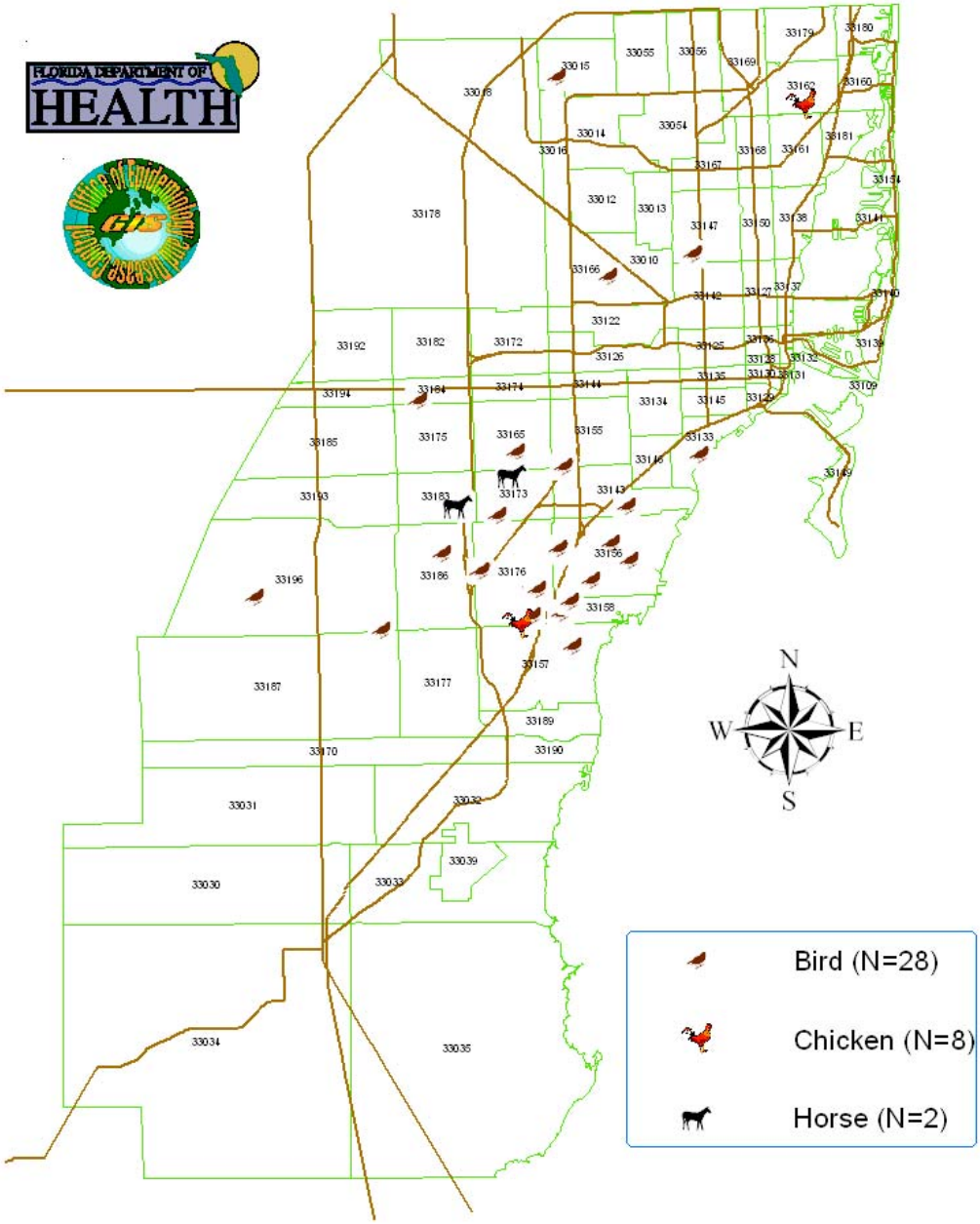


Fig.3 : West Nile Virus Positive Birds, Horses and Sentinel Chickens in Miami-Dade County: January 1, 2004 -October 30, 2004



Conclusion

The surveillance data indicates that the most affected age group for WNV is that of 50 years and over and the most affected gender is male. A larger percentage of cases developed neuro-invasive conditions but a majority of the cases recovered from the illness.

It is therefore recommended that aggressive intervention programs be conducted before and throughout the WNV season, particularly in the higher risk population areas to reduce the number of WNV cases.

References

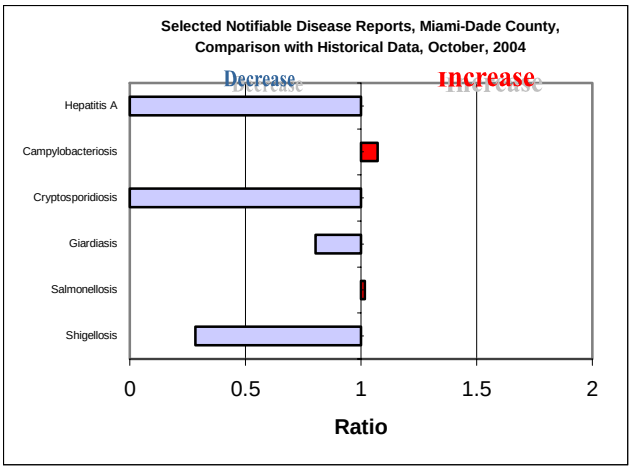
1. *Centers for Disease Control and Prevention*
2. *Florida Department of Health Arbovirus Surveillance Miami-Dade County Health Department/OEDC WNV Surveillance.*

Acknowledgement

We appreciate the efforts of the infection control practitioners, physicians and other hospital staff, the staff at the Mosquito Control Division of Dade County Public Works Department, the Florida DOH Arbovirus Surveillance team, the MDCHD/ EH inspectors, members of the OEDC/Enhanced Surveillance team, and staff from the Miami-Dade County Commissioner's office for their contribution to the MDCHD WNV surveillance program.

Kick-off of the City Readiness Initiative, Miami-Dade County

Last November 19th was the official kick-off of the Cities Readiness Initiative (CRI) in Miami-Dade County. Representatives from the Centers for Disease Control and Prevention (CDC), United States Postal Services (USPS), Office of Emergency Management, and the Florida Department of Health met with Lillian Rivera, RN, MSN, Administrator of Miami-Dade County Health Department (MDCHD) and other MDCHD staff members, as well as with members of other local agencies to share information about this initiative. The main goal of the CRI is to enable the Miami-Dade metropolitan area to distribute needed medications in response to suspected bioterrorism attacks. Our challenge is to produce a viable plan for this initiative and incorporate our community partners to the process of finding better and efficient options for medication distribution.



*Ratio of current month total to mean of 15 month totals (from previous, comparable, and subsequent month periods for the past 5 years).

THE OFFICE OF EPIDEMIOLOGY AND DISEASE CONTROL HAS MOVED!

Address: **8600 NW 17th Street, Suite 200**
Miami, Fl 33126
Phone **305-470-566**
Fax: **305-470-5533**

THE OFFICE OF HIV AND AIDS HAS MOVED!

Address: **8600 NW 17th Street, Suite 200**
Miami, Fl 33126
Phone: **305-470-6999**

To report a case of HIV or AIDS please use the Adult and or Pediatric CDC reporting forms and mail it in a double sealed confidential envelope. Please mail it to the above address and to the attention of one of the managers listed below:

North-North East Area	
Georgia Brown	(305) 470-6985
North East-Miami Beach Area	
Jean Frantz Chery	(305) 470-6986
North-North West Area	
Chrystal McDonald	(305) 470-6988
Central Area	
Wesley Ruffin	(305) 470-6991
South Dade	
Wissam Alghawi	(305) 470-6982

Please call any of the managers if you need reporting forms and/or technical assistance.

Remember: DO NOT FAX any HIV/AIDS information.

TO REPORT ANY DISEASE AND FOR INFORMATION CALL:

Office of Epidemiology and Disease Control

Childhood Lead Poisoning Prevention Program	**(305) 470-6877**
Hepatitis	**(305) 470-5536**
Other diseases and outbreaks	**(305) 470-5660**
HIV/AIDS Program	**(305) 470-6999**
STD Program	**(305) 325-3242**
Tuberculosis Program	**(305) 324-2470**
Special Immunization Program	**(786) 845-0550**
Nights, weekends, and holidays	**(305) 377-6751**

Monthly Report
Selected Reportable Diseases/Conditions in Miami-Dade County, October 2004

Diseases/Conditions	2004 this Month	2004 Year to Date	2003 Year to Date	2002 Year to Date	2001 Year to Date	2000 Year to Date
AIDS *Provisional	79	1202	882	944	1015	1082
Animal Rabies	0	0	0	0	1	0
Campylobacteriosis	14	122	115	82	104	131
Chlamydia trachomatis	362	3946	3738	4072	3064	2646
Ciguatera Poisoning	0	0	0	2	0	2
Cryptosporidiosis	0	16	11	8	10	28
Cyclosporosis	0	2	1	1	0	0
Diphtheria	0	0	0	0	0	0
E. coli, O157:H7	0	3	0	0	2	3
E. coli, Non-O157	0	1	2	1	1	0
E. coli, Other	0	1	0	0	0	0
Encephalitis (except WNV)	0	0	0	1	0	0
Encephalitis, West Nile Virus	1	14	6	1	0	0
West Nile Fever	2	7	0	0	0	0
Giardiasis, Acute	19	240	154	172	214	200
Gonorrhea	153	1478	1573	1730	1573	1769
Granuloma Inguinale	0	0	0	0	0	0
Hepatitis A	3	37	52	129	156	86
Hepatitis B	2	28	45	37	54	99
HIV *Provisional	109	1497	1440	1660	1375	1411
Lead Poisoning	48	263	213	250	213	354
Legionnaire's Disease	0	7	4	0	3	0
Leptospirosis	0	0	0	0	0	0
Lyme disease	0	3	2	2	6	4
Lymphogranuloma Venereum	0	0	0	0	0	0
Malaria	1	16	12	10	14	21
Measles	0	0	0	0	0	0
Meningitis (except aseptic)	2	10	7	5	9	15
Meningococcal Disease	3	18	4	11	15	24
Mumps	0	0	0	0	0	1
Pertussis	0	9	9	6	1	7
Polio	0	0	0	0	0	0
Rubella	0	0	0	0	0	0
Rubella, Congenital	0	0	0	0	0	1
Salmonellosis	40	364	441	256	244	224
Shigellosis	5	137	263	207	117	186
Streptococcus pneumoniae, Drug Resistant	4	56	101	84	142	159
Syphilis, Infectious	24	183	158	179	166	115
Syphilis, Other	60	697	866	918	719	617
Tetanus	0	0	0	0	0	0
Toxoplasmosis	2	7	9	15	11	0
Tuberculosis *Provisional	19	196	173	191	186	215
Typhoid Fever	0	3	4	3	0	2
Vibrio cholera Type O1	0	0	0	0	0	0
Vibrio cholera Non-O1	0	0	0	1	0	0
Vibrio, Other	0	0	1	0	0	0

* Data on AIDS are provisional at the county level and are subject to edit checks by state and federal agencies.
** Data on tuberculosis are provisional at the county level.