
**Cook County
West Nile Virus
Prevention and Response Plan**



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June 20, 2005

Stephen A. Martin, Jr., Ph.D., M.P.H.
Chief Operating Officer

Dear Residents:

In 2002, the central United States, especially the Great Lakes region, experienced the most intense West Nile virus (WNV) activity that had ever occurred up to that point. Illinois had the most cases in the nation that year--877--leading to 62 deaths. Among the 877 cases, approximately 46.4%, (407 cases) were documented in suburban Cook County. Of the 407 suburban Cook County cases, 20 cases resulted in death.

As a result of the 2002 epidemic, the Cook County Department of Public Health (CCDPH) has dedicated itself to investigating the emerging threat of WNV with a number of partners from the public and private sector. This is a major challenge, but it is also an excellent illustration of the intense spirit of collaboration among the public health community. With their help, CCDPH has prepared a working response plan for the control of WNV in suburban Cook County.

This document is a framework for CCDPH to respond to WNV and will be updated accordingly, if necessary. Should the need arise to implement the plan, CCDPH will continue to collaborate with our many associates in government, the private sector, labor, academia, and non-governmental organizations.

I would like to thank our partners for their tremendous cooperation in developing this working plan.

Sincerely,

A handwritten signature in black ink that reads "Stephen A. Martin, Jr." with a large, stylized flourish at the end.

Stephen A. Martin, Jr., Ph.D., M.P.H.
Director

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2. Acknowledgements

The following documents were used in preparation of this plan. Sections of the plan were modeled after those from the Centers for Disease Control and Prevention (CDC), the Illinois Department of Public Health (IDPH), the Chicago Department of Public Health (CDPH), and the New York City Department of Health and Mental Hygiene (NYCDOHMH).

CDC:

Epidemic/Epizootic West Nile virus in the United States: Revised guidelines for surveillance, prevention and control
<http://www.cdc.gov/ncidod/dvbid/westnile/resources/wnv-guidelines-aug-2003.pdf>

IDPH:

Surveillance and Response Procedures for Mosquito-borne Arbovirus Emergencies
<http://www.idph.state.il.us/envhealth/pdf/mosquito-borne01.pdf>

CDPH:

West Nile Virus: 2004 Interim Report and Comprehensive Prevention Plan for 2005
http://egov.cityofchicago.org/webportal/COCWebPortal/COC_EDITORIAL/WestNilePlan.pdf

NYCDOHMH:

Comprehensive mosquito surveillance and control plan, 2005
<http://www.nyc.gov/html/doh/pdf/wnv/wnvplan2005.pdf>

The Cook County Department of Public Health wishes to thank its many partners who have collaborated on the management of this important public health issue in Cook County.

3. Executive Summary

During the late summer of 2002, Cook County, Illinois experienced a major outbreak of human West Nile Virus (WNV) infection. Similar outbreaks occurred in many areas of the country, but the Midwest was one of the hardest hit. Nationwide, 4156 cases and 284 deaths were reported to the federal Centers for Disease Control and Prevention (CDC) surveillance system; the state of Illinois recorded 884 cases and 64 deaths. The suburban Cook County (SCC) area, served by the Cook County Department of Public Health (CCDPH) (excluding Chicago, Evanston, Skokie, Oak Park and Stickney Township), reported 299 cases and 18 deaths (the highest prevalence occurred in the north shore and near south areas of SCC). In 2003 and 2004, WNV was prevalent in SCC, but the outbreak was less severe than 2002 (CCDPH managed 12 cases with one death in 2003 and 16 cases and one death in 2004). In anticipation of the continued seasonal presence of WNV, CCDPH remains committed to the planning and preparedness process.

Within the temperate climate of North America, WNV has demonstrated an ability to persist in a summer-fall seasonal pattern from year to year, both in nature and in the form of human illness. Since WNV was first detected in the United States in 1999, it has extended geographically from east to west to involve a greater number of states, while persisting in the areas previously impacted. For this reason, CCDPH embarked on an interagency and inter-jurisdictional collaboration to reduce the risk of WNV infection in SCC. To that end, CCDPH has developed this WNV Prevention and Control Plan. An overview of the plan is provided in the following sections.

Health Education and Risk Communication

Educating the public about WNV is an important part of the strategy to reduce the risk of human illness. The goal of the CCDPH education campaign is to stimulate health promoting behaviors until they become normative (e.g., encouraging the public to wear insect repellent and appropriate clothing, to limit outdoor activities during peak mosquito biting times, and to remove standing water). Community presentations, press releases, media interviews, communications with village and other government officials, and educational brochures and other prevention materials will be employed across SCC to increase awareness about WNV and the need for preventive practices.

Risk communication messages will be used to explain the benefits and safety profile of adulticiding measures, should they be needed to reduce the risk of a WNV outbreak.

Sentinel Bird and Horse Surveillance

CCDPH will assess reports of wild bird mortality as a sentinel indicator of WNV activity and predictor of impending human illnesses from mosquito-borne infection. In particular, birds from the family *Corvidae*, namely American crows and blue jays, will be monitored via reports of dead bird sightings, which will be mapped using geographic information system (GIS) software. In addition, dead crows and blue jays will be tested for WNV infection through services contracted by the IDPH for use by local health departments. CCDPH will also monitor laboratory reports of WNV infection in horses in Cook County as a key indicator of potential transmission to humans.



Mosquito Surveillance and Control

According to the CDC, mosquito control is the most reliable means currently available to reduce the risk of mosquito borne disease in humans. CCDPH will monitor mosquito surveillance activities in Cook County and surrounding areas in order to determine the density and geographic distribution of mosquito vectors that are likely to transmit WNV infection. The priority will be to identify and monitor important *Culex* mosquito breeding sites to target control measures. Information will be gathered from **CCDPH EHSU**, the four mosquito abatement districts (MADs), and private contractors. CCDPH will carry out source reduction consultations in neighborhoods where cases have occurred, and will monitor mosquito control activities conducted by other agencies in and around its jurisdiction (i.e., source reduction, larvicide, and adulticide).

Human Case Surveillance

Detection of mosquito-borne diseases among humans is an essential component of a comprehensive prevention and control plan. The ultimate goal of WNV prevention activities is to minimize the risk of disease in humans. However, it is recognized that some risk of disease transmission will always remain despite highly effective prevention measures. Health care providers play a vital role in disease detection by maintaining a high index of suspicion, conducting appropriate laboratory tests, and reporting cases promptly. CCDPH will utilize enhanced disease surveillance to monitor for cases of encephalitis and aseptic meningitis due to WNV or other mosquito-borne infections. Hospitals within the CCDPH jurisdiction will be asked to promptly report cases to enable a rapid disease control response.

Risk-Response Levels for WNV Prevention and Control

CCDPH will collaborate with its many partners regarding the assessment of surveillance data and other factors (e.g., weather) to gauge the risk of human disease. A progressively intense, phased response will be employed where feasible, as recommended by the CDC for risk reduction purposes.

4. Introduction and Background

History of West Nile Virus

WNV was first detected in 1937, in a Ugandan woman, living in the West Nile Province, who experienced a mild illness with fever. Since that time, extensive studies of WNV have led to a better understanding of its ecology and clinical characteristics. WNV is a member of the Flavivirus family, which includes other mosquito-borne viruses (e.g., Yellow Fever and St. Louis Encephalitis). In nature, transmission of WNV is initiated when a vector mosquito feeds on an infected bird. The virus then grows in the salivary glands of the mosquito and after a few days can be transmitted to a susceptible bird during a blood meal. This bird-mosquito cycle is the primary means for growth, or amplification, of the virus in nature. The *Culex*, or northern house mosquito, is the principle vector for WNV spread in the United States. National mosquito pool test data from the 2002 outbreak demonstrated that although 39 different species tested positive for WNV, 89% of the positive pools were *Culex* species. *Culex* has a strong preference for feeding on birds; however, when conditions are suitable, it will alternatively feed on other animals including horses and humans. Horses and humans are referred to as dead end hosts because, once infected, the virus does not grow to levels that would permit further spread via a subsequent mosquito bite. Unless disturbed, *Culex* is normally active and most likely to bite between dusk and dawn.

Transmission

A number of variables determine the extent to which *Culex* mosquitoes will breed in a given season. *Culex* breeding is best supported by rainy spring seasons and hot, relatively dry summers. *Culex* reproduces by laying its eggs in stagnant water of all types such as that found in roadside ditches, discarded tires, unattended birdbaths, swimming pools, buckets, and tin cans. Catch basins, both roadside and off-road, are also important breeding sites. After several days, adult mosquitoes emerge from the standing water. Flight ranges are believed to be limited to about a mile. Data from previous outbreaks provide evidence for the spread of WNV to humans predominantly from mosquito breeding sites near the home. As is the case in humans, WNV infection of various species of birds results in a wide spectrum of disease from asymptomatic infection to severe central nervous system disease and death. Birds from the family *Corvidae* (Corvids), which includes American crows and blue jays, are particularly susceptible to severe disease and death. For this reason, Corvid deaths during WNV season (late summer and early fall) can be monitored as sentinel events indicating likely WNV activity and used, in combination with other data, to trigger the implementation of additional control measures.

WNV in the U.S.

During the late summer of 2002, Cook County, Illinois experienced a major outbreak of human WNV infection. Similar outbreaks were seen in many areas of the country with the Midwest being one of the hardest hit. Nationwide, 4,156 cases and 284 deaths were reported to the CDC surveillance system. Two-thirds of the national case count was reported from six states, with over 200 cases each, namely Illinois, Michigan, Ohio, Louisiana, Indiana, and Texas. The state of Illinois recorded 884 cases and 64 deaths. The SCC area served by the CCDPH (excludes Chicago, Evanston, Skokie, Oak Park and Stickney Township) reported 299 cases, over 200 hospitalizations, and 18 deaths. The north shore and near south areas of SCC were most heavily affected. Far south SCC also reported a substantial number of cases. Northwest and west districts were largely spared from involvement with human WNV disease, despite documented infection in birds and mosquitoes in those geographic areas.

Within the temperate climate of North America, WNV has demonstrated an ability to persist in a seasonal pattern from year to year, both in nature and in the form of human illness. WNV was first detected in the United States when it appeared in New York City (NYC) during the late summer of 1999. Reported hospitalized cases totaled 44 with 4 deaths. This outbreak represented the first occurrence of WNV in the western hemisphere. Since that time, NYC has continued to document cases each year during late summer and early fall. Since 1999, WNV has extended geographically from east to west to involve an increasingly greater number of states, while persisting in the areas previously impacted. In 2001, the CDC issued revised guidelines for WNV prevention and control, which included the recommendation that state and local health departments should develop response plans to guide disease prevention and control activities.

In 2003, the epicenter of WNV moved westward; Colorado reported the highest number of cases (2,947). In Illinois, although virus activity was detected in 77 Illinois counties, the number of WNV human cases decreased dramatically when compared to 2002. In SCC, CCDPH managed 12 cases, and one death. In 2004, the westward movement of the virus continued. California had birds test positive in every county in the state as well as the most human cases of WNV in the country. Illinois had 60 human cases in 22 counties and in SCC there were 16 cases and one death.

WNV Prevention and Control in Suburban Cook County

Minimizing human infections by controlling WNV activity is the ultimate goal of prevention efforts. In SCC, surveillance for WNV infection in mosquitoes, birds and humans began in 2000. A Cook County interagency work group was convened at CCDPH to discuss how coordination of prevention activities could best be accomplished. The focus was on enhancing communication between agencies, and sharing data. During the summer of 2001 WNV-infected birds were detected in the Cook County area; however, no human cases were diagnosed. During the early spring of 2002, the Cook County Interagency WNV Work Group was again convened to further develop a coordinated strategy for prevention and control. As its primary areas of focus, the group undertook enhancing communication, data sharing and analysis, and coordinating the allocation and utilization of supplemental resources for additional control activities. In keeping with federal and state recommendations, and as an outgrowth of these previous efforts, CCDPH has developed this WNV Prevention and Control Plan for 2005.

5. Purpose and Scope of Plan

The purpose of the *CCDPH WNV Prevention and Control Plan* is to provide standardized protocols and terminology, chain of command, and established authority for the detection of and response to a WNV outbreak. The response components outlined in this plan will help to minimize morbidity and mortality, and maintain the operation of essential community services in the event of an outbreak. Specific objectives set-out of the plan include:

- Rapidly and efficiently identify WNV cases;
- Ensure rapid information exchange among clinicians, MADs, public health officials, contractors and administrators of healthcare facilities about potential WNV cases;
- Rapidly and effectively implement measures to prevent the transmission of WNV;
- Continuously monitor the course of a WNV outbreak and promptly revise control strategies as needed;
- Implement effective communication and education strategies for the health care workers, the public, the media, community officials, healthcare communities, and agencies serving the affected populations to ensure an appropriate response to WNV; and
- Coordinate and integrate WNV preparedness and response planning efforts with other preparedness plans and systems.

The plan provides strategic direction for CCDPH to define and clarify roles, responsibilities and action steps to implement a response to a WNV outbreak. All references to SCC in this document refer to the CCDPH jurisdiction. The department has a jurisdiction of 125 incorporated municipalities in 30 townships, which encompasses over 2.3 million people. Chicago, Evanston, Skokie, Oak Park and Stickney Township are fully recognized health entities by the Illinois Department of Public Health (IDPH) and are excluded from the scope of discussion in this plan.

SCC is a large, diverse region bordering the city of Chicago. The region covers a total of 700 square miles with more than 80 miles separating its farthest boundaries. CCDPH manages communicable disease reports from twenty-one acute care hospitals, as well as long-term care facilities and other health-care facilities.

6. Plan Definitions

Case: is a person with an illness that is clinically compatible with the characteristics of WNV described previously and with laboratory evidence of WNV infection (Appendix 2).

Healthcare worker: refers to any employee who has close contact with 1) patients, 2) patient-care areas (i.e., patient rooms, procedure areas), or 3) patient-care items (i.e., linens and other waste).

Incubation period: is the time from exposure to an infectious disease to symptom onset.

Personal protective equipment (PPE): is barrier protection to be used by an individual to prevent disease transmission. PPE may include gowns, gloves, masks, goggles or face shields.

7. Legal Authority and Responsibility

Authority-County

- Section 5-200 *et. seq.* of the Cook County Board of Health Ordinance sets forth CCDPH's procedures and responsibilities in protecting the public's health in those areas not served by another health department. CCDPH's authority to protect the public is broad and the Department may carry out "programs and activities of all kinds not inconsistent with law that may be deemed necessary or desirable in the promotion and protection of health and the control of disease or conditions which threaten the public's health."
- The Cook County Sheriff's Emergency Management Agency (CCSEMA) is Cook County's agency responsible for management and coordination of the county's disaster response and recovery operations. CCSEMA is Cook County's agency responsible for recommending actions to the Cook County Board President and the EMA Coordinator (Sheriff) related to the implementation and coordination of the County's disaster response and recovery operations. CCSEMA works cooperatively in support of local governments within SCC and assists municipal efforts for efficient and effective disaster response. County Ordinance 7-7-80, p.6093.
- The Cook County Emergency Operations Plan (CCEOP) identifies hazards to which the county is vulnerable and sets down responsibilities of all county agencies and outlines a means for the county's resources to be used to assist the residents of SCC. The planning authorities and governments are recognized and acknowledged.
- It is the policy of Cook County to be prepared for any emergency or disaster. Emergency response personnel, equipment and services of Cook County will be maintained in a high state of readiness to save lives, prevent or minimize damage to property, and provide assistance to all people who are threatened by an emergency, or who become victims of any disaster or catastrophe.
- CCDPH's COO, or designated alternate, has been designated by the President of the Cook County Board as the primary agent to coordinate Cook County's plan implementing this plan.

Authority-State

- The Illinois Emergency Management Act, 20 ILCS 3305 and 29 Illinois Administrative Code Part 301, provides the state government authority to respond to emergencies and prepare, for issuance by the Governor, executive orders, proclamations, and regulations as necessary or appropriate in coping with disasters.
- Section 20 ILCS 3305 of the Illinois Code states that the Illinois Department of Public Health (IDPH) shall determine which resources will be required and requested to supply resources that are necessary to respond to any emergency event.
- The State of Illinois' Emergency Medical Disaster Plan provides an organizational structure to allow emergency medical services personnel and health care facilities to work together in a collaborative way and to provide assistance in situations where local resources are overwhelmed.

Authority-Federal

- United States Public Law 93-288, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, provides the federal government authority to respond to emergencies and provide assistance to protect public health. This function is implemented by the Federal Emergency Management Agency (FEMA).
- Health and medical services will be provided through the Emergency Support Function (ESF) #8 of the Federal Response Plan (FRP). The purpose of this function is to coordinate assistance to supplement state and local resources needed in response to an event.
- The Centers for Disease Control and Prevention (CDC), through its Division of Global Migration and Quarantine, is empowered to detain, medically examine, or conditionally release persons suspected of carrying certain communicable diseases. This authority derives from section 361 of the Public Health Service Act (42 U.S.C. 264), as amended.

8. Partner Agencies Within Suburban Cook County

Primary Agency

Cook County Department of Public Health (CCDPH): is the lead agency for operations under this plan. The Executive Director of the health department, or designated alternate, will be in overall command for the implementation of this plan. CCDPH has been designated by the President of the Cook County Board as the primary agency to coordinate Cook County's plan for instituting orders of isolation, monitoring and quarantine.

Partner Agencies

Catholic Cemeteries: will distribute WNV prevention materials to the public visiting their cemeteries.

Community Colleges in SCC: will allow CCDPH to use their auditoriums for community presentations.

Cook County Bureau of Health Service (CCBHS): is the Cook County agency responsible for overall hospital and health care management. CCDPH will communicate all activities to CCBHS during the activation of this plan to coordinate a county-wide response.

Cook County's Emergency Public Information Officer: will be responsible for collaborating with the CCDPH Media Services personnel and other municipal governments in the release of information to the general public and media.

Cook County Office of the Comptroller: will distribute a joint letter with CCDPH to advise cemetery administrators about WNV prevention for their operation and to protect the general public.

Cook County Sheriff's Emergency Management Agency (CCSEMA): is Cook County's agency responsible for the management and coordination of the county's disaster response and recovery operations. CCSEMA will assist CCDPH in acquiring needed equipment, contact information, and resources during a public health emergency. If a WNV disaster is declared, CCSEMA will assist CCDPH in requesting resources through the Illinois Emergency Operations Center.

Cook County's Medical Examiner: is the primary Cook County agency that investigates any human death that is from disease constituting a threat to public health. CCDPH may work with this agency to determine if the cause of death due to WNV. This agency also coordinates with CCSEMA to activate the Cook County plan that address enhanced morgue capacity need.

Emergency Medical Service Directors: will work to implement infectious disease control practices as directed by CCDPH and/or IDPH and the CDC in hospital emergency departments.

Oscor Drugs: will distribute WNV prevention materials

Illinois Department of Public Health (IDPH): will assist in disease control and hospital management related to WNV. During a WNV emergency, IDPH will step-up the Illinois Operational Headquarters Notification Office (IOHNO) and implement the Illinois Emergency Medical Disaster Plan.

Illinois Emergency Management Agency (IEMA): is the lead agency within the State of Illinois that is responsible for the management and coordination of the state's disaster response and recovery operations. During an emergency, IEMA will set-up a state emergency operations center (SEOC) through which CCSEMA will request additional assets.

Municipalities and Governments: have the primary responsibility to provide emergency health and medical services within their jurisdiction in response to an emergency or disaster of natural or manmade origin. They may assist CCDPH to provide key information to citizens during a large WNV outbreak.

Municipal Fire Department/Fire Districts/Emergency Medical System: will work in cooperation with and assist the CCDPH to implement infection disease control mechanism.

Municipal Law Enforcement: will be responsible implementing and enforcing orders of isolation or quarantine in their respective municipalities and hospitals within said municipality located within SCC.

SCC Hospitals: will work in cooperation with CCDPH and paramedics to transport sick patients.

SCC POD Hospitals: are the designated hospitals in SCC to be activated by the State of Illinois Emergency Medical Disaster Plan. During an emergency, POD hospitals will collect information regarding hospital bed capability, supply needs, morgue status, and pharmaceutical needs of all associate and resource hospitals in the POD region (organized by IDPH).

State's Attorney's Office: will provide legal counsel and advice concerning all forms, documents and court orders required during a potential outbreak of WNV. The Cook County State's Attorney's Office is the primary agency to assist CCDPH in implementing isolation and quarantine orders through a designated legal official (judge) during the event CCDPH must implement forced quarantine or isolation.

Suburban Area Agency on Aging: will distribute prevention materials to the agencies they fund to provide services to senior citizens in SCC.

Northwest Mosquito Abatement District: will monitor and control mosquito activity in their jurisdiction

Des Plaines Valley Mosquito Abatement District: will monitor and control mosquito activity in their jurisdiction

North Shore Mosquito Abatement District: will monitor and control mosquito activity in their jurisdiction

South Cook County Mosquito Abatement District: will monitor and control mosquito activity in their jurisdiction

Clarke Mosquito Control: a contractor hired to assist in mosquito control

9. CCDPH: Incident Management System

Command and Control

The Incident Management System (IMS) provides a mechanism to provide command, control and coordination for management of emergency situations (www.fema.gov). The Federal Emergency Management Agency states that this system is used “to coordinate the efforts of individual agencies as they work toward the common goal of stabilizing the incident or situation and protecting life, property and the environment.” The IMS, formally known as Incident Command System, has been used in the field by first responders for many years. Public health department and personnel are new to this and as a result, they continue to develop this application for their purposes.

CCDPH Incident Management System(IMS)

CCDPH’s IMS is implemented for all public health emergencies. A full description of this system is currently being developed by the Community Preparedness and Coordination Unit at CCDPH. Guidance for the general CCDPH IMS system will be detailed in the CCDPH Emergency Operations Plan; however, each emergency requires a unique system response. The following response details the roles and responsibilities of IMS positions for use during a WNV outbreak.

10. CCDPH: WNV Risk-Response Levels

A coordinated response is important when a virus like WNV is prevalent in a community. CCDPH developed WNV Risk-Response Levels to create a conceptual framework that CCDPH, and its partners, can use to communicate and coordinate in responding to a WNV outbreak. CCDPH and its partners can use the levels to guide the process for assessing the risk of WNV transmission and implementing the associated WNV response activities.

CCDPH used the CDC’s risk levels as a guide the development of these response levels attempting to insure uniformity between the agencies. The agency created a general template that provides an overview of each response level along with general response activities. Please see *Supplement E: West Nile Virus Risk-Response Levels* for an explanation of these levels and the corresponding response activities. CCDPH will also use these levels to guide an agency response.

11. Recovery

The goal of any recovery phase is to return the agency’s and community’s activities to a normal level. For an infectious disease such as WNV, it is crucial that public health and hospitals workers continue enforcing response activities until enough time has passed to establish that there are no infectious or ill individuals. Relaxing surveillance practices too early could initiate further disease cases, and only prolong the outbreak. Currently CCDPH anticipates initiating a WNV Recovery Phase after the first mosquito-killing frost.

As CCDPH works to return the community to normal, WNV response activities should be slowly discontinued as it clear the outbreak is subsiding. A recovery phase is typically declared after an emergency is over, although response activities can occur simultaneously to recovery activities.

CCDPH will use its response levels as a way of downgraded its response, so that as the risk of WNV diminishes, so would CCDPH response levels and its corresponding response activities.

12. Plan Management and Update

The CCDPH WNV Preparedness and Response Team will exercise this plan one time per calendar year, before the anticipated start of the WNV season.

As noted in the introduction of this plan, this plan is a living document that will be updated as information about WNV is provided and new information about disease transmission and infection control practices are realized. The CCDPH WNV Preparedness and Response Team will review the plan on an annual basis to provide any necessary updates before the anticipated start of the WNV season, and to insure cohesion with other CCDPH and partner emergency response plan. The CCDPH COO and his designee, the Director of Community Preparedness, will control this document and make revisions as needed.

13. CCDPH WNV Contacts and Information

Individuals with questions not answered in this document are encouraged to visit our website for more information:

www.cookcountypublichealth.org

More information can be found on the CCDPH WNV website at
<http://www.cookcountypublichealth.org/programs/eni/wnv/frontlink.shtml>

Residents who find a dead crow or blue jay are encouraged to call the (708) 492-2650 to report it. Those with questions and concerns are encouraged to call the West Nile health alert hotline at (708) 492-2185.

Dead bird report forms can also be printed off the web at the above website.

Supplement A: Public Education and Media Communication

Objectives

- To increase risk awareness about WNV;
- To implement effective communication and education strategies for media and community officials;
- To increase personal protection, and other health promoting behaviors;
- To decrease mosquito breeding, including messages describing the benefits of necessary mosquito control efforts (e.g. adulticiding) and source reduction;
- To increase public reports of dead birds; and
- To promote the use of medical care, if symptomatic.

Preparedness Plan

The pre-event phase of a WNV outbreak, like any emergency situation, is the most important. Each step of preparedness before an emergency strikes brings us closer to managing the event successfully. Pre-event planning entails the following:

1. Message creation

In order to be ready to provide information to health care workers, agency partners, the public and media, some basic information should be created beforehand. In the case of WNV, fact sheets about the disease, frequently asked questions and a listing of resources for public and media should be created. Messages for letters to agency partners and public presentations should be refined.

2. Communications team

The communications team should have an up-dated media list with phone, fax and pager numbers, as well as email addresses. Also the partners' (Public Information Officers from hospitals, local health depts., County govt.) fax, phone and email info should be updated and ready to use.

3. Education team

The public health education plan should be revised every year based on lessons learned from the previous year and any new messages relevant to the current threat. Contacts and locations for message dissemination need to be updated annually.

4. Spokesperson/subject matter experts

It's important to have these people chosen ahead of time, so that when that emergency happens someone with authority and knowledge who can reassure/inform the public.

5. Delivery methods of communication

Cell phones, pagers, blast fax machines, email, web site, phone bank, hotline, press releases, public service announcements, radio and TV interviews, and press conferences.

Background

Educating the public about WNV is an important part of the strategy to reduce the risk of human illness. The goal of the CCDPH education campaign is to increase public awareness of WNV as a public health threat, and to stimulate health promoting behaviors that reduce the risk of WNV infection. A shift in social norms is needed such that a majority of persons adopt personal protective measures (e.g., wearing

insect repellent and appropriate clothing, limiting outdoor activities during peak mosquito biting times, and removing standing water).

CDC guidelines for community outreach and public education emphasize the importance of capturing the interest and commitment of key community leaders. It has recommended that community task forces be formed of civic, business, environmental and health representatives to develop common educational messages. Message content should include information on pertinent mosquito biology and techniques for prevention of mosquito-borne disease. Educational messages should be distributed through multiple venues to ensure good community coverage. It is further recommended that the effectiveness of educational techniques be tested before use, whenever feasible. Emergency mosquito control will likely include the use of adulticiding services as a supplement to source reduction and larviciding measures. Because adulticiding is sometimes controversial in a community, it is essential to actively build public acceptance for this component of comprehensive mosquito control. Risk communication messages that explain the benefits versus the risks should be developed and utilized before adulticiding begins. Mass media can be engaged as a public health partner by assisting in the dissemination of factual information on adulticiding.

CCDPH'S 2003 Response: "Fight the Bite" West Nile Virus Health Education Campaign

"Fight the Bite" West Nile Virus Campaign Elements

- information dissemination (e.g. print materials and community presentations); and
- partnerships with the Suburban Area Agency on Aging, Cook County Office of the Comptroller, Catholic Cemeteries, a Home Depot store and Osco Drugs.

Target Audiences

The primary target audience is residents throughout SCC, particularly those over the age of 50.

Information Dissemination

WNV information is distributed at suburban health fairs by CCDPH staff. The media campaign includes the development of brochures in English and Spanish with an edition for senior citizens, door hangers, public service announcements, CCDPH web page, a telephone service for reporting dead birds, and a pre-recorded message on the CCDPH hotline in both English and Spanish; a public relations campaign in partnership with Osco Drugs to distribute brochures, cable TV, and other forms of broadcast messages.

Partnerships

CCDPH sends letters to all agencies contracted by the Suburban Area Agency on Aging (senior centers, community centers, nutrition sites and adult day care centers) to explain the campaign and provide copies of the brochure for distribution to clients. The Suburban Area Agency on Aging issued several press releases and public service announcements throughout the season. A letter written jointly by the CCDPH Chief Operating Officer and the Illinois Office of the Comptroller was distributed to all SCC cemetery owners to reduce standing water, encourage patrons to wear repellent, and reduce hours of operation when mosquitoes are active. In addition, a letter was written to the Archdiocese of Chicago for distribution to Catholic cemeteries. Letters were also written to village mayors and managers and agencies serving senior citizens which included master copies of a personal protection brochure in

English and Spanish. Osco Drug pharmacies in Cook County displayed WNV safety information on their counters.

Response Plan

Based on past activity, the 2005 campaign will begin on Memorial Day, with the height of outreach activity occurring in the first half of August. The campaign will use a variety of communication modes for public education including material distribution, and community presentations. Materials will include posters, brochures, and door hangers (designed specifically for our target audiences). Messages will be refined to incorporate key concepts about risk and personal protection gathered from six focus groups which were conducted in 2003.

Letters will be written to the Illinois Office of the Comptroller and the Archdiocese of Chicago for distribution to all SCC cemetery owners to encourage the reduction of standing water, communication with patrons to wear repellent, and reduction of hours of operation when mosquitoes are active. Letters will also be distributed to village mayors and managers, village clerks, and agencies serving senior citizens, and it will include a CCDPH web site link to a personal protection brochure in English and Spanish. In addition, a letter will be written to the Cook County Forest Preserve Director for distribution to forest preserves and golf courses. The Suburban Area Agency on Aging will issue press releases and public service announcements throughout the season. We will seek to distribute brochures at a Home Depot store and Osco Drug Stores.

Information will be distributed at suburban health fairs by agency staff.

Supplement B: Sentinel Bird and Horse Surveillance

Objectives

- To assess reports of bird deaths (crows and blue jays) as sentinel indicators of WNV activity in SCC;
- To document WNV activity in sentinel birds through testing of a sample of dead birds;
- To monitor the WNV infection rate in sentinel birds as a measure of human outbreak risk; and
- To monitor WNV testing of horses in SCC.

Background

Sentinel surveillance involves the collection of case data from only part of the total population to learn something about the larger population, such as trends in disease. WNV tends to fatally infect certain bird species, particularly of the *Corvidae* family (e.g., American crows and blue jays). These birds can be identified and tested for WNV infection, and in that way serve as important sentinel indicators of WNV activity in a given region. Sentinel bird surveillance data, in combination with other information, can be used to predict the occurrence of human illness. In one study, the CDC found that counties that had recorded a WNV positive bird before August 1st, were twice as likely to have a human case during that year as those that recorded a WNV bird after August 1st.

According to federal guidelines, a sentinel bird surveillance program should consist of 1) reporting and analyzing the sightings of dead birds in a timely fashion and; 2) submitting sentinel birds for WNV testing. Dead bird testing for WNV infection has been conducted in Illinois since 2000 through reference laboratory services contracted by IDPH for local health department use. Crows and blue jays are submitted to the Illinois Department of Agriculture Laboratory in Galesburg or the Veterinary Diagnostic Laboratory, School of Veterinary Medicine, University of Illinois, Urbana, IL. Birds are tested for WNV by necropsy and detection of WNV antigen by immunohistochemical staining of tissues.

WNV infected birds have been documented in Illinois and in Cook County since 2001. During 2003, CCDPH Environmental Health Unit (EHU) collected and submitted 34 dead crows and blue jays for WNV testing. Among those tested, 18 (53 %) were found to be WNV infected. In 2004, 50 birds were submitted for WNV testing. Among those tested, 34 (68%) tested positive for WNV.

Surveillance for WNV infection in horses with evidence of central nervous system illness is another public health tool commonly used to monitor for risk of disease in humans. In Illinois, encephalitis in horses is reportable to the Illinois Department of Agriculture (IDA).

Testing for WNV in horses is also carried out by IDA. Test results are forwarded to IDPH for surveillance and disease control purposes. In 2003, 70 clinically ill horses tested positive for WNV in Illinois. In 2004, one horse tested positive for WNV.

Response Plan

- EHU in cooperation with selected laboratories, villages, other agencies, and the public, will collect and assess reports of sentinel bird mortality as an indicator of potential WNV activity;
- Dead crows and blue jays will be collected and submitted for testing by EHU according to IDPH protocol, as resources permit;
- Distribute, as needed, information on dead bird sightings and testing, to other CCDPH personnel, as well as to staff from other agencies who work on WNV prevention and control activities;
- Monitor the distribution of sentinel dead bird sightings, and those that test positive for WNV, utilizing GIS mapping prepared by the CCDPH Epidemiology Unit; and
- Monitor testing and infection rates in horses in the Cook County area, through reports from IDPH.

Supplement C: Mosquito Surveillance and Control

I. Mosquito Surveillance

Objective

- To estimate the density and distribution of mosquito populations, and the associated risk of human disease, by monitoring reports of mosquito surveillance activities conducted by the Mosquito Abatement Districts of Cook County, and other sources as available.

Background

Studies have demonstrated that the most effective means of prevention and control of outbreaks of mosquito-borne disease is the implementation of an integrated mosquito management program. It is recommended that such a program include both mosquito surveillance and mosquito control activities.

Mosquito surveillance can be useful in a number of ways, including:

- Document the species composition of mosquito populations in an area;
- Monitor for vector species capable of transmitting WNV;
- Identify larval habitats of vector species for targeted control;
- Evaluate data in conjunction with other indicators to assess human risk;
- Determine need for and timing of additional interventions; and
- Assess effectiveness of control operations.

Typical activities include surveillance to determine the density and distribution of larvae and adult mosquitoes, and to detect disease causing viral infections (WNV, or other arboviruses). Larval surveillance detects vector and pest species in both known and new aquatic habitats. Adult mosquito surveillance documents which species of mosquitoes have emerged from their aquatic habits. Determination of the proportion of WNV-infected mosquitoes can enable the detection of virus amplification, geographic spread and increase in risk to humans.

In SCC, mosquito surveillance and control responsibilities are assigned to four agencies generally referred to as mosquito abatement districts (MADs). These agencies include Northwest MAD, North Shore MAD, Des Plaines Valley MAD, and South Cook County MAD.

In early 2002, CCDPH formed an interagency task force to address the possibility of a WNV outbreak in Cook County. Participants included representatives from CCDPH, each Cook County MAD, the Illinois Department of Public Health, other certified local health departments (Chicago, Evanston, Skokie, Oak Park, and Stickney Township), Cook County Forest Preserve, Metropolitan Water Reclamation District of Greater Chicago, and Clarke Mosquito Control Company (hereafter referred to as Clarke). An entomologist from the CDC provided consultation on mosquito control measures for the task force; EHU served as the lead support and facilitating group for the task force. Throughout the outbreak, the task force worked cooperatively to assess surveillance data, to determine the need for additional surveillance and control activities, and to coordinate the implementation of those supplemental activities. In 2004, CCDPH expanded its environmental surveillance to include mosquito surveillance, primarily in the areas of SCC that are not under the jurisdiction of a MAD.

Response Plan

- Request weekly reports of mosquito surveillance activities from Cook County MADs and provide weekly reports of CCDPH mosquito surveillance activities to Cook County MADs and IDPH;
- Monitor the prevalence and geographic distribution of vector mosquito populations;
- Monitor the infection rate of vector mosquitoes, by geographic area, throughout the arboviral season;
- Use GIS to map infected mosquito pools, and to track increasing risk;
- Combine mosquito surveillance data with other surveillance and risk indicator data to obtain an overall estimate of human risk and the need for enhanced control measures; and
- Encourage the use of the VecTest assay for rapid field testing, especially when risk of human disease is high.

II. Larval Mosquito Control

Objectives

- To monitor the utilization of chemical larvicides to control vector mosquito populations;
- To assess the adequacy of geographic coverage of larviciding activities; and
- To facilitate the implementation of supplemental measures as needed.

Background

The two main approaches to control of vector mosquitoes at the larval stage are source reduction and chemical larvicide applications (larviciding). Source reduction is believed to be the most effective and economical method of providing long term mosquito control.

It involves the elimination or alteration of aquatic larval habitats to prevent breeding. Source reduction can be as simple as removing water-collecting containers and instituting once-a-week water changes in bird baths and wading pools around the home, to proper management of discarded tires, to large water management projects.

Larviciding, the application of bacterial or synthetic chemical products to kill mosquito larvae, is an important part of integrated mosquito management. It is an essential tool used for addressing standing water that is not accessible to source reduction techniques. Commonly used larvicides include *Bacillus thuringiensis israelensis* (*Bti*, a bacterial larvicide), *Bacillus sphaericus* (VectoLex®, a bacterial larvicide), methoprene (Altosid®, an insect growth regulator), and temephos (Abate®, an organophosphate). Larvicide applicators must be licensed or certified by an appropriate state agency.

In SCC, larviciding activities are principally carried out by the four MADs. In addition some villages conduct independent larviciding activities or contract with a private agency for this service.

Following the outbreak of WNV in SCC, CCDPH conducted 230 environmental investigations of yards and the surrounding neighborhood of persons with reported WNV infection. High morbidity areas were targeted for inspection, which led to the identification of many unmapped, back yard catch basins. Many of these sites had not previously received larvicide applications. Larvicide treatment of the catch basins was instituted at that time.

Response Plan

- Provide public education about the importance of residential source reduction, and other personal protective measures;
- Encourage village administrations throughout SCC to incorporate inspections for standing water and source reduction activities into existing inspection procedures (e.g., building inspections, park district maintenance, etc.);
- Conduct environmental inspection surveys and source reduction consultations, prioritizing the homes and surrounding neighborhoods of WNV cases in high risk areas;
- Exchange weekly reports of mosquito surveillance and control activities with Cook County MADs;
- Survey villages for additional larviciding activities that are being conducted;
- Encourage additional larviciding activities, as deemed necessary, in areas with increasing risk of human disease as determined by surveillance data; and
- Seek resources for additional larvicide applications, if needed, to reduce WNV risk.

III. Adult Mosquito Control

Objective

- To monitor and ensure the reduction of infected adult vector mosquitoes through the judicious use of pesticides in targeted areas when there is significant risk of mosquito-borne human disease.

Background

Source reduction of breeding sites and larviciding are the most efficient and effective measures for reducing mosquito populations. However, there may be situations where WNV infected adult mosquitoes are present and pose a threat to human health. In this instance, federal health authorities have emphasized the importance of utilizing a comprehensive, integrated mosquito control program that includes adulticiding treatments. The CDC has stated that interventions should be driven by carefully obtained and adequate surveillance data. When data indicate WNV transmission, a minimal response should include public education for personal risk reduction; larval control to reduce the continued emergence of competent mosquito vectors; adult mosquito control to reduce risk of exposure to infected mosquitoes in the environment; and continued surveillance to monitor changes in virus activity and efficacy of control measures. As evidence of sustained or intensifying virus activity occurs, adulticiding is instituted to reduce the risk of transmission to humans.

Adulticiding is the application of pesticide chemicals capable of killing adult mosquitoes, and is carried out via ground (truck-mounted) or aerial spraying devices. Ultra-Low-Volume (ULV) sprays are used for this purpose. The federal Environmental Protection Agency has determined that there is minimum

risk to human health and the environment when ULV insecticides are used according to label directions. Products commonly used for mosquito adulticiding include organophosphates (e.g., malathion), pyrethrins, and synthetic pyrethroids (e.g., permethrin). The decision to use adulticides is based on several factors including weather conditions, level of virus transmission, mosquito habitat, and public sentiment. Negative public sentiment should be managed by appropriate risk communication messages.

The timing of adulticiding activities and selection of insecticide are based on the behavior of the targeted mosquito species, and its distribution. WNV transmission in the Cook County area, to date, appears to be driven mainly by the *Culex* (Northern House) mosquito. Most *Culex* are nocturnal, thus making the option of daytime aerial applications unattractive. Multiple applications spaced several days apart are generally needed to appreciably reduce *Culex* populations. During 2002, extensive adulticiding applications were conducted by truck-mounted equipment throughout Cook County in an effort to control the WNV outbreak. These activities were carried out by Clarke as well as some MADs.

Response Plan

- Utilize bird, mosquito, and human surveillance data to detect evidence of sustained or intensifying virus transmission;
- Notify mosquito control agencies of any surveillance findings indicating a greater level of virus transmission;
- Consult with Cook County MADs, IDPH, Clarke, other Cook County local health departments, and adjacent public health jurisdictions, about the need for additional intervention activities, including adulticiding, as surveillance data warrants;
- Request reports of adulticiding activities carried out by the MADs that include an indication as to purpose (e.g., for nuisance control or for disease vector control); and
- Seek resources for supplemental adulticiding, if indicated, to reduce WNV risk.

Supplement D: Human Disease Surveillance and Health Care Provider Communication

Objectives

- To detect cases of WNV infection in humans within the CCDPH jurisdiction and surrounding area;
- To determine the geographic distribution of human WNV infections over time;
- To guide the initiation, intensity, duration, and location of outbreak control measures; and
- To document the clinical and epidemiological characteristics of WNV infection.

Background

Surveillance for human illness is critical for defining the scope of an outbreak, ensuring that public health decisions are based on the best available assessment of the problem, and for identifying patterns and trends that can help inform prevention activities. Public information efforts in response to initial human cases can increase public attention to the importance of preventive methods such as reduction of standing water, larviciding, and avoidance of mosquito bites. Given that the goal of WNV surveillance activities is to prevent or minimize infection among people, human case surveillance is typically not used alone for the detection of arbovirus activity, but is usually supplemented by ecological surveillance activities in other animal species (e.g., avian, equine, mosquitoes, etc.).

Laboratory-based surveillance is employed for the detection of human arboviral infection. Surveillance is conducted for non-bacterial central nervous system infections (NBCNSI) caused by WNV, St. Louis Encephalitis Virus (SLE), California (LaCrosse) Encephalitis Virus (LAC), and Eastern Equine Encephalitis Virus (EEE). Laboratory testing is conducted by the IDPH laboratory from May 15 through October 31 (or the first killing frost, whichever comes first). During arboviral season, specimens are requested on all patients who present with a clinical or laboratory picture of NBCNSI, or with acute flaccid paralysis. Appropriate specimens include cerebral spinal fluid, and acute and convalescent serum specimens, which are tested for the presence of antibodies to the arboviruses.

Epidemiologic and clinical investigations are initiated by the local health department based upon a positive WNV/Arboviral report from the IDPH laboratory. Once completed, surveillance case data are forwarded to the IDPH. The information is subsequently submitted by the IDPH to the CDC. At the local and state levels, reported cases are classified as suspect, probable, and confirmed cases for epidemiologic purposes according to CDC case definitions.

The first human cases of WNV infection were detected in Illinois in 2002. During that year, Illinois documented 884 cases, the largest number reported to the CDC by any state in the nation. Cook County was the epicenter of the Illinois outbreak with a total of 627 cases reported by the following Local Health Departments: (CCDPH: 299; Chicago: 227; Evanston: 41; Skokie: 46; Oak Park: 2; Stickney: 12).

During the 2002 outbreak, the first human WNV case in Illinois was reported in a resident of Cook County on August 4. This event triggered notifications to hospitals around the state by the IDPH for enhanced surveillance to be implemented. A review of the 2002 epidemic curve showed that the

incidence of reported cases peaked during the third week of August, and that nearly three-quarters of all cases occurred between August 15 and September 15.

In order to document incident cases in a more timely fashion, CCDPH requested that providers report hospitalized cases within 24 hours of a presumptive or confirmed diagnosis. The more timely reports were used to create GIS maps of cases over the course of the outbreak. The maps were then used to guide supplemental mosquito control and public information interventions.

The staff of the CCDPH obtained assistance from the IDPH and the CDC in conducting the 2002 outbreak investigation and with implementation of the necessary intervention measures. Medical record reviews were conducted on all hospitalized patients on whom partially completed case report forms were submitted within 24 hours of specimen submission. A database of clinical information was established. In addition, CDC staff assisted with the development of a behavioral/environmental exposure questionnaire that was used to conduct interviews with 125 case patients.

Response Plan

- Incorporate recommendations from the IDPH for enhanced surveillance in 2005 for arboviral diseases (WNV, SLE, LAC, and EEE) into the CCDPH WNV Prevention and Control plan;
- Notify ICPs of all changes and/or revisions to the 2004 WNV surveillance protocol;
- Issue a written request to hospital ICPs for WNV/arboviral case report submission within 24 hours of diagnosis, for all patients that are hospitalized or seen in an emergency department. (This request will be made as an outbreak response measure once human cases are detected in the Cook County area.);
- Provide periodic updates on 2005 local WNV infection trends, throughout the arboviral surveillance season, to health care providers serving SCC;
- Provide notification of human WNV cases to CCDPH personnel and staff from other agencies (e.g., the Cook County MADs) working on WNV prevention and control activities;
- Assist in coordinating the submission of WNV positive specimens from private labs to the IDPH laboratory for confirmation;
- Monitor the distribution of WNV cases utilizing GIS mapping (to be conducted by the CCDPH Epidemiology Unit);
- Monitor local and state surveillance and control trends through the IDPH intranet, and via verbal and written communications with the state;
- Monitor local NBCNSI cases during the arboviral surveillance season and the number of serum samples obtained for assessment of convalescent titers; and
- Monitor national surveillance and control trends through CDC conference calls, summaries in the Morbidity and Mortality Weekly Reports (MMWR), and attendance at the national WNV conference.

Supplement E: West Nile Virus Risk-Response Levels

Objectives

- To compile and analyze climactic and surveillance data throughout the arboviral season; and
- To establish a system of assessing risk of human disease as a guide to the implementation of progressively intense prevention and control measures.

Background

A number of environmental factors contribute to the overall risk of human WNV infection in a community. Those factors include rainfall and temperature variations throughout the spring and summer months; the presence of adequate, competent hosts (i.e., susceptible wild birds) to support viral amplification; and the emergence of ample mosquito vectors including bridge vectors likely to transmit infection from bird to human populations.

Ongoing assessment of human disease risk should occur throughout the arboviral season (early-spring to mid-fall). Risk assessment can be used to guide a progressively intense, phased response, as recommended by the CDC. A flexible approach to implementation of the response plan should be adopted, which takes into account such feasibility factors as availability and quality of surveillance data; existing budgets and infrastructure; public acceptance; and ongoing mosquito control activities.

The recommended six stage phased response adopted from CDC guidelines is as follows:

WNV Risk-Response Level 0 (Likelihood of human outbreak: none)

Definition: Off-season; weather unsuitable for mosquito activity and virus amplification and transmission; surveillance suspended.

Response: Develop WNV response plan including surge capacity capabilities; evaluate need for expanding staff expertise; secure resources; conduct program assessment and development studies; train staff; initiate community outreach and public education.

WNV Risk-Response Level 1 (likelihood of human outbreak: remote)

Definition: Occurs during arboviral surveillance season (spring, summer, fall); WNV activity in birds/animals is anticipated; however no current activity detected in the area (Cook County/immediately surrounding geographic area); average rainfall.

Response: Continue category 0 activities plus: monitor the initiation of entomologic surveys (mosquito populations are inventoried and mapped), and larviciding activities targeting vector species; expand public education with focus on source reduction; conduct source reduction consultations, avian mortality reporting and selective bird testing, and human WNV disease surveillance; monitor equine surveillance.

WNV Risk-Response Level 2 (likelihood of human outbreak: low)

Definition: Occurs during arboviral surveillance season (spring, summer, fall); applies when WNV activity in birds/mosquitoes is limited or sporadic; weather suitable for increased activity.

Response: Continue category 1 activities; increase larval control and source reduction activities; increase public education emphasizing personal protection measures, particularly among the elderly; enhance human surveillance; encourage and monitor activities to further quantify epizootic activity (e.g.,

mosquito trapping and testing); consider encouraging and facilitating focal or targeted adult mosquito control if surveillance demonstrates likelihood of increasing risk for humans.

WNV Risk-Response Level 3 (likelihood of human outbreak: moderate)

Definition: Occurs during arboviral surveillance season (spring, summer, fall); applies when WNV activity in birds/mosquitoes is moderate or there is initial confirmation in a human and/or horse.

Response: Continue category 2 activities; continue enhanced animal and human surveillance; strongly encourage/facilitate consideration of adult mosquito control if surveillance indicates likely potential for human risk to persist or increase; consider enhanced risk communication message to include explanation of adulticiding need, and risk/benefit.

WNV Risk-Response Level 4 (likelihood of human outbreak: high)

Definition: May occur spring, summer, or fall; applies when quantification of surveillance data indicates a high level of WNV epizootic transmission (e.g., multiple mosquito species infected, high mosquito infection rate, high dead bird density/ infection rate, escalating transmission in horses or other mammals; or a human case and high epizootic activity).

Response: Continue category 3 activities; public information program to include TV, radio, and newspapers (Re., public compliance with source reduction, use of repellants, other personal protection, risk communication about adult mosquito control); consider active surveillance for human cases; ensure implementation of adult mosquito control targeted at areas of potential human risk.

WNV Risk-Response Level 5 (human outbreak in progress)

Definition: Multiple human cases confirmed; sustained transmission to humans anticipated and supported by surveillance data.

Response: Continue category 4 activities; ongoing enhanced risk communication about adult mosquito control; monitor efficacy of spraying on target mosquito populations through continued surveillance and data analysis; if the outbreak is widespread ensure implementation of widespread adulticiding measures.

Public Education and Media Communication WNV Risk-Response Activities

Risk-Response Level 0

Likelihood of Human Outbreak: None

- Assess readiness of SCC to meet communication needs during a WNV outbreak, and update the plan as necessary;
- Assess the information needs of the general public and healthcare providers;
- Assess logistical capacity for effective health and risk reduction communication;
- Assess the range of educational materials that are available in appropriate languages as determined by the needs of SCC residents;
- Assess adequacy of printing/graphic design contracts, website and resources to meet emergency needs;
- Assess capacity of hotlines and web servers to accommodate increased usage;
- Assess availability of CCDPH personnel to staff hotlines for extended hours;
- Establish a mechanism in advance for reviewing and clearing WNV-related messages and materials;
- Develop 27-9-3 message for press interest in WNV;
- Identify and train (in risk communication) spokespersons and subject matter experts who will be available during an outbreak;
- Carry out media and risk communication training as needed;
- Make sure information is available to fax to media;
- Maintain partnerships with county partners for the dissemination of WNV information;
- Develop phone bank and hotline message template;
- Investigate if larvacide training will be offered by CCDPH, and revise larvacide training letter;
- Revise letters to Cook County Office of Comptroller, Archdiocese of Chicago, Jewish Cemeteries, Suburban Area on Aging, municipalities, and partner businesses;
- Identify key locations for disseminating information throughout community; and
- Update 2004 community contacts.

Risk-Response Level 1

Likelihood of Human Outbreak: Remote

- Post and/or update WNV information on website;
- Write a mock press release announcing first WNV case in SCC;
- Have information available for press;
- Pitch stories to local press regarding the upcoming WNV season;
- Designate medical spokesperson(s) to talk about WNV and create specific messages for spokesperson(s) to practice their message delivery;
- Create 2005 PowerPoint community presentation based on 2004 statistics;
- Create hotline message for bird collecting and disease prevention/health promotion;
- Send letters to Cook County Office of Comptroller, Archdiocese of Chicago,

<ul style="list-style-type: none"> ▪ Jewish Cemeteries, Suburban Area on Aging, and municipalities; ▪ Send homeowner protection to Home Depot retailers in Lead Poisoning Prevention program; and ▪ Develop phone bank operators training.
<p>Risk-Response Level 2 Likelihood of Human Outbreak: Low</p>
<ul style="list-style-type: none"> ▪ Record message for health hotline; ▪ Create PSAs for radio and TV outlets educating the public about how to respond to a WNV outbreak; ▪ Send out press release about CCDPH's responsibility should human WNV be detected in SCC; ▪ Communications staff will be in touch with IDPH's Communications Unit to find out what information is being released by the state; ▪ Communications team will work with Bureau, downtown, hospital PIO's and other LHD PIO's; ▪ Public awareness forums begin; ▪ Dissemination of print materials in SCC; ▪ First responder and partner training begin; ▪ Training for high-risk groups initiated; and ▪ Train phone bank operators.
<p>Risk-Response Level 3 Likelihood of Human Outbreak: Moderate</p>
<ul style="list-style-type: none"> ▪ Continue public awareness trainings and meetings; ▪ Update information continually on website; ▪ Update information on hotline; ▪ Possible press conference to address concerns; ▪ Possible Radio/TV/Newspaper interviews; ▪ Continue health education presentations for partner agencies; ▪ Continue disseminating information throughout SCC; and ▪ Train phone bank operators.
<p>Risk-Response Level 4 Likelihood of Human Outbreak: High</p>
<ul style="list-style-type: none"> ▪ Regular press briefings (local); ▪ Radio/TV/Newspaper interviews; ▪ Continued info to public via hotline, website and media; ▪ Phone bank set up for incoming calls; ▪ Make presentation with Environmental Health and Communicable Disease unit personnel at community meetings and partner agencies; and ▪ Continue disseminating information and conducting training sessions throughout SCC.

Risk-Response Level 5

Likelihood of Human Outbreak: Human outbreak in progress

- Regular press conferences with state;
- Regular press briefings (local);
- Continued info to public via hotline, website and media;
- Phone bank set up for incoming calls;
- Make presentation with Environmental Health and Communicable Disease unit personnel at community meetings and partner agencies; and
- Continue disseminating information throughout SCC.

Environmental Surveillance WNV Risk-Response Activities

Risk-Response Level 0
Likelihood of Human Outbreak: None
<ul style="list-style-type: none"> ▪ Planning; ▪ Public education; ▪ Equipment preparation; and ▪ Contract preparations.
Risk-Response Level 1
Likelihood of Human Outbreak: Remote
<ul style="list-style-type: none"> ▪ Conduct environmental inspections; ▪ Public education; ▪ Communicate plan for bird surveillance to local municipalities; and ▪ Institute larval control in areas not served by a MAD or not under contract (done via contract with Clarke Mosquito).
Risk-Response Level 2
Likelihood of Human Outbreak: Low
<ul style="list-style-type: none"> ▪ Continue activities from Risk-Response Level 1; ▪ Bird surveillance; ▪ Gravid trap placement/maintenance; ▪ Mosquito surveillance; ▪ Continue larval control activities; and ▪ Public education.
Risk-Response Level 3
Likelihood of Human Outbreak: Moderate
<ul style="list-style-type: none"> ▪ Continue activities from Risk-Response Level 2; ▪ Increase communication with CD unit, MADs, IDPH, Clarke Mosquito; ▪ Prepare for possible contracting of adulticide activities through Clarke Mosquito; ▪ Identify areas, based on surveillance data, potentially needing adulticide applications.
Risk-Response Level 4
Likelihood of Human Outbreak: High
<ul style="list-style-type: none"> ▪ Continue activities from Risk-Response Level 3; and ▪ Institute adulticide activities in areas identified that are not served by a MAD or not under contract.
Risk-Response Level 5
Likelihood of Human Outbreak: Human outbreak in progress
<ul style="list-style-type: none"> ▪ Continue activities from Risk-Response Level 4

- Increase emergency adulticiding as necessary.
- Monitor efficacy of spraying programs on target areas.

Human Disease Surveillance WNV Risk-Response Activities

Risk-Response Level 0
Likelihood of Human Outbreak: None
<ul style="list-style-type: none"> ▪ Update the previous years' WNV Prevention and Control plan; ▪ Re-educate communicable disease control staff on human surveillance protocols; and ▪ Recruit and train interns.
Risk-Response Level 1
Likelihood of Human Outbreak: Remote
<ul style="list-style-type: none"> ▪ Continue Risk-Response Level 0 activities; ▪ Notify hospitals in CCDPH jurisdiction of start of arboviral season; and ▪ Monitor local non-bacterial central nervous system infections (NBCNSI) maintain 7-day reporting schedule.
Risk-Response Level 2
Likelihood of Human Outbreak: Low
<ul style="list-style-type: none"> ▪ Continue Risk-Response Level 1 activities; and ▪ Maintain passive surveillance for NBCNSI.
Risk-Response Level 3
Likelihood of Human Outbreak: Moderate
<ul style="list-style-type: none"> ▪ Continue Risk-Response Level 2 activities; and ▪ Initiate enhanced passive surveillance (monitor patients who have IgM antibodies to either WNV or San Luis Encephalitis).
Risk-Response Level 4
Likelihood of Human Outbreak: High
<ul style="list-style-type: none"> ▪ Continue Risk-Response Level 3 activities; ▪ Initiate active surveillance: <ul style="list-style-type: none"> ○ Alert physicians in appropriate specialties (infectious diseases, neurology and critical care) and hospital infection control personnel of active surveillance status; and ○ Implement laboratory-based surveillance. ▪ Request that providers report hospitalized NBCNSI cases within 24 hours.
Risk-Response Level 5
Likelihood of Human Outbreak: Human outbreak in progress
<ul style="list-style-type: none"> ▪ Continue Risk-Response Level 4 activities; and ▪ Intensify and expand active surveillance as necessary.

Appendix 1: Initializations Used in the Plan

CCDPH	Cook County Department of Public Health
CDPH	Chicago Department of Public Health
CD	(CCDPH) Communicable Disease (Unit)
CDC	Centers for Disease Control
COO	(CCDPH) Chief Operating Officer
DVBID	(CDC) Division of Vector Borne Infectious Disease
EEE	Eastern Equine Encephalitis Virus
EHU	(CCDPH) Environmental Health Unit
GIS	Geographic Information System
HCWs	Health Care Workers
ICP	Infection Control Practitioner
IDA	Illinois Department of Agriculture
IDPH	Illinois Department of Public Health
IL	State of Illinois
IMS	Incident Management System
LAC	California (LaCrosse) Encephalitis Virus
LHD	Local Health Department
MAD	Mosquito Abatement District
MMWR	Morbidity and Mortality Weekly Report
NBCNSI	Non-Bacterial Central Nervous System Infections
NYC	New York City
NYCDOHMH	New York City Department of Health and Mental Hygiene
PIO	Public Information Officer
SCC	Suburban Cook County
SLE	St. Louis Encephalitis Virus
ULV	Ultra-Low Volume
WNV	West Nile Virus

Appendix 2: West Nile Virus Case Definition

(Source: http://www.cdc.gov/ncidod/dvbid/westnile/clinical_guidance.htm)

Clinical Features

Mild Infection

Most WNV infections are mild and often clinically unapparent.

- Approximately 20% of those infected develop a mild illness (West Nile fever).
- The incubation period is thought to range from 3 to 14 days.
- Symptoms generally last 3 to 6 days.

Reports from earlier outbreaks describe the mild form of WNV infection as a febrile illness of sudden onset often accompanied by

- malaise
- anorexia
- nausea
- vomiting
- eye pain
- headache
- myalgia
- rash
- lymphadenopathy

The full clinical spectrum of West Nile fever has not been determined in the United States.

Severe Infection

Approximately 1 in 150 infections will result in severe neurological disease.

- The most significant risk factor for developing severe neurological disease is advanced age.
- Encephalitis is more commonly reported than meningitis.

In recent outbreaks, symptoms occurring among patients hospitalized with severe disease include

- fever
- weakness
- gastrointestinal symptoms
- change in mental status
- A minority of patients with severe disease developed a maculopapular or morbilliform rash involving the neck, trunk, arms, or legs.
- Several patients experienced severe muscle weakness and flaccid paralysis.
- Neurological presentations included
 - ataxia and extrapyramidal signs
 - cranial nerve abnormalities
 - myelitis
 - optic neuritis
 - polyradiculitis
 - seizures

Although not observed in recent outbreaks, myocarditis, pancreatitis, and fulminant hepatitis have been described.

Clinical Suspicion

Diagnosis of WNV infection is based on a high index of clinical suspicion and obtaining specific laboratory tests.

- WNV, or other arboviral diseases such as St. Louis encephalitis, should be strongly considered in adults ≥ 50 years who develop unexplained encephalitis or meningitis in summer or early fall.
- The local presence of WNV enzootic activity or other human cases should further raise suspicion.
- Obtaining a recent travel history is also important.

Note: Severe neurological disease due to WNV infection has occurred in patients of all ages. Year-

round transmission is possible in some areas. Therefore, WNV should be considered in all persons with unexplained encephalitis and meningitis.

Note: Please do not attempt self-diagnosis based on above symptoms. If you feel as if you are experiencing the above symptoms, please see a physician for accurate diagnosis.

Diagnosis and Reporting

Diagnostic Testing

WNV testing for patients with encephalitis or meningitis can be obtained through local or state health departments.

- The most efficient diagnostic method is detection of IgM antibody to WNV in serum or cerebral spinal fluid (CSF) collected within 8 days of illness onset using the IgM antibody capture enzyme-linked immunosorbent assay (MAC-ELISA).
- Since IgM antibody does not cross the blood-brain barrier, IgM antibody in CSF strongly suggests central nervous system infection.
- Patients who have been recently vaccinated against or recently infected with related flaviviruses (e.g., yellow fever, Japanese encephalitis, dengue) may have positive WNV MAC-ELISA results.

Reporting Suspected WNV Infection

Refer to local and state health department reporting requirements:

www.cdc.gov/ncidod/dvbid/westnile/city_states.htm

- WNV encephalitis is on the list of designated nationally notifiable arboviral encephalitides.
- Aseptic meningitis is reportable in some jurisdictions.

The timely identification of persons with acute WNV or other arboviral infection may have significant public health implications and will likely augment the public health response to reduce the risk of additional human infections.

Laboratory Findings

Among patients in recent outbreaks

- Total leukocyte counts in peripheral blood were mostly normal or elevated, with lymphocytopenia and anemia also occurring.
- Hyponatremia was sometimes present, particularly among patients with encephalitis.
- Examination of the cerebrospinal fluid (CSF) showed pleocytosis, usually with a predominance of lymphocytes.
- Protein was universally elevated.
- Glucose was normal.
- Computed tomographic scans of the brain mostly did not show evidence of acute disease, but in about one-third of patients, magnetic resonance imaging showed enhancement of the leptomeninges, the periventricular areas, or both.

Treatment

Treatment is supportive, often involving hospitalization, intravenous fluids, respiratory support, and prevention of secondary infections for patients with severe disease.

- Ribavirin in high doses and interferon alpha-2b were found to have some activity against WNV in vitro, but no controlled studies have been completed on the use of these or other medications, including steroids, antiseizure drugs, or osmotic agents, in the management of WNV encephalitis.

Appendix 3: CCDPH Letter to Cemetery Directors

June 16, 2005

Name, Director
Address

Dear Name:

The Cook County Department of Public Health is asking for your assistance to protect residents from illness.

West Nile virus is a disease caused by the bite of an infected mosquito. The WNV outbreak in 2002 caused hundreds of illnesses and many deaths in the metropolitan Chicago area. A survey conducted by the Centers for Disease Control and Prevention (CDC) and the Cook County Department of Public Health revealed that 10% of individuals who had a case of WNV in 2002 had visited a cemetery and only 17% used repellent.

In order to limit or prevent this disease, we suggest the following for cemetery administrators:

- Encourage staff and visitors to use repellent with DEET when visiting grave sites between the hours of dusk and dawn (when mosquitoes are most active). This year, the CDC is also recommending the use of picaridin and oil of lemon eucalyptus. According to the CDC, both DEET and picaridin have provided more protection than other active ingredients.
- Remind staff and visitors to remove standing water from pots and vases on cemetery plots. Stagnant water is a breeding ground for mosquitoes.
- If possible, limit the hours of operations as we move further into West Nile virus season.
- Provide WNV information for staff and visitors

English and Spanish West Nile virus brochures may be downloaded by visiting the Cook County Department of Public Health web site at: www.cookcountypublichealth.org/publications/print.shtml . Enclosed is a master copy of our 2005 WNV brochure in English and Spanish. Please reproduce these brochures for distribution at your reception center.

If you have any questions, please contact me at 708-492-2010.

Thank you for working with us to make suburban Cook County a healthy place to reside.

Sincerely,

Stephen A. Martin, Jr., PhD, MPH
Chief Operating Officer

SAM/kf
Enclosures

Appendix 4: CCDPH Letter to Village Managers

June 16, 2005

Dear Mayor or Village Manager,

The Cook County Department of Public Health is committed to the prevention of illness, disability and premature death among all of the residents of suburban Cook County. Educating the public about West Nile virus is an important part of the strategy to reduce the risk of human illness. The goal of the CCDPH education campaign is to increase public awareness of WNV as a public health threat, and to stimulate health promoting behaviors that reduce the risk of WNV infection. CCDPH activities include:

- Working with hospitals and medical providers to alert them to the signs and symptoms of severe WNV disease
- Establishing a phone line for residents to report dead birds: 708-492-2650
- Encourage residents to call our health alert phone line: 708-492-2185
- Making prevention presentations to community groups
- Distributing personal protection messages on post cards, brochures, posters, and door hangers

Please encourage your residents to visit our web site at:

<http://www.cookcountypublichealth.org/publications/print.shtml> to download a West Nile virus brochure in English and Spanish. If you would like more information on WNV and/or a tailored presentation for your community, please contact Kimberly Fairman at 708-492-2268 or you can also contact me at 708-492-2010 if you should have additional questions or concerns.

Thank you for working with us to make suburban Cook County a healthy place to reside.

Sincerely,

Stephen A. Martin, Jr., Ph.D., M.P.H.
Chief Operating Officer

[STREET ADDRESS] • [CITY/STATE] • [ZIP/POSTAL CODE]
PHONE: [PHONE NUMBER] • FAX: [FAX NUMBER]

Appendix 5 CCDPH Letter to Forest Preserve District

June 16, 2005

Dear Mr. Bylina:

The Cook County Department of Public Health is asking for your assistance to protect residents from illness. As you may be aware, our area has been affected in the past by mosquito-borne disease. The West Nile virus outbreak in 2002 caused hundreds of illnesses and many deaths in the suburbs and city. In order to limit or prevent this deadly disease, we suggest the following for forest preserve district administrators:

- Encourage staff and patrons to use repellent with DEET on clothing and skin when visiting golf courses between the hours of dusk and dawn (when mosquitoes are most active). This year, the CDC is also recommending the use of picaridin and oil of lemon eucalyptus. According to the CDC, both DEET and picaridin have provided more protection than other active ingredients.
- Provide brochures on West Nile virus prevention for your staff and patrons.

By reducing breeding sites and striving for increased repellent use, we are better able to control the virus which can affect the general population, but may be especially serious for those over 50 years of age.

English and Spanish West Nile virus brochures may be downloaded by visiting the Cook County Department of Public Health web site at:

<http://www.cookcountypublichealth.org/publications/print.shtml>

Enclosed is a master copy of our 2005 West Nile virus brochure in English and Spanish. Please reproduce these brochures for distribution at your reception center.

Thank you for helping us reduce illness, disability and premature death from this new and emerging disease.

Sincerely,

Stephen A. Martin, Jr., Ph.D, M.P.H.
Chief Operating Officer
SAM/kf
Enclosures

Appendix 6 Sample Press Release

It's that time of year: The return of Mosquito Season

The Cook County Department of Public Health reminds residents to protect themselves from mosquitoes

With temperatures on the way up, health officials from the Cook County Department of Public Health are reminding residents that it's important to take precautions against mosquito-borne illness.

"There's no crystal ball that tells us how prevalent West Nile virus will be this summer," said CCDPH COO Stephen A. Martin, Jr., Ph.D, M.P.H. "CCDPH is preparing for its return, and it's our responsibility to prepare the public."

WNV was first detected in birds in Cook County during September of 2001. Human illness in Illinois occurred in the summer of 2002, sickening 884 people statewide and causing 64 deaths, 38 of them in Chicago and suburban Cook County. In 2003, WNV sickened 12 in suburban Cook County, including one death. In 2004, there were 16 cases with one death in SCC.

Focus groups conducted by CCDPH following the summer of 2003 indicated that while people knew it was important to use repellents and limit the hours outside when mosquitoes were more active, participants did not know what to do about stagnant water, particularly the elderly. Standing water that becomes stagnant is a breeding ground for mosquitoes.

"It's particularly important to make sure you assess the perimeter around the outside of your home for items that may hold water," said Dr. Martin. "Drain water from flower pots, buckets, tires and pet bowls at least twice a week."

CCDPH also recommends that the public assist elderly neighbors with emptying containers that may hold water.

Besides eliminating water from the outside of your home, CCDPH suggests that the public follow these tips to prevent mosquito bites:

- Apply mosquito repellent containing either DEET or Picaridin. Oil of lemon eucalyptus also has been tested by the EPA, and provides similar protection to low concentrations of DEET. Always follow the application directions on the container.
- Keep skin covered when outdoors between dusk and dawn. Wear long-sleeved shirts, pants and socks.
- Limit time outdoors when mosquito activity is heaviest (dusk through dawn)
- Be sure screens in homes are intact and tight fitting to prevent entry of insects.
- Keep gutters around home cleared of debris and in good repair.

-more-

Pg 2/WNV

Mosquitoes become infected after biting a bird that harbors the illness, and human infection may occur after being bitten by an infected mosquito. Most people infected with WNV have no symptoms of illness and never become ill. But some may become ill 3-15 days following a bite. Symptoms can include fever, headache and body aches.

While most mosquitoes do not carry WNV and a person who is bitten by a mosquito does not need to be tested for the virus, any individual who develops symptoms such as high fever, confusion, muscle weakness, severe headaches, or stiff neck should see a doctor immediately. These symptoms may indicate meningitis or encephalitis, two potentially life-threatening illnesses. Diagnosis is made through a blood test, but no specific medication exists to treat or cure the disease.

The public plays an important role in monitoring WNV in their communities by reporting dead birds to local health departments. Dead birds in an area may mean that the virus is circulating between the birds and the mosquitoes in that region.

CCDPH is encouraging the public to call 708-492-2035 if a dead crow or blue jay is found on residential property. Or, residents may download a bird reporting form at www.cookcountypublichealth.org.

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