DEPARTMENT OF THE ARMY
WALTER REED ARMY INSTITUTE OF RESEARCH
WALTER REED ARMY MEDICAL CENTER
WASHINGTON, D.C. 20307-5100

REPLY TO
ATTENTION OF

MCMR-UWK

3 February 2003

Memorandum for Program Director, Preventive Medicine & Surveillance, Force Health Protection & Readiness, Office of the Assistant Secretary of Defense for Health Affairs Skyline 4, Suite 901, 5113 Leesburg Pike, Falls Church, VA 22041-3226

Subject: DoD West Nile Virus Surveillance and Response Activities in 2002

1. Attached is a copy of the DoD West Nile Virus Surveillance and Response Activities in 2002.

2. The point of contact at the Department of Defense Global Emerging Infections Surveillance and Response System (DoD-GEIS) is CDR Clara J. Witt, (301) 319-9743.

Patrick W. Kelley

PATRICK W. KELLEY
COL, MC
Director, DoD-GEIS

Attachments:
July 11 HA Memo
Table of Surveillance
Sites and Findings

cc:
CAPT Bohnker, NEHC
LTC CE Cannon, CHPPM-N
LTC K Cox, AFIERA
COL JD Gunzenhauser, OTSG
Dr. G Ludwig, USAMRIID
COL C Kelsey, VETCOM

DoD West Nile Virus Surveillance and Response Activities in 2002

West Nile virus (WNV) is one of the most widely distributed arboviruses in the world. Since the summer of 1999, when it was first recognized in the western hemisphere, CDC estimates that the virus has caused a cumulative total of 4006 human cases (96% occurring in 2002) and 259 deaths in 44 states and the District of Columbia (20 December 2002). This makes WNV the leading cause of arboviral encephalitis in the United States.

WEST NILE VIRUS
US CIVILIAN DATA

Host (states)	1999 (4)	2000 (12, DC)	2001 (27, DC)	2002 (44, DC)
Human	62 (7)*	21 (2)	66 (9)	3852 (241) **
Bird	295 (89% crows)	4305	7,338 (71% Corvidae)	14, 122† (90% Corvidae)
Equine	25 (9)	60 (23)	738 (>156)	14,515‡
Mosquito	17	515	918	4943§
Sentinel Chicken	-	14	218	366 †

*cases (dead)
** Dec. 20 2002, CDC
† test + Nov. 30 2002 CDC
‡ cases (died or euthanized) Dec. 15 2002 USDA
§ positive pools Nov 30 2002 CDC

In compliance with *Health Affairs Policy of West Nile Virus Surveillance at Military Installations* (11 July 2002), the Services of the Department of Defense (DoD) implemented comprehensive surveillance and response activities to meet the challenge of the WNV outbreak and protect DoD force health and readiness. This memorandum presents the 2002 surveillance findings of implemented activities. It also describes the type and volume of undertaken activities to indicate the breadth and magnitude of the DoD response. This report also lists some identified issues that may warrant future consideration.

In aggregate, during 2002, 122 DoD installations and federal government sites participated in DoD WNV surveillance activities (not including the enhanced passive human surveillance). See attached Table of surveillance sites and findings. Forty-four (36%) installations and sites had surveillance findings indicative of WNV presence, and 11 (73%) with positive mosquito findings had avian or mammalian results suggestive of virus transmission risk.

Forty-three installations and sites conducted two forms of surveillance activity. Twenty-five (58%) had two forms in agreement, either both positive or both negative. Ten conducted three forms of surveillance activity. The two installations with confirmed positive equine findings also had positive mosquito and bird findings.

Uncertainty about accounting for all surveillance activities and in interpreting data obtained in reports makes an in-depth analysis of the time sequence between findings from different surveillance activities difficult.

Human Enhanced Passive Surveillance (passive detection of clinical cases enhanced by general alerts to health-care providers)

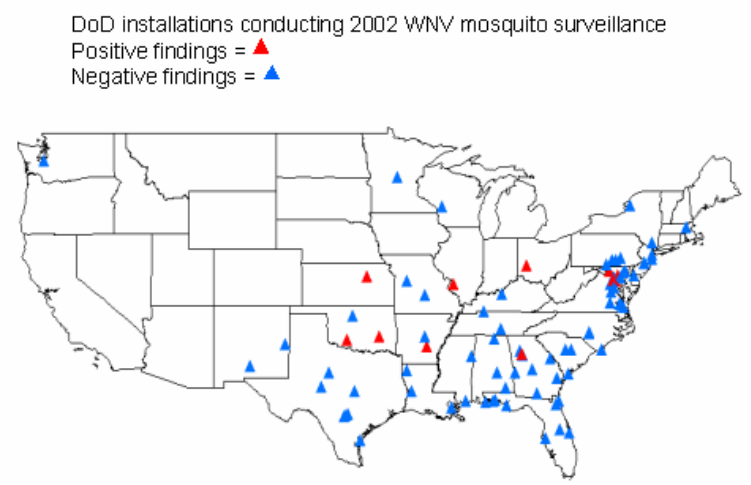
No reports were received of active duty (AD) service members with confirmed cases of WNV. One confirmed case occurred in an Army reservist not on active duty. A review of DoD ambulatory care records shows that 13 patients (AD: 4 Army, 2 Air Force; Dependent: 2 Army, 3 Navy and 2 Marine) presented to Military Treatment Facilities (MTF) with clinical signs suggestive of WNV infection (ICD-9-CM code 066.3 'other mosquito borne fever; fever (viral)…excluding dengue and yellow fever'), but the initial diagnoses were not supported by laboratory results.

Testing to diagnose and confirm cases was done through an MTF's state or commercial laboratory or through the US Army Medical Research Institute of Infectious Diseases (USAMRIID) at Ft Detrick MD. As a surrogate for determining if the 'zero confirmed cases' reported signified a true absence of cases or a lack of recognition or reporting of presenting cases, commands were requested late in the season to report their respective numbers of WNV diagnostic test requests. The US Army North Atlantic Regional Medical Command reported 89 such requests (Ft Meade did not report), and the US Army Great Plains Regional Medical Command reported 32 requests from 4 MTFs. USAMRIID performed diagnostic testing on 35 submitted samples (all negative).

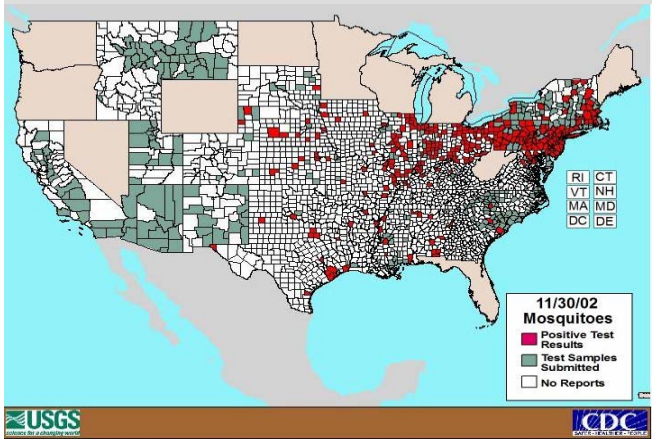
In October 2002 WNV was assigned a specific ICD-9 code (066.4 West Nile fever, encephalitis, encephalomyelitis and virus) to specifically identify WNV as a suspected or confirmed infection.

Active Mosquito Surveillance

Two hundred eighty-four mosquito pools from 15 DoD installations (and other federal government participating sites) were found positive for WNV in 2002 (CHPPM-N report #28, 30 December 2002). Seventy nine percent of positive mosquito pools were found in the Washington DC area at 7 installations. Ninety percent of positive pools were composed of *Culex* mosquitoes.



2002 Civilian WNV mosquito surveillance. (CDC 30 November 2002) Red = areas with positive surveillance findings. Green = areas with negative surveillance findings. White = areas with no civilian mosquito surveillance activity in 2002.



At least 95 DoD installations (25 States and DC) undertook WNV mosquito surveillance during 2002. A total of 115,247 female mosquitoes were collected during 9,797 traps nights, aggregated into 13,106 pools and analyzed for WNV presence using RT-PCR or *VecTest* (a dip stick based detection system, with positive results confirmed by RT-PCR). The majority of mosquito catches were accomplished using gravid traps, considered conducive to collecting infected *Culex* mosquitoes, the most common enzootic vectors. Light traps, with and with out CO2, along with various other adult mosquito collection methods were employed to collect potential mosquito vectors. Additionally, oviposition surveillance traps were used at 18 mid-Atlantic installations to detect and/or monitor for the presence of *Aedes albopicutus, Aedes aegypti*, and *Ochlerotatus japonicus* .

The CDC recommendations for WNV mosquito testing include the suggestion that RT-PCR be done using two primer/probe sets to determine a confirmed WNV detection. Initial DoD testing using one primer for RT-PCR precluded inclusion of DoD findings in state reports to CDC. DoD has modified its procedure to include two primers.

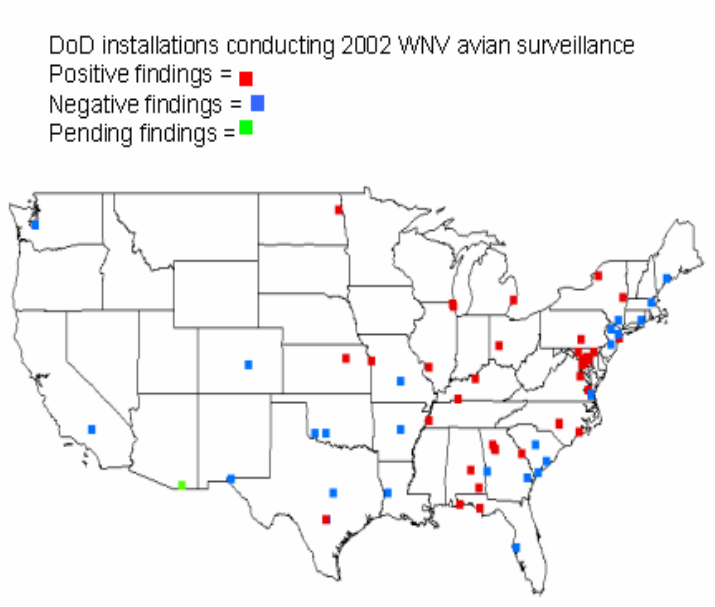
As required, installation pest management program personnel conducted mosquito abatement procedures, focusing on adulticiding, but also including larviciding when indicated. Adult mosquito control varied depending on mosquito species present and the level of adult activity. Several installations used thermal foggers (dispensing Pyrethrum ULD BP 100) to precision target adult *Culex* mosquitoes resting in storm drains and sanitary sewer systems. Several installations used gas powered backpack sprayers (dispensing Demand CS) to treat sites such as ivy beds and other ground cover that harbored resting adult *Aedes albopictus*. Some installations used truck-mounted Ultra Low Volume (ULV) sprayers to provide area treatment to knock down adult mosquito populations. Installation pest management, preventive medicine and public relations offices also conducted active installation clean-up campaigns to minimize mosquito breeding sites.

The US Army Center for Health Promotion and Preventive Medicine (CHPPM) conducted mosquito management training exercises for 53 installation and governmental agency sites in 2002. (CHPPM – N: 26 [over 100 federal government employees]; CHPPM – S: 23 [over 186 federal government employees]; and CHPPM – W: 4 [12 federal government employees]). The Great Plains Regional Medical Command staff entomologist conducted mosquito management training for 3 installations (11 federal government employees). The Navy Disease Vector Ecology and Control Center (NDVECC) in Jacksonville FL provided training for 18 sites, and NDVECC in Bangor WA for 5 sites.

Active Bird Morbidity and Mortality Surveillance

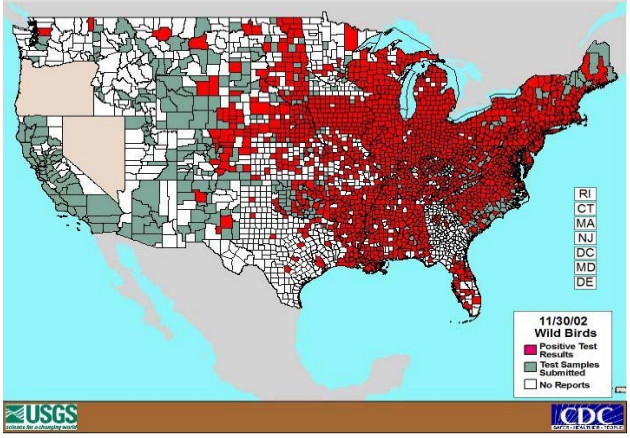
At least 106 wild, sick or dead birds found on 40 DoD installations and other federal government sites were determined positive for WNV during 2002. (23 January 2003)

Two DoD installations (Ft Polk LA and Langley AFB VA) detected WNV seroconversions in sentinel chicken flocks during 2002. Ft Polk reported its first seroconversion on 16 August and ceased monitoring by 23 August when 83% of the flock had seroconverted. Langley AFB reported its first positive chicken in late October.



2002 Civilian WNV avian surveillance findings. (CDC 30 November 2002)

Red areas = positive findings. Green = areas of negative surveillance findings. White = areas with no civilian bird surveillance activity in 2002.



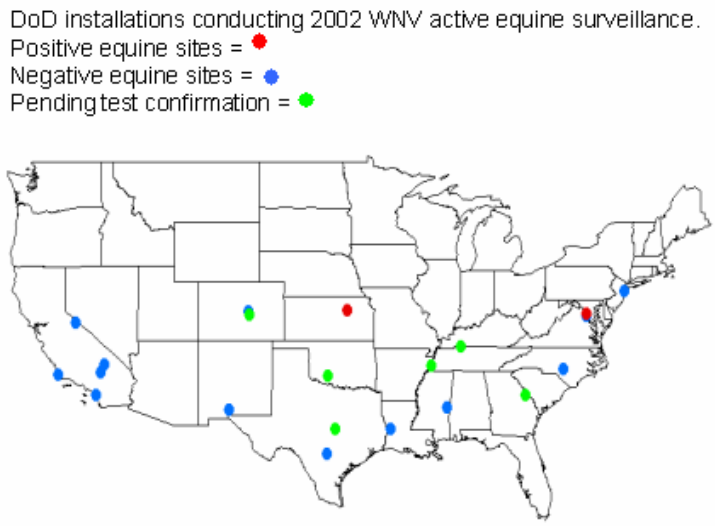
Avian morbidity and mortality surveillance was conducted on 69 DoD installations and federal government sites. At least 487 birds were submitted for WNV testing. Eleven installations and sites in the Washington DC area were responsible for 38% of all DoD bird submissions, and accounted for 53% of the birds diagnosed for DoD as WNV positive. The majority of birds were sent by Veterinary Treatment Facilities (VTF) for analysis to the US Geologic Survey National Wildlife Health Center (USGS) in Madison Wis. Weekly updates of results and the status of submitted birds (including negative or unsuitable) were provided by USGS. A few

installations submitted WNV suspect birds to their state and local health department laboratories. On many Air Force and Navy installations, the WNV avian surveillance functions were performed by installation environmental or public health or preventive medicine staff.

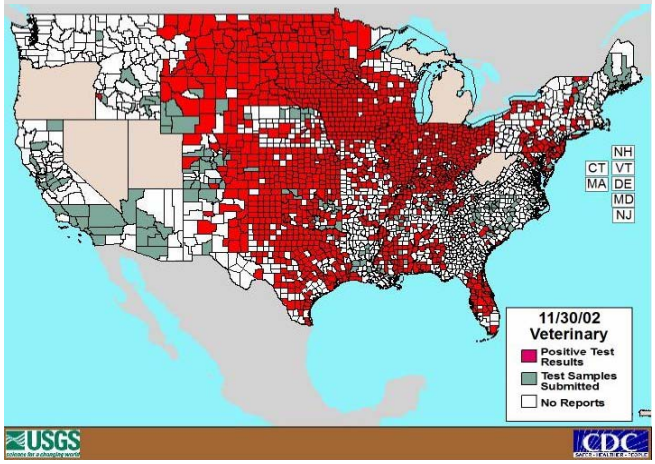
Two DoD installations (Ft Polk and Langley AFB) conducted WNV sentinel chicken surveillance to demonstrate active onithophilic WNV transmission. Over 240 serum samples were assayed. At both installations the WNV-positive sentinel chicken findings came in the absence (before or after) of other WNV positive surveillance findings. As positive sentinel chicken findings can be interpreted as signaling virus transmission risk, the detections reinforced recognition of the need for heightened mosquito abatement and human-exposure prevention efforts**.** Three hundred and sixty-six civilian sentinel chicken flocks in 7 states (FL, IA, NC, NE, NY, PA, and TX) seroconverted to WNV during 2002.

Equine Enhanced Passive Veterinary and Selected Active Equine Surveillance

As of 31 December 2002, one government-owned horse (Ft Myer VA) has had an unequivocal WNV infection detected by IgM and IgG antibody response on ELISA and PRNT assays. This horse was a recent acquisition at the time of detection and had no history of previous WNV vaccination. The horse was purchased in Iowa. A second government-owned horse (Ft Riley KS) had a confirmed WNV seroconversion, but because of the animal's vaccination history, it is unclear that the seroconversion can be unequivocally attributed to viral infection. Three additional horses had current (31 December) mildly elevated IgM responses, 20 have mildly elevated IgG responses and 4 have both IgM and IgG elevations. All are pending determination of an association with WNV infection. None of the above horses had clinical WNV disease. In addition, 6 privately-owned horses (5 stabled on DoD installations and one stabled next to an installation) have been diagnosed with WNV disease by civilian veterinarians.



Civilian WNV horse surveillance findings in 2002. (CDC 30 November 2002) Red = areas with positive surveillance findings. Green = areas with negative surveillance findings. White = areas with no civilian horse surveillance activity in 2002



A total of 468 government-owned equines (horses, mules and a donkey) on 21 installations were enrolled and 197 followed with serial serum samplings in the US Army Veterinary Command and DoD-Global Emerging Infections Surveillance and Response Systems WNV Equine Surveillance Project. Diagnostic testing (ELISA and confirmation Plaque-Reduction Neutralization Test [PRNT]) was performed as a joint effort by the US Army Medical Research of Infectious Diseases (USAMRIID), Ft Detrick MD and the VETCOM Food Analysis and Diagnostic Laboratory (FA&DL) at Ft Sam Houston TX. Over 1150 samples were tested by USAMRIID. USAMRIID provided training for FA&DL personnel. DoD-GEIS and VETCOM veterinarians are examining the vaccination and mosquito exposure histories of the horses with pending test results. If further investigation suggests a likelihood that virus transmission has occurred, the relevant installation and command authorities will be notified for further action.

On installations where privately owned horses have had WNV disease, VTF personnel conducted investigations and worked with civilian and installation authorities to improve the effectiveness of mosquito control and prevention measures.

Identified Issues for Consideration

Given the broad spectrum of signs and symptoms currently included in the CDC case definition for human WNV disease, and the emphasis placed on laboratory confirmation for diagnosis, the number of WNV tests requested by primary-care providers would have been a useful indicator of the extent to which DoD considered or looked for WNV infection as a possible etiology or diagnostic rule-out in its health care beneficiaries receiving care in DoD facilities. This number was not accessible from existing DoD sources. Such a number could have provided an estimate of the extent of this passive surveillance activity.

CDC has reported cases of WNV infection transmission through donated blood, blood products and transplants. No DoD cases have been reported secondary to the use of blood products or transplants. It has also been reported that WNV has potential for transplacental transmission to fetuses.

The overwhelming majority of the DoD WNV mosquito testing was conducted by only one DoD facility, CHPPM-N at Ft Meade MD. The number of installations participating in surveillance, and the number of mosquito pools submitted each year for analysis has doubled each year since 2000. Two CHPPM Subordinate Command laboratories in addition to CHPPM-N are preparing to support mosquito analysis operations in 2003 within their CONUS regions.

Mosquito trap night collection data, particularly negative trap collection data, was routinely under reported. The volume of submissions prevented a determination if the variance in number of trap nights from week to week was the result of a failure to record zero collections.

There was no apparent uniformity or minimum-information and time requirements for avian surveillance record keeping and reporting established prior to

the start of the WNV season. Results from the diagnostic laboratories used were sometimes delayed and incomplete, and did not always reach the facilities submitting the birds.

A preponderant portion of the installations performing avian and mosquito surveillance activities were located in areas with known or assumed WNV presence and activity. This surveillance aided local efforts to characterize endemicity and assess effectiveness of control activities. Areas of unknown or presumed absence of WNV were not as involved in surveillance activities. Surveillance activities in such areas would assist in the early detection and response to initial entry of virus into an area.

The sentinel-chicken WNV seroconversions, in the absence of other positive WNV surveillance findings, may be used as an indication of the sensitivity of other WNV surveillance activities on installations.

Vaccination of equines for WNV may complicate interpretation of diagnostic test results. It is unknown if vaccinated equines can still become infected with WNV. The only WNV vaccine currently available for use in equines was conditionally approved by the US Department of Agriculture pending demonstration of efficacy. Most US government-owned equines have been vaccinated for WNV. The value of properly vaccinated equines as indicators of risk for WNV transmission to mammals on installations remains to be determined.

Summary

Evidence of WNV infection was found in mosquitoes, birds and equines on DoD installations and federal government sites participating in DoD WNV surveillance activities. The absence of detected WNV infection or disease in DoD active duty service members may be an indication of the quality and quantity of prevention and control work conducted by the Services' preventive medicine, public health, pest management, veterinary and environmental service authorities in compliance with the 11 July 2002 memorandum from Health Affairs. It may equally reflect the expected low virulence of the virus in younger and otherwise healthy humans. A formal epidemiological sero-survey may elucidate the risk of WNV infection and disease in DoD personnel.

Meaningful and effective WNV surveillance and vector intervention required regional coordination among federal, state and municipal governmental agencies. In some regions, DOD dead bird and mosquito surveillance conducted on military properties dovetailed with similar efforts being conducted in adjoining jurisdictions thereby resulting in a more accurate assessment of regional viral activity. This was exemplified by efforts that took place in Metropolitan District of Columbia where data collected from nine DOD sites were integrated into a regional network via the Metropolitan Area Council of Governments (COG), thereby allowing coordinated, pragmatic, targeted response measures. In other regions, DOD efforts were sometimes the only source of surveillance data, providing essential regional health risk data that would otherwise be unavailable.

DoD WNV Surveillance Findings, 2002

State	Installation (122)**	Mosquito (95)	Bird* (69)	Horse (21)
AL	Ft Rucker	N	**P**	
AL	Maxwell AFB	N	**P**	
AL	Redstone Arsenal	N		
AR	Little Rock AFB	N	N	
AR	Pine Bluff Arsenal	**P**		
AZ	Ft Huachuca		PD	
CA	Edwards AFB		N	
CA	Camp Pendleton			N
CA	Marine MWTC			N
CA	Fort Irwin			N
CA	MCLB Barstow			N
CA	Vandenberg AFB			N
CO	Air Force Academy			N
CO	Ft Carson		**P**	PD
CT	New London Submarine Base		N	
DC	Anacostia Annex	N		
DC	Bolling AFB	N	**P**	
DC	Department of Health	N		
DC	Ft McNair	**P**	**P**	
DC	Naval Observatory	N		
DC	Soldier's Home	**P**		
DC	Walter Reed AMC	N	N	
DC	Washington Naval Yard	N		
DE	Dover AFB	N		
FL	Eglin AFB	N		
FL	Hurlburt AFB	N		
FL	Jacksonville NAS	N		
FL	Kennedy Space Center	N		
FL	MacDill AFB	N	N	
FL	Mayport NAS	N		
FL	Patrick AFB	N		
FL	Pensacola NAS	N	**P**	
FL	Tyndall AFB	N	**P**	
GA	Atlanta NAS	N	**P**	
GA	Ft Benning	N	N	
GA	Ft Gillem	N	**P**	
GA	Ft Gordon	N	**P**	PD
GA	Ft McPherson	**P**	**P**	
GA	Ft Stewart	N	N	
GA	Moody AFB	N		
GA	Robins AFB	N		
IL	Scott AFB	**P**	**P**	
IL	Great Lakes Naval Base		**P**	
IL	Ft Sheridan		**P**	
KS	Ft Leavenworth		**P**	
KS	Ft Riley	**P**	**P**	**P**
KY	Ft Campbell	N	**P**	PD
KY	Ft Knox	N	**P**	
LA	Barksdale AFB	N		

LA	Ft Polk	N	N	N
LA	New Orleans NAS	N		
MA	Hanscom AFB	N	N	
ME	Brunswick NAS, Topsham		N	
MD	APG-Aberdeen	N	**P**	
MD	Andrews AFB	**P**	**P**	
MD	Annapolis NMCL	N	**P**	
MD	Bethesda NMC	**P**	**P**	
MD	Forest Glen/Glen Haven	N		
MD	Ft Detrick	**P**	**P**	
MD	Ft Meade	**P**	**P**	
MI	SANGB (Selfridge)		**P**	
MN	Camp Ripley	N		
MO	Ft Leonard Wood	N	N	
MO	Whiteman AFB	N		
MS	Columbus AFB	N		
MS	Meridian			N
MS	Keesler AFB	N		
NC	Ft Bragg	N	**P**	N
NC	Pope AFB	N	**P**	
NC	Camp LaJuene		N	
NC	Sunny Point	N		
ND	Grand Forks AFB		**P**	
NJ	Ft Dix	N	N	
NJ	Ft Monmouth	N	**P**	
NJ	Picatinny Arsenal		N	
NJ	Northeast			N
NJ	McGuire AFB	N		
NM	Cannon AFB	N		
NM	Holloman AFB	N		
NM	White Sands MR			N
NY	Watervliet Arsenal		**P**	
NY	Ft Drum	N	**P**	
NY	Ft Hamilton	N	N	
NY	West Point	N	N	
OH	Wright Patterson AFB	**P**	**P**	
OK	Altus AFB	N		
OK	Ft Sill	**P**	N	PD
OK	McAlester AAP	**P**		
OK	Vance AFB	N		
PA	Carlisle Barracks	N	**P**	
PA	Distribution Depot, SP	N		
PA	Ft Indiantown Gap	N		
PA	Letterkenny	N		
SC	Ft Jackson	N	N	
SC	Parris Island MCRD	N	N	
SC	Naval Weapons Station, Berkley		N	
SC	Shaw AFB	N		
TN	Arnold AFB	N		
TN	Millington NAS		**P**	PD
TX	Corpus Christi Naval Hospital	N		
TX	Dyess AFB	N		
TX	Ft Hood	N	N	PD
TX	Ft Sam Houston	N	**P**	N

TX	Goodfellow AFB	N		
TX	Lackland AFB	N		
TX	Ft Bliss		N	
TX	Randolph AFB	N	N	
VA	Arlington Naval Service Center	N		
VA	Dahlgren	N		
VA	Ft A.P. Hill	N	**P**	
VA	Ft Belvoir	N	**P**	N
VA	Ft Eustis	N	**P**	
VA	Ft Lee	N		
VA	Ft Monroe		U	
VA	Ft Myer	**P**	**P**	**P**
VA	Langley AFB	N	N	
VA	Norfolk NAS	N	N	
VA	Pentagon	**P**	**P**	
VA	Quantico MCB	N		
WA	Ft Lewis	N	N	
WI	Ft McCoy	N		
PR	Roosevelt Roads		N	

* birds reported as of 21 January 2003 (not including sentinel chicken findings)
** No. sites
N = only negative findings for surveillance category
P = at least one positive findings in 2002 for the surveillance category
PD = surveillance results pending confirmation testing
U = submission unsuitable for testing

THE ASSISTANT SECRETARY OF DEFENSE

1200 DEFENSE PENTAGON
WASHINGTON, DC 20301-1200

HEALTH AFFAIRS

JUL 11 2002

MEMORANDUM FOR THE ASSISTANT SECRETARY OF THE ARMY (M&RA)
ASSISTANT SECRETARY OF THE NAVY (M&RA)
ASSISTANT SECRETARY OF THE AIR FORCE (SAF/MI)

SUBJECT: Policy for West Nile Virus Surveillance at Military Installations

Since the summer of 1999, West Nile Virus (WNV) encephalitis has become the second leading cause of arboviral encephalitis in the United States. This memorandum updates the DoD policy for WNV surveillance. A summary of WNV in the US and DoD since 1999 is attached. The results of calendar year (CY) 2001 surveillance efforts indicated that WNV has spread to most states along the eastern seaboard and westward to Louisiana, Missouri, Arkansas, and Illinois. It is expected to continue to spread westward. Military installations located in areas where the West Nile Virus has been identified should be prepared to conduct surveillance and prevention efforts in coordination with state and local health departments.

Each Service should develop WNV surveillance and prevention plans appropriate for the region and installation in conjunction with local public health programs already in place. The U.S. Army North Atlantic Regional Medical Command has developed 2001 guidelines that can be used as a general template. This document and other WNV information and POC listings can be viewed at the DoD-Global Emerging Infections System (GEIS) website at http://www.geis.ha.osd.mil.

WNV surveillance data from military installations will continue to be collected in CY2002. Similar to last year, all WNV surveillance findings need to be reported directly to the appropriate local/state health department for inclusion in the state and CDC database. The state health departments will be responsible for forwarding this information to the CDC. However, all military treatment facilities (MTFs) should report any positive human cases directly to the CDC in addition to reporting them to the state and DoD-GEIS. To assist with planning, the CDC issued updated guidelines in April 2001. This document, "Epidemic/Epizootic West Nile Virus in the United States: Revised Guidelines for Surveillance, Prevention, and Control" can be found on the CDC website at http://www.cdc.gov/ncidod/dvbid/westnile/resources/wnv-guidelines-apr-2001.pdf. In addition, information from the March 2002 National Planning Meeting is available on the CDC website at http://www.cdc.gov/ncidod/dvbid/westnile/conf/index.htm.

As in CY 2000 and 2001, the U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM)–North Entomological Sciences Division will again provide mosquito testing for the DoD. The point of contact to submit specimens for testing is LTC Charles (Gene) Cannon at 301-677-3466 or Mr. Ben Pagac at 301-677-3962 (DSN 923). Installations may also choose to submit mosquitoes for testing through state public health laboratories. Surveillance data from these installations should still be submitted to the CHPPM-North for inclusion in overall DoD surveillance reports. Mosquito and bird surveillance data will be compiled by CHPPM–North and forwarded to DoD-GEIS for reporting to this Office and the Services.

Installations will conduct avian morbidity and mortality surveillance. Avian testing may be coordinated through the United States Geological Survey (USGS) or through state public health laboratories. CHPPM-North will obtain bird testing results from the USGS. Results of

avian testing through local and state public health laboratories will need to be reported to CHPPM-North for inclusion in the DoD report.

Surveillance for West Nile infection in government-owned horses will be done through military Veterinary Treatment Facilities. Horse surveillance data should be reported to DoD-GEIS via the Regional Veterinary Commands. The POC for horse surveillance is MAJ Steve Osborn, (210) 221-8702/7975 (DSN 471).

Serological testing of suspected clinical cases should be considered when the index of suspicion is high for West Nile virus infection, or when febrile illness rates in risk areas are high and the viral prevalence in mosquitoes is high. The Services should ensure providers receive education on both the clinical aspects of WNV and pertinent reporting requirements. Testing of human specimens is available at the US Army Medical Research Institute of Infectious Diseases (USAMRIID), Fort Detrick, MD or at many state public health laboratories. MTFs may choose either one for testing of their specimens. The point of contact at USAMRIID is Dr. George Ludwig at 301-619-4941 or DSN 343-4941. The serological test results should be reported to DoD-GEIS IAW Service-specific reporting instructions. The Services should continue to report cases of encephalitis to the Defense Medical Surveillance System (DMSS) through their respective reportable events reporting systems.

DoD-GEIS will compile and summarize all DoD WNV surveillance data and submit monthly reports and a final summary report to this office. The points of contact at DoD-GEIS are CDR Clara Witt at (301) 319-9743 (DSN 285) and Mary Brundage at 301-319-9769 (DSN 285).

My point of contact at Health Affairs is COL Benedict Diniega, (703) 681-1711.

William Winkenwerder, Jr., MD

Attachment:
As stated

cc:
Joint Staff (MRD-4)
Army Surgeon General
Air Force Surgeon General
Navy Surgeon General
Surgeon, HQ, Marines
Medical Director, US Coast Guard
Executive Director, TMA

A SUMMARY OF WEST NILE VIRUS IN THE UNITED STATES AND THE DEPARTMENT OF DEFENSE.

Since the summer of 1999, West Nile Virus (WNV) encephalitis has become the second leading cause of arboviral encephalitis in the United States. In 1999, 62 cases of severe disease with 7 deaths occurred in New York State. In CY 2000, New York, New Jersey and Connecticut reported a total of 21 human cases with 2 deaths. The case fatality rates vary from 3 to 15 percent with the highest rates in the elderly. The virus was isolated in 2000 from mosquitoes, birds and a variety of mammals along the East Coast from Vermont and New Hampshire in the north to North Carolina in the south. In 2001, 66 human cases and 9 human fatalities were reported in addition to 7,338 positive dead birds in 27 states and the District of Columbia, 731 positive horses in 20 states, and 918 positive mosquito pools from 16 states and the District of Columbia.

In 2000, the Centers for Disease Control and Prevention (CDC) coordinated surveillance of mosquitoes, birds and other animals, and humans. Mosquito data from military installations were submitted by CHPPM-North to state public health departments for inclusion in state surveillance reports. Dead birds from military installations were sent to the United States Geological Survey (USGS) for analysis, and the data were submitted by the USGS to the state public health departments for inclusion in state surveillance reports. These same data were collected weekly by the DoD Global Emerging Infections System (DoD-GEIS). Data from DoD installations appeared as part of the states' data in which the installation is located.

In 2001, USACHPPM-North tested 7,288 mosquito pools (containing 55,467 mosquitoes) collected on 44 DoD facilities. Two of those pools tested positive for WNV (Fort McPherson in Atlanta, GA, and Fort Hamilton in New York City, NY). In addition, 34 dead birds submitted from DoD facilities in Maryland, Pennsylvania, Maine, Ohio, New York, New Jersey, Virginia, Georgia, Florida, and the District of Columbia tested positive for WNV.

WNV surveillance has already begun for 2002. Positive mosquito pools and birds have been found earlier than in previous years. In addition, early data indicate that WNV continues to spread westward.