

**PROTOCOL: ENHANCED SURVEILLANCE FOR WEST NILE VIRUS
IN HUMANS IN NORTHERN IRELAND, 2005**

CONTENT:

- A. Introduction**
 - B. Aim**
 - C. Methods**
 - D. Contact details**
-

A: Introduction

- Between 1999 and 2003 the United States reported annual increases in West Nile Virus (WNV) activity. These increases were in terms of the annual case count, geographical spread, and extension of the transmission period. Although geographical spread continued in 2004 there was a substantial decrease in the number of reported human cases with only 2470 cases in 2004 compared to 9858 cases in 2003.¹
- Transmission has also fallen substantially in Canada; 1335 human cases were reported in 2003 but only 25 human cases were reported in 2004 from Quebec, Ontario, Manitoba, Saskatchewan and Alberta.²
- There continue to be sporadic cases and outbreaks of WNV in mainland Europe. In 2004 a cluster of equine cases was identified in the Camargue area of France³ and two human cases, thought to have been acquired in Portugal, were reported from the Republic of Ireland⁴. To date (May 2005), no human cases have been reported in the UK.
- The risk of cases occurring in the UK is thought to be low⁵:
 - (1) The mosquito species involved in transmission of WNV (mainly *Culex* spp.) are present in the UK. However, mosquito-borne diseases, and indeed transmission of mosquito-borne viral infections, are virtually unknown in the UK, in contrast to the situation in the USA.
 - (2) The epidemic of WNV in the USA is thought to have followed new introduction of the virus in 1999 into the North American continent, whereas in Europe migrating birds from WNV endemic parts of Africa have been regular visitors for many centuries. Despite this, WNV infection in humans is thought to be rare in Europe.⁶
- Amongst cases of viral encephalitis and meningitis in the UK, only 20-40% has an aetiology determined (based on HES data⁷).
- Assessment of risk of human WNV infection is based ideally on results from surveillance in mosquitoes, birds, horses and humans.

B. Aim

To continue investigating whether WNV causes human disease in Northern Ireland. If cases are found, this, together with ongoing bird and mosquito studies would inform implementation of appropriate control strategies.

C. Methods

Enhanced clinical surveillance: 1st August to the end of October 2005

Enhanced surveillance for human West Nile Virus infection will start on 1 August 2005 and will operate until the end of October 2005.

Clinicians have been reminded to consider the possibility of WNV infection, particularly in those aged over 50 years. Microbiologists may wish to consider WNV in patients with otherwise unexplained neurological or other compatible symptoms who meet the suspected case definitions (Table 1).

Table 1 Prospective surveillance: Definition for suspected cases of UK-acquired WNV infection in humans – Indications for considering the diagnosis of WNV infection and requesting a WNV test (adapted from EU case definition⁸)

WNV Neurological Syndrome: An adult (particularly aged 50 years and over) case of encephalitis or meningoencephalitis or aseptic meningitis or acute flaccid paralysis, defined by the specific criteria below, presenting from 1st August 2005 to 30th October 2005 and with no travel history outside the UK	
1. Encephalitis or Meningoencephalitis	1. Fever >38° and
Any person with suspected viral encephalitis with all the following criteria	2. Altered mental state (altered level of consciousness, agitation, lethargy) and/or other evidence of cortical involvement (e.g. focal neurological findings, seizures) and
	3. Cerebrospinal fluid (CSF) pleocytosis with predominant lymphocytes and/or elevated protein with a negative Gram stain and culture and
	4. No alternative microbiological cause identified
2. Meningitis	1. Fever >38° and
Any person with suspected viral (aseptic) meningitis with all the following criteria	2. Headache, stiff neck and/or other meningeal signs and
	3. CSF pleocytosis with predominant lymphocytes and/or elevated protein with a negative Gram stain and culture and
	4. No alternative microbiological cause identified
3. Acute Flaccid Paralysis (AFP)	1. Fever >38° and
Any person with suspected AFP (most cases are polio-like) with all the following criteria	2. Asymmetric limb weakness without sensory loss with diminished deep tendon reflexes and
	3. Anterior horn cell disease and
	4. May have facial nerve palsy and
	5. No alternative microbiological cause identified

Suspected adult cases with onset until the end of October, and with no travel history, should be reported on the surveillance report form to Dr Neil Irvine at the Communicable Disease Surveillance Centre (Northern Ireland).

Clinicians and microbiologists should liaise with the Regional Virus Laboratory who will arrange for appropriate samples (serum or CSF, Table 2), to be sent to the Special Pathogens Reference Unit, HPA Centre for Emergency Preparedness and Response (CEPR) Porton Down, Salisbury SP4 0JG. Samples from cases not fulfilling the case definition or those returning from travel outside the UK in the three weeks before onset should be sent directly to CEPR.

Table 2 Details about samples of cases of suspected WNV infection to be sent to HPA CEPR Special Pathogens Reference Unit

<p>1. Paired serum or whole blood specimens. The acute phase specimen 0 to 8 days after onset and the convalescent phase sample 14 to 21 days after onset. <i>By the eighth day of illness, a large majority of infected persons will have detectable IgM antibody to West Nile Virus. In most cases this will still be detectable up to 2 months post illness and can be detected in some cases 12 months post infection. By 3 weeks post-infection serum IgG to West Nile Virus is detectable.</i></p>
<p>2. CSF, ideally acute phase (< 8 days of onset). <i>As early as the first few days following infection, anti-capture ELISA can detect IgM to West Nile Virus. Virus may also be isolated or be detected by reverse transcriptase polymerase chain reaction (RT-PCR), in acute phase CSF within 8 days of onset. CSF samples collected later in the disease can also be useful for diagnosis.</i></p>

Table 3 Definitions of probable and confirmed WNV infection

Probable case (positive for one of the following criteria):
1. Single serum specimen: A positive WNV IgM test
2. CSF: detection of WNV IgM
Confirmed case (positive for one or more of the following criteria*):
1. Serum or CSF: isolation of WNV
2. Serum or CSF: detection of WNV genomic RNA sequences by RT-PCR
3. Serum or CSF: detection of neutralising WNV antibodies with significant titre
4. Paired Serum specimens: A fourfold rise in WNV specific antibody titre
*isolation of the virus or detection of nucleic acid is unusual and the most likely confirmatory testing is through detection of neutralising antibodies or a rising titre

D. Contact Details

Name	Organisation	Responsibilities	Contact Details	E-mail
Dr Graham Lloyd	HPA CEPR SPRU	Laboratory testing	Special Pathogens Reference Unit, Porton Down, Salisbury, Wiltshire, SP4 OJG +44 (0)1980 612100	graham.lloyd@hpa.org.uk
Consultant Virologists	Regional Virology Laboratory	Liaison with clinicians and microbiologists; specimen arrangements; Reporting of results to clinicians and to CDSC (NI)	Tel: 028 90632662	
Dr Neil Irvine	CDSC (NI)	Coordination, epidemiology	Tel: 028 90263765	neil.irvine@hpa.org.uk

Reference List

1. Centers for Disease Control and Prevention. 2004 West Nile Virus Activity in the United States (reported to CDC as of January 11 2005). Available at:
http://www.cdc.gov/ncidod/dvbid/westnile/surv&controlCaseCount04_detailed.htm
2. Public Health Agency of Canada. West Nile virus Canada. Human surveillance: Results of 2004 Program. Available at:
http://www.phac-aspc.gc.ca/wnv-vwn/pdf_srrs_2004/situation_report_123104_hm.pdf
3. Zeller H, Zientara S, Hars S, Languille J, Mailles A, Tolou H, Paty M-C, Schaffner F, Armengaud A, Gaillan P, Legras J-F, Hendrickx P. West Nile outbreak in horses in southern France: September 2004. *Eurosurveillance Weekly* 2004; 8(41): 07/10/2004. Available at
<http://www.eurosurveillance.org/ew/2004/041007.asp#3>
4. Connell J, McKeown P, Garvey P, Cotter S, Conway A, O'Flanagan D, O'Herlihy B, Morgan D, Nicoll A, Lloyd G. Two linked cases of West Nile Virus (WNV) acquired by Irish tourists in the Algarve, Portugal. *Eurosurveillance Weekly* 2004; 8(32):05/08/2004. Available at
<http://www.eurosurveillance.org/ew/2004/040805.asp#1>
5. Crook PD, Crowcroft NS, Brown DW. West Nile virus and the threat to the UK. *Commun Dis Public Health* 2002; 5(2):138-43.
6. Perra A, Zientara S, Murgue B, Zeller H, Hars J, Mathieu B et al. La surveillance du virus West Nile en France en 2001. *Bulletin Epidemiologique Hebdomadaire* 2002; 33:161-3.
7. Davison KL, Crowcroft NS, Ramsey ME, Brown DWG, Andrews NJ. Viral encephalitis in England, 1989-1998: what did we miss? *Emerg Infect Dis.* 2003; 9:234-240
8. Technical Guidance Document. C3/WD159. Procedure for communication to member states and the commission about West Nile virus disease.
http://europa.eu.int/comm/health/ph_threats/com/west_nile/wnv_case_def_en.pdf