



ACDP/72/P10

## **ADVISORY COMMITTEE ON DANGEROUS PATHOGENS**

### **Management and control strategy for West Nile virus in the United Kingdom**

#### **Issue**

1. Consideration of current actions in developing a management and control strategy for West Nile virus (WNV) in the United Kingdom. Members are invited to comment on the actions taken to date.

#### **Background**

2. Members were last updated on actions to develop a strategy for the management and control of West Nile Fever (WNF) in the UK at their meeting in September 2002.

#### **Surveillance**

##### Mosquitoes

3. The Department of Health (DH) is funding Durham University to determine whether WNV is present in mosquitoes in England, and to assess the distribution of different mosquito species in central and southern England. This work is vital, as it will allow us to determine the risk of human WNV infection in the UK. DH is considering funding proposed work to test mosquitoes, collected by both suction traps and baited traps, for the presence of WNV. The Department is also considering a wider programme of Microbial Risk Assessment with CAMR.

##### Birds

4. Ongoing and enhanced surveillance of dead birds, across a range of species including Corvidae, where there is suspicion of encephalitis is being managed by DEFRA, and laboratory isolation from possible WNV-infected avian cadavers is undertaken by VLA.

5. Results from research, being undertaken by CEH Oxford, looking into the presence of antibodies against WNV in non-migratory native birds, has suggested that there may be evidence of WNV in the bird population of the UK. However, these results need to be confirmed and further studies are being undertaken in collaboration with Government Agencies.

6. CAMR, VLA and CEH are working together to ensure that their test protocols are consistent, and all are working with colleagues in other countries to obtain validation samples and agreed testing protocols.

## Humans

7. The Public Health Laboratory Service Communicable Disease Surveillance Centre (PHLS/CDSC) set up enhanced surveillance for human disease in September 2002. This included a retrospective study of CSF from patients with encephalitis where no causative organism had been identified in cases between April and September 2002, and prospective surveillance of suspected cases to the end of October. An alert was placed in the CDR and the Regional Epidemiologists were asked to contact infectious disease physicians in their regions to ask them to complete data collection forms from possible cases fulfilling the case definition and refer samples to CAMR. The Clinical Virology Network co-ordinated the retrospective study.

8. The retrospective study yielded 123 CSF samples from patients aged 50 years or above who had been given a clinical diagnosis of encephalitis but for which no organism had been identified.

9. The prospective study yielded samples from 14 patients. Increased publicity prompted submission of samples for WNV testing from a further 13 patients with encephalitis with no record of recent travel history. Samples were tested for WNV as follows: For CSF samples, detection of WNV RNA by RT-PCR and detection of anti-WNV IgG by immunofluorescence (IF); for serum samples, IgG-IF, with RT-PCR if sample taken in the acute phase.

10. All samples were negative for WNV, suggesting that WNV infection is not widespread in the UK.

11. A further co-ordinated surveillance for WNV infection will be resumed this Spring.

## **Pesticides and repellents**

### Pesticides

12. It is generally thought that DH should not advise on specific use of pesticides as part of a contingency strategy for combating WNV by control of mosquitoes. The Health and Safety Executive (HSE), and DEFRA, working with English Nature, advise on pesticide use, and local authorities who would be responsible for undertaking pest control measures would need to be advised as to which pesticides were appropriate and approved for use.

13. DH sought advice from the Advisory Committee on Pesticides (ACP) at its meeting in October 2002, on the use of pesticides, and presented a number of products which might potentially be used under emergency conditions should there be WNF and/or WNV outbreaks in the UK. These included insecticide products that could be used in internal (indoor) situations (predominantly based on pyrethroids) and a number of products for use in external situations.

14. The ACP noted that, to date, only a couple of District Councils in SE England have needed to use pesticides to control mosquito populations to control biting nuisance. They also noted that there is no experience of space-spraying in external conditions to control adult mosquitoes within the UK. Information is available from the U.S.A where space-spraying to control adult mosquitoes has been undertaken. The ACP were reluctant to endorse the use of large-scale spraying to control mosquito populations in the absence of evidence that such spraying would be effective in preventing the spread of the disease. Although there is evidence of the effectiveness

of spraying in controlling mosquito population in specific areas, there is no specific evidence that this measure prevents the spread of the disease.

15. Following this meeting, DH contacted UK manufacturers and identified approved adulticides available for supply within the UK and compared these to those that had been used in the U.S. There was a reluctance of most manufacturers to supply approved pesticides for control of adult mosquitoes in external situations, primarily because of the potential for adverse effects on other non-target insects. Three products supplied have been identified where the label recommendations include use to control mosquitoes by Ultra Low Volume (ULV) or fogging application, and the company have indicated willingness to supply the UK.

16. HSE examined the existing conditions of approval for a number of products identified. The HSE, acting as Registration Authority, prepared a tabulation of approved use products which was presented to the ACP at its meeting on 16 January 2003 ([http://www.pesticides.gov.uk/committees/acp/minutes\\_list.htm](http://www.pesticides.gov.uk/committees/acp/minutes_list.htm)).

17. The ACP noted that many of the product uses proposed in the control strategy were within existing conditions of approval, but recommended that environmental risk assessments should be carried out to address the potentially more widespread use than originally envisaged. HSE advised that it is not possible to give generic advice and that advice must be related to specific products.

18. In the interim, members of ACP confirmed that these products could be used against WNV (under terms of approval), should an outbreak occur in the UK and require immediate action. They also re-emphasised the need for mathematical modelling of the transmission of infection to confirm any proposed use of pesticides was likely to have benefits for human health. The ACP also recommended that consideration of potential for development of insecticide resistance be considered further, which would be addressed by the Registration Authority.

19. Consequently DH has:

- commissioned a small scoping research contract with Warwick University to model the effects of pesticides in controlling transmission;
- written to a major supplier of pesticide products seeking confirmation that they will supply products; and
- drafted an advice note for local authorities which has been sent to English Nature for comment.

20. HSE are undertaking an evaluation of the approved pesticides for use in the control of mosquitoes, including **insect repellents**.

21. The Committee on Toxicology (COT) recently made a draft statement on N,N-diethyl-m-toluamide (DEET) which can be found on their website: [www.doh.gov.uk/cotnonfood/index.htm](http://www.doh.gov.uk/cotnonfood/index.htm). They concluded that

“There are a small number of published reports of severe CNS toxicity which concern 18 individuals (children aged below 16, and one adult aged 29) where exposure to DEET containing insect repellents was followed by severe CNS toxicity. The Committee noted that the small number of reported cases had to be considered in the context of the very large numbers of people using

DEET- containing products. Thus the risk of such severe effects was considered to be extremely remote."

22. The Biocides Consultative Committee (BCC) met in January 2003 and concluded that:

- When used appropriately, topically applied products containing DEET can give protection against biting insects such as mosquitoes;
- The concentration of DEET in such products and frequency of application are the main determinants of the efficacy of protection; and
- Products containing greater than 30% of DEET afford no additional protection. The most appropriate approach to prevention of biting is to use concentrations below 30% with an application frequency recommended by the manufacturer.

### **Management and Control Strategy**

23. DH, in conjunction with colleagues at DEFRA, is continuing to develop a management and control strategy for WNV. This strategy includes a human disease surveillance programme, ensuring laboratory capacity for the identification of the viral agent, provision of advice for medical and veterinary staff, public health control measures to be taken in the event of a case and provision of advice for the public.

### **Triggers**

24. At the 70<sup>th</sup> meeting of the ACDP in September 2002, it was thought premature to make final decisions about 'trigger points' for the use of larvacides and adulticide treatments for mosquitoes but that this advice would need to be included in the agreed Management and Control Strategy. One suggestion was that a greater number than usual of dead corvids could be used as an indicator.

25. Research in the US had not provided substantive evidence of a correlation between WNV in birds and mosquitoes with the disease in humans, although there had been increased incidence of human disease in areas where dead birds had been found.

26. Before setting trigger points for the use of insecticide controls of mosquitoes, it is suggested that the outcome of the mosquito surveillance programme is awaited, as well as the conclusions of the modelling exercise on the efficacy of mosquito spraying in the control of the spread of WNV.

### **Action**

27. This paper is intended primarily for information at this stage, but members are invited to comment on the actions taken to date.

**Secretariat**

**March 2003**

## **Update on situation in US, Canada and France**

### **US and Canada**

Since 1999, when WNV was present in 16 states, it has spread extensively to cover 44 states, the District of Columbia and five Canadian provinces by the end of 2002. The virus was found in more than 140 species of birds, 36 species of mosquito, in horses, and other mammals (bats, cats, rabbits and skunks). A particularly unusual feature in 2002 was the rapid spread of infection to horses across the country.

In 2002, 3893 people had been reported as infected with the virus (laboratory confirmed) and 254 had died. In 2002 the largest outbreak occurred in Illinois (835 cases).

In all, over 4000 people have been infected since the original New York City outbreak and 272 have died.

WNV circulates in the blood of infected people and during 2002, 58 cases of infection with WNV in the United States of America were investigated after it was suspected they had been acquired through blood transfusion. Evidence of transmission of WNV through blood transfusion has been found in six of these cases. There have also been a small number of cases of West Nile Fever in the United States following organ transplantation. Transmission of WNV from breast milk and intra-uterine transmission have also been reported. The breast milk transmission followed infection of the mother by blood transfusion. The US authorities are continuing their investigation into these incidents. Viral inactivation of imported US blood plasma is carried out as a safety measure to remove the risk to patients from transfusion transmissible viruses, including WNV, should it be present.

### **France**

Surveillance in France in 2002 concentrated on the areas where horses had been infected in the 2000 outbreak and failed to find any evidence of WNV in people, birds or mosquitoes.