Ionad Naisiunta Faire Galair

EPI-INSIGHT

DISEASE SURVEILLANCE REPORT OF NDSC, IRELAND

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In Partnership for Prevention and Protection

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National Disease Surveillance Centre,

25-27 Middle Gardiner St
Dublin 1,
Ireland

Tel: +353 (0)1 **876 5300**
Fax: +353 (0)1 **856 1299**
info@ndsc.ie
www.ndsc.ie

WEST NILE VIRUS INFECTION

Introduction

The National Disease Surveillance Centre (NDSC) has advised people intending to travel to countries where mosquitoes are prevalent to take routine preventive measures against insect bites, following confirmation of West Nile Virus (WNV) in two Irish travellers who returned from the Algarve, Portugal in July. The initial diagnosis was made at the National Virus Reference Laboratory and confirmed in the UK at the HPA Special Pathogens Reference Unit in Porton Down.

WNV belongs to a group of viruses known as flaviviruses and are categorised as arboviruses (viruses that are transmitted by insects). It is commonly found in Africa, West Asia, Australasia, the Middle East and more recently, in North America. There has been sporadic WNV activity in many countries bordering the Mediterranean and in South Eastern Europe over the last 40 years with occasional human cases being diagnosed. In Europe, during 2003, there was one imported human WNV case in the Netherlands and two cases in France (acquired either locally or in Spain).

Transmission

Birds are the normal host for WNV. However, humans, mosquitoes, horses and some other mammals can also be infected. The virus is transmitted by the bite of an infected mosquito. Person to person transmission does not occur through direct contact. However, transmission through blood transfusions, organ donations and across the placenta has been identified in a small number of cases. The incubation period is usually 3 to 8 days but can be as long as 14 days.

Clinical Features

The spectrum of illness produced by WNV varies:

- *Asymptomatic*: about 80% of WNV infections have no symptoms.
- *Mild illness:* approximately 20% of those infected develop a mild illness (West Nile fever). West Nile fever is generally described as a febrile illness of sudden onset often accompanied by malaise, headache, muscle pain, rash and gastrointestinal symptoms. Symptoms generally last 3 to 6 days.
- *Severe illness:* less than 1% of infections will result in severe neurological disease with high fever, headache, neck stiffness, sore eyes, disorientation, muscle weakness, convulsions and coma. Case fatality rates during recent outbreaks have ranged from 4% in Romania (1996)[1] to 12% in New York (1999)[2] and 14% in Israel (2000).[3] The most significant risk factor for developing severe neurological disease is advanced age (those over 80 are particularly vulnerable). Encephalitis is more commonly reported than meningitis.

Clinical Diagnosis

Diagnosis of WNV infection is based on a high index of clinical suspicion and obtaining specific laboratory tests. WNV infection has occurred in patients of all ages. However, it should be strongly considered in adults >50 years who develop unexplained encephalitis or meningitis in summer or early autumn within 14 days of returning from areas where there is known WNV activity (in particular US or Canada). It rarely occurs in children.

Any suspected cases should be reported to the Director of Public Health.

Laboratory Diagnosis

WNV testing is available through the National Virus Reference Laboratory. The most efficient diagnostic method is detection of IgM antibody to WNV in serum collected within 8-14 days of illness onset or cerebrospinal 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.

Treatment

West Nile fever is generally a self limiting illness requiring simple measures only. In a small proportion of cases with severe central nervous system infection treatment is supportive, often requiring hospitalisation, intravenous fluids, respiratory support, and prevention of secondary infections. Ribavirin in high doses and interferon alfa - 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 treatment options, including steroids, anti-epileptic agents or osmotic agents, in the management of WNV encephalitis. There are indications that a vaccine may be developed in the next year or two.

Prevention

The best way to protect yourself against WNV is to prevent mosquito bites:

- Take particular care between dusk and dawn when mosquitoes are most active.
- Avoid areas near water where mosquitoes are likely to be found.
- Use insect repellents on exposed skin, avoiding contact with eyes.
- Wear loose-fitting light coloured clothing with long sleeves, long trousers, socks and closed shoes. Clothing can be treated with insecticide sprays.
- Mosquito bites can be reduced by air conditioning, insect-proof screens on windows and doors, and by spraying the room with insecticide.
- Bed nets and cot nets can be used if necessary.

Further information

Further information can be found on the NDSC website at www.ndsc.ie and the CDC website at http://www.cdc.gov/ncidod/dvbid/westnile/index.htm. A definitive paper, Petersen LR, Marfin AA. West Nile virus: a primer for the physician. *Ann Intern Med* 2002; **137**(3):173-9, gives a broad overview of WNV and its clinical management and can be accessed at http://www.annals.org/cgi/content/full/137/3/173

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1. Tsai TF *et al*. West Nile encephalitis epidemic in southeastern Romania. *Lancet* 1998; **54**:767-71.
2. Nash D *et al*. The outbreak of West Nile virus infection in New York City area in 1999. *N Engl J Med* 2001; **344**: 1807-14.
3. Chowers MY *et al*. Clinical characteristics of the West Nile fever outbreak, Israel, 2000. *Emerg Infect Dis* 2001; **7**: 675-8.

Introduction

With the explosion in types of travel to an increasing range of destinations the role of travel medicine is becoming more complex. Vaccination schedules, risk assessment and appropriate disease prevention strategies must be tailored to match individual itineraries. The travel medicine physician needs to have up-to-date information regarding emerging diseases and new vaccinations. This information is readily available on the web and access to such websites and electronic recording of vaccinations are now considered essential.

TRAVAX www.travax.scot.nhs.uk or TRAVMED www.travmed.com have comprehensive websites with A-Z destination listings – outbreak index, disease information and map resources, country itinerary and links to other important sites such as the World Health Organisation http://globalatlas.who.int/ and CDC Atlanta http://www.cdc.gov/travel/destinat.htm where up-to-date information on global infectious disease and travellers' health is available. Further information, particularly with regard to policies on emerging conditions such as SARS and imported diseases, is available on the NDSC web site at www.ndsc.ie.

Accurate recording of consultations and vaccine administration is essential. In Ireland, GP Clinical and Health Care 1 (the two most commonly used GP computerised record systems used by Irish general practitioners) have good vaccination packages which can be tailored to one's interest in travel medicine. Specific recording and information packages for travel medicine clinics such as Exodus are also commercially available.

It is essential that all administered vaccines are recorded by name of vaccine, manufacturing company, site of administration, method of administration, dose and batch number. Recent recall of vaccines such as rabies vaccine and oral polio vaccine (OPV) underline the importance of electronic recording.

The initial pre-travel consultation must include a careful medical history, previous vaccination history including childhood vaccination, travel itinerary, vaccine preventable disease risk, advice regarding insect and mosquito prevention, appropriate malaria prophylaxis, mountain sickness, prevention of travellers' diarrhoea and helminthic infections, and careful evaluation regarding risk behaviour. The advice offered to a middle aged couple staying one week in a five star hotel in Bangkok differs from the advice given to a student backpacker travelling for three months around South East Asia including Thailand, Vietnam, Laos and Cambodia.

Vaccines

Confirmation of primary courses of vaccines, BCG, and those given in special circumstances e.g. influenza, should be ascertained. Yellow fever vaccine is still mandatory for parts of Sub-Saharan Africa and South America and administration can only be carried out at a registered yellow fever centre of practice. To register as a yellow fever centre an application is made to the Department of Health and Children. They arrange for inspection of the premises and ensure certain criteria are met before granting a licence.

Many new combined vaccines have recently become available on the Irish market:

- **Hepatitis A/hepatitis B**
- **Hepatitis A/typhoid**
- **Polio/diphtheria/tetanus**

These have greatly reduced the need for multiple injections. The basic five travel vaccines hepatitis A, typhoid, polio, diphtheria and tetanus can now be given in two injections.

A course of hepatitis B vaccine should be considered for all young people, long-term travellers, individuals at risk, and overseas volunteer aid workers. It can be given either singly or as a combined hepatitis A/hepatitis B preparation.

For more specific destinations, vaccination for Japanese encephalitis, rabies, meningitis A and C, and tick-borne encephalitis may be considered following risk assessment of destination and likely level of exposure. Dukoral a new oral cholera vaccine would be appropriate in very specific situations such as cholera outbreaks in areas of conflict, or when working in refugee camps. Dukoral for the prevention of enterotoxigenic *E. coli* induced diarrhoea should not be used until additional evidence of its efficiency has become available.

Vaccine Preventable Disease

Hepatitis A

Hepatitis A is the commonest viral infection preventable through vaccination. The risk of hepatitis A in the unprotected traveller is estimated to be 3 per thousand per month of travel. Transmission is by the faecal/oral route through food and water. The incubation period is 2-6 weeks. The mortality is 3% in the over 65-year age group.

Typhoid

Infection occurs worldwide. Typhoid is one of the commonest causes of fever in the returned traveller. The attack rate is 1:30,000 overall with a 10-fold greater attack rate in India and North Africa. Spread is through food and water including contaminated ice cream and milk. The incubation period is from 3 to 30 days (normally 8 to 18 days). Diagnosis is made by culture of blood, faeces or urine. Vaccination only gives 70% protection.

Tetanus
The risk of tetanus is worldwide. Transmission occurs when tetanus spores are introduced into the body through an open wound or through injecting drug use. The incubation period is 3 days to 21 days but can be longer depending on the site of the wound and the extent of contamination. Mortality can be as high as 50% in a third world situation. A shorter incubation period is associated with higher mortality.

Diphtheria
Diphtheria is mainly a problem in Eastern Europe. During the period 1990 – 1995 there were 47,808 cases reported in Russia. The incubation period is about 3 days.

Polio
Polio has been eliminated from much of the world by vaccination. However, it is still reported in India and recently it has re-emerged in Nigeria from where it has spread to a number of West and Central African countries such as Burkina Faso, Ghana, Togo and Chad.

Introduction of the inactivated polio vaccine in the combination vaccine preparation prevents risk of emergence of wild strains from OPV.

Hepatitis B
Hepatitis B is the second most common viral disease that is preventable through vaccination. Transmission is from person to person through sexual contact, shared needles, contaminated blood and body fluids, or perinatal transmission from mother to infant. The carrier state in the tropics can be as high as 20%. About 15% of carriers develop carcinoma of the liver or cirrhosis.

Rabies
Rabies is transmitted through dogs, bats and wild animals. Approximately 6% of street dogs in South East Asia carry rabies. There are 60,000 deaths worldwide each year from rabies and 30,000 in India. Pre-exposure vaccination is very effective. However, it does not eliminate the need for additional medical attention after a potential rabies exposure. Booster rabies vaccination is normally required in post-exposure situations. Established cases are invariably fatal.

Japanese encephalitis
Japanese encephalitis occurs throughout South-East Asia and the Far East. The reservoir of infection is pigs and the virus is transmitted to man via mosquitoes. The incubation period is usually 5-15 days. Mortality is about 20%.

Other Important Diseases

Dengue fever and dengue haemorrhagic fever
Dengue fever is endemic in South East Asia, Africa, Central and South America, the Indian Subcontinent and China. Epidemics occur normally from June to October. It is transmitted by mosquitoes. No vaccine is available and prevention is by avoidance of mosquito bites, and control and eradication of the mosquito vector.

Travellers' diarrhoea
Travellers' diarrhoea is characterised by at least three watery loose motions in 24 hours accompanied by one or more of the following symptoms: nausea, vomiting, abdominal cramps, fever, tenesmus or dehydration. The causes include: *E. coli*, *Shigella*, *Campylobacter*, *Salmonella* subtypes, *Giardia*, *Cryptosporidium* and amoebiasis. Symptoms normally respond to rehydration and loperamide, or in more severe cases quinolone or azithromycin.

Sexually Transmitted Infection

Advice on lifestyle should be given particularly in the case of younger travellers. Sexually transmitted infection (STI) risks are increased with increased alcohol consumption and at present the only vaccine preventable STI is hepatitis B.

Mosquito and Insect Prevention

Insect bite prevention is one of the most effective measures in preventing disease and this must be stressed during any pre-travel consultation. Mosquito-borne diseases include dengue fever, yellow fever and other arborial fevers, Japanese encephalitis and malaria. Other insect-borne diseases include leishmaniasis which is spread by sandflies, trypanosomiasis (sleeping sickness) spread by the tsetse fly, and Chagas' disease spread by the triatomine or "assassin" bug found in old buildings in South America. Insect bite prevention includes the use of a permethrin impregnated bed net, application to exposed skin of repellent with 50% Deet and use of permethrin spray to equipment and clothing. Long sleeves, high necks and covered legs are particularly important in malaria areas in the evenings.

In conclusion the pre-travel consultation should cover appropriate vaccination and pre-travel advice following a careful risk assessment. One does not wish to unduly alarm clients but it is important that they are informed.

DE Thomas, Irish Society of Travel Medicine

Cork Zoonoses Conference

A 2-day conference entitled '*Zoonotic Diseases: Global Threats & Local Issues*' will be held on 19th and 20th October 2004 at Rochestown Park Hotel, Cork. Topics to be covered will range from an overview of zoonotic diseases (evolution, Irish situation, legal issues) to emerging viral threats (SARS, Avian Flu, West Nile Virus) to food safety issues (surveillance, importation/labelling, antimicrobial resistance) and water-related aspects (water quality, outbreaks). National and international experts will contribute. The conference is organised by the Cork Zoonoses Committee. Further information and registration details are available from: **Conference Secretariat, Dept. of Public Health, Southern Health Board (ph 021-4923502; e-mail bradleya@shb.ie or millarn@shb.ie).**

MEASLES: INCREASED INCIDENCE IN IRELAND

One hundred and eighty one measles cases were reported in Ireland during weeks 1-26, 2004 (incidence rate of 4.6/100,000 population). The increase in measles activity (particularly since week 22) indicates that measles transmission is widespread in the community. This follows on substantial measles activity in 2003 (figure 1) and should be seen against the backdrop of the large measles outbreak in 2000 (over 1600 cases reported, including three measles-associated deaths in children).

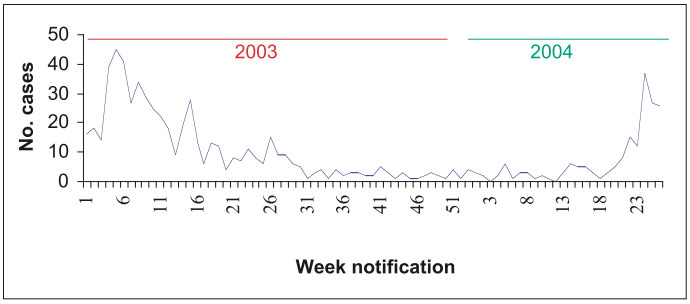

Figure 1. Measles cases by week of notification 2003-2004 (provisional data)

Since the beginning of the year 70% of cases notified have been reported from the ERHA (rate 9.0/100,000) (figure 2).

For weeks 1-26, 2004, young children were most affected, with the highest age-specific incidence rates occurring among those <1 year of age (117.4/100,000). Enhanced surveillance data (where available) indicate that the main risk factor for infection is non-vaccination with measles-mumps-rubella (MMR) vaccine.

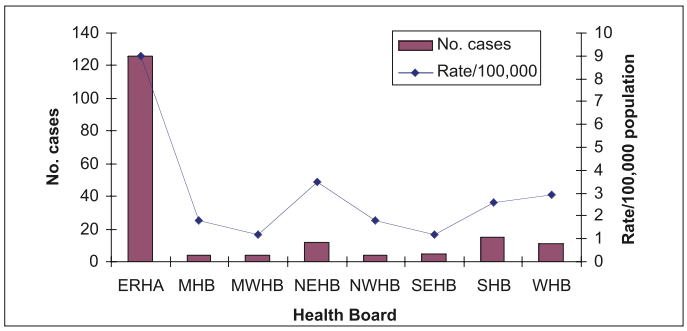

Figure 2. Number of measles cases and crude incidence rate (per 100,000 population) by health board, weeks 1-26, 2004 (provisional data)

Measles vaccination

Measles and its sequelae can be effectively prevented with MMR. In Ireland, MMR vaccine is routinely recommended for children at 12-15 months of age, with another dose recommended at 4-5 years of age.[1] The vaccine can be administered to children as young as 6 months of age, particularly in outbreak situations. Because seroconversion rates are lower in children immunised before their first birthday than in older children, it is recommended that these children should receive a second dose of MMR between the ages of 12-15 months and a third dose at 4-5 years of age.

Nationally, MMR vaccination rates among children by the age of 24 months are inadequate (at 80%)[2] and well below the 95% considered necessary to prevent outbreaks occurring. Maintaining high immunisation uptake is essential for preventing measles transmission.

Preventing on-going transmission in specific settings

Individuals with measles who attend any group settings (e.g. crèches, schools, health care settings) are likely to transmit infection to non-immune individuals. Age appropriate vaccination is recommended for all children. Health care workers born after 1978, without evidence of either measles infection or of having received two doses of MMR vaccine should be given two doses of MMR separated by at least one month.[2]

Key points

- Measles virus is circulating widely in the community, particularly in the ERHA region.
- Unvaccinated children are at highest risk of measles infection.
- Ensuring high MMR immunisation coverage is essential to prevent measles transmission.
- Good surveillance data are fundamental to control and prevention activities.

Suzanne Cotter, Sarah Gee, NDSC

References

1. RCPI. Immunisation guidelines for Ireland 2002. Immunisation Advisory Committee Royal College of Physicians of Ireland. Available at www.ndsc.ie/Publications/Immunisation/ImmunisationGuidelines/
2. NDSC. Immunisation uptake statistics, Quarter 4, 2003. Available at www.ndsc.ie/Publications/Immunisation/ImmunisationUptakeStatistics/d982.PDF

HEPATITIS A CLUSTER

A crèche-linked cluster of hepatitis A virus infection (HAV) presented in the Southern Health Board region in June 2004. A geographical and time-related cluster of three confirmed HAV cases was identified. The cases (two adults and a pre-teen child) were each found, on follow up surveillance, to have child household contacts attending the same crèche facility. No case had been notified from the crèche itself. However, in children under six years, most (70%) of such infections are asymptomatic.[1]

Control measures included the offering of hepatitis A vaccine to all children and staff in the facility as recommended by national immunisation guidelines.[1] Vaccination was also offered to household members of all attending children. To date, there have been no further notified cases of HAV infection linked either directly or indirectly to the crèche.

While not possible on this occasion for practical reasons, it would have been of particular interest to examine the epidemiology of HAV immunity in this setting and context (including household contacts of crèche attendees) by means of salivary testing. The process would enable the cost efficiency of current immunoprophylaxis guidelines to be reviewed and would inform national policy. Salivary testing merits consideration in future such instances.

Dr. Margaret O' Sullivan and Dr. Mary Kieran, SHB

Reference

1. Immunisation Guidelines for Ireland 2002. Immunisation Advisory Committee Royal College of Physicians of Ireland.

Salmonella Monthly Report (June 2004):

Strains are allocated to months based on the date of receipt of the isolate from the referring laboratory. These figures are provisional as work may not be finished on particular strains at the time of publication. Data are provided courtesy of Prof Martin Cormican and Dr Geraldine Corbett-Feeney, NSRL.

Health Board	E	M	MW	NE	NW	SE	S	W	Total
S. Albany	1	0	0	0	0	0	0	0	1
S. Bredeney	2	0	0	0	0	0	0	0	2
S. Enteritidis	9	2	0	0	0	4	2	6	23
S. Hadar	0	0	0	0	0	0	0	1	1
S. Reading	1	0	0	0	0	0	0	0	1
S. Typhi	0	0	0	0	1	0	0	0	1
S. Typhimurium	2	2	1	0	0	1	0	0	6
S. Virchow	0	0	0	0	0	1	0	1	2
Unnamed	1	0	0	0	0	0	0	0	1
Total	**16**	**4**	**1**	**0**	**1**	**6**	**2**	**8**	**38**