Infectious encephalitis. Guidelines for travellers

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With increasing numbers of people travelling worldwide, it is important to highlight the risk of infectious encephalitis and their preventive measures. The more common types or those for which there are prevention measures, are described below.

1. Infections transmitted by mosquitoes

a) Japanese encephalitis

What is it and how can I get it?

Japanese encephalitis virus belongs to the *Flavivirus* family. The virus is mainly transmitted between *Culex* mosquitoes and pigs or birds. However, humans can become infected after being bitten by a mosquito carrying the virus.

Where is it found?

Japanese encephalitis virus is found in South, South-East Asia and the Western Pacific islands. In 2022 there were a number of cases in South Eastern Australia. It mainly occurs in rural areas, particularly around rice farming where there are many mosquitoes.

What are the symptoms?

Only a few people develop symptoms, which range from fever, headache and vomiting to drowsiness and seizures. It can be fatal in some cases.

Can I prevent it?

If you are visiting South or South East Asia, visit your local travel clinic for up-to-date advice.

The Ixiaro vaccine is licensed in the UK. Two initial doses are normally given 28 days apart with a booster dose 12-24 months later for those still at risk. In those aged 18-64 years a fourth can be given 10 years for ongoing protection (UK Health Security Agency, 2018).

A rapid schedule administered at days 0 and 7 is also licensed for adults aged 18-64 years of age.

For children (from two months of age) and adults 65 years of age and older, although not

licensed for these age groups, the rapid schedule can be used in circumstances where there is genuinely insufficient time to complete the standard schedule prior to travel (Green Book, June 2018).

With both schedules, primary immunisation should ideally be completed at least one week prior to potential exposure to Japanese encephalitis virus.

You should also exercise precaution against mosquito bites (please see *Prevention of mosquito bites* below). Please see our factsheet on *Japanese encephalitis* for more information about this condition.

b) West Nile encephalitis

What is it and how can I get it?

West Nile virus belongs to the *Flavivirus* family. People usually become infected after being bitten by a mosquito which has fed on an infected bird.

Where is it found?

West Nile virus first occurred in Uganda. However, since then it has been found in Africa, Europe, the Middle East, North America and West Asia.

What are the symptoms?

Only around 20% of people who are infected with the virus develop symptoms. These often range from headache to fatigue and body ache. However, more severe symptoms including drowsiness, seizures and confusion can occur sometimes because of encephalitis or meningitis. Older people are more susceptible to encephalitis.

Can I prevent it?

There is no vaccine against West Nile virus; however, you should exercise precaution against mosquito bites (please see *Prevention of mosquito bites* below). Please see our factsheet on *West Nile virus* for more information on this condition.

c) Zika

What is it and how can I get it?

Zika virus is also a *Flavivirus*, transmitted by the day-time biting *Aedes* mosquitoes. The virus can be transmitted to the foetus from the mother during pregnancy. Sexual transmission has also been reported.

Where is it found?

A large outbreak of Zika virus occurred in South America in 2014. However, the virus has been reported in a number of other countries in Central America, the Caribbean, Asia, Africa and the USA.

What are the symptoms?

Many people who are infected with a virus have no symptoms. However, of those who do report symptoms these may include fever, rash, headache, joint or muscle pain and red eyes (conjunctivitis). Although a few cases of encephalitis have been reported, the most common neurological complaint is Guillain-Barré syndrome (a weakness of the arms and legs). However, if infection occurs during pregnancy, this can result in a baby being born with microcephaly (a neurological birth defect).

Can I prevent it?

At the time of writing there is no established vaccination against Zika virus. Pregnant women are advised to postpone non-essential travel to areas at high or moderate risk. Women who have travelled to areas at risk of Zika virus are advised to postpone pregnancy for at least eight weeks after leaving the area (or after experiencing symptoms on returning home) and six months after a male partner has returned from an area of risk. In all travellers and particularly in pregnant women, measures can be taken to prevent mosquito bites.

Preventing mosquito bites

- Using N, N-Diethyl-m-toluamide (DEET) mosquito repellent during the day and at dusk. It is recommended to use concentrations up to 50% (the higher the concentration, the longer the length of protection). It is safe to use in pregnancy and breastfeeding and in children older than two months.
- Wear long-sleeved clothing which may be treated with mosquito-repellent (permethrin).
- Sleep in rooms with air-conditioning and houses with mosquito screens on the windows and doors.
- Avoid keeping items around the home that store water e.g., plant pots and tyres.

2. Infections transmitted by ticks

a) <u>Tick-Borne encephalitis</u>

What is it and how can I get it?

Tick-Borne encephalitis virus is a *Flavivirus*. It is transmitted to people mostly by the bite of a tick, or in rare cases, through consuming infected dairy products.

Where is it found?

Tick-Borne encephalitis virus is found in parts of Europe and Asia.

What are the symptoms?

The most common symptoms include fever, headache, muscle ache, nausea and vomiting. However, around 20-30% of patients will develop encephalitis with symptoms including drowsiness, confusion and weakness occurring approximately eight days after the initial symptoms.

Can I prevent it?

Take measures to avoid tick bites as below and remove any ticks you find on your body. There is a vaccine available and you should discuss whether this is recommended with your travel clinic. Three doses of the

vaccine are required. Staying in rural areas, in particular camping puts you at higher risk. Please see our factsheet on *Tick-Borne encephalitis* for more information on this condition

b) ***Borrelia burgdorferi*** **(Lyme disease)**

What is it and how can I get it?

Borrelia burgdorferi is type of bacteria which causes Lyme disease. It is acquired from the bite of an infected tick.

Where is it found?

Lyme disease occurs in forested areas in Asia, Europe and the USA.

What are the symptoms?

Often a skin lesion occurs, which is ring-shaped with a clear central part. This is known as '*erythema migrans'*. Other early symptoms include fever, muscle aches, headache, and swollen lymph nodes. Headache and neck stiffness suggestive of a meningitis or encephalitis as well as weakness of part of the face 'facial palsy' may occur later.

Can I prevent it?

There is no vaccine available. It is advisable to avoid forested areas and if bitten to remove the tick immediately.

General measures to avoid tick bites

- Use of DEET repellent.
- Wear long trousers and socks, especially when walking in forested areas.
- Shower after walking outside.
- Check your body for ticks.
- Remove any ticks from your skin immediately but ensure this is done correctly (e.g., removal of the whole tick).

3. Infections transmitted by animal's bites

Rabies

What is it and how could I get it?

Rabies is caused by a virus which is carried in the saliva of infected animals commonly dogs, cats, bats and monkeys. Humans acquire the diseases when the infected saliva enters the blood. This may be via a bite, a scratch or a lick to an open wound or to other vulnerable areas including mouth and eyes.

Where is it found?

Rabies is found throughout the world with only a few countries being free of rabies, including the UK. However, rates are higher in the developing world where fewer animals are vaccinated.

What are the symptoms?

Symptoms may occur sometime after acquiring the virus. These include confusion and hydrophobia (fear of water).

Can I prevent it?

It is advisable to keep your distance from animals whilst abroad especially stray dogs and cats. There is a vaccine available, which is recommended for those thought to be at increased risk of exposure to infected animals e.g., those working with animals or spending long periods in a country with well-known rabies risk. Three doses of the vaccine are required at least on days 0, 7 and 28 (or minimum of 0. 7 and 21) before travel with booster doses required as per the ongoing risk of exposure to animals.

In addition, following potential exposure to the virus (e.g., by a bite, lick, or scratch), wash the wound thoroughly and seek medical attention immediately. If you have already been vaccinated, two further doses of vaccine are required on days 0 and 3. If you have not been vaccinated, multiple doses of vaccine are given over a period of a month, in addition to an injection of antibodies against rabies (immunoglobulin) if available. There is no treatment for rabies and almost all cases are fatal.

References

The above information is obtained from the following references. As information is constantly changing, it is recommended that you consult the following websites for the most up-to-date advice prior to travel in addition to visiting your local travel clinic or general practitioner.

- TravelHealthPro (UK based website with the travel resources from the National Travel Health Network and Centre (NaTHNaC) www.travelhealthpro.org.uk
- Center for Disease Control (USA) www.cdc.gov
- World Health Organisation (WHO) www.who.int/en
- NHS information regarding travel vaccinations www.nhs.uk/Conditions/Travel-immunisation/Pages/Introduction.aspx
- Electronic Medicines Compendium (eMC) – IXIARO suspension for injection (Japanese encephalitis vaccine – inactivated, absorbed) www.medicines.org.uk/emc/files/pil.6534.pdf
- Green Book Chapter 20 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/715006/Greenbook_chapter_20__Japanese_encephalitis_v3.pdf

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