

Factsheet for Health Professionals

Zika virus (ZIKV) is a member of the Flaviviridae virus family and the flavivirus genus. In humans, it causes a disease known as Zika fever. It is related to dengue, yellow fever, West Nile and Japanese encephalitis; viruses that are also members of the virus family Flaviviridae.

Outbreaks of Zika virus have previously been reported in tropical Africa, in some areas in Southeast Asia and more recently in the Pacific Islands.

Zika virus infection is symptomatic in only about one out of every five cases. When symptomatic, Zika infection usually presents as an influenza-like syndrome, often mistaken for other arboviral infections like dengue or chikungunya.

Zika virus infection is notifiable in New Zealand as an arboviral disease.

The mosquitoes that are able to spread Zika virus are not normally found in New Zealand. It has been isolated from a number of species in the genus *Aedes* - *Aedes aegypti*, *Aedes africanus*, *Aedes apicoargenteus*, *Aedes furcifer*, *Aedes luteocephalus* and *Aedes vittatus*.

AGENT

Zika virus is a mosquito-borne flavivirus closely related to dengue virus. The virus was first isolated in 1947 from a sentinel rhesus monkey stationed on a tree platform in the Zika forest, Uganda [2].

RESERVOIR

The virus reservoirs are presumably monkeys.

TRANSMISSION MODES

Zika virus is transmitted to humans mainly by certain species of *Aedes* mosquitoes. Some of these species bite during the day as well as in the late afternoon/evening.

SYMPTOMS

The main clinical symptoms in patients are fever, conjunctivitis, transient arthritis/arthralgia (mainly in the smaller joints of the hands and feet) and maculo-papular rash (that often starts on the face and then spreads throughout the body). In general the disease symptoms are mild and short-lasting (2-7 days). There is no evidence that Zika infection affects pregnant women or their babies. However, there are very few case reports in the literature. Studies show that the extrinsic incubation period in mosquitoes is about 10 days. The incubation period in humans is typically 3–12 days. There is no specific therapy for Zika virus infection and acute symptoms typically resolve within 4-7 days

The first well documented case of Zika virus was in 1964, beginning with a mild headache and progressing to a maculopapular rash, fever, and back pain. Within 2 days, the rash was fading, and within 3 days, the fever was gone and only the rash remained. There is no vaccine or preventive drug for Zika virus, and only treatment of symptoms is possible. Usually non-steroid anti-inflammatories and/or non-salicylic analgetics are used.

- low-grade fever (between 37.8°C and 38.5°C)
- arthralgia, notably of small joints of hands and feet, with possible swollen joints
- myalgia
- headache, retro-ocular headaches
- conjunctivitis
- cutaneous maculopapular rash
- post-infection asthenia which seems to be frequent.
- More rarely observed symptoms include digestive problems (abdominal pain, diarrhoea, constipation), mucous membrane ulcerations (aphthae), and pruritus.



Zika virus infection causes a mild disease and, other than notification, no particular action is required. However, as Zika infection may cause a rash that could be confused with more serious diseases such as measles or dengue, these more serious diseases do need to be ruled out. Diagnosis of Zika will first and foremost be by exclusion, based on symptoms, travel history and exclusion of more serious diseases including measles, rubella and dengue.

The pathogenesis of the virus is hypothesized to first infect [dendritic cells](#) near the site of inoculation, and then spread to lymph nodes and the bloodstream. In terms of replication, flaviviruses generally replicate in the [cytoplasm](#), but Zika virus antigens have been found in infected cell nuclei.

Rash on arm due to Zika virus.

HUMAN TO HUMAN TRANSMISSION

In 2009, it was proved that Zika virus can be sexually transmitted between humans. Professor Brian Foy, a university biologist from the Colorado State University at the Arthropod Borne and Infectious Disease Laboratory, visited [Senegal](#) to study mosquitoes and was bitten on a number of occasions during his research. A few days after returning to the USA he fell ill with Zika, but not before having vaginal intercourse with his wife. His wife subsequently showed symptoms of Zika infection, along with extreme sensitivity to light. Foy is the first person known to have passed on an insect-borne virus to another human by sexual contact.

DIAGNOSIS

Zika virus can be identified by RT-PCR in acutely ill patients and from day 5 post onset of fever by serology (detection of specific IgM antibodies). Serological cross-reactions with closely related flaviviruses are possible [4][5].

TREATMENT

Symptomatic only (non-steroid anti-inflammatories, non-salicylic analgetics); no vaccine or preventive drug is available.

PREVENTION

To reduce the risk of contracting Zika virus infection - as for the other mosquito-borne infections - travellers should minimise the exposure to mosquito bites by taking the following preventive measures:

1. Use of anti-mosquito devices (insecticide-treated bed nets, coils, smudge pots, spray, repellents) and wearing long sleeves and clothes with long legs, especially during the hours of highest mosquito activity (morning and late afternoon). Mosquito repellent based on a 30% DEET concentration is recommended;
2. Before using repellents, pregnant women and children under the age of 12 years should consult a physician or pharmacist;
3. For newborn children under three months, repellents are not recommended; instead, insecticide-treated bed nets should be used.

OUTBREAKS OF ZIKA VIRUS

Serologic studies have shown that Zika infections are occurring from Africa to Southeast Asia; in 1978 a small outbreak of acute fever in Indonesia due to Zika virus infection was described.

The most recent known outbreak has been reported on Yap Island, Federated States of Micronesia (FSM) from April to July 2007. This was the first outbreak of Zika virus identified outside of Africa and Asia. A total of 108 cases were confirmed by PCR or serology and 72 additional cases were suspected. The most common symptoms were rash, fever, arthralgia and conjunctivitis, and no deaths were reported. The mosquito *Aedes hensilli*, which was the predominant species identified in Yap during the outbreak, was probably the main vector of transmission. While the way of introduction of the virus on Yap Island remains uncertain, it is likely to have happened through introduction of infected mosquitoes or a viraemic human.

HISTORY

The first outbreak of the disease outside of Africa and Asia was in April 2007, on the island of Yap in the [Federated States of Micronesia](#). This virus was characterized by rash, conjunctivitis, and arthralgia, and was initially thought to be dengue. The Chikungunya and Ross River viruses were also suspected.[3] However, serum samples from patients in the acute phase of illness contained RNA of Zika virus. The [Zika fever](#) disease process was relatively mild: there were 49 confirmed cases, 59 unconfirmed cases, no deaths and no hospitalizations.[4]

Zika virus could be considered an emerging pathogen, as it spread outside Africa and Asia for the first time in 2007.[2] Thus far, it has been a relatively mild disease with limited scope, but its true potential as a virus and as an agent of disease is currently unknown.

OUTBREAKS IN THE PAZIFIC ISLANDS

French Polynesia: Between early October 2013 and 21 March 2014, 8,700 suspected cases of Zika.

New Caledonia: Between 25 November 2013 and 25 March 2014 there have been 352 confirmed cases of Zika virus. Of these, 244 are locally transmitted cases while the other 32 cases were imported from French Polynesia.

Cook Islands: Between 13 February and 24 March 2014 there have been 648 dengue-like illness cases reported with 49 of these laboratory confirmed with Zika virus.

Easter Island: As of 07 March 2014 there have been 40 suspected cases and 1 confirmed case of Zika virus reported.

In French Polynesia, after the Zika virus outbreak started, an increase in autoimmune and neurological diseases has been observed (73 cases, 42 of them being Guillain-Barré Syndrome, in a population of about 270 000). There is no proven link at this stage other than this temporal sequence. The simultaneous circulation of dengue serotype 1 and 3 viruses may also play a role

Measures at the community level include,

1. Reduction of mosquito breeding sites (removal of all open containers with stagnant water in and round houses, or, if that is not possible, treatment with larvicides);
2. In affected areas, elimination of adult mosquitoes through aerial spraying with insecticides.