

# Diseases transmitted by insects and ticks in the Americas

Depending on the destination, travellers may be at risk of a number of different diseases

## Key messages

- **A number of different diseases transmitted by insects and ticks are present in the Americas.**
- **Some insect borne diseases can potentially cause severe, occasionally life threatening, illness.**
- **Travellers should follow [insect bite avoidance advice](#) and seek prompt advice for any unusual symptoms - especially fever.**
- **Malaria tablets are recommended for some areas in Central and South America.**
- **Specific advice on malaria and vaccine preventable diseases can be found on our [Country Information pages](#).**

## Overview

Countries in the Americas have several native insects and tick species capable of transmitting diseases. Depending on the destination, travellers may be at risk of a number of different diseases, some are highlighted in this article.

Insect-borne illnesses may be mild and self-limiting. However, some diseases can potentially cause severe, occasionally life threatening, illness.

## Chikungunya

[Chikungunya](#) virus ([CHIKV](#)) is an infection transmitted by infected, day time biting *Aedes spp.* mosquitoes. The disease has recently emerged in [many countries in the Americas](#) [1]. CHIKV can cause fever, headache and muscle / joint pain. Most people fully recover but for some individuals, the joint pain may last for months or years and may become a cause of disability [2]. Occasional complications have been reported affecting the eye, nervous system or heart [2]. There is no

specific cure for CHIKV infection, treatment aims to relieve the symptoms.

## Dengue

[Dengue](#) is a viral infection, which like CHIKV is transmitted by day time biting *Aedes spp.* mosquitoes. Symptoms can include high fever, severe headache, pain behind the eyes, muscle and joint pains, nausea, vomiting, swollen glands or rash [3]. Symptoms usually last for two to seven days [3]. Severe dengue (also known as dengue haemorrhagic fever) is a more serious form of the disease which is rare in travellers. Many countries in the Americas have reported cases; a [map showing areas affected](#) is available from healthmap.

## Leishmaniasis

[Leishmaniasis](#) is an infection caused by protozoan *Leishmania* parasites and is transmitted to humans by a bite from an infected phlebotomine sandfly. The parasite is found in [a number of Central and South American countries](#) [4, 5]. There are different clinical forms of the disease including cutaneous (affecting the skin), mucosal (affecting mucus membranes of the nose, mouth and throat) and visceral (affecting internal organs of the body). Cutaneous leishmaniasis is the most common form and causes skin lesions, mainly ulcers, on exposed parts of the body which often result in scarring [6].

## Lyme disease

[Lyme disease](#) is a bacterial infection transmitted to humans by a bite from an infected *Ixodes* tick. Symptoms can include fever, headache, tiredness, and a characteristic skin rash around the site of the tick bite called erythema migrans. If left untreated, infection can spread to joints, the heart, and the nervous system.

Lyme disease is the most commonly reported vector-borne illness in the United States. Most cases are reported in the northeast and upper midwest of the country [7]. A recent study of Mid-Atlantic and Northeastern national parks in the US, found species of ticks that transmit Lyme (and other tick-borne diseases) on frequently used trails, indicating the potential risk of tick-borne disease to tourists [8].

The disease is also reported in Canada [9]. Studies have also shown that the bacteria that causes Lyme disease occurs in Mexico [10].

## Malaria

[Malaria](#) is caused by *Plasmodium* parasites and is spread to humans by infected *Anopheles spp.* mosquitoes. Malaria occurs in parts of Central and South America. A small number of Caribbean islands are also affected. Specific advice for each country is available on our [Country Information pages](#).

## Rickettsial infections

[Rickettsial infections](#) are caused by a range of different bacteria. These diseases are usually transmitted by ectoparasites such as fleas, lice, mites, and ticks. Some rickettsial infections can cause severe disease such as Rocky Mountain and Brazilian spotted fevers, scrub typhus, and epidemic typhus; prompt treatment is essential [11].

## South American Trypanosomiasis (Chagas disease)

[Chagas disease](#) is caused by the parasite *Trypanosoma cruzi* and it is mostly transmitted to humans by contact with faeces of the triatomine bug. The disease is rare in travellers but is reported in 21 Latin American countries [12].

## Tularaemia

[Tularaemia](#) is a bacterial disease. Humans can be infected with the bacteria in a number of different ways including tick and deer fly bites. Tularaemia can cause severe disease but most infections can be treated with antibiotics [13].

## Viral infections

### Eastern Equine encephalitis (EEE), St Louis encephalitis (SLE) and La Crosse encephalitis (LAC)

Many of those infected with the viruses that cause diseases such as [EEE](#), [SLE](#) and [LAC](#) will not develop symptoms. However, when the brain is involved (encephalitis) the person may die or be left with long term neurological complications. [Maps showing human cases](#) for a number of different viral diseases in the USA are available from the US Centres for Disease Control and Prevention.

### West Nile virus (WNV)

[WNV](#) is a viral illness of humans, horses and birds transmitted by *Culex spp.* mosquitoes. Most people infected with WNV (approximately 80 percent) will not develop symptoms. Those with symptoms can experience a mild, self-limiting flu-like illness with fever, headache, muscle pain and rash. About 1 in every 150 cases progresses to a more serious neurological illness.

WNV is regularly reported in North America. Maps showing [WNV activity in the USA](#) are available from the US Centres for Disease Control and Prevention (CDC). Maps showing [WNV activity in Canada](#) are available from the Government of Canada.

WNV is less commonly reported in Central / South America and the Caribbean but a number of countries have reported WNV activity in birds or horses [14]. In December 2014, the first human case of WNV was reported in Brazil [15].

## Yellow fever

[Yellow fever](#) is a viral disease transmitted via the bite of infected *Aedes spp.*, *Haemogogus spp.* or *Sabethes spp.* mosquitoes. Country specific advice, including vaccine recommendation maps are available on our [Country Information pages](#).

## Zika virus (ZIKV)

[ZIKV](#) infection is a newly emerging mosquito-borne disease in regions outside Africa and Asia [16]. Like dengue and CHIKV it is transmitted by *Aedes spp.* mosquitoes. ZIKV has been reported in a [number of countries in the Americas](#). It is likely that cases will be reported in other countries in the area. Symptoms of ZIKV infection include fever, headache, a rash (that often starts on the face and then spreads throughout the body) conjunctivitis (red eye) and pain in the smaller joints of the hands and feet. The illness is usually mild and short lived [17].

There is now scientific consensus that ZIKV is a cause of microcephaly and other congenital anomalies, and Guillain-Barré syndrome [18-20].

## Advice for travellers

Reduce the risk of insect or tick-borne diseases by using [insect bite avoidance](#) measures.

- *Aedes spp.* mosquitoes bite during daylight hours.
- *Anopheles spp.* mosquitoes bite during the evening and night. Malaria tablets are recommended for some countries; see the [Country Information pages](#) for further details.
- Sand flies bite at dusk and after dark, but will bite during the day if disturbed.
- Ticks do not jump or fly but opportunistically attach themselves to passing humans. They then crawl to a suitable feeding place, often the nape of the neck, groin or arm-pit. [Remove ticks carefully](#) or get medical help.
- Triatomine bugs are large bloodsucking insects. Some species have adapted to living in and near houses. They rest during the day in dark crevices particularly in unplastered cracked walls of mud or mud-brick houses, palm-thatched roofs or cracks in floors [21]. They feed at night; infected bugs can deposit parasites with their faeces on the skin shortly after feeding. Scratching or rubbing helps the parasites to enter the body through the bite wound or broken skin [21]. An insecticide impregnated mosquito net can protect travellers staying in basic accommodation.
- There is an effective vaccine to protect against yellow fever for those visiting risk areas. A number of countries are affected, information can be found on our [Country Information pages](#).

## Advice for health professionals - the returned traveller

Health professionals should be alert to the possibility of insect or tick-borne disease when

consulting with an ill-returned traveller from the Americas. Health professionals who suspect a case of insect or tick-borne disease in a traveller should liaise with their local infectious disease physician, microbiologist or virologist.

The [Imported Fever Service: Public Health England](#) is available to local infectious disease physicians or microbiologists should specialist advice be needed on 0844 7788990.

## Resources

- [Insect and tick bite avoidance](#)
- [Public Health England \(PHE\): Chikungunya](#)
- [PHE: Dengue](#)
- [PHE: Malaria](#)
- [PHE: Lyme disease](#)

## REFERENCES

1. [Pan American Health Organization and World Health Organization, Chikungunya interactive map. \[Accessed 30 December 2015\]](#)
2. [World Health Organization, Chikungunya fact sheet, May 2015, \[Accessed 30 December 2015\]](#)
3. [World Health Organization, Dengue fact sheet, May 2015, \[Accessed 30 December 2015\]](#)
4. [Pan American Health Organization and World Health Organization, Vector borne diseases in the region of the Americas Leishmaniasis, Schistosomiasis, Onchocerciasis, Lymphatic filariasis. \[Accessed 30 December 2015\]](#)
5. [Pan American Health Organization and World Health Organization, Leishmaniasis Epidemiological report of the Americas, July 2015. \[Accessed 30 December 2015\]](#)
6. [World Health Organization, Leishmaniasis fact sheet, February 2015, \[Accessed 30 December 2015\]](#)
7. [Centres for Disease Control and Prevention, Lyme disease data and statistics, fast facts. \[Accessed 30 December 2015\]](#)
8. [Johnson TL, Graham CB, Boegler KA. Prevalence and Diversity of Tick-Borne Pathogens in Nymphal Ixodes scapularis \(Acari: Ixodidae\) in Eastern National Parks Journal of Medical Entomology, 2017, 1-10. \[Accessed 11 January 2017\].](#)
9. [Public Health Agency of Canada, Public Health reminder Lyme disease. \[Accessed 30 December 2015\]](#)
10. [Centres for Disease Control and Prevention, Borrelia burgdorferi Infection and Cutaneous Lyme Disease, Mexico, Emerging Infectious Diseases Volume 13, Number 10—October 2007. \[Accessed 30 December 2015\]](#)
11. [McQuiston, J. Rickettsial \(Spotted & Typhus Fevers\) & Related Infections \(Anaplasmosis & Ehrlichiosis\) in US CDC Yellow book Chapter 3, 10 July 2015 \[Accessed 30 December 2015\]](#)
12. [World Health Organization Chagas disease \(American trypanosomiasis\) factsheet. March 2015. \[Accessed 30 December 2015\]](#)
13. [US Centres for Disease Control and Prevention, Tularemia.26 October 2015 \[Accessed 30 December 2015\]](#)
14. [Gubler D.J. The Continuing Spread of West Nile Virus in the Western Hemisphere. Clin Infect Dis. \(2007\) 45 \(8\):1039-1046](#)
15. [Piauí State Government Portal, Brazil, Coletiva reúne imprensa para esclarecer primeiro caso de Febre do Nilo – 9 December 2014 \[Accessed 30 December 2015\]](#)

16. [Hayes, EB. Zika virus outside Africa. Emerg Inf Dis. 2009; 15, 9. \[Accessed 30 December 2015\]](#)
17. [European Centre for Disease Prevention and Control. Zika virus: Factsheet for health professionals. 27 November 2015 \[Accessed 30 December 2015\]](#)
18. [Martines RB, Bhatnagar J, Keating MK, et al. Notes from the Field: Evidence of Zika Virus Infection in Brain and Placental Tissues from Two Congenitally Infected Newborns and Two Fetal Losses — Brazil, 2015. MMWR Morb Mortal Wkly Rep 2016;65:1-2. \[Accessed 11 January 2017\]](#)
19. [Miranda-Filho, B, Maria Turchi Martelli, C, Arraes de Alencar Ximenes R, et al. Initial description of the presumed congenital zika syndrome. American Journal of Public Health: April 2016, Vol. 106, No. 4: 598-600 \[Accessed 11 January 2017\]](#)
20. [Ramussen SA, Jamieson DJ, Honein MA, Petersen LR. Zika Virus and Birth Defects – Reviewing the Evidence for Causality. NEJM April 16. \[Accessed 11 January 2017\]](#)
21. [World Health Organization, Triatomine bugs, Vectors of Chagas disease. \[Accessed 11 January 2017\]](#)

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