

# Vector-borne diseases

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## Overview

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### Key facts

- Vector-borne diseases account for more than 17% of all infectious diseases, causing more than 1 million deaths annually.
  - More than 2.5 billion people in over 100 countries are at risk of contracting dengue alone.
  - Malaria causes more than 600 000 deaths every year globally, most of them children under 5 years of age.
  - Other diseases such as Chagas disease, leishmaniasis and schistosomiasis affect hundreds of millions of people worldwide.
  - Many of these diseases are preventable through informed protective measures.
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### Main vectors and diseases they transmit

Vectors are living organisms that can transmit infectious diseases between humans or from animals to humans. Many of these vectors are bloodsucking insects, which ingest disease-producing microorganisms during a blood meal from an infected host (human or animal) and later inject it into a new host during their subsequent blood meal.

Mosquitoes are the best known disease vector. Others include ticks, flies, sandflies, fleas, triatomine bugs and some freshwater aquatic snails.

#### Mosquitoes

- *Aedes*
  - Dengue fever
  - Rift Valley fever
  - Yellow fever
  - Chikungunya
- *Anopheles*
  - Malaria
- *Culex*
  - Japanese encephalitis
  - Lymphatic filariasis
  - West Nile fever

### **Sandflies**

- Leishmaniasis
- Sandfly fever (phlebotomus fever)

### **Ticks**

- Crimean-Congo haemorrhagic fever
- Lyme disease
- Relapsing fever (borreliosis)
- Rickettsial diseases (spotted fever and Q fever)
- Tick-borne encephalitis
- Tularaemia

### **Triatomine bugs**

- Chagas disease (American trypanosomiasis)

### **Tsetse flies**

- Sleeping sickness (African trypanosomiasis)

### **Fleas**

- Plague (transmitted by fleas from rats to humans)
- Rickettsiosis

### **Black flies**

- Onchocerciasis (river blindness)

### **Aquatic snails**

- Schistosomiasis (bilharziasis)

## **Vector-borne diseases**

Vector-borne diseases are illnesses caused by pathogens and parasites in human populations. Every year there are more than 1 billion cases and over 1 million deaths from vector-borne diseases such as malaria, dengue, schistosomiasis, human African trypanosomiasis, leishmaniasis, Chagas disease, yellow fever, Japanese encephalitis and onchocerciasis, globally.

Vector-borne diseases account for over 17% of all infectious diseases.

Distribution of these diseases is determined by a complex dynamic of environmental and social factors.

Globalization of travel and trade, unplanned urbanization and environmental challenges such as climate change are having a significant impact on disease transmission in recent years. Some diseases, such as dengue, chikungunya and West Nile virus, are emerging in countries where they were previously unknown.

Changes in agricultural practices due to variation in temperature and rainfall can affect the transmission of vector-borne diseases. Climate information can be used to monitor and predict distribution and longer-term trends in malaria and other climate-sensitive diseases.

## **WHO response**

WHO responds to vector-borne diseases by:

- providing the best evidence for controlling vectors and protecting people against infection;
- providing technical support and guidance to countries so that they can effectively manage cases and outbreaks;
- supporting countries to improve their reporting systems and capture the true burden of the disease;
- providing training on clinical management, diagnosis and vector control with some of its collaborating centres throughout the world; and
- developing new tools to combat the vectors and deal with the disease, for example insecticide products and spraying technologies.

A crucial element in vector-borne diseases is behavioural change. WHO works with partners to provide education and improve awareness so that people know how to protect themselves and their communities from mosquitoes, ticks, bugs, flies and other vectors.

For many diseases such as Chagas disease, malaria, schistosomiasis and leishmaniasis, WHO has initiated control programmes using donated or subsidized medicines.

Access to water and sanitation is a very important factor in disease control and elimination. WHO works together with many different government sectors to control these diseases.