

This fact sheet provides general information on diseases from mosquitoes. Talk to your healthcare provider for specific medical treatment and guidance. Employees and volunteers are at most risk when one or more of the following conditions are present: (1) mosquitoes are actively biting, (2) working outdoors, and (3) living in or traveling to a high risk area where these diseases may exist.

Introduction

Mosquitoes are carriers of several diseases that can be passed on to humans. Mosquitoes often acquire the disease from feeding on an infected animal prior to biting a human. Mosquito-borne diseases are found throughout the world and in some cases can cause severe illness, birth defects, and death. However, mosquito-borne diseases can pose less risk if preventable measures and early detection is practiced.

What are the symptoms of a mosquito-borne infection?

Most people infected with a mosquito-borne disease will not develop symptoms. However, some people may become ill a few days after being bitten by an infected mosquito. General symptoms may include fever, headache, body aches, and skin rash. There are no known long-term effects of mild forms of these illnesses, and in some cases the individual becomes immune to future infections. Only a small percentage of mosquito-borne disease infections result in a severe illness, and even fewer cause birth defects or death.¹ If mosquito-borne disease symptoms develop, seek medical attention promptly. Discuss any possible exposure to mosquitoes or infections spread by mosquitoes with a healthcare provider.

Common mosquito-borne diseases:

Malaria

Characteristics: Malaria has been a worldwide problem for hundreds of years and is caused by a parasite-infected mosquito that feeds on humans. Even though malaria is preventable, nearly half a million people die worldwide from it each year.² Vaccines for malaria are currently in the clinical testing phases but are not publicly available.³

Where it is a concern: Africa, India, the Caribbean, South American Amazon forest, and Papua New Guinea.⁴

Dengue

Characteristics: Dengue has emerged as a worldwide problem only since the 1950s. The dengue virus is a leading cause of illness and death in the tropics and subtropics.⁵

Where it is a concern: Puerto Rico, Central and South America, Southeast Asia, and Pacific islands.⁶

Zika

Characteristics: The World Health Organization (WHO) declared Zika virus a public health emergency of international concern in early 2016. Symptoms are typically minor to unnoticeable, but if transferred from a mother to fetus, then severe birth defects can occur. Along with being transmitted from mosquitoes, Zika can also be sexually transmitted from an infected man.⁷

Where it is a concern: Central and South America, Mexico, the Caribbean, certain South Pacific islands, and certain areas of Africa.⁸

Chikungunya

Characteristics: Chikungunya is hard to distinguish from other mosquito-borne diseases. The symptoms and distribution are very similar to other mosquito-borne diseases.⁹

Where it is a concern: Africa, Asia, and Pacific islands; recently transmission was confirmed in the Caribbean and Florida.¹⁰

West Nile Virus

Characteristics: First identified in Uganda in 1937 and has spread throughout much of the world. In recent years, thousands of cases and hundreds of deaths have been reported annually in the United States.

Where it is a concern: Africa, Asia, Australia, and North America.¹¹

How are mosquito-borne diseases treated?

There are no preventative vaccines or specific treatment for infections from mosquito-borne diseases. Seek medical attention if flu-like symptoms start after a bite from a mosquito or traveling to an area of higher risk. Early recognition and prompt supportive treatment can substantially lower the risk of medical complications and death.

What can you do to prevent mosquito-borne diseases?

Avoid mosquito bites. Use the following guidelines if you live in or visit an area affected by mosquito-borne diseases:

- Apply insect repellent to exposed skin when you go outdoors. Read and follow label directions for repellent use. The CDC (Centers for Disease Control and Prevention) recommends using a repellent with an active ingredient of either DEET or Picaridin. Products containing 10–30% DEET are appropriate for most. Do not apply repellents to cuts, wounds, or irritated skin. When needed, reapply repellents according to label instructions. Use care in applying repellent to children: do not put repellent on their hands, and avoid their mouths and eyes.¹²
- Whenever possible, wear protective clothing such as long-sleeved shirts, long pants, and socks while outdoors. Spray clothing with repellents containing DEET or Picaridin because mosquitoes may bite through thin clothing. Do not apply repellents under clothing.
- Treat clothing or buy clothing factory-treated with permethrin, an Environmental Protection Agency–registered insect repellent specifically for clothing. Do not treat clothing with permethrin while clothing is being worn. Treated clothing should be washed separately.¹³
- Consider limiting outdoor activity during high risk times of day and seasons. Avoid activities in areas where mosquitoes are plentiful.

Control mosquito breeding areas. Mosquitoes lay their eggs in standing water. Prevent mosquitoes from breeding by draining standing water. Routinely empty water from buckets, barrels, cans, and other items that collect water. Coordinate with the local mosquito abatement district to control mosquito breeding in large areas of standing water.

Handle dead animals with care. Avoid touching any dead animal with your bare hands; use gloves or an inverted plastic bag. Put animal carcasses in a plastic bag before disposing of them.

Zika and sexual transmission. If symptoms of Zika are experienced, couples should consider practicing only protected sex or abstinence for at least six months. After traveling to an area with Zika and never experiencing symptoms, couples should consider practicing only protected sex or abstinence for at least eight weeks. When living in an area with Zika and currently pregnant or considering getting pregnant, couples should follow the preventative measures above and talk to a healthcare provider.¹⁴

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- ¹ See Centers for Disease Control and Prevention, “FAQ: General Questions about West Nile Virus,” <http://www.cdc.gov/westnile/faq/genQuestions.html>.
- ² See Centers for Disease Control and Prevention, “Malaria Facts,” <https://www.cdc.gov/malaria/about/facts.html>.
- ³ See Centers for Disease Control and Prevention, “Vaccines,” https://www.cdc.gov/malaria/malaria_worldwide/reduction/vaccine.html.
- ⁴ See Centers for Disease Control and Prevention, “Where Malaria Occurs,” <https://www.cdc.gov/malaria/about/distribution.html>.
- ⁵ See Centers for Disease Control and Prevention, “Dengue,” <http://www.cdc.gov/dengue/>.
- ⁶ See Centers for Disease Control and Prevention, “Dengue.”
- ⁷ See Centers for Disease Control and Prevention, “About Zika,” <http://www.cdc.gov/zika/about/index.html>.
- ⁸ See Centers for Disease Control and Prevention, “All Countries and Territories with Active Zika Virus Transmission,” <http://www.cdc.gov/zika/geo/active-countries.html>.
- ⁹ See Centers for Disease Control and Prevention, “Chikungunya Virus,” <https://www.cdc.gov/chikungunya/index.html>.
- ¹⁰ See Centers for Disease Control and Prevention, “Geographic Distribution,” <https://www.cdc.gov/chikungunya/geo/index.html>.
- ¹¹ See Centers for Disease Control and Protection, “CDC Releases Final West Nile Virus National Surveillance Data for 2012,” <http://www.cdc.gov/media/releases/2013/a0513-west-nile.html>.
- ¹² See American Camp Association, “West Nile Virus—What Every Camp Needs to Know,” <http://www.acacamps.org/knowledge/health/diseases/west-nile-virus>.
- ¹³ See Environmental Protection Agency, “Repellent-Treated Clothing,” <https://www.epa.gov/insect-repellents/repellent-treated-clothing>; see also National Pesticide Information Center, “Permethrin Treated Clothing,” <http://npic.orst.edu/pest/mosquito/ptc.html>.
- ¹⁴ See Centers for Disease Control and Prevention, “Zika and Sexual Transmission,” <http://www.cdc.gov/zika/transmission/sexual-transmission.html>.