

Mosquito-borne Viral Diseases

Although information about mosquito-borne diseases is readily available and precautions are known, many people disregard the instructions because they have become desensitized to the risk.

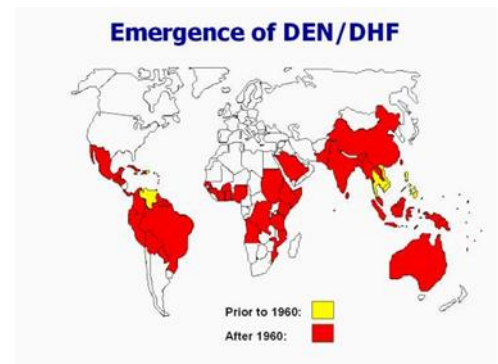
Mosquitoes cause more human suffering than any other organism -- over one million people worldwide die from mosquito-borne diseases every year. There are many mosquito-borne diseases that have been around for many years such as malaria, yellow fever, West Nile and encephalitis. The focus of this article is on the mosquito-borne viruses that are rapidly spreading around the world including dengue, chikungunya and zika.



Dengue

With more than one-third of the world's population living in areas at risk for infection, dengue virus is a leading cause of illness and death in the tropics and subtropics. As many as 400 million people are infected yearly. Today, dengue (DEN) and dengue hemorrhagic fever (DHF) rank as the most important mosquito-borne viral disease in the world. In the last 50 years, incidence has increased 30-fold.

Dengue is caused by any one of four related viruses transmitted by mosquitoes. There are not yet any vaccines to prevent infection with dengue virus and the most effective protective measures are those that avoid mosquito bites. When a person is infected, early recognition and prompt supportive treatment can substantially lower the risk of medical complications and death.



Symptoms and What to Do If You Think You Have Dengue

The principal symptoms of dengue are:

- High fever and at least two of the following:
- Severe headache
- Severe eye pain (behind eyes)
- Joint pain and muscle and/or bone pain (sometimes called "bone-break fever")
- Rash - mild bleeding manifestation (e.g., nose or gum bleed, petechiae, or easy bruising)
- Low white cell count

Generally, younger children and those with their first dengue infection have a milder illness than older children and adults.

Watch for warning signs as temperature declines 3 to 7 days after symptoms began.

Go **IMMEDIATELY** to an emergency room or the closest health care provider if any of the following warning signs indicating dengue hemorrhagic fever (DHF) appear:

- Severe abdominal pain or persistent vomiting
- Red spots or patches on the skin
- Bleeding from nose or gums

- Vomiting blood
- Black, tarry stools (feces, excrement)
- Drowsiness or irritability
- Pale, cold, or clammy skin
- Difficulty breathing

Treatment

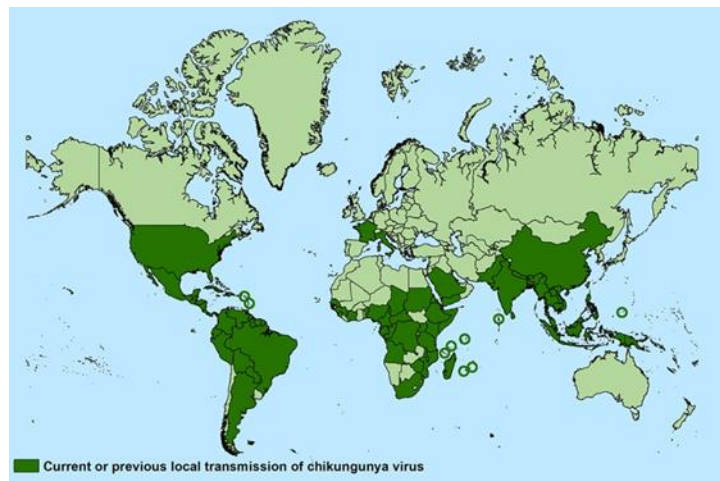
There is no specific medication for treatment of a dengue infection. Persons who think they have dengue should use analgesics (pain relievers) with acetaminophen and **avoid those containing ibuprofen, Naproxen, aspirin or aspirin containing drugs**. They should also rest, drink plenty of fluids to prevent dehydration, avoid mosquito bites while febrile and consult a physician.

As with dengue, there is no specific medication for DHF. If a clinical diagnosis is made early, a health care provider can effectively treat DHF using fluid replacement therapy. Adequately management of DHF generally requires hospitalization.

Chikungunya Virus

Chikungunya virus is primarily transmitted to humans through the bites of infected mosquitoes, predominantly *Aedes aegypti* and *Aedes albopictus*. Humans are the primary host of chikungunya virus during epidemic periods.

Chikungunya Distribution Map (as of October 2020)



Symptoms

- High fever (40°C/ 104°F)
- Joint pain (lower back, ankle, knees, wrists or phalanges)
- Joint swelling
- Rash
- Headache
- Muscle pain
- Nausea
- Fatigue

Chikungunya is rarely fatal. Symptoms are generally self-limiting and last for 2–3 days. The virus remains in the human system for 5-7 days and mosquitoes feeding on an infected person during this period can also become infected. Chikungunya shares some clinical signs with dengue and can be misdiagnosed in areas where dengue is common.

Chikungunya can be detected using serological tests. Recovery from an infection will confer life-long immunity.

Treatment

There is no specific antiviral therapy for chikungunya virus infection. Treatment is for symptoms and can include rest, fluids, and use of non-steroidal anti-inflammatory drugs (NSAIDs) to relieve acute pain and fever. Persistent joint pain may benefit from use of NSAIDs, corticosteroids, or physiotherapy. People infected with chikungunya should be protected from further mosquito exposure during the first week of illness to reduce the risk of local transmission.

Zika

Zika virus disease is caused by a virus transmitted by *Aedes* mosquitoes. People with Zika virus disease usually have a mild fever, skin rash (exanthema) and conjunctivitis. These symptoms normally last for 2-7 days. There is no specific treatment or vaccine currently available.

On February 1, 2016 the World Health Organization declared a "**public health emergency of international concern**" concerning the Zika virus and the health problems that doctors fear it is causing.

Where has Zika virus been found? (as of October 2018 CDC)



Health Concerns Linked to Zika Virus

- Doctors connect Zika to a surge in neurological disorders and the birth defect microcephaly, in which infants are born with abnormally small heads and incomplete brain development over time.
- Guillain-Barré syndrome (GBS) is a rare disorder where a person's own immune system damages the nerve cells, causing muscle weakness and sometimes, paralysis. These symptoms can last a few weeks or several months. While most people



fully recover from GBS, some people have permanent damage and in rare cases, people have died. It is not known if the Zika virus infection causes GBS. It is difficult to determine if any particular germ “causes” GBS. However, the Brazil Ministry of Health (MOH) is reporting an increased number of people affected with GBS. CDC is collaborating with the Brazil MOH to determine if having Zika makes it more likely you will get GBS.

What is the treatment for Zika?

There is no vaccine or specific medicine to treat Zika virus infections.

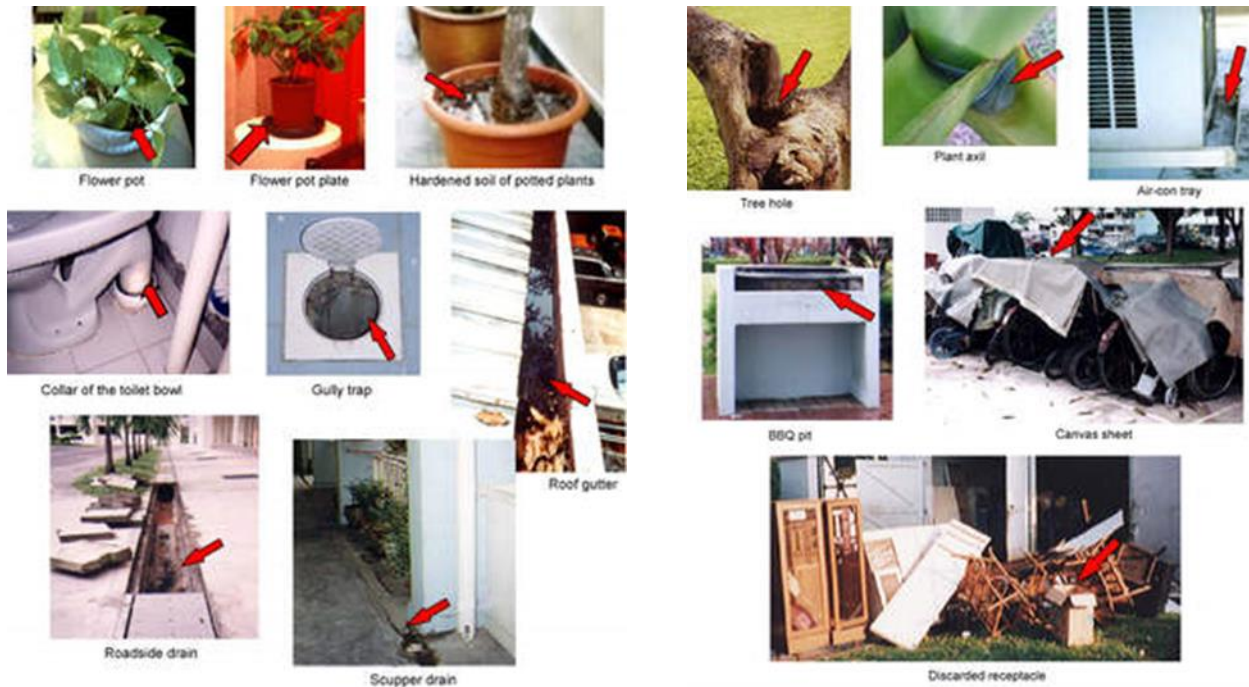
Treat the symptoms:

- Get plenty of rest.
- Drink fluids to prevent dehydration.
- Take medicine such as acetaminophen to reduce fever and pain.
- Do not take aspirin or other non-steroidal anti-inflammatory drugs.
- If you are taking medicine for another medical condition, talk to your healthcare provider before taking additional medication.

To optimize protection against mosquitoes and reduce the risk of diseases they transmit:

- Wear a long-sleeved shirt, long pants, and socks. Light colors are best.
- Treat clothing with permethrin or purchase pretreated clothing.
 - Permethrin-treated clothing will retain repellent activity through multiple washes.
 - Repellents used on skin can also be applied to clothing but provide shorter duration of protection (same duration as on skin) and must be reapplied after laundering.
- Apply lotion, liquid, or spray repellent to exposed skin.
 - Ensure adequate protection during times of day when mosquitoes are most active.
 - **Dengue, yellow fever chikungunya and zika vector mosquitoes bite mainly from dawn to dusk.**
 - Malaria, West Nile, and Japanese encephalitis vector mosquitoes bite mainly from dusk to dawn.
 - Use common sense. Reapply repellents as protection wanes and mosquitoes start to bite.
- If you have a baby or child:
 - Do not use insect repellent on babies younger than 2 months of age.
 - Dress your child in clothing that covers arms and legs, or
 - Cover crib, stroller, and baby carrier with mosquito netting.
 - Do not apply insect repellent onto a child’s hands, eyes, mouth, and cut or irritated skin.
- Bed nets - when accommodations are not adequately screened or air conditioned, bed nets are essential in providing protection and reducing discomfort caused by biting insects. If bed nets do not reach the floor, they should be tucked under mattresses. Bed nets are most effective when they are treated with a pyrethroid insecticide.
- Drain any areas of standing water which can be breeding areas for mosquitoes.

Check around your house for standing water!



If you have any questions about this topic, please reach out to CompassionLink at info@compassionlink.org. We will be happy to answer your questions.

Sources:

<http://www.who.int/csr/disease/dengue>

<http://www.cdc.gov/chikungunya/index.html>

<http://www.cdc.gov/zika/geo/index.html>

<http://www.who.int/mediacentre/factsheets/zika/en/>

<http://www.cdc.gov/zika/disease-qa.html>