

Just the Facts...

Chikungunya

- Chikungunya [chick'-en-GUN-yah], also called chikungunya virus disease or chikungunya fever, is a viral illness that is spread by the bite of infected mosquitoes. The disease resembles dengue fever, and is characterized by severe, sometimes persistent, joint pain (arthritis), as well as fever and rash. It is rarely life-threatening.
- Chikungunya occurs in Africa, India, and Southeast Asia. It is primarily found in urban areas.
- There is no specific treatment for chikungunya.
- Prevention centers on avoiding mosquito bites in areas where chikungunya virus may be present, and by eliminating mosquito breeding sites.

What is chikungunya?

Chikungunya (also known as chikungunya virus disease or chikungunya fever) is a debilitating, but non-fatal, viral illness that is spread by the bite of infected mosquitoes. It resembles dengue fever.

What is the infectious agent that causes chikungunya?

Chikungunya is caused by the chikungunya virus, which is classified in the family *Togaviridae*, genus *Alphavirus*.

How is chikungunya spread?

Chikungunya is spread to humans by the bite of an infected *Aedes* mosquito, primarily *Aedes aegypti*. In some locations, *Ae. albopictus* may also be an important vector (transmitter) of the virus. Humans are thought to be the major source, or reservoir, of chikungunya virus for mosquitoes. Therefore, the mosquito usually transmits the disease by biting an infected person and then biting someone else. An infected person cannot spread the infection directly to other persons (i.e., it is not a contagious disease). *Aedes aegypti* mosquitoes (as well as *Ae. albopictus* mosquitoes) bite during the day.

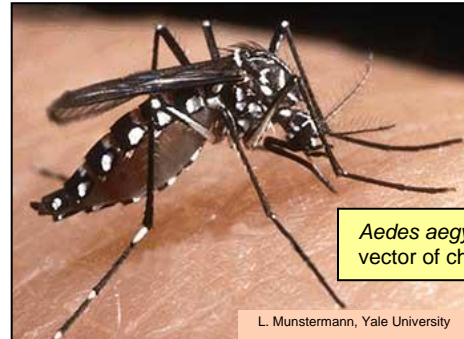
Where is chikungunya found?

Chikungunya occurs mainly in Africa, India, and Southeast Asia. There have been a number of outbreaks (epidemics) in the Philippines and on islands throughout the Indian Ocean. Chikungunya has never been established anywhere in the Americas.

Because humans act as very efficient reservoirs for the virus, chikungunya is most prevalent in urban areas. Epidemics are sustained by the human-mosquito-human transmission cycle.

The *Aedes* mosquitoes that transmit chikungunya breed in a wide variety of manmade containers which are common around human dwellings. These containers collect rainwater, and include discarded tires, flowerpots, old oil drums, animal water troughs, water storage vessels, and plastic food containers.

Widespread poverty, year-round tropical climate, environmental disturbance due to war or natural disaster, and lack of public health infrastructure are all factors that promote uncontrolled mosquito breeding and are conducive to outbreaks of chikungunya, or other mosquito-borne diseases.



What are the symptoms of chikungunya?

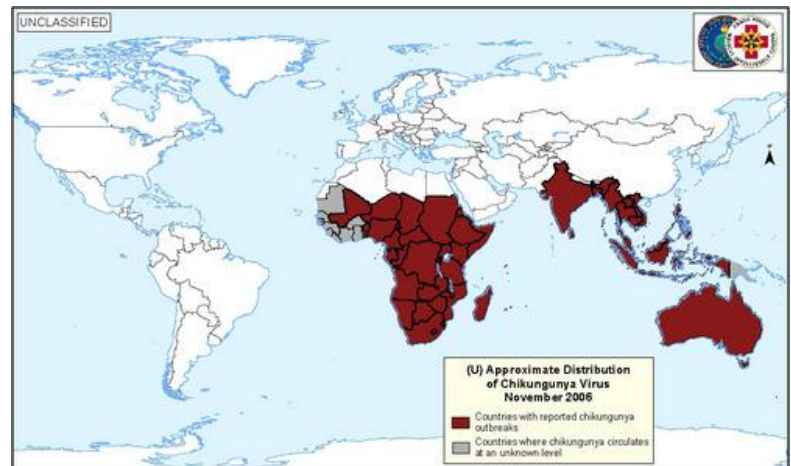
Chikungunya usually starts suddenly with fever, chills, headache, nausea, vomiting, joint pain, and rash. In Swahili, "chikungunya" means "that which contorts or bends up." This refers to the contorted (or stooped) posture of patients who are afflicted with the severe joint pain (arthritis) which is the most common feature of the disease. Frequently, the infection causes no symptoms, especially in children. While recovery from chikungunya is the expected outcome, convalescence can be prolonged (up to a year or more), and persistent joint pain may require analgesic (pain medication) and long-term anti-inflammatory therapy. Infection appears to confer lasting immunity.

How soon after exposure do symptoms appear?

The time between the bite of a mosquito carrying chikungunya virus and the start of symptoms ranges from 1 to 12 days.

How is chikungunya diagnosed?

Chikungunya is diagnosed by blood tests. Since the clinical appearance of both chikungunya and dengue are similar, laboratory confirmation is important, especially in areas where dengue is present.



Distribution of Chikungunya Virus as of November 2006.
Map courtesy of the Armed Forces Medical Intelligence Center

Who is at risk for chikungunya?

Anyone who is bitten by an infected mosquito can get chikungunya.

What is the treatment for chikungunya?

There is no specific treatment for chikungunya. Supportive therapy that helps ease symptoms, such as administration of nonsteroidal anti-inflammatory drugs, and getting plenty of rest, may be beneficial. Infected persons should be isolated from mosquitoes in as much as possible in order to avoid transmission of infection to other people.

How common is chikungunya?

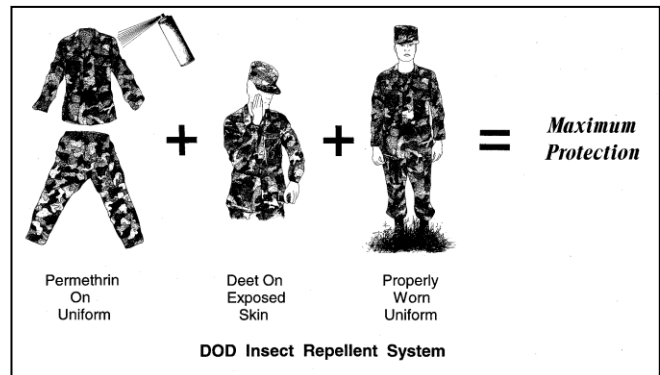
The first recognized outbreak of chikungunya occurred in East Africa in 1952-1953. Soon thereafter epidemics were noted in the Philippines (1954, 1956, and 1968), Thailand, Cambodia, Vietnam, India, Burma, and Sri Lanka. Since 2003, there have been outbreaks in the islands of the Indian Ocean, including Madagascar, Comoros, Mauritius, and Reunion Island, with a surge in numbers of cases after the Tsunami of December 2004. From January to July 2006, approximately one million cases of chikungunya were reported from several states across India. In addition, it is suspected that many cases of chikungunya are either misdiagnosed or go unreported.

How can chikungunya be prevented?

The only known chikungunya virus vaccine is no longer being produced and has very limited availability. Prevention, therefore, centers on avoiding mosquito bites when traveling to areas where chikungunya occurs. Eliminating mosquito breeding sites is another key prevention measure. To prevent mosquito bites, do the following:

- When indoors, stay in air-conditioned or well-screened areas. Use bed nets if sleeping in areas that are not screened or air-conditioned.
- When outdoors during times that mosquitoes are biting, wear long-sleeved shirts and long pants.
- **Use mosquito repellents on skin and clothing.**
- Use insect repellents that have been approved by the Environmental Protection Agency (EPA). They are safe and effective.
- For your skin, use a product that contains 20-50% **DEET** (N, N-diethyl-meta-toluamide). DEET in higher concentrations is no more effective.
- Use DEET sparingly on children, and don't apply to their hands, which they often place in their mouths.
- Apply DEET lightly and evenly to exposed skin; do not use underneath clothing. Avoid contact with eyes, lips, and broken or irritated skin.
- To apply to your face, first dispense a small amount of DEET onto your hands and then carefully spread a thin layer.
- Wash DEET off when exposure to mosquitoes ceases.
- When using DEET and a sunscreen, apply the sunscreen first. After 30 minutes to an hour, apply the DEET. This allows the sunscreen time to penetrate and bind to the skin, and will not interfere with the efficacy of the DEET.

- For your clothing, use an insect repellent spray to help prevent bites through the fabric. Use a product that contains permethrin.
- Permethrin is available commercially as 0.5% spray formulations. In addition, factory permethrin-impregnated clothing is now also available.
- Permethrin will withstand numerous launderings.
- Permethrin should only be used on clothing, never on skin.
- When using any insect repellent, always FOLLOW LABEL DIRECTIONS.
- Do not inhale aerosol formulations.
- For optimum protection, soldiers should utilize the **DOD INSECT REPELLENT SYSTEM**. In addition to proper wear of the military field uniform (ACUs, BDUs, DCUs), which provides a physical barrier to insects, this system includes the concurrent use of both skin and clothing repellents:
 - Standard military skin repellent: 33% DEET lotion, long-acting formulation, one application lasts up to 12 hours, **NSN 6840-01-284-3982**.
 - Standard military clothing repellents, either aerosol spray, 0.5% permethrin, one application lasts through 5-6 washes, **NSN 6840-01-278-1336**; or impregnation kit, 40% permethrin, one application lasts the combat life of the uniform (at least 50 washes), **NSN 6840-01-345-0237**. Uniforms may also be contracted for factory treatment.



- Under field conditions, sleep or rest under a bed net. Treat the net with permethrin.
- A camouflage face paint compact that has permethrin incorporated in the paint is available: order **NSN 6840-01-493-7334**. Otherwise, apply DEET first, followed by regular face paint.

Where can I get more information on chikungunya and other insect-borne diseases?

Contact the U.S. Army Public Health Command (Provisional) (USAPHC), Entomological Sciences Program, Aberdeen Proving Ground, Maryland 21010-5403; DSN 584-3613; CM (410) 436-3613; FAX -2037; or visit our website at: <http://chppm-www.apgea.army.mil>. Additional information can also be obtained by visiting the website of the Centers for Disease Control and Prevention (CDC): <http://www.cdc.gov/ncidod/dvbid/index.htm>