

CHIKUNGUNYA

Information for Clinicians

Chikungunya virus (CHIKV) is an arthropod-borne virus (arbovirus) transmitted principally by mosquitoes.

Chikungunya derives from a Makonde word meaning “that which bends,” describing the stooped appearance of persons suffering with the characteristic, severe arthralgia. Outbreaks have been described in Africa, Southeast Asia, the Indian subcontinent and Indian Ocean islands. A 2007 outbreak in northern Italy highlighted the risk of local transmission of the virus in the US via imported cases. Like Italy, the US harbors competent mosquito vectors and naïve hosts, which creates a potential for emergence of CHIKV. Given the risk of introduction, and the potential for significant morbidity due to CHIKV, timely diagnosis and alerting public health officials to suspect cases is critical to protect against a future outbreak in the US. CDC and PAHO have developed a preparedness and response plan that elaborates on information provided below, available at: <http://www.cdc.gov/chikungunya/>.

BASIC INFORMATION:

Chikungunya is an alphavirus of the family *Togaviridae*. It is composed of an enveloped, single-strand, positive sense RNA genome.

Vectors:

Aedes aegypti



Aedes albopictus
("Asian Tiger Mosquito")



These mosquitoes can be identified by the white stripes on their black bodies and legs. Although the mosquitoes' peak feeding time is dawn and dusk, they also are aggressive daytime biter.

Hosts:

Humans are the primary reservoir of CHIKV during epidemic periods.

CLINICAL INFORMATION:

The majority (72-97%) of persons infected will become symptomatic.

Incubation Period:

Typically **3-7 days**, with a range of 1-12 days.

Symptoms/Presentation:

1. Sudden onset of **high fever** (>102°F).
2. **Severe polyarthralgias** mainly involving the distal joints of the extremities.
3. **Headache**
4. **Myalgias**
5. **Back pain**
6. **Rash** (~50% of cases)

Symptoms typically resolve within 7-10 days. The joint pain and stiffness may last longer.

Atypical Manifestations:

SYSTEM:	CLINICAL MANIFESTATIONS:
Neurological	Meningoencephalitis, encephalopathy, seizures, Guillain-Barre syndrome, paresis, palsies & neuropathy
Ocular	Optic neuritis, iridocyclitis, episcleritis, retinitis & uveitis
Cardiovascular	Myocarditis, pericarditis, heart failure, arrhythmias & hemodynamic instability
Dermatological	Photosensitive hyperpigmentation, intertriginous aphthous-like ulcers & vesiculobullous dermatosis
Renal	Nephritis & acute renal failure
Other	Bleeding dyscrasias, pneumonia, respiratory failure, hepatitis, pancreatitis, syndrome of inappropriate secretion of antidiuretic hormone (SIADH) & hypoadrenalism

These manifestations can be due to direct effects of the virus, immunological response to the virus, or drug toxicity.

Differential Diagnosis:

Diseases should be considered based upon epidemiological features such as place of residence, travel history and exposure.

DISEASE/AGENT	PRESENTATION
Dengue fever	Fever and two or more of the following: retro-orbital or ocular pain, headache, rash, myalgia, arthralgia, leucopenia, or hemorrhagic manifestations.
Leptospirosis	Severe myalgia localized to calf muscles with conjunctival congestion/or subconjunctival hemorrhage with or without jaundice or oliguria. Consider history of contact with contaminated water.
Post-infection arthritis	Arthritis of one or more, typically larger joints due to an infectious disease such as Chlamydia, shigella, and gonorrhea. Rheumatic fever is seen more commonly in children as migratory polyarthritis predominantly affecting large joints. Consider antistreptolysin O (ASO) titer and history of sore throat with Jones criteria for rheumatic fever.

It is important to distinguish CHIKV from dengue, due to the potential for worse outcomes (including death) from dengue. The two diseases can occur together in the same patient. With CHIKV:

- Pain is more intense and localized to the joints and tendons in CHIKV.
- Onset of fever is more acute in CHIKV and is also shorter in duration.
- Shock or severe hemorrhage is rarely observed in CHIKV.

CASE MANAGEMENT:

Treatment:

There is no specific antiviral drug treatment for CHIKV. Symptomatic treatment is recommended after excluding more serious conditions like dengue and bacterial infections.

ACUTE DISEASE:

Treatment is symptomatic or supportive:

- **Rest & Fluids**
- **NSAIDs** (to relieve arthritic component)

For patients with severe joint pains unresponsive to NSAIDs:

- **Narcotics** (e.g., morphine)
- **Short-term corticosteroids**

These can be used after evaluating the risk-benefit of treatment

SUBACUTE & CHRONIC DISEASE:

Convalescence can be prolonged, sometimes exceeding a year. Persistent joint pain may require pain management, including **long-term anti-inflammatory therapy**.

For disabling peripheral arthritis refractory to other agents:

- **Intra-articular corticosteroids** or **topical NSAID** therapies may be used to limit oral corticosteroid use.
- **Graduated physiotherapy**

Outcome:

Mortality is rare and has been reported predominantly in the elderly and those who are immunosuppressed.

Recovery without sequelae is expected; however chronic disease may occur and can continue for months to >1 year.

Groups at highest risk of complications include: the **elderly (>65 years)** and those with **comorbidities (hypertension, diabetes, etc.)**. **Neonates** who acquire the infection antenatum also exhibit severe disease.

DIAGNOSIS:

Three main types of laboratory tests are used for diagnosing CHIK:

- **Virus isolation:** Within the first 3 days of illness.
- **RT-PCR:** Day 1-8, after onset of illness.
- **Serological assays for IgM/IgG:** 4 days after illness and beyond.

Since there is a range for when the virus is present in the blood, results from virus isolation and RT-PCR testing should not be used to exclude the diagnosis.

Testing Locations:

Currently testing is available at CDC's Division of Vector-Borne Diseases (DVBD), a limited number of state health departments, and one commercial laboratory. Contact your state health department for more information.

WHO TO TEST:

A patient with acute onset of fever (>102°F) and severe arthralgia or arthritis not explained by other medical conditions, and who resides or has visited epidemic or endemic areas within two weeks prior to the onset of symptoms.

Consider testing for CHIKV if there is a cluster of patients presenting with a febrile illness and severe joint pain.

REPORTING:

Report any person diagnosed with CHIK to local public health authorities to ensure local transmission has not occurred.

If you suspect a cluster of CHIK cases, alert the health department even if testing results are not yet available.

PREVENTION:

There is currently **no vaccine** to prevent CHIK. **Reducing human vector contact is paramount.**

Prevention of mosquito bites:

Acutely infected persons must avoid being bitten by *Aedes* mosquitoes, in order to **prevent further transmission** of the virus.

Encourage the following measures to reduce the chance of being bitten:

- Use **mosquito repellents** on exposed skin including: **DEET, picaridin, IR3535** and **oil of lemon eucalyptus**.
- Wear **long-sleeved shirts and long pants** if feasible.
- Wear **permethrin-treated clothing** to repel and kill mosquitoes.
- Use **screens on windows and doors** to exclude mosquitoes and when available, **A/C** can make households less hospitable to mosquitoes.
- Participation in community and homeowner based **vector-control strategies**.
 - **Ensure that water does not collect in containers around the home and community.**
 - **Chemical or biological control** of larvae and adult mosquitoes when necessary.

FOR MORE INFORMATION VISIT: <http://www.cdc.gov/chikungunya/>