



## CLINICAL PRESENTATION<sup>2,6,7</sup>




- Chikungunya disease is very similar to other widespread arbovirus infections such as dengue, with some clinical specificities.
- Chikungunya is usually a **mild disease**, and rarely causes death. However, newborns infected around the time of birth, older adults ( $\geq 65$  years), and people with medical underlying conditions are at risk for more severe and sometimes lethal disease.
- The **incubation period** is silent and lasts for **4 to 7 days**.

## STAGES OF CHIKUNGUNYA<sup>7</sup>

Acute phase	Post-acute phase	Chronic phase
<ul style="list-style-type: none"> <li>• 1 to 2 weeks (up to 3 weeks in some patients)</li> <li>• Sudden high fever and joint pain (due to inflammatory arthralgia and arthritis)</li> <li>• Other symptoms may include myalgia, headache, macular to maculopapular rash</li> </ul>	<ul style="list-style-type: none"> <li>• Day 21 to end of 3<sup>rd</sup> month</li> <li>• Concerns <math>&gt;50\%</math> of patients with clinical symptoms</li> <li>• Persistence of initial inflammatory events, which slowly regress</li> </ul>	<ul style="list-style-type: none"> <li>• Absence of return to pre-existing condition <math>&gt;3</math> months after onset of symptoms</li> <li>• Several months to several years</li> <li>• Clinical symptoms similar to post-acute stage</li> <li>• Concerns up to 40% - 60% of patients depending on the population studied</li> <li>• Can impair patients' quality of life</li> </ul>

## RELATIVE FREQUENCY OF CHIKUNGUNYA SYMPTOMS<sup>8</sup>

Adapted from Tanabe et al. *Front Cell Infect Microbiol.* 2018;8:345.

Most common symptoms				Least common symptoms		
						
Fever	Severe joint pain	Headache	Rash	Muscle pain	Joint swelling	Digestive symptoms

## DIAGNOSTIC APPROACH<sup>2,3,9</sup>

- As **symptoms are not specific**, chikungunya fever can be confused with other febrile infectious diseases during the acute phase, or with other rheumatologic diseases during the post-acute and chronic phase.
- **Differential diagnosis** relies on residence, travel history, and exposure.
- During the initial febrile phase, it is necessary to consider other Flavivirus infections (most commonly dengue and Zika virus disease), other Alphavirus infections, and other febrile infections such as leptospirosis, malaria, rickettsia.
- In regions where several pathogens are co-circulating, **co-infections are possible**, especially dengue-chikungunya or malaria-chikungunya.
- **Etiological confirmation** of chikungunya requires laboratory testing:
  - routine laboratory tests provide non-specific results: lymphopenia without leukopenia, mild thrombocytopenia, mild transaminase elevations, and an elevated C-reactive protein level;
  - confirmation of CHIKV infection therefore relies on specific laboratory assays.

## LABORATORY CONFIRMATION<sup>3,7,9</sup>

The diagnostic approach for chikungunya confirmation is based on:

- **direct methods** which detect the virus in the blood: virus isolation or nucleic acid amplification test, such as PCR;
- **indirect methods** such as serological testing which detect the host immune response to CHIKV infection.

**Virus isolation** and **Plaque Reduction Neutralization Test (PRNT)** are considered as reference methods for, respectively, direct virus detection and serology; however they are not used in routine practice (requiring specialized laboratories).

The indication for testing depends on when the samples are collected after onset of symptoms, and interpretation of test results is based on the epidemiological context and clinical information provided by the clinician (time of onset of symptoms is mandatory).

## BIOMARKER KINETICS

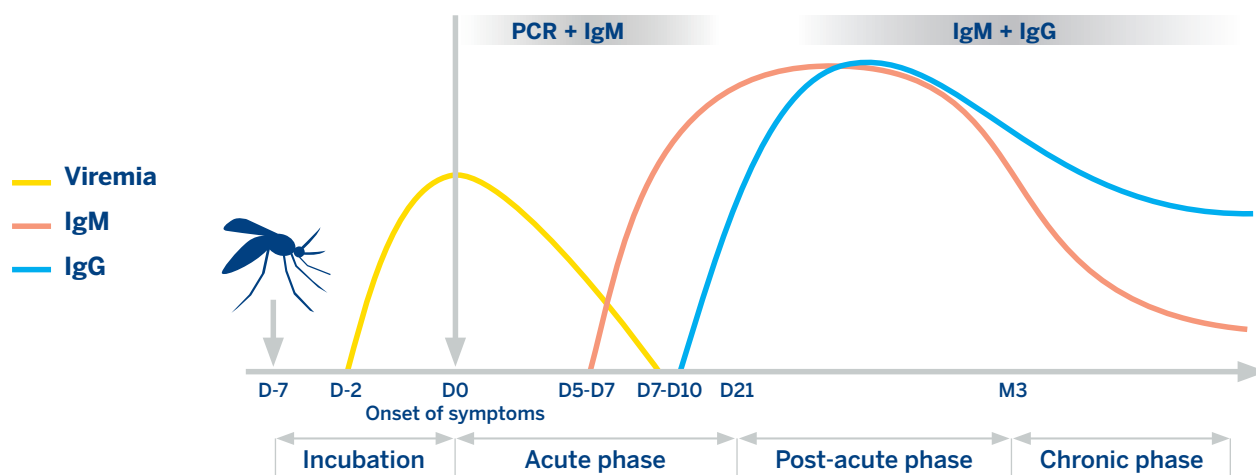
**Viremia** (presence of the virus in the blood) is detectable up to 5-7 days after onset of symptoms.

**Anti-chikungunya IgM and IgG** are antibodies produced by the immune system after chikungunya infection:

- **IgM** are detectable as soon as 5-7 days post-infection (sometimes earlier). It has traditionally been admitted that IgM persist for several weeks up to 3 months. However, it has now been demonstrated that IgM can be detected in the blood of infected persons up to at least 10-12 months after the acute phase.
- **IgG** are detected a few days after IgM (7-10 days post-infection) and persist for years.

## RECOMMENDED DIAGNOSTIC METHODS FOR CHIKUNGUNYA ACCORDING TO THE DELAY AFTER INFECTION<sup>7,10</sup>

Adapted from Simon et al. *Med Mal Infect.* 2015;45(7):243-263 and Santé Publique France.



## TREATMENT<sup>1,2</sup>

As there is **no effective antiviral treatment**, the management of chikungunya is **symptomatic**.

- Assess hydration and hemodynamic status and provide supportive care as needed.
- Evaluate for other serious conditions (e.g., dengue, malaria, and bacterial infections) and treat or manage appropriately.
- Use acetaminophen or paracetamol for initial fever and pain control:
  - if inadequate, consider using narcotics or non-steroidal anti-inflammatory drugs (NSAIDs);
  - if the patient may have dengue, do not use aspirin or other NSAIDs (e.g., ibuprofen, naproxen, toradol) until they have been afebrile  $\geq 48$  hours and have no warning signs of severe dengue.
- Persistent joint pain may benefit from use of NSAIDs, corticosteroids, or physiotherapy.

There is currently **no approved vaccine** against chikungunya.

### References:

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