

Key to diagnostic excellence

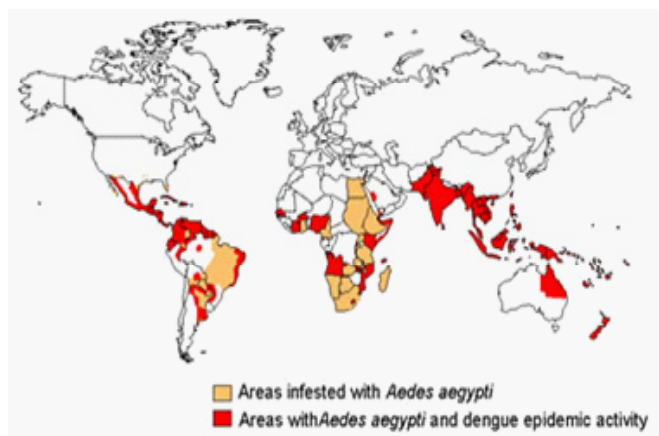
Pathologists Without Borders  
www.lancet.co.ke | info@lancet.co.ke  
Compiled by Dr. Ruchika Kohli

## Introduction

Dengue is a self-limited, systemic viral infection transmitted between humans by mosquitoes. The rapidly expanding global footprint of dengue is becoming a public health challenge

## Global burden

The global burden of dengue is large with an estimated 50 million infections occurring per year across approximately 100 countries. Dengue infections in Africa remain largely unquantified, but



recent outbreaks suggest that substantial parts of the continent may be at risk for increasing dengue transmission. More surveillance is required to assess the true burden of disease.

## Kenyan Situation

Recently we are seeing an increased number of positive cases from the Coastal region. According to the CDC as of May 2012, in addition to an outbreak in Mandera, there were an increasing number of cases being reported in Eastern Kenya.

## Transmission

The primary vector, the urban-adapted *Aedes aegypti* mosquito, has become widely distributed across tropical and subtropical latitudes.



## Basic Virology

Dengue is caused by an RNA virus of the genus flavivirus, Dengue viruses exist in two environments: the urban or endemic setting, where humans and mosquitoes are the only known hosts, and forested areas, where transmission of mosquito-borne viruses occurs between nonhuman primates and, rarely, from these primates to humans

## Clinical features

Clinical manifestations can vary from mild febrile illness to severe and fatal disease. After an incubation period of 3 to 7 days, symptoms start suddenly and follow three phases — an initial febrile phase, a critical phase around the time of defervescence, and a spontaneous recovery phase.

## Differential Diagnosis

A number of diseases mimic dengue. Malaria should always be considered especially as Kenya has a high prevalence. Other conditions which should form part of the differential diagnosis are:

Infection Type/Condition	Example
Other Arboviruses	Yellow fever Japanese encephalitis Arbovirus – West Nile virus, eastern equine encephalitis, western equine encephalitis
Viruses Cytomegalovirus Measles virus Rubella virus HIV (initial infection) Lymphocytic choriomeningitis Acute viral hepatitis	Epstein-Barr virus
Bacteria Leptospira spp Brucella spp Neisseria meningitidis Haemophilus influenzae Rickettsia typhi	Salmonella typhi
Parasites Babesia microti	Plasmodium species
Sepsis	

## Diagnosis

Laboratory diagnosis of dengue is established directly by detection of viral components in serum or indirectly by serologic means. Diagnosis of acute (on-going) or recent dengue infection can be established by testing serum samples during the first 5 days of symptoms and/or early convalescent phase (more than 5 days of symptoms).

Acute infection with dengue virus is confirmed when the virus is isolated from serum specimens by PCR. Acute infections can also be laboratory confirmed by seroconversion from negative to positive IgM antibody to dengue or demonstration of a fourfold or greater increase in IgG antibody titers in paired (acute and convalescent) serum specimens. The sensitivity of each approach is influenced by the duration of the patient's illness.

Other laboratory tests that complement the

diagnosis include:

Investigation	Result
Full blood count Platelet count < 1,00,000/ mm <sup>3</sup> PCV by 20% or more due to haemoconcentration	Mild lymphocytosis
Liver function tests	Increased transaminase levels Hypoproteinaemia
Electrolytes	Hyponatraemia
Serum complement level	Reduced C3 & C5

Laboratory testing to rule out other conditions with similar clinical presentation is also vital.

## Complications

There are two important complications, severe dengue and dengue shock syndrome. Severe dengue is a potentially life threatening form of the condition and presents with

- feeling tired
- an intense and persistent abdominal pain
- persistent vomiting
- hepatomegaly
- haemorrhagic symptoms e.g epistaxis, haematuria. Of note is that the patient is afebrile.

Dengue shock syndrome, another complication presents with symptoms such as

- cold, clammy skin
- a weak rapid pulse
- dry mouth
- reduced flow of urine

## Management

Currently, no effective antiviral agents to treat dengue infection are available, and treatment remains supportive, with particular emphasis on careful fluid management. Patients who have no complications and are able to tolerate oral fluids may remain at home with instructions to return to the hospital immediately if bleeding occurs.

## References

- N Engl J Med 2012;366:1423-32.
- CDC guidelines
- WHO guidelines

Main Laboratory / Headquarters  
5th Avenue Office Suites  
Opp. Traffic HQ - Upper Hill  
5th Ngong Avenue | Ngong Road  
| Switchboard: 0703 061 000  
Landlines: 020 273 5123, 271  
6701 | 020 2508456, 271 6697  
Mobile: 0729 111110, 0736  
493100  
Email: info@lancet.co.ke  
Website: www.lancet.co.ke

## PATHOLOGISTS LANCET KENYA BRANCHES

**LANCET- MOMBASA**  
Biashara Building,  
Tel: 0721 143 766

**LANCET- KISUMU**  
WEDCO Centre on Oginga Odinga Street  
Tel: 0726 838773

**LANCET- THIKA**  
Thika Arcade  
Tel: 020262 2633/ 0717414684

**LANCET- EASTLEIGH**  
Alliance Medical Centre Madina Shopping  
Mall Avenue Tel: 0717 414682

**LANCET GA**  
Within Zenith Medical Centre  
Tel: 0726 995 860

**Prof. NELSON AWORI CENTRE**  
Next to Nairobi Hospital Tel: 0726 839341

**LANCET- BURUBURU**  
Buruburu service point behind Misora  
Tel: 0717414708

**LANCET GARISSA**  
Mabruk House  
Mobile: 0704 819 799

**LANCET- ELDORET**  
KVDA Plaza  
Tel: 0714 403 655

**LANCET- PARKLANDS**  
Park Place, 1st floor  
Tel: 0708727628

**LANCET MALINDI**  
At Tawfiq Hospital  
Mobile: 0721 143 766/

**Mombasa – Links Plaza**  
Links Road, Nyali  
Mobile: 0722 355 796