

Key to diagnostic excellence

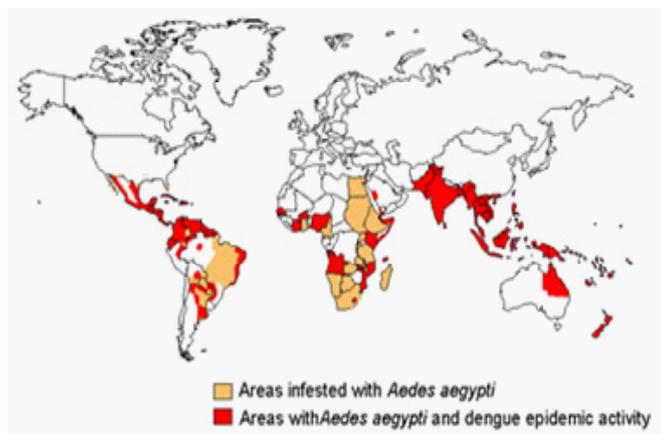
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Introduction

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 ³ 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

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