

DENGUE VIRUS INFECTION

INTRODUCTION

Dengue viruses belong to the family Flaviviridae and have 4 subtypes (1-4). Dengue virus is transmitted by the mosquito *Aedes aegypti* and *Aedes albopictus*, widely distributed in tropical and subtropical areas of the world. Dengue fever (“break bone fever”) is considered to be the most important arthropod borne viral disease due to the human morbidity and mortality it causes. The disease may be subclinical, self limiting, febrile or may progress to a severe form of Dengue hemorrhagic fever or Dengue shock syndrome.

NORMAL RANGE

Dengue NS1 antigen by Elisa (First 5 days of fever)

RESULT IN INDEX	REMARKS
Negative (<0.5)	No detectable dengue NS1 antigen. The result does not rule out dengue infection. An additional sample should be tested for IgG & IgM serology in 7-14 days.
Equivocal (0.5-<1.0)	Repeat sample after 1 week
Positive (>=1.0)	Presence of detectable dengue NS1 antigen. Dengue IgG & IgM serology assays should be performed on follow up samples after 5-7 days of onset of fever, to confirm dengue infection.

Dengue Virus PCR Qualitative (First 5 days of fever)

RESULT	REMARKS
Detected	Indicates presence of Dengue Virus in the sample submitted
Indeterminate	Indicates presence of inherent inhibitors in the sample submitted
Not Detected	Indicates absence of Dengue Virus in the sample submitted

Dengue Virus IgG & IgM antibodies by Elisa (7-10 days of fever)

ANTIBODY	RESULT (INDEX)	REMARKS
Dengue IgM	Negative (<0.9)	No detectable IgM antibody. Result does not rule out Dengue infection. Additional sample to be tested after 7-14 days if infection is suspected.
	Equivocal (0.9-1.1)	Retesting advised.

	Positive (>1.1)	IgM antibody detected. Suggestive of Primary / Secondary Dengue infection
Dengue IgG	Negative (<1.8)	No detectable IgG antibody indicating a presumptive evidence that the patient does not have secondary Dengue infection.
	Equivocal (1.8-2.2)	Retesting advised.
	Positive (>2.2)	IgG antibody detected indicating presumptive evidence that the patient has been recently exposed to / or currently infected with Dengue virus.

CLINICAL PRESENTATION

After an incubation period of 2-7 days, the following symptoms appear:

- Fever
- Headache
- Retro-orbital pain
- Severe myalgia
- Maculo-papular rash
- Epistaxis
- Petechiae
- Nausea & Vomiting
- Hemorrhagic manifestations

Cause

- Bite of infected mosquito *Aedes aegypti* and *Aedes albopictus*

HIGH RISK FACTORS

- Old age

LABORATORY DIAGNOSIS

- Leukopenia
- Thrombocytopenia
- SGOT / SGPT increased
- Dengue NS1 Antigen Elisa
- Dengue Virus PCR Qualitative
- Dengue IgM & IgG Elisa

LIMITATIONS

- Cross reactivity is seen in the Flavivirus group between Dengue virus, Murray Valley encephalitis, Japanese encephalitis, Yellow fever & West Nile viruses
- A negative result of Dengue PCR does not necessarily indicate the absence of Dengue infection as assay may detect viremia or viral shedding in asymptomatic individuals also