

**Decision Support System for Dengue Management Based on  
Vital Signs and Blood Profile**

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## Declaration

I declare that this thesis is my own work and has not submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from published or unpublished work of others has been acknowledged in the text and a list of lists of references is given.

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## Abstract

Dengue is a mosquito-borne viral disease which has become a major health issue in Sri Lanka during the past few years. Based on the symptoms and their severity dengue can be classified as Dengue Fever (DF), Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS). Being a viral disease, it cannot be cured with drugs and attempts to develop a vaccine have not been successful yet. Therefore, proper care and management have become very critical to reduce the number of dengue deaths. Plasma leakage is the major reason which causes death from dengue virus and correct identification of plasma leakage is a challenging task for medical doctors. Since there is not specific available treatment for dengue, early detection of the suspected case and give proper medical care can help to prevent dengue shock or severe involvement.

This research based on research paradigm, Cased-Based Reasoning (CBR) to develop a web application to manage dengue illness. Identified most important cases related Dengue and identified rules which are related to those rules. Clinical parameters and values or ranges of those parameters are used for this research with the guidance of the Physicians. Based on these cases and rules, the system is developed. The system will predict the current situation of the patient by analyzing his/her past vital signs and blood profiles. Normally Dengue Patients are monitored hour by hour and some of those important monitoring parameters will be entered to the system. Then the system will display the current stage of the Dengue and some suggestions. And using this system doctors can see how is the Pulse Pressure, Urine Output, Packed Cell Volume (PCV), Platelet Count and White Cell Count (WCC) varying according to the time of the particular patient.

The system generated details will help doctors to identify the current situation of the patient and do proper treatment to the dengue patient. This will help to reduce the number of Dengue death in Sri Lanka.

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# Abbreviations

WHO	World Health Organization
DF	Dengue Fever
DHF	Dengue Haemorrhagic Fever
DSS	Dengue Shock Syndrome
HR	Heart Rate
PP	Pulse Pressure
HCT	Haematocrit
UOP	Urine Output
WCC	White Cell Count
CBR	Cased Based Reasoning
PCV	Packed Cell Volume
IV	Intravenous