

Management of Dengue Fever

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What is dengue and dengue haemorrhagic fever:

Dengue is a viral infection caused by dengue virus which is transmitted to human beings by mosquitos. The clinical course of dengue infection varies from individual to individual and even in the same individual from time to time.

Many patients infected with dengue virus remain asymptomatic. Others, after an incubation period of 4-7 days, develop a febrile illness which could turn out to be an undifferentiated fever,

classical dengue fever or dengue hemorrhagic fever.

Those infected with dengue virus, especially for the first time (i.e. primary dengue infection), may develop a simple fever indistinguishable from other viral infections (undifferentiated fever).

Classical Dengue fever is generally an acute febrile illness, which may be coupled with clinical symptoms such as severe headache, myalgia, arthralgia and a rash. Decrease in the count of white blood cells and platelets may be observed in hematological tests. Although dengue fever may be benign, it could be an incapacitating disease

due to severe body aches, especially backache. Thus dengue fever is also known as “Breakbone Fever”

Undifferentiated febrile illness and classical dengue fever can be managed as any other viral fever with symptomatic treatment. However, often it is difficult to differentiate dengue fever from dengue hemorrhagic fever in the early phase (febrile phase) of the illness.

Dengue hemorrhagic fever is characterized by the acute onset of high fever, and is associated with signs and symptoms similar to dengue fever in the early febrile phase. Plasma leakage is the hallmark of dengue hemorrhagic fever which generally occurs soon after the end of the febrile phase. There is a possibility of developing hypovolemic shock (dengue shock syndrome) due to plasma leakage if a significant amount of plasma leaks out. Importance of early detection of beginning and end of plasma leakage, treatment of shock and other complications are important for the survival and swift recovery of the patient.

If you have fever:

Dengue is now considered a hyper



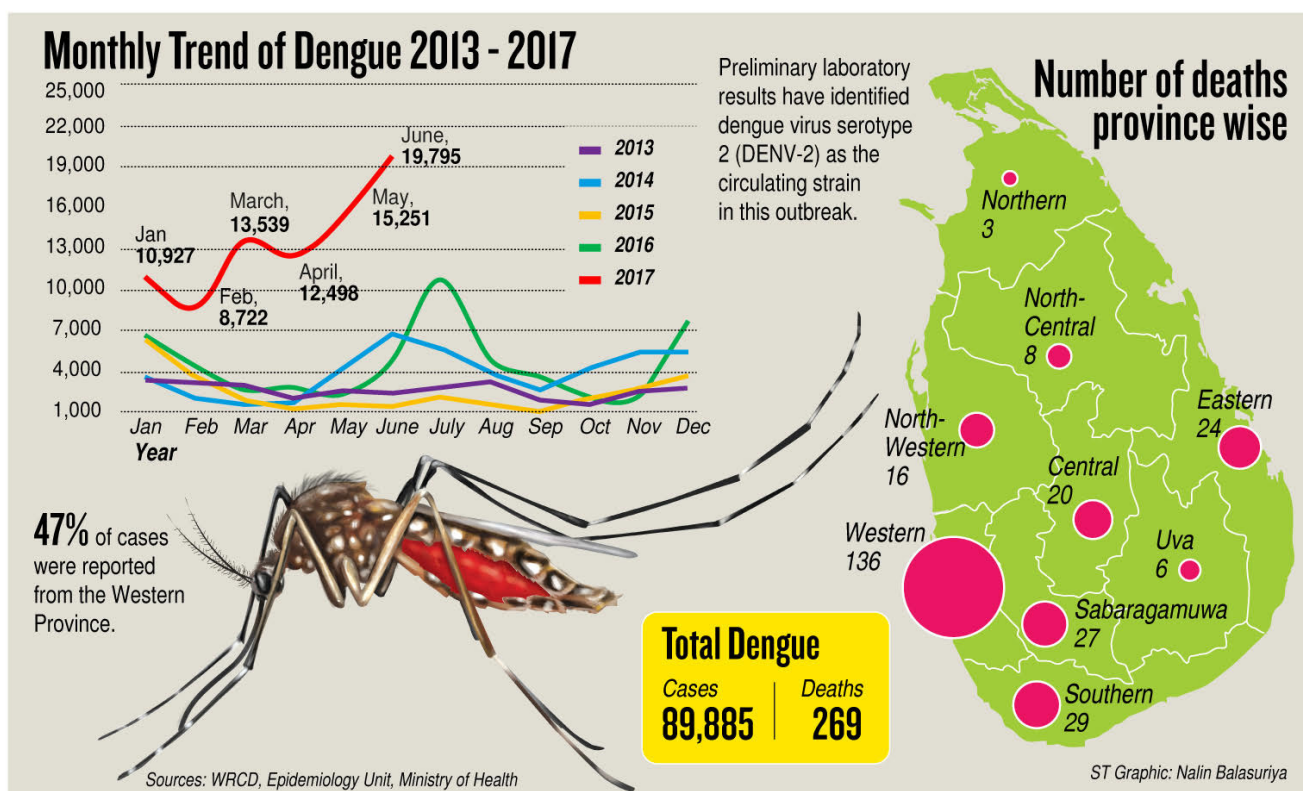
endemic disease in Sri Lanka, thus it is important to suspect dengue in any patient who is having fever.

It is recommended to do a Full Blood Count (FBC) at the end of the second day of fever. A Normal full blood count does not exclude the possibility of dengue fever. Therefore follow up FBCs are essential. It is recommended to do FBC daily if the platelet count is $>150,000/\text{mm}^3$. FBC should be done

identify dengue in the early phase. It is important to note that the NS1 test has to be done within the first 3 days to obtain a reliable result. The likelihood of Dengue infection is high if NS1 antigen test is positive, but a negative test does not exclude the possibility of Dengue. Even if the NS1 test is positive, the decision regarding admission to a hospital will be done based on the results of the FBC and clinical condition of the patient.

Recommended forms of fluid include- oral rehydration fluid, king coconut water, fruit juice, kanji or soup rather than plain water. It is advised to avoid red or brown drinks which could cause confusion with blood vomiting.

Physical rest is very important. Tepid sponging and cooling using a fan is recommended as adjuvant therapy to paracetamol to bring down the fever. Paracetamol not



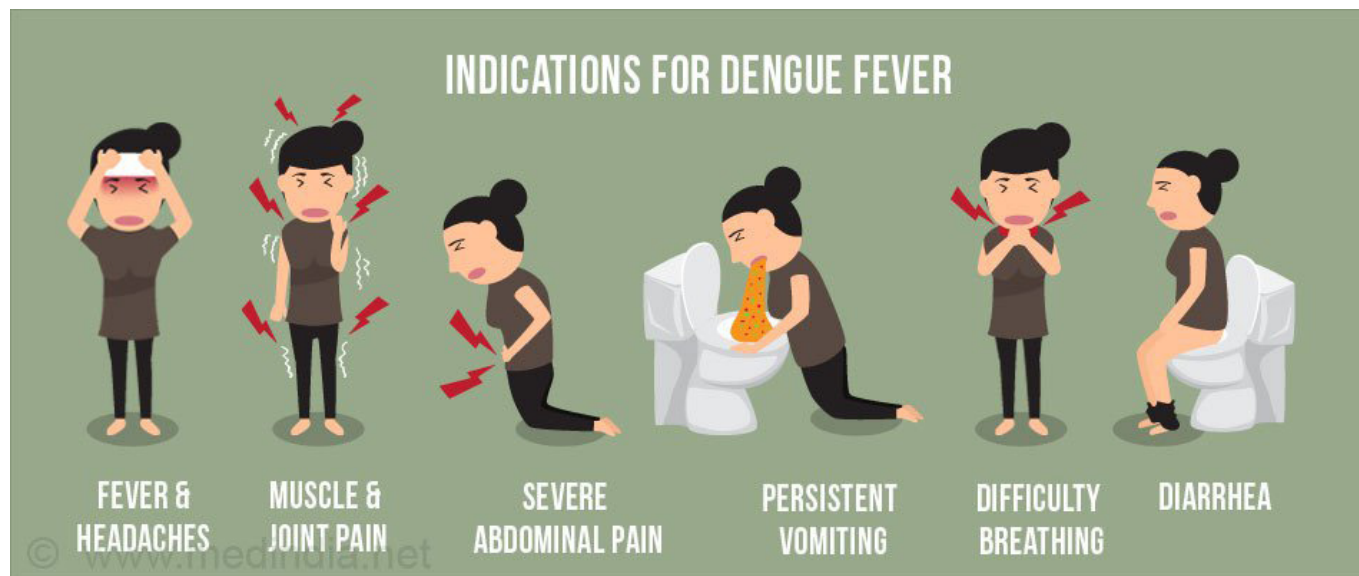
twice daily if the platelet count is $<150,000/\text{mm}^3$. However a FBC should be done on the first day of fever in pregnant patients and in patients with co-morbidities.

Abnormalities in FBC will be the deciding factor when it comes to admitting a patient to the hospital. NS1 (nonstructural protein1) antigen test is a useful test to

If the patient does not need admission, he or she can be followed up as an out-patient with continuous assessment of clinical condition and repeated FBCs.

During this period, it is important to ensure adequate oral fluid intake in a patient with fever (about 2500 ml within 24 hours - for an adult).

exceeding 2 tablets six hourly (reduce dose for patients with lower body weights) should be given. It is important to note that fever may not fully settle with paracetamol and should not be taken in excess. Anti-emetics (to control vomiting) can be given if necessary. Avoid NSAIDs (non-steroidal anti-inflammatory drugs) and steroids at all times as these drugs can increase



the bleeding tendency and can affect the liver in dengue.

When the platelet count drops close to 100,000/mm³ patients need to be admitted to a hospital as monitoring is necessary. Even if the platelets count is above this figure, hospital admission will be considered if any of the following 'warning signs' are present after day 3 of fever/illness:

Warning signs-

Abdominal pain, persistent vomiting, clinical signs of plasma leakage, pleural effusion, ascites, mucosal bleeding, lethargy, restlessness, liver enlargement >2 cm, increase in hematocrit (HCT)

concurrent with rapid decrease in platelet count

Other patients who may need admission even without the above warning signs are: Pregnant mothers, elderly patients, obese patients, patients with co-morbid conditions like diabetes, chronic renal failure, ischemic heart disease, thalassemia and other Blood disorders.

Managing In-ward Patients

In-ward patients include patients with DF or DHF.

Differentiation between these two is difficult during

the initial few days (First three to four days of fever). The hallmark of DHF is plasma leakage. Plasma leakage is the main cause for shock, subsequent bleeding, organ failure and death. The only way of diagnosing a patient with DHF clinically

is the detection of plasma leakage. Therefore the mainstay of in-ward care is: Early detection of plasma leakage (onset of critical phase) and judicious fluid management to prevent shock and fluid overload. For this, purpose regular monitoring of vital signs (such as



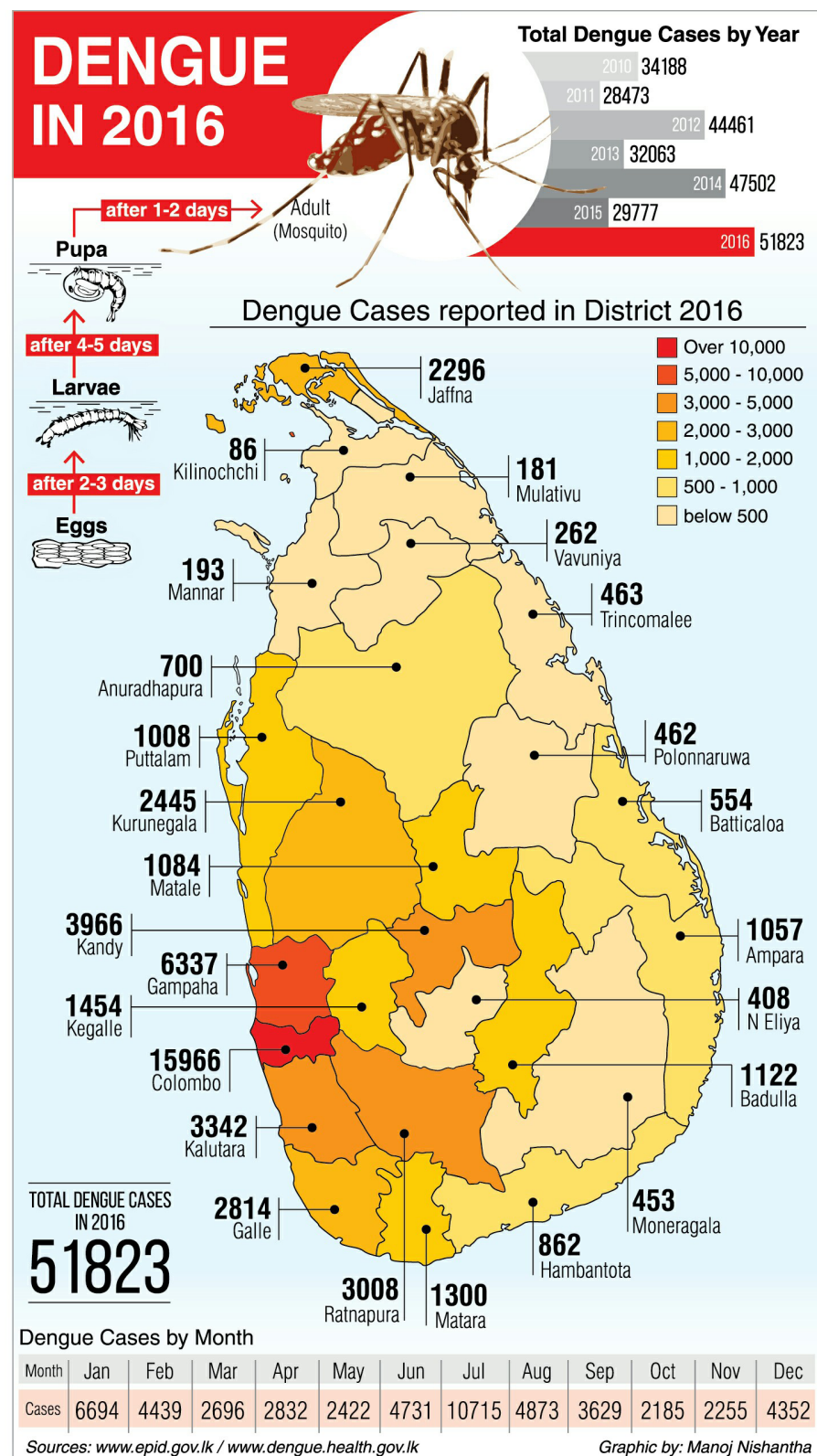
pulse rate, blood pressure), intake of fluid and urine output, and hematocrit are very important. Ultra sound examination of the abdomen and chest is a useful investigation to detect plasma leakage. If plasma leakage is detected, monitoring has to be intensified as the leak can continue for the next 48 hours or so. Further the degree of leak vary from person to person and the rate also can vary with time even in the same individual.

Prevention or early treatment of shock is essential if more serious complications are to be avoided. To detect shock early, observation for symptoms and signs are important. Hence, monitoring of following is important:

If the patient is clinically stable on admission and DF/DHF is suspected, the following parameters are measured,

- Vital signs (temperature, blood pressure, respiratory and heart rate)
- Fluid intake and output chart.
- Fluid balance should be measured, and documented every 2 hourly.
- Hematocrit (PCV)
- Evidence of bleeding- especially melena (dark tarry stools) or bleeding per vagina and quantify.
- Any other fluid loss from the body such as vomiting, diarrhoea with attempt to quantify.

Specific treatment will depend on these parameters. Maintaining the monitoring charts is for accurate fluid management and early detection of shock. And also to decide on the amount of fluid to be given, type of fluid and whether the patient needs blood transfusion. Patients are encouraged to take fluids during hospital stay. The amount of fluid that needs to be taken will be advised according to the parameters. Patients are encouraged to take Solutes over water. If fluid intake is not adequate saline will be given. Type and rate of saline infusion will be determined according to patient's condition. If the patient is capable of taking food, it is allowed; but if vomiting persists fluid intake is encouraged over solid foods.



In convalescent phases

Once the critical period is over, the patient will show features of improvement. The appetite will

improve, general well being will improve and patient may have increased amount of urine. Both the WBC and platelets improve. Some people get itching of hand



and feet during this period which is transient. Generally, when the patient is afebrile for about 48 hours, and when the platelet count improves the patient is ready to be discharged home. This usually occurs around the 7th day of the illness. Occasionally patients can get bacterial infections which occur towards the recovery stage of dengue illness. Such patients will have continuing fever and will need antibiotics

Platelet count and complications in dengue.

Earlier it was believed that complications in dengue are due to low platelets. Therefore, the practice many years ago was to transfuse platelets. However, this is not done now not only because it is of no use, but also because it can lead to complications. Platelet drop is common in patients with dengue. Usually this reaches a nadir around 5th or 6th day of the illness and then starts to rise. Complications in dengue are not

due to the low platelet count. Platelet rise starts when the patient starts to recover. Therefore, it is not recommended to take other remedies (like papaya leaf extract) to artificially increase the platelet count. This confuses the standard treatment methods and can lead to faulty management of the condition.

Once the patient is discharged home.

Generally patients are recommended to have physical rest (not strict bed rest) for a few days after being discharged from the hospital. Most individuals can even start commencing work after a few days of rest. If the patient had complications during the hospital stay, he/she may be advised to have rest for a longer duration of time, occasionally up to two weeks.

Getting dengue again.

There are four serotypes of dengue. When an individual gets an infection with one type, he becomes immune to that type. But he can get an infection from another type. However, a person contracted and cured of dengue is immune to all four serotypes of dengue for several months. Hence it is highly unlikely that a person

who had dengue would get it again within next few months.

Dengue vaccine.

One dengue vaccine was marketed recently. World Health Organization recommends countries to consider using it only in certain geographic settings according to certain criteria. Therefore, it is not registered in Sri Lanka. Furthermore, the present vaccine is not effective against the serotype 2, which is the serotype prevalent in Sri Lanka at present. However, experts are regularly reviewing the data regarding the vaccine.

There are extensive methods of treating dengue, but the important thing to keep in mind is that Dengue always need to be considered as a possibility (given the hyper-endemic situation in the country) when somebody gets fever.



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{This article is based on the interview done with Dr. Ananda Wijewickrama, Consultant Physician, Infectious Diseases Hospital on the 16th of October 2017 by Jithmal Meegoda and Sarith Ranawaka (3rd year medical students, Faculty of Medicine Colombo)}

