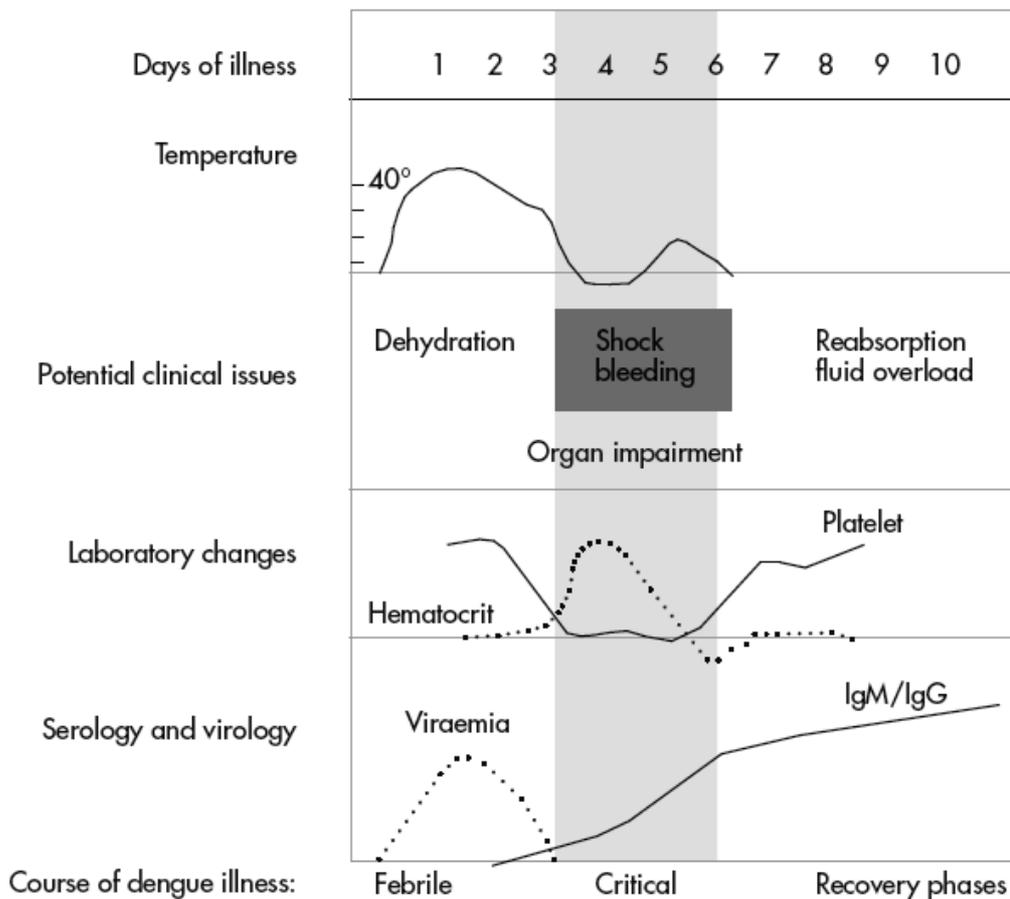


CLINIC BASED DENGUE MANAGEMENT PROTOCOL

The course of Dengue illness:



1. Febrile phase:

- Acute onset fever with facial flushing, skin erythema,
- Generalized body ache, myalgia, arthralgia and headache.
- Some patients may have sore throat, injected pharynx and conjunctival injection.
- Anorexia, nausea and vomiting are common.
- A positive tourniquet test in this phase increases the probability of dengue.
- Mild haemorrhagic manifestations like purpuric spots and mucosal membrane bleeding may be seen. Massive vaginal bleeding (in women of childbearing age) and gastrointestinal bleeding may occur during this phase but is not common.

2. Critical phase:

- When the temperature drops to 37.5–38°C or less (3rd –7th day of illness), an increase in capillary permeability in parallel with increasing haematocrit levels occur.
- The degree of increase above the baseline haematocrit often reflects the severity of plasma leakage.
- This phase or plasma leakage lasts for 1-2 days.
- Progressive leukopenia followed by a rapid decrease in platelet count usually precedes plasma leakage.
- **Shock** occurs when a critical volume of plasma is lost through leakage.

- Those who deteriorate will manifest with warning signs. This is called *dengue with warning signs*

Warning signs:

CLINICAL	LABORATORY
<ul style="list-style-type: none"> • Abnormal pain/tenderness • Persistent vomiting • Clinical fluid accumulation • Mucosal bleeding • Lethargy, restlessness • Hepatomegaly > 2cm 	<ul style="list-style-type: none"> • Increase in Hct concurrent with rapid decrease in platelet count

3. Recovery phase:

If the patient survives the 24–48 hour critical phase, a gradual reabsorption of leaked fluid takes place in the following 48–72 hours and patient recovers completely.

Severe dengue

Suspected dengue **plus** any of the following features:

- There is evidence of plasma leakage, such as:
 - high or progressively rising haematocrit;
 - pleural effusions or ascites;
 - circulatory compromise or shock
- There is significant bleeding.
- There is an altered level of consciousness (lethargy or restlessness, coma, convulsions).
- There is severe gastrointestinal involvement (persistent vomiting, increasing or intense abdominal pain, jaundice).
- There is severe organ impairment (acute liver failure, acute renal failure, encephalopathy or encephalitis, or other unusual manifestations, cardiomyopathy) or other unusual manifestations.

Patients with severe dengue usually do not have major bleeding. When major bleeding does occur, it is almost always associated with profound shock leading to DIC and inadvertent use of drugs like acetylsalicylic acid (aspirin), ibuprofen or corticosteroids

Dengue case classification:

PROBABLE DENGUE	LABORATORY CONFIRMED DENGUE	DENGUE WITH WARNING SIGNS	SEVERE DENGUE
Live in/travel to dengue endemic area	A case compatible with the clinical description that is laboratory confirmed	<ul style="list-style-type: none"> • Abnormal pain/tenderness • Persistent vomiting • Clinical fluid accumulation • Mucosal bleeding • Lethargy, restlessness • Hepatomegaly > 2cm • Increase in Hct with concurrent rapid decrease in platelet count 	<ul style="list-style-type: none"> • Shock (Dengue shock syndrome) • Fluid accumulation with respiratory distress • Severe bleeding • AST or ALT > 1000 • Impaired consciousness • Heart failure • Renal failure
Fever and any 2 criteria: <ul style="list-style-type: none"> • Nausea, vomiting • Rash • Aches and pains • Tourniquet test positive • Leukopenia • Any warning sign 			

Diagnosis

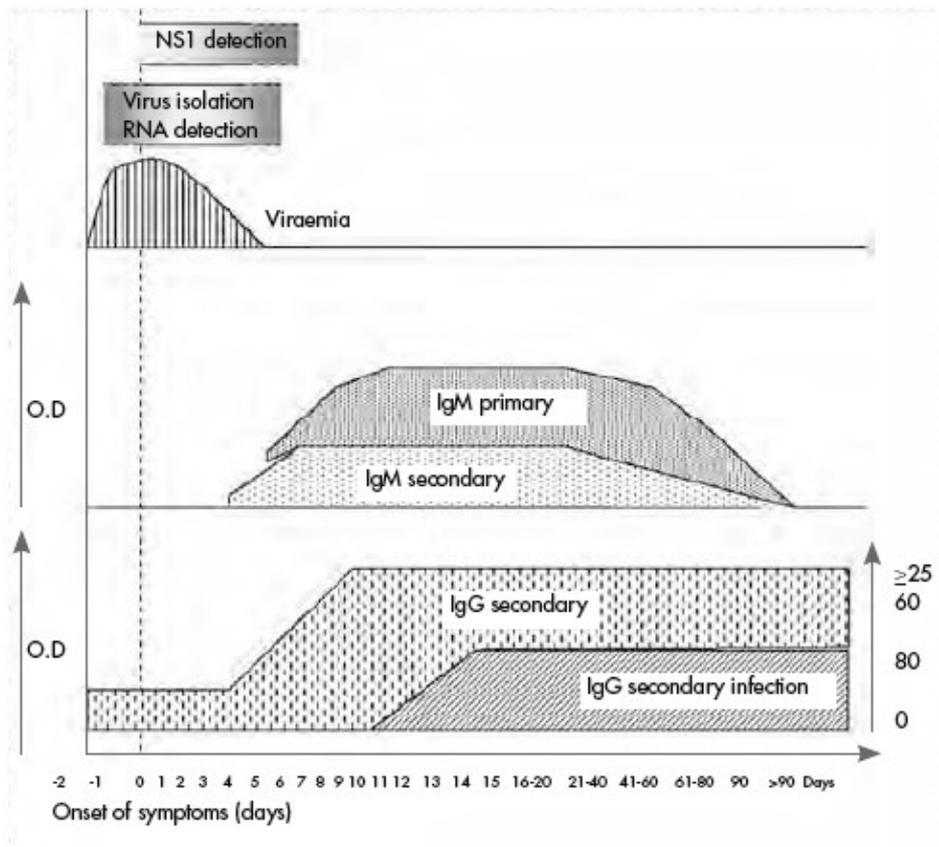
High degree of clinical suspicion

NS1 antigen detection: up to 5 days of illness (sensitivity of rapid tests variable).

IgM Antibody Capture ELISA (MAC ELISA) : After 5 days. Confirmatory.

Doing IgM ELISA before 5 days of illness have no value. Some patients have detectable IgM on days two to four after the onset of illness, while others may not develop IgM for seven to eight days after the onset.

Approximate time-line of primary and secondary dengue virus infections and the diagnostic methods that can be used to detect infection



Management

Most patients recover without requiring hospital admission with regular monitoring.

Depending on the clinical manifestations and other circumstances, patients may be divided into three groups:

Group A – patients who may be sent home

Group B – patients who should be referred for in-hospital management

Group C – patients who require emergency treatment and urgent referral when they have severe dengue

Group A: Who do **not have any warning signs** (Most of the patients fall in this group)

Management of Group A

1. Bed rest
2. Fluids: Plenty of ORS, fruit juice. Total intake 3-4 L/day(adults) and children accordingly
3. Avoid drugs like aspirin, ibuprofen and other NSAIDs and corticosteroids.
4. Paracetamol : Up to 4 Gm/day(adults) and for children accordingly
5. Daily monitoring for appearance of warning signs until out of critical period.

Group B: Dengue with warning signs or patients without warning signs who fall in the following group:

- Infant
- Old age
- Diabetes
- Pregnancy
- Renal failure

Management of Group B: All patients will need admission in hospital

Subsequent fluid therapy and monitoring with the help of PCV and platelet count at hospital.

Group C: Most serious group of patients with:

- Severe plasma leakage/evidence of shock/ evidence of fluid accumulation
- Severe bleeding
- Multi organ involvement

Management of Group C: These patients need emergency admission in hospital followed by isotonic crystalloid based therapy or transfusion of blood components as appropriate with frequent PCV and/or platelet estimations and evaluation of other organ functions as situation demands.

Treatment of haemorrhagic complications

Minor bleeding: No transfusion

Mucosal bleeding may occur in any patient with dengue

If the patient remains stable: No Transfusion

Profound thrombocytopenia:

- Strict bed rest
- No IM injections

Major bleeding : Usually from the gastrointestinal tract, and/or vagina in adult females. If suspected should be referred to hospital immediately with fluid support during transit.

Blood transfusion is life-saving in these cases with appropriate fluid resuscitation.

Indications of red cell transfusion

- Loss of blood (overt blood) -10% or more of total blood volume. Preferably whole blood/ component to be used
- Refractory shock despite adequate fluid administration and declining haematocrit/PCV
- Replacement volume should be 10ml/kg body wt at a time and coagulogram should be done
- If fluid overload is present Packed cell transfusion is to be given

Indications of platelet transfusion

In general there is no need to give prophylactic platelets even at $< 20,000/ \text{cumm}$

- Prophylactic platelet transfusion may be given at level of $< 10,000/ \text{cumm}$ in absence of bleeding manifestations
- In case of Systemic massive bleeding like severe menorrhagia and GI bleeding, platelet transfusion may be needed in addition to red cell transfusion.

Criteria for discharge of patients

- Absence of fever for at least 24 hours without the use of anti-fever therapy
- Return of appetite
- Visible clinical improvement

- Good urine output
- Minimum of 2/3 days after recovery from shock
- No respiratory distress from pleural effusion or ascitis
- Platelet count > 50,000/ cumm