

# WEBINAR SERIES ON DENGUE OUTBREAK CONTROL IN SOUTH-EAST ASIA REGION

## Decision making on home care - the role of primary care physician

**Day -3-Date: 31-08-2023**

**Session -3**

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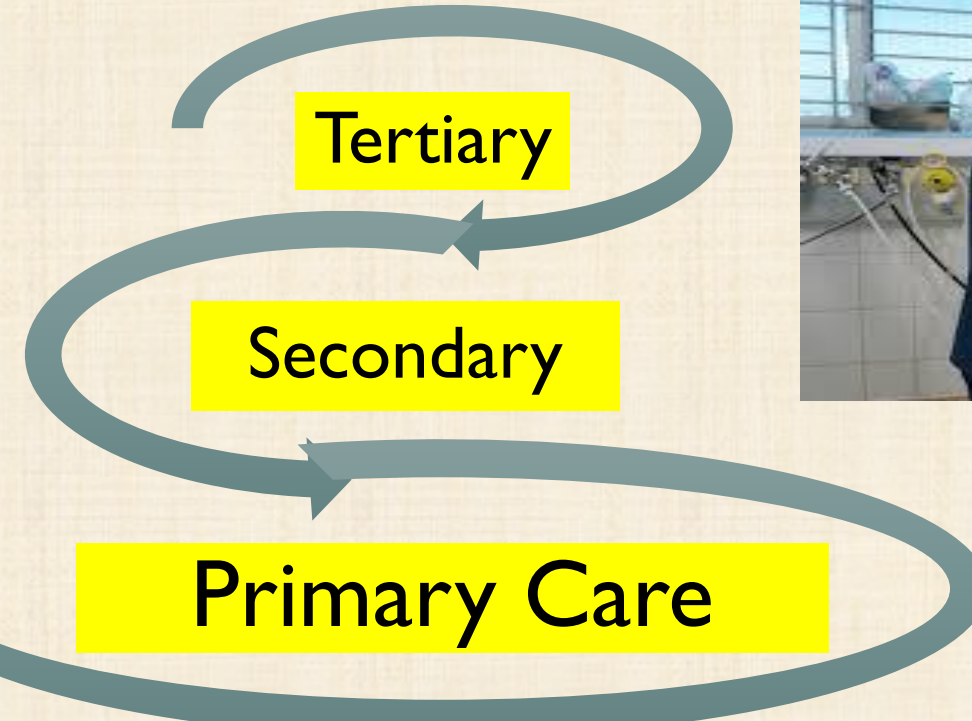
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# FOUR LEVEL OF CARE IN DENGUE MANAGEMENT



# DENGUE OUTBREAK SITUATION & CHALLENGES

Following issues are critical

- Diagnosis
- Severity assessment
- Specific management
- Critical care management

# STEPWISE APPROACH

## Step I – Overall assessment

I.1	History, including symptoms, past medical and family history
I.2	Physical examination, including full physical and mental assessment
I.3	Investigation, including routine laboratory tests and dengue-specific laboratory tests

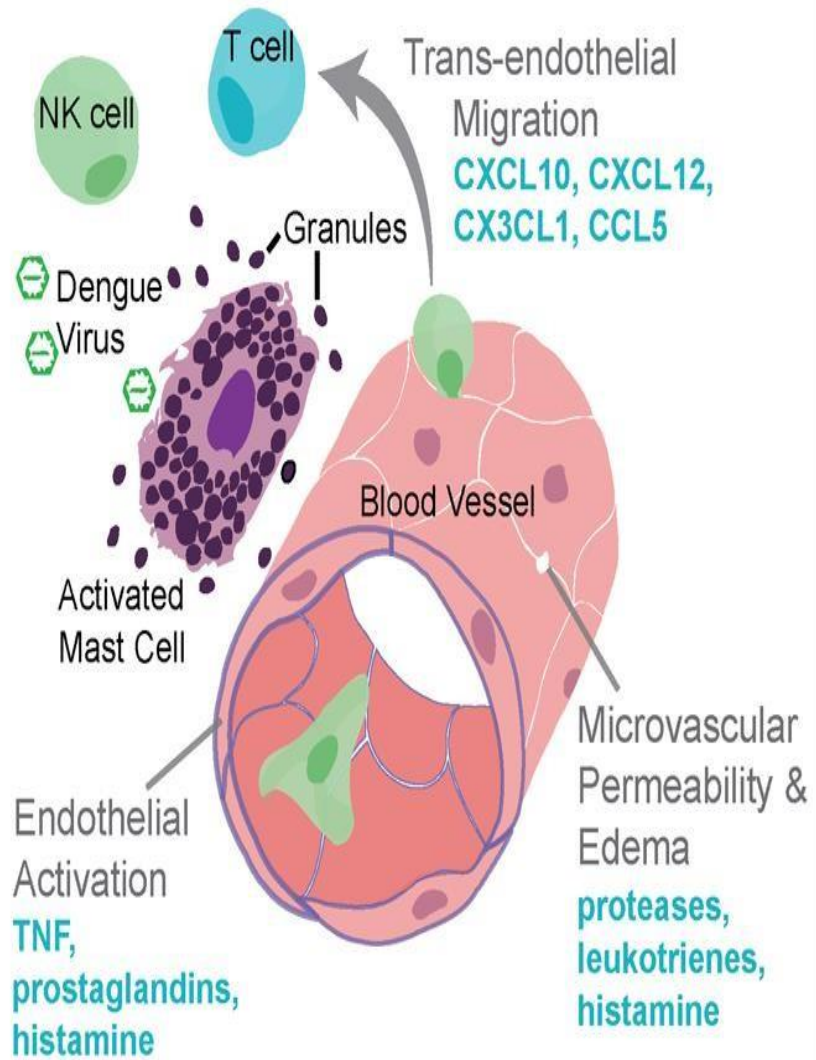
## Step II – Diagnosis, assessment of disease phase and severity

## Step III – Management

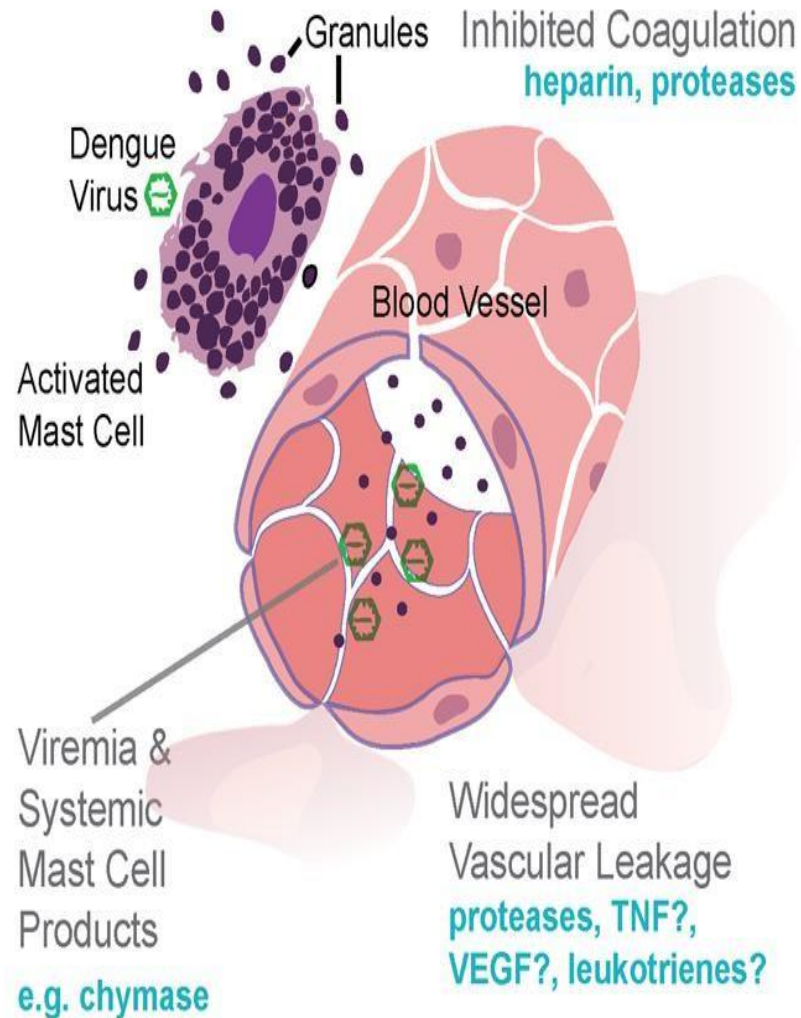
III.1	Disease notification
III.2	Management decisions. Depending on the clinical manifestations and other circumstances, patients may (1): <ul style="list-style-type: none"><li>- be sent home (Group A)</li><li>- be referred for in-hospital management (Group B)</li><li>- require emergency treatment and urgent referral (Group C)</li></ul>

# Pathogenesis

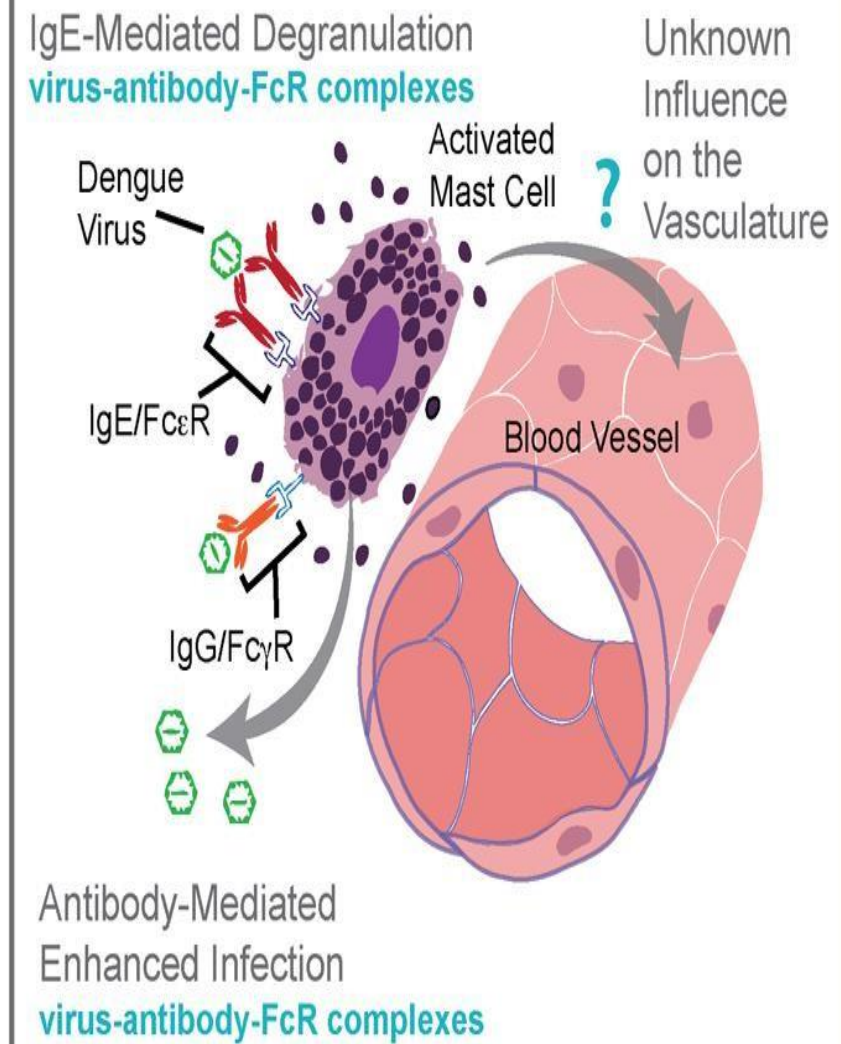
## A Localized Infection



## B Systemic Infection

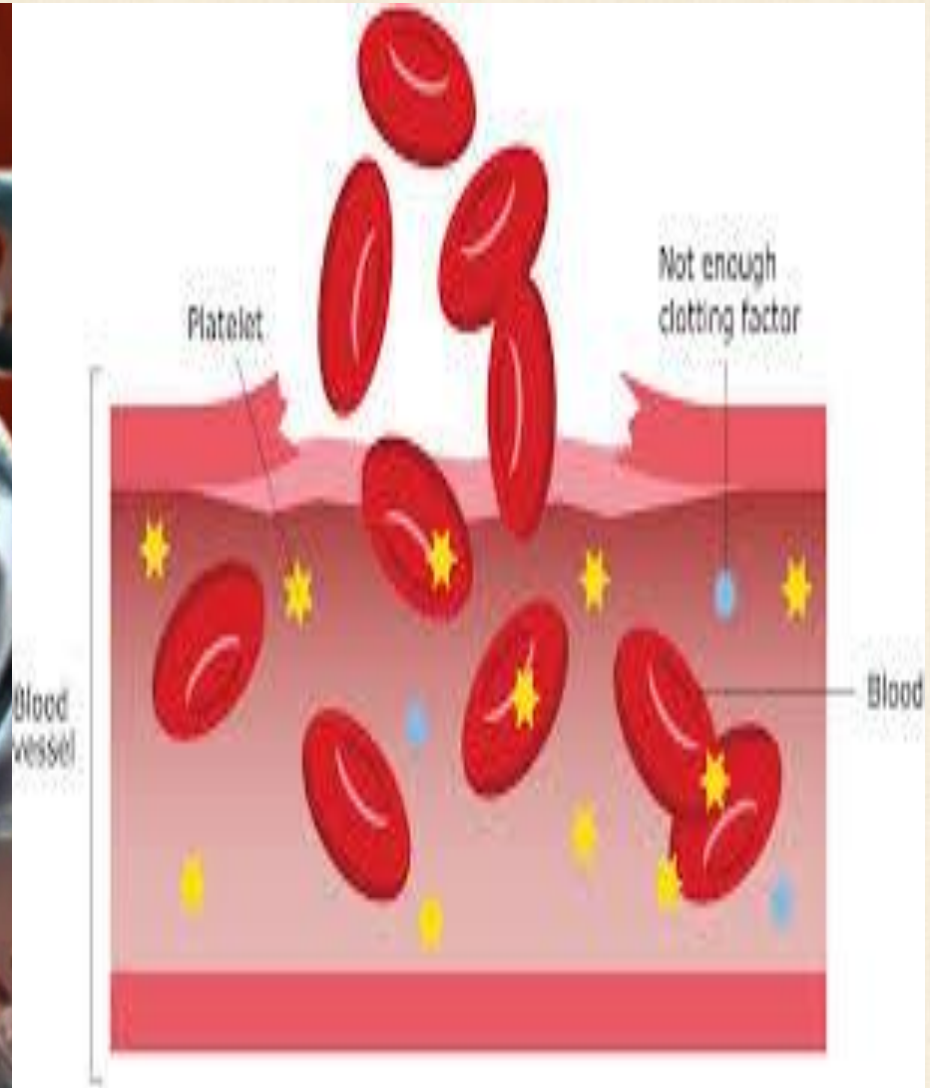
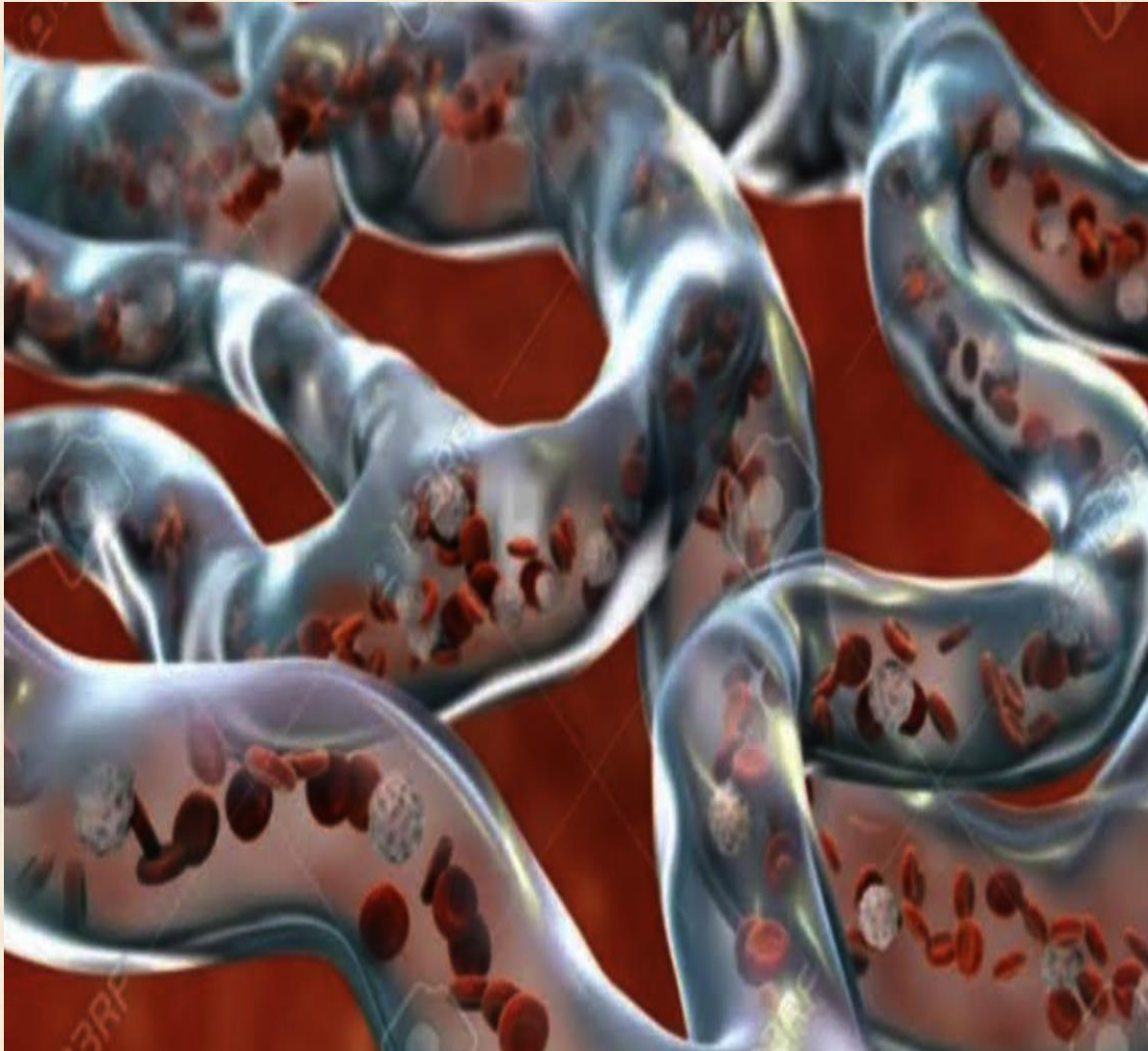


## C Secondary Infection

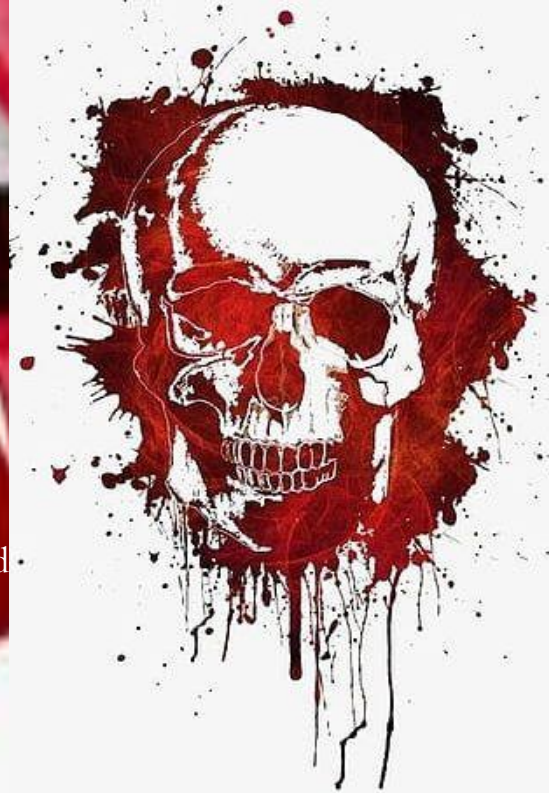




# Vasculopathy



# Coagulopathy



Bleeding in dengue

- APTT ↑
- Fibrinogen ↓
- Platelets ↓
- DIC
- Procoagulants ↑
- Anticoagulants ↓
- Enhanced fibrinolytic activity
- Release of heparan sulphate or chondroitin sulfate from the glycocalyx

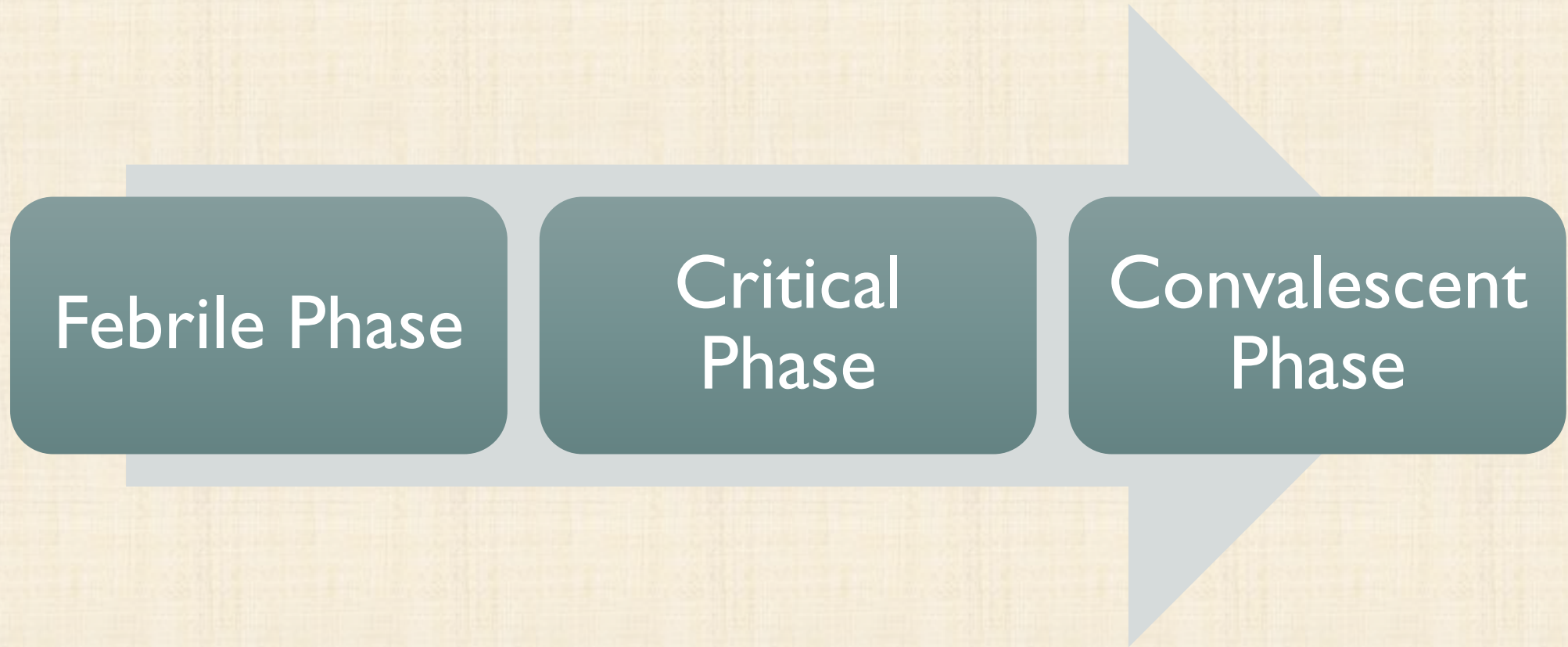
# HISTORY

- Date of onset of fever/illness
- Quantity of oral fluid intake
- Diarrhoea
- Urine output (frequency, volume and time of last voiding)
- Assessment of warning signs
- Change in mental state/seizure/dizziness
- Other important relevant history, such as family or neighbourhood dengue, travel to dengue-endemic areas, co-existing conditions (e.g. infancy, pregnancy, obesity, diabetes mellitus, hypertension)
- Past h/o dengue infection

# PHYSICAL EXAMINATION

- Assessment of mental state
- Assessment of hydration status
- Assessment of haemodynamic status
- Checking for quiet tachypnoea/acidotic breathing/pleural effusion
- Checking for abdominal tenderness/hepatomegaly/ascites
- Examination for rash and bleeding manifestations
- Tourniquet test (repeat if previously negative or if there is no bleeding manifestation)

# NATURAL COURSE OF DENGUE INFECTION



# WARNING SYMPTOMS AND SIGNS

- Persistent vomiting
- Abdominal pain and tenderness
- Lethargy and/or restlessness, sudden behavioral changes.
- Bleeding manifestations like epistaxis, melena, haematemesis, excessive menstrual bleeding, and haematuria.
- Syncope or giddiness
- Clinical fluid accumulation (ascites and pleural effusion)
- Enlarged Liver(>2cm)
- Laboratory: Progressive increase in haematocrit with a rapid decrease in platelet count

# FEBRILE PHASE

- Sudden rise of body temperature – high grade, biphasic
- Associated with headache, flushing, vomiting, myalgia, arthralgia & macular rash
- Rash –
  - maculopapular/rubelliform
  - Appears on 3<sup>rd</sup> – 4<sup>th</sup> days after fever
  - Face, neck, chest, abdomen
  - Fades away as fever progresses



# FEBRILE PHASE

- Bleeding manifestations depending upon severity –
  - MC skin, mucosal bleeding (GI/vaginal)
  - Less commonly hematemesis, melena, menstrual bleeding, epistaxis, hematuria
  - Higher risk for patients with co-morbidities – peptic ulcer disease, pts on steroids
- Facial puffiness, conjunctival congestion, pharyngeal erythema, lymphadenopathy, hepatomegaly, petechiae (skin/palate), bruising
- Tourniquet test

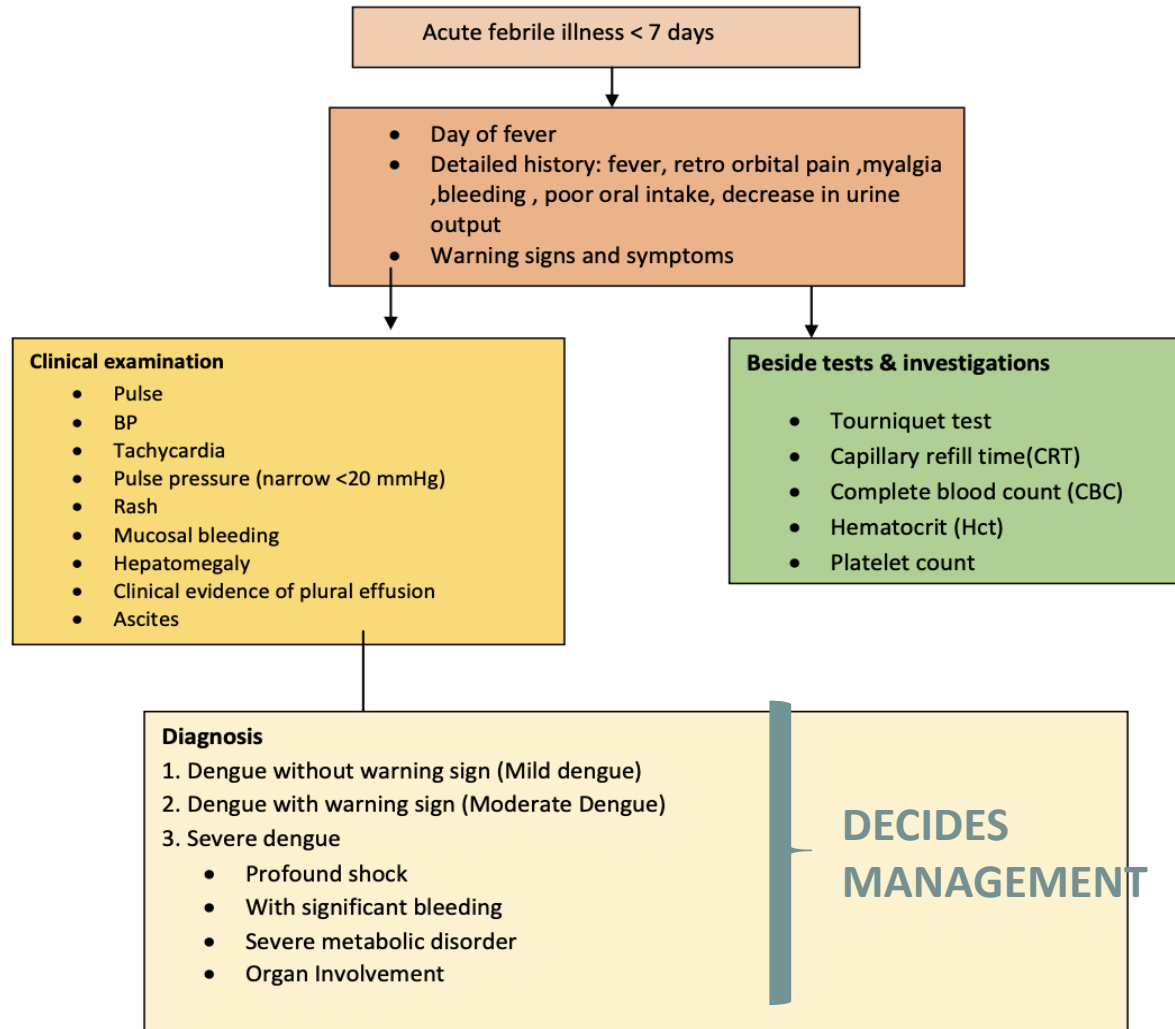
# TOURNIQUET TEST

- Inflate blood pressure cuff to a point mid way between the systolic and diastolic blood pressure for five minutes
- Positive when  $\geq 10$  petechiae/ $2.5 \text{ mm}^2$
- Severe dengue  $> 20$  petechiae/ $2.5 \text{ mm}^2$  may be observed
- May be negative in shock



# Approach to Dengue patients and Decision Making

Figure 6: Approach to diagnosis of dengue



RESP.  
RATE

EYE/FUNDUS  
EVALUATION

## CAREFUL HISTORY FOR D/D

- FAMILY/NEIGHBORHOOD DENGUE
- TRAVEL TO ENDEMIC AREAS
- CO-MORBIDITIES
- JUNGLE TREKKING
- SWIMMING IN WATERFALLS
- HIGH RISK BEHAVIOUR

## CAREFUL ASSESSMENT

## ATYPICAL MANIFESTATIONS

## COMPENSATED SHOCK

## DAY OF ILLNESS, NATURAL HISTORY, WARNING SIGNS

## DISEASE CLASSIFICATION

# Dengue case classification by severity

## Dengue $\pm$ warning signs

## Severe dengue



### Criteria for dengue $\pm$ warning signs

#### Probable dengue

Live in/travel to dengue endemic area. Fever and 2 of the following criteria:

- Nausea, vomiting
- Rash
- Aches and pains
- Tourniquet test positive
- Leucopenia
- Any warning sign

#### Laboratory confirmed dengue

(important when no sign of plasma leakage)

#### Warning signs\*

- Abdominal pain or tenderness
- Persistent vomiting
- Clinical fluid accumulation
- Mucosal bleed
- Lethargy; restlessness
- Liver enlargement  $>2\text{cm}$
- *Laboratory*: Increase in HCT concurrent with rapid decrease in platelet count

*\* Requiring strict observation and medical intervention*

### Criteria for severe dengue

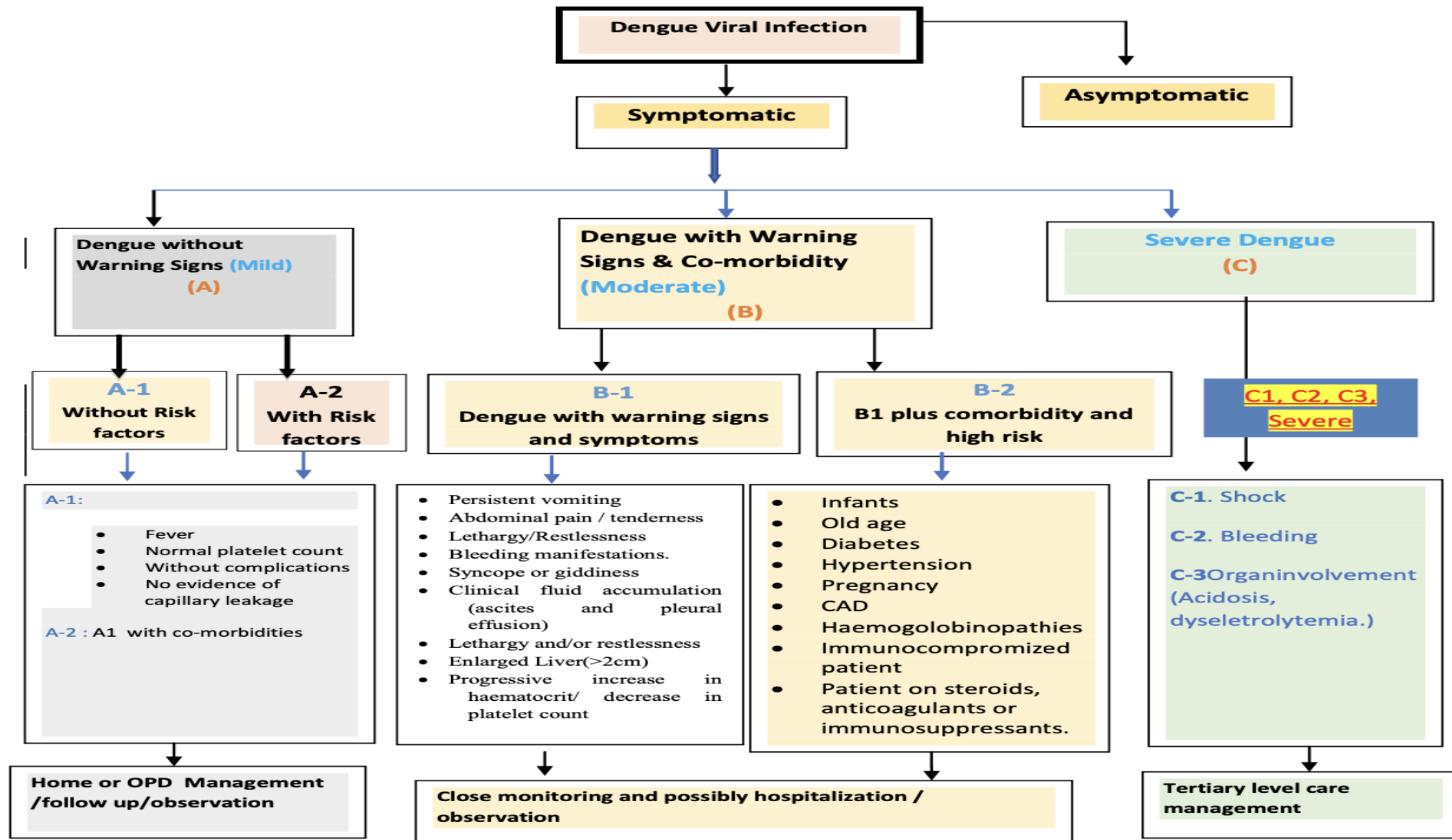
#### 1. Severe plasma leakage leading to:

- Shock (DSS)
- Fluid accumulation with respiratory distress

#### 2. Severe bleeding as evaluated by clinician

#### 3. Severe organ involvement

- Liver: AST or ALT  $\geq 1000$
- CNS: Impaired consciousness
- Heart and other organs



## High-risk factors for severity of Dengue.

- Infants and the children (age < 10 years) especially with malnutrition
- Elderly (age > 65 years)
- Obesity
- Pregnant women, female who have menstruation or abnormal vaginal bleeding
- Hemolytic diseases such as glucose-6-phosphatase dehydrogenase deficiency, thalassemia and other haemoglobinopathies
- Peptic ulcer disease, Congenital heart disease
- Chronic diseases such as diabetes mellitus, hypertension, obstructive lung diseases, cardiovascular diseases, chronic renal failure, and chronic liver disease
- Patients on long term steroid or NSAID treatment

MANAGEMENT

# DIFFERENTIAL DIAGNOSIS

- Malaria
- Enteric fever
- Pharyngitis
- Tonsillitis
- Influenza
- Leptospirosis
- Meningococcal infection
- Chikungunya fever
- Epidemic typhus/scrub typhus
- Crimean-Congo haemorrhagic fever
- Ebola haemorrhagic fever

# CONDITION FOR ADMISSION

A patient showing the following symptoms and signs should be considered for admission to hospital:

- Significant bleeding from any site
- Any warning sign and symptoms
- Persistent high grade fever (38.5 C and above)
- Impending circulatory failure – tachycardia, postural, narrow pulse pressure (<20 mmHg. With rising diastolic pressure, e.g- 100/90 mmHg), increased capillary refilling time > 2 secs
- Neurological abnormalities- restlessness, seizures, excessive (young infants), altered sensorium and behavioural changes, severe and persistent headache
- Drop in temperature and/or rapid deterioration in general condition
- Shock – cold clammy skin, hypotension/ narrow pulse pressure, tachypnoea

# INDICATION FOR DOMICILIARY MANAGEMENT

If patients have done none of the following conditions, they can be managed at home:

- Tachycardia
- Hypotension
- Narrowing of pulse pressure
- Bleeding
- haemoconcentration

### No Indications for admission:

- No tachycardia / hypotension/ narrowing of pulse pressure / bleeding/ hemoconcentration
- Platelet count  $> 100000/\text{cumm}$

Patient should come for follow up after 24 hrs for evaluation and should report to nearest hospital immediately in case of the following complaints:

- Bleeding from any site (fresh red spots on skin, black stools, red urine, nose-bleed, menorrhagia )
- Severe abdominal pain, refusal to take orally/ poor intake, persistent vomiting
- Not passing urine for 12 hrs/decreased urinary output
- Restlessness, seizures, excessive crying (young infant), altered sensorium, behavioural changes, severe persistent headache, cold clammy skin and sudden drop in temperature

# HOME CARE

## With Fever

### Bed rest

- Let your sick child or family member rest as much as possible.

### Control high fever

- Do not give ibuprofen (Motrin, Advil), aspirin, or aspirin-containing drugs.
- Sponge the patient's skin with cool water if fever remains high.
- Give acetaminophen or paracetamol (Tylenol) every 6 hours if needed for high fever (maximum 4 doses per day).

### Prevent dehydration

Give plenty of fluids, and watch for signs of dehydration, which occurs when a person loses too much body fluid from fever, vomiting, or if he or she does not drink enough fluids. Bring your child or sick family member to a clinic or emergency room if any of the following signs appear:

- Decrease in urination (check the number of wet diapers or trips to the bathroom)
- Few or no tears when a child cries
- Dry mouth, tongue, or lips
- Sunken eyes
- Listlessness, overly agitated, or confused
- Rapid heartbeat (more than 100 beats per minute)
- Cold or clammy fingers and toes
- Sunken soft spot (fontanel) in an infant's head

### Prevent spread of dengue inside your house

Mosquitoes that bite the affected family member can go on to bite and infect others.

- Allow the sick child or family member to rest and sleep under a bed net or use insect repellent while feverish.
- Kill all mosquitoes in the house and empty containers that carry water on patios.
- Place screens on windows and doors to prevent mosquitoes from entering the house.

## As Fever Goes Away

### Watch for warning signs

Although the fever is going away, this phase of dengue can be dangerous for some patients.

- Watch for warning signs as temperature declines, 3-7 days after symptoms began.

**Return IMMEDIATELY to the clinic or emergency department if any of the following warning signs appear:**

- Severe abdominal pain or persistent vomiting
- Red spots or patches on the skin
- Bleeding from nose or gums
- Vomiting blood or blood in stools
- Drowsiness or irritability
- Pale, cold, or clammy skin
- Difficulty breathing



Cover sleeping areas to keep away mosquitoes.



## MANAGEMENT OF DENGUE FEVER

- Symptomatic and Supportive
- Bedrest during febrile phase
- Cold/tepid sponging
- Antipyretics- paracetamol 500mg/dose to keep temp below 39 degree cel (Max 4 gm/day)
- Avoid aspirin, ibuprofen
- Oral fluid till the patient tolerates
- ORS/fruit juice

## HOME CARE CONTD...

- Sufficient oral fluid intake should result in a urinary frequency of at least 4 to 6 times per day
- Commercial carbonated drinks that exceed the isotonic level (5% sugar) should be avoided
- Recording of oral fluid intake and urine output be maintained and reviewed daily in the ambulatory setting

# MONITORING

- IV fluid for persistent vomiting/refusal to feed
- Close monitoring for warning signs and initial signs of shock (postural hypotension)
- Monitoring for 24-48 hours post afebrile period for development of complications by primary care physician/health care worker along with hematocrit and platelet count
- Close monitoring of vitals, input and output, oxygen saturation, sensorium
- Avoid intramuscular injections
- Psychological support for patient and family

# CHALLENGES IN DOMICILIARY CARE

Use of traditional remedies for dengue  
(papaya leaf, guava juice and crabmeat soup)

Dietary modification during self-care at  
home. Increasing fluid intake to be  
encouraged

Gaps in information provision and patients'  
knowledge of the dengue warning signs and  
different phases of illness

Symptom severity and social circumstances  
influence health-seeking rather than their  
knowledge of the warning signs

Dengue follow-ups visits were 'troublesome'  
to patients

# SIGNS OF RECOVERY OF DENGUE PATIENT

- Stable pulse, blood pressure and respiratory rate
- Normal temperature
- No evidence of external or internal bleeding
- Return of appetite
- No vomiting, no abdominal pain
- Good urinary output
- Stable hematocrit at baseline level
- Convalescent confluent petechiae rash or itching, especially on the extremities

# CONCLUSION

- Dengue is one of the major public health problems which can be controlled with active participation of the community
- Proper diagnosis, management and identification of cases for referral from primary health care centre to higher centre
- Proper Nursing Care
- High risk groups need to be monitored closely
- Fluid management is very crucial



THANK YOU