

# Management of Dengue fever in Primary Health Care

Day 3 – (31/08/2023)  
Session -3

# LINE OF MANAGEMENT OF DENGUE DURING OUTBREAK SITUATION

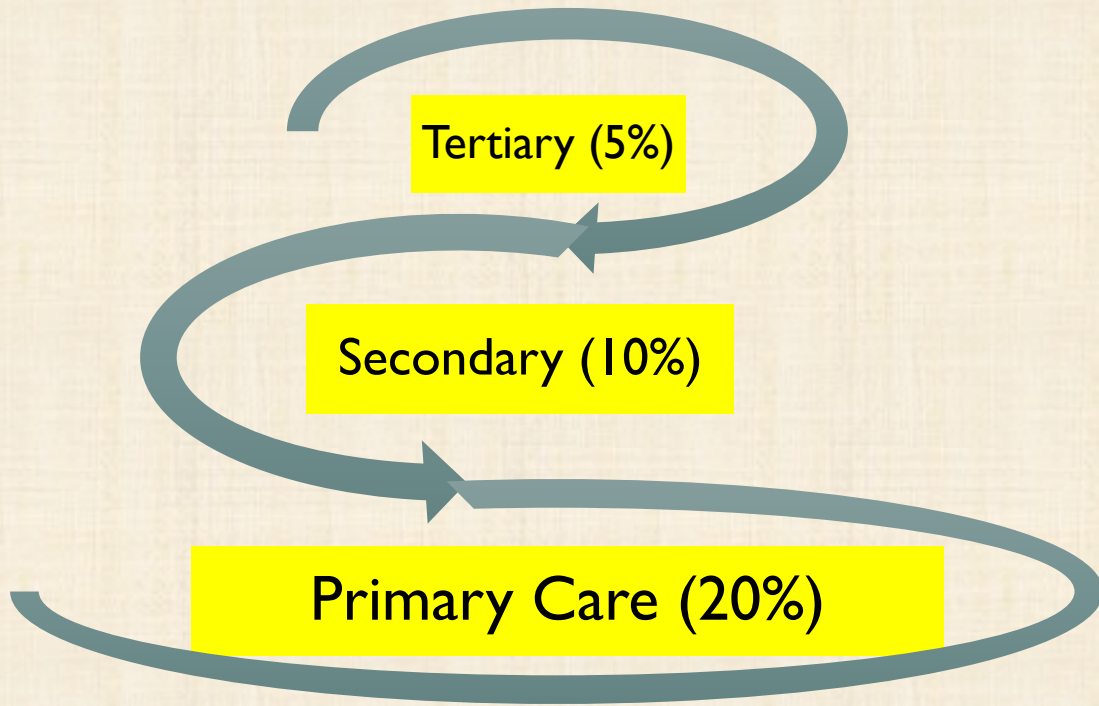
Following issues are critical

- Diagnosis (Probable/ Confirmatory)
- Severity assessment ( Mild, Moderate, Severe)
- Specific management
- Critical care management

# NATURAL COURSE OF DENGUE INFECTION

- Febrile Phase
- Critical Phase
- Convalescent Phase

# PRIMARY CARE IN DENGUE MANAGEMENT



# WARNING SYMPTOMS & SIGNS

## **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.

Hemorrhagic manifestations may be seen in both febrile & critical phases  
USG & CXR may help in detecting plasma leakage

# 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)

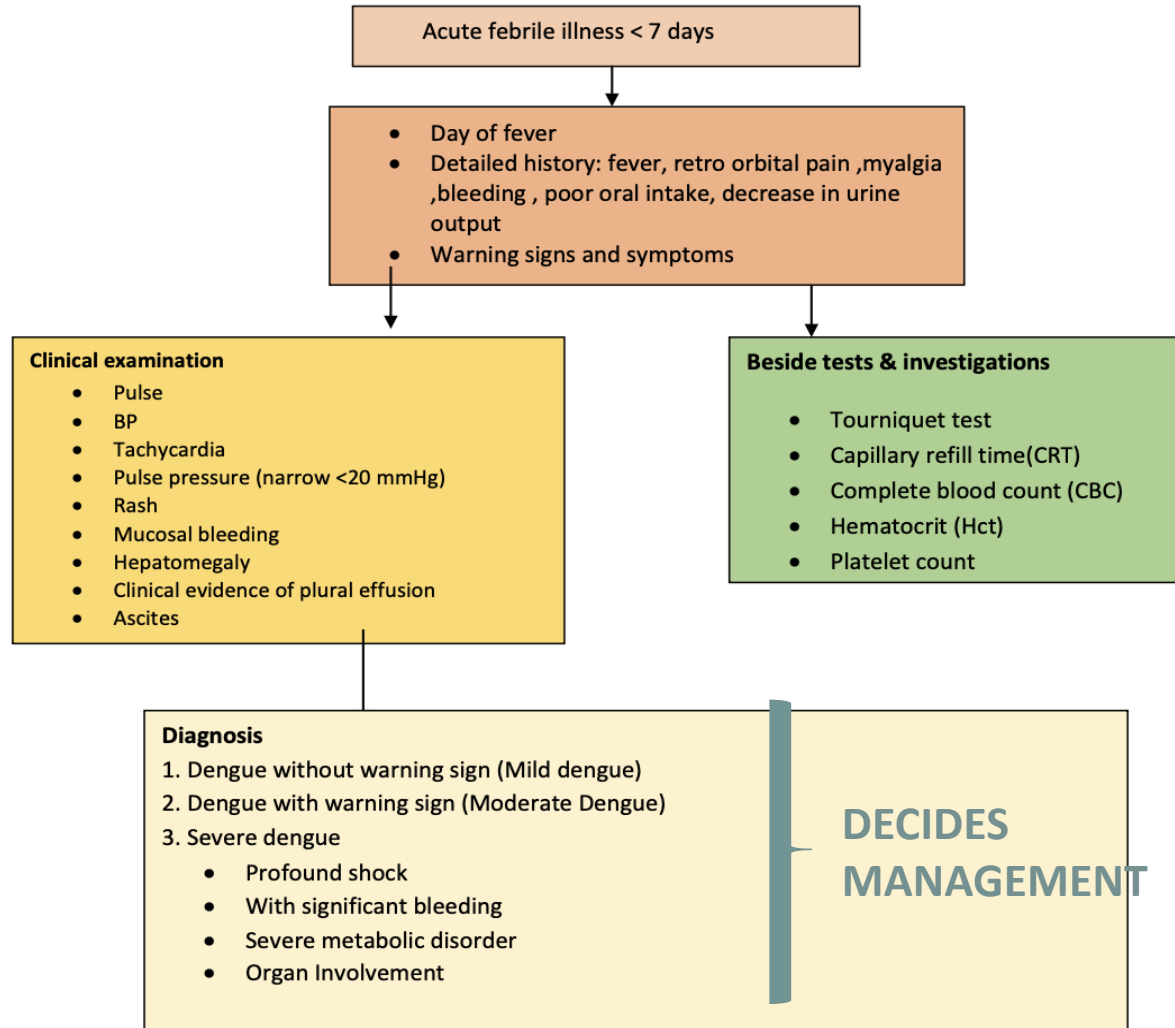
# TRIAGING

- Triage at the primary and secondary levels are critical in determining the clinical outcome
- Well managed front-line activities not only reduces the number of unnecessary hospital admissions but also prevents mortality
- Differential diagnosis needs also to be considered
- Being understanding and alert to the clinical problems during its different dynamic phases
- Rational approach to case management



# Primary health care level approach to the dengue patients

Figure 6: Approach to diagnosis of dengue



RESP.  
RATE

## 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 ± warning signs

## Severe dengue



### Criteria for dengue ± 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)

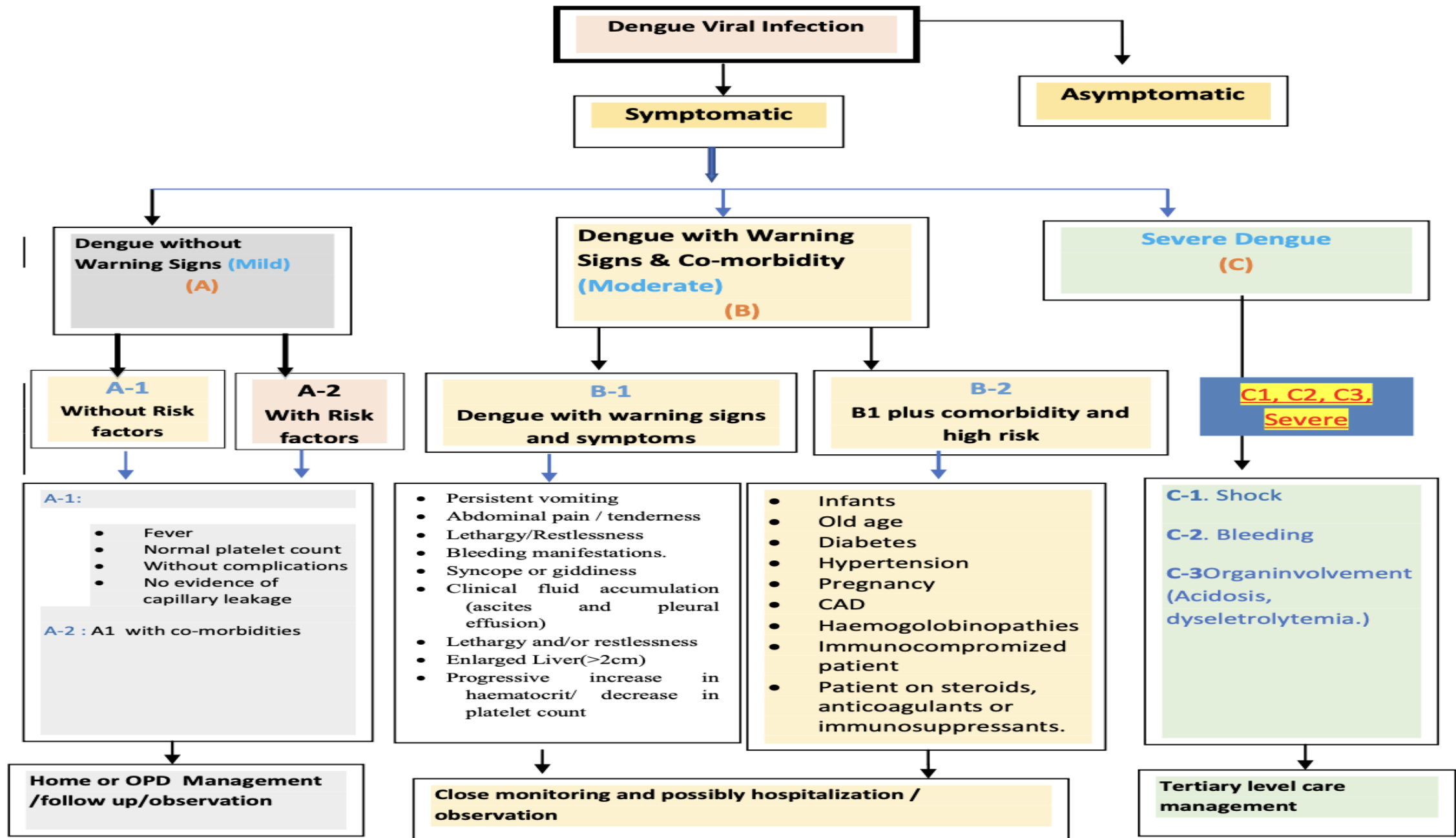
#### Warning signs\*

- Abdominal pain or tenderness
- Persistent vomiting
- Clinical fluid accumulation
- Mucosal bleed
- Lethargy; restlessness
- Liver enlargement >2cm
- *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



# 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>

# INVESTIGATION

**First line (mild dengue)**- CBC (including hematocrit and platelet count), RBS

**Second line (moderate to severe dengue) -**

Random blood glucose

Blood gas analysis including lactate

Serum electrolytes (sodium, potassium and calcium)

Renal function tests (urea and creatinine)

Liver function tests (AST, ALT and bilirubin)

Coagulation profile- PT/APTT/INR/D-dimer/fibrinogen

Platelet dysfunction test

Chest radiograph

Blood Group

Cardiac enzymes (Pro-BNP and Troponin level) or ECG if indicated among high risk groups

Serum amylase and ultrasound abdomen

# SEVERE DENGUE

## 1. Severe plasma leakage leading to:

- Shock
- Fluid accumulation with respiratory distress

## 2. Severe bleeding (as evaluated by the treating team)

## 3. Severe organ dysfunction

- Aspartate aminotransferase (AST) or alanine aminotransferase (ALT)  $\geq 1000$  units/L
- Impaired consciousness (GCS  $< 9$ )

## High-risk factors for severe disease

- 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

# CONDITIONS FOR ADMISSION

- Significant bleeding from any site
- Any warning signs and symptoms
- Persistent high grade fever (38.5°C and above)
- Impending circulatory failure
- Neurological abnormalities – restlessness, seizures, altered sensorium, severe and persistent headache;
- Temperature drop &/or rapid deterioration in general condition
- Shock

It should be noted that a patient may remain fully conscious until a late stage.

- Hypotension

# PRINCIPLES OF MANAGEMENT OF SEVERE DENGUE

- All patients to be stabilised and referred for admission to a hospital which has blood transfusion facilities
- Judicious IV fluid resuscitation is essential and lifesaving
- Prefer a crystalloid solution (0.9% NS or RL) sufficient to maintain an effective circulation during the period of plasma leakage (usually for 24–48 hours) and adjust fluid as per the patient status
- It's advised to obtain hematocrit level before starting fluid therapy; lack of haematocrit should not delay fluid management
- Monitor vital signs every 5-30 min.
- Use IBW for overweight and obese patients while calculating fluid rates
- Blood transfusion should be given to patients with established severe bleeding, or suspected severe bleeding (fall in Hct) with unexplained hypotension

# MANAGEMENT OF DENGUE FEVER

Management of dengue fever is symptomatic and supportive:

- Bed rest is advisable during the acute phase
- Use cold/tepid sponging to keep temperature below 38.5°
- Antipyretics may be used to lower the body temperature. Aspirin/ NSAIDS like Ibuprofen, etc should be avoided since it may cause gastritis, vomiting, acidosis, platelet dysfunction and severe bleeding. Paracetamol is preferable in the doses given below:

1-2 years: 60-120mg/dose

3-6 years: 120mg/dose

7-12 years: 240mg/dose

Adult: 500mg/dose

# MANAGEMENT DURING FEBRILE PHASE

- Paracetamol is recommended to keep the temperature below 39° Adequate fluid should be advised orally to the extent the patient tolerates . Oral rehydration solution (ORS), such as those used for the treatment of diarrhoeal diseases and/or fruit juices are preferable to plain water. Intravenous fluid should be administered if the patient is vomiting persistently or refusing to feed.

**Table 2: Various parameters to determine compensated and decompensated shock.**

<b>Normal Circulation</b>	<b>Compensated shock</b>	<b>Decompensated /Hypotensive shock</b>
Normal sensorium	Normal sensorium with shock	Change of mental state – restless, combative or lethargy
Capillary refill time (<2 sec)	Prolonged capillary refill time(>2sec)	Mottled skin, prolonged capillary refill time
Extremities are warm	Cold extremities	Cold, clammy extremities
Good volume peripheral pulses	Weak & thready peripheral pulses	Feeble or absent peripheral pulses
Normal heart rate for age	Tachycardia	Tachycardia
Normal blood pressure for age	Normal systolic pressure with raised diastolic pressure, Postural hypotension	Profound shock /unrecordable BP
Normal pulse pressure for age	Narrow pulse pressure	Pulse pressure (<20 mmHg)
Normal respiratory rate for age	Tachypnoea	Metabolic acidosis/ hyperpnoea/ Kussmaul's breathing
Urine output -normal	Urine output -reduced	Oliguria or anuria

- **Convalescent phase (Recovery phase)**

**DOMICILIARY  
MANAGEMENT**

**No Indications for primary care management at hospital:**

- No tachycardia / hypotension/ narrowing of pulse pressure / bleeding/ hemoconcentration
- Platelet count > 100000/cumm

**Indication for admission and primary care management:**

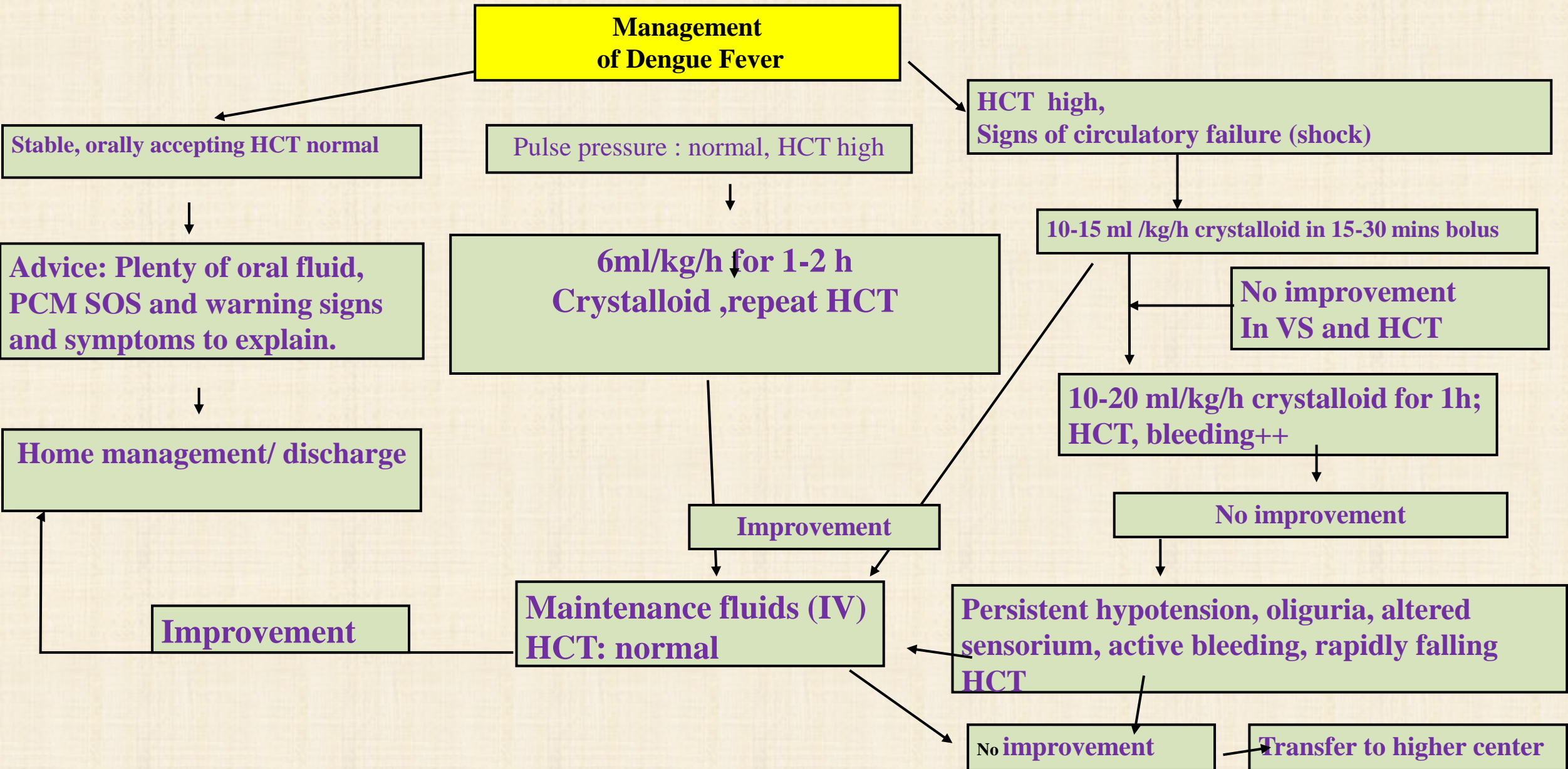
- Bleeding from any site (fresh red spots on skin, black stools, red urine, nose-bleed, menorrhagia )
  - Severe abdominal pain, refusal to take orally/ poor intake, persistent vomiting
  - Not passing urine for 12 hrs/decreased urinary output
  - Restlessness, seizures, excessive crying (young infant),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

# MONITORING

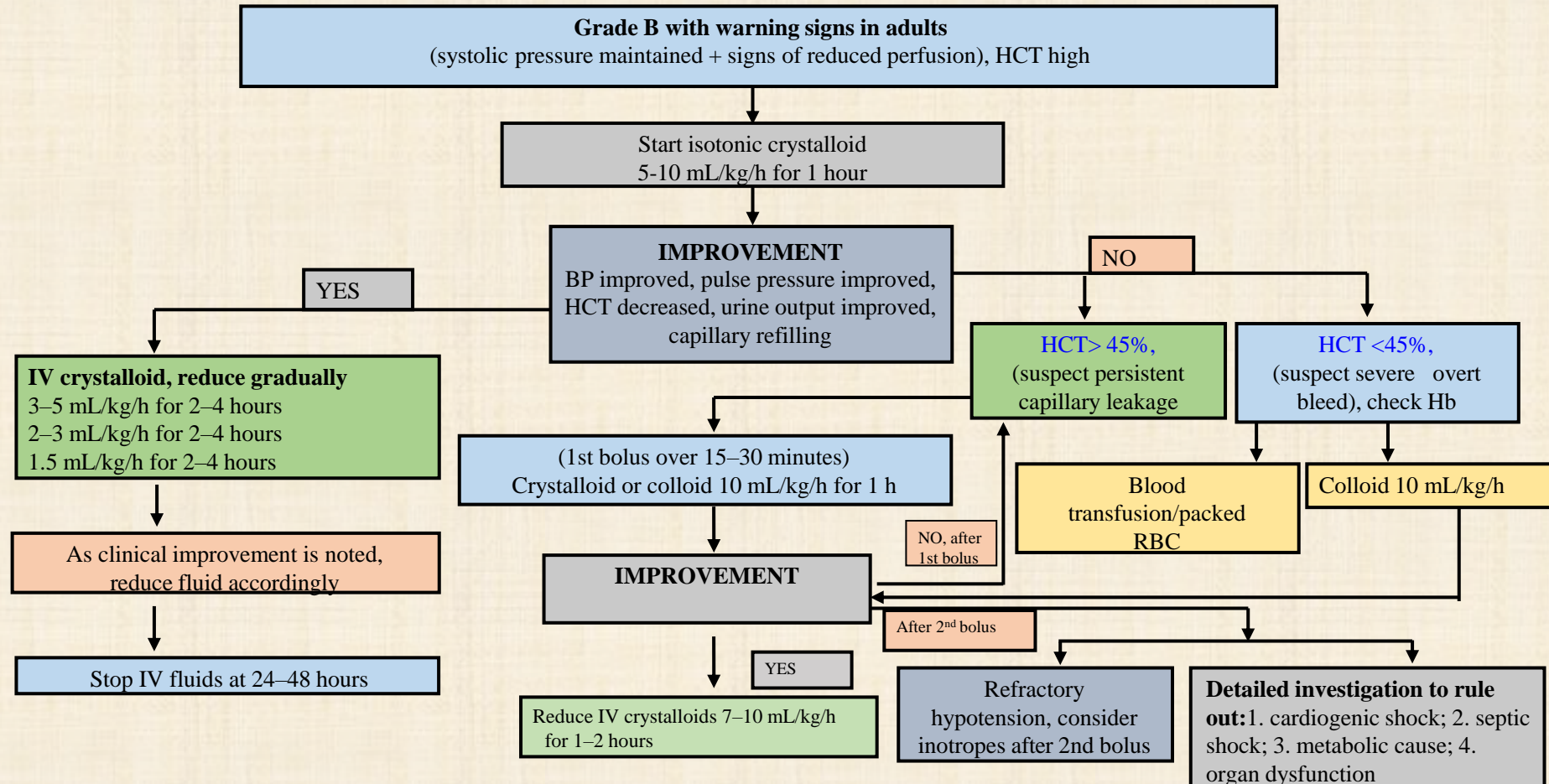
- IV fluid for persistent vomiting/refusal to feed
- Close monitoring for warning signs and initial signs of shock (postural hypotension)
- Monitoring for 24-48 hours post afebrile period for development of complications by primary care physician/health care worker along with hematocrit and platelet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



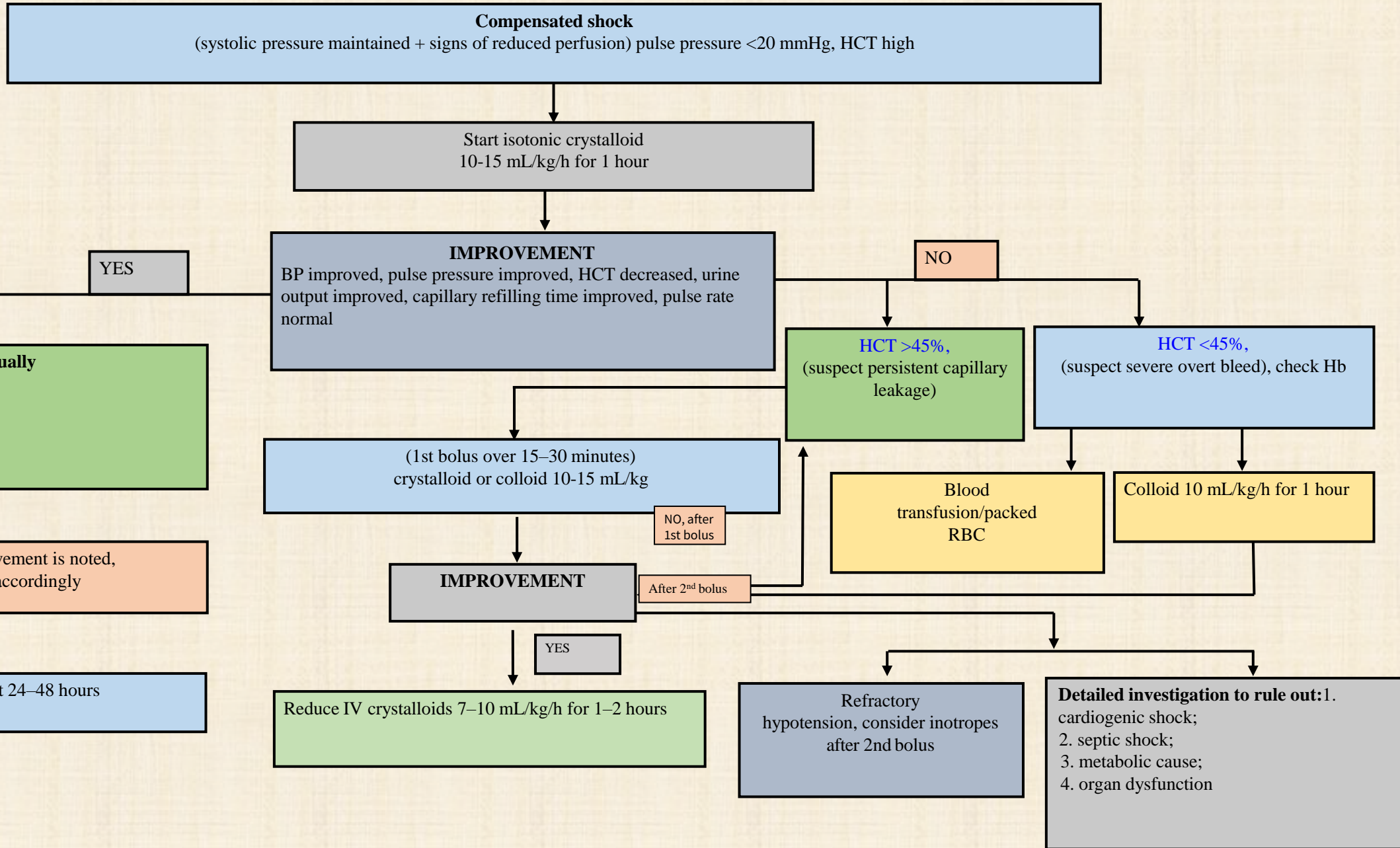
# Guidelines to be followed in the PHC for management of dengue



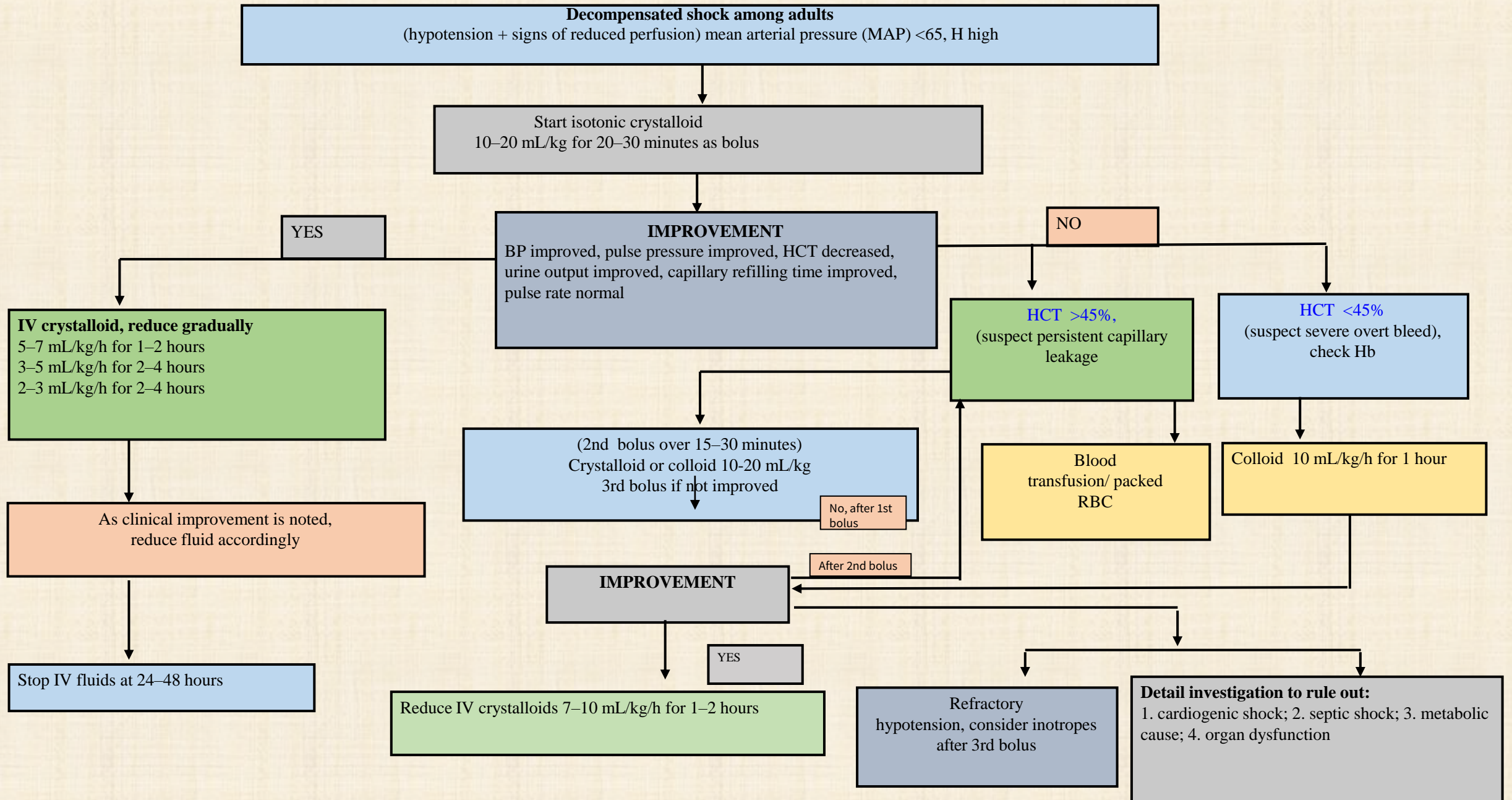
## Grade B: management of dengue with warning signs in adults



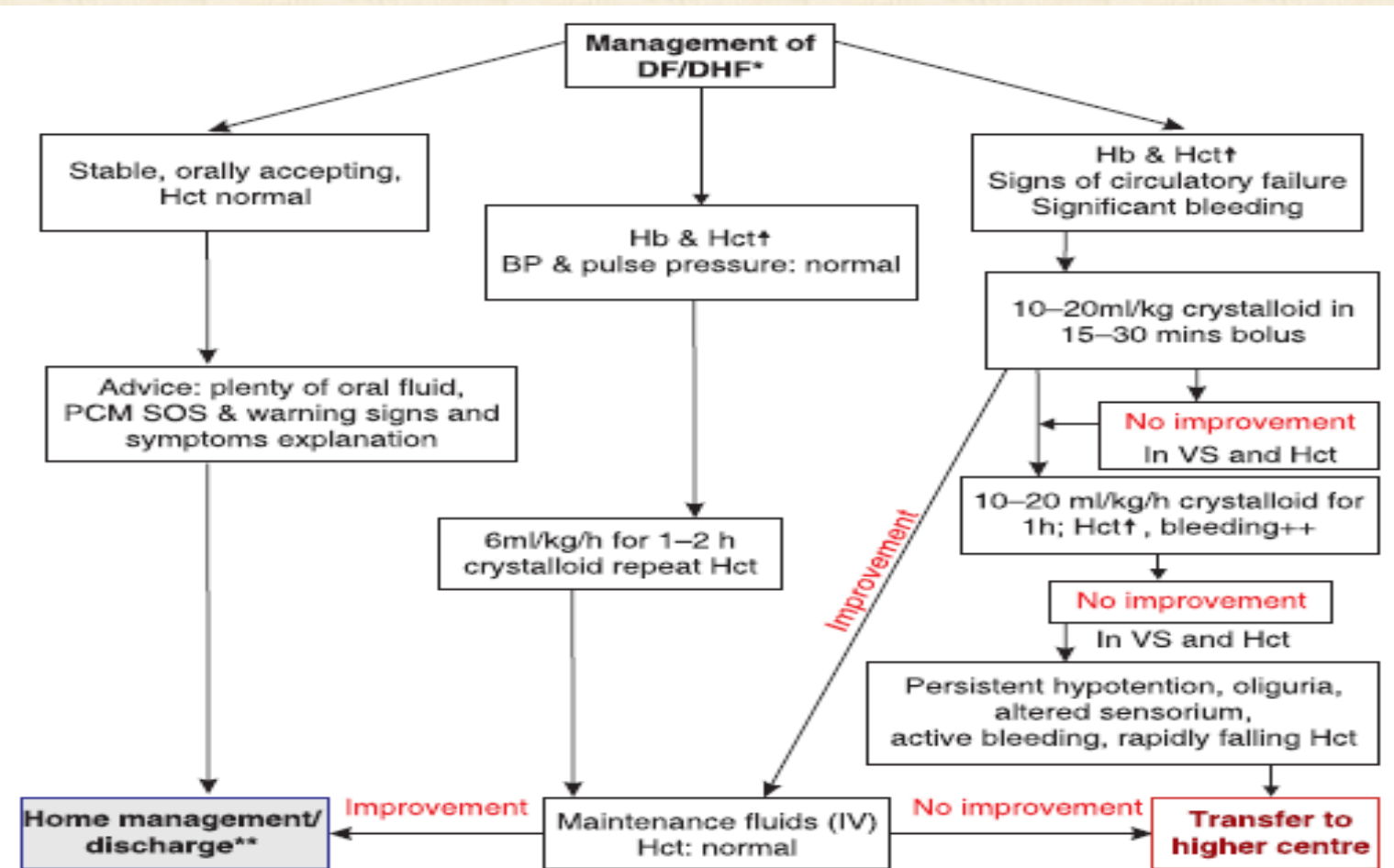
# Grade C: management of dengue with compensated shock in adults



# Grade C: management of dengue with decompensated shock in adults



# MANAGEMENT AND REFERRAL OF DENGUE CASE AT PHC LEVEL



\* Look for co-morbid illnesses and coinfections – refer Sections 5.3 and 5.4 for details

\*\* Patient should be advised to come for follow-up after 24 h for evaluation. He should report to the 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 h/decreased urinary output
  - Restlessness, seizures, excessive crying (young infants), altered sensorium and behavioural changes and severe persistent headache
  - Cold clammy skin
  - Sudden drop in temperature
- # Also follow Chart 1 to 3 for volume replacement algorithm

# INDICATION OF PLATELET TRANSFUSION

- Transfuse platelet only if bleeding is present
- Prophylactic platelet transfusion may be considered for counts  $< 10,000/\text{cumm}$  without bleed and those who may need emergency surgery

# INDICATIONS FOR BLOOD TRANSFUSION

Severe bleeding, hemodynamic instability and excessive mucosal bleeds

- These patients should be treated with blood transfusion and periodic monitoring
- When massive bleeding cannot be managed with fresh blood/fresh-packed cells, FFP and PRP may be considered
- Platelet transfusion and FFP transfusion may be given when platelet count is low (below 50 000/cumm) with deranged PT, APTT, hypofibrinogenemia and increased D- dimer or FDP

# 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



# CRITERIA FOR DISCHARGE OF PATIENTS

- Absence of fever for at least 24 hours without the use of anti-fever therapy
- No respiratory distress from pleural effusion or ascites
- Return count  $>50000\text{mm}^3$
- Return of appetite
- Good urine output
- Minimum of 2 to 3 days after recovery from shock
- Visible clinical improvement

# 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

# CONCLUSION

## Management of common problems in dengue patients

- High grade fever. Tepid sponging/ paracetamol/ Encourage intake of plenty of oral fluids.
- Abdominal pain: severe abdominal pain may be a sign of severe complication, so remain vigilant and inform the treating doctor.
- Bleeding. Estimate and record the amount of blood loss, monitor vitals and inform the doctor.
- Plasma leakage. Monitor vitals, Hct and input/output. Encourage oral intake if possible and start IV fluid as per instructions
- Decreased urine output. First rule out Catheter blockade by palpating the bladder. Flush the catheter if blocked. Continue monitoring vitals, input/ output and inform the doctor.
- Respiratory distress. Check oxygen saturation and administer oxygen via facemask or nasal catheter if SpO<sub>2</sub><90%. Look for pleural effusion, cardiac involvement and inform the doctor
- Convulsions/encephalopathy. Pay attention to maintenance of airway, breathing and circulation (ABC) Be ready with resuscitation set for emergency intubation and mechanical ventilation
- Fluid overload can develop during recovery phase of the illness due to fluid shifts. Closely observe for pedal oedema, neck vein engorgement and respiratory distress. Continue strict input/output monitoring during recovery phase

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THANK YOU