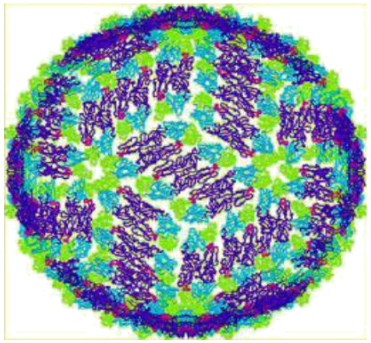
DENGUE FEVER



Public Health Division, Directorate of Health Services
Thiruvananthapuram
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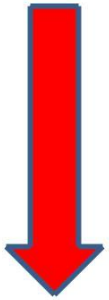
Dengue Fever

Four serotypes
- DEN-1

DEN-2
DEN-3
DEN-4

Genotypes/subtypes	
DEN-1	3
DEN-2	2
DEN-3	4
DEN-4	4

The clinical course of illness passes through the following three phases...



- Febrile phase
- Critical phase
- Convalescent phase

Clinical Criteria for DF and DHF (1)

Dengue Fever:

An acute febrile illness of 2-7 days duration with two or more of the following manifestations:

Headache, retro-orbital pain, myalgia, arthralgia, rash, hemorrhagic manifestations.

Dengue Hemorrhagic Fever (DHF):

a). A case with clinical criteria of dengue

Fever plus

b). Hemorrhagic tendencies evidenced by **one or more of the following**

•Positive tourniquet test

•Petechiae, ecchymoses or purpura

•Bleeding from mucosa, gastrointestinal tract, injection sites or other sites

Plus

c). Thrombocytopenia (<100 000 cells per cumm)

plus

Clinical Criteria for DF and DHF (2)

plus

d).

- A rise in average haematocrit for age and sex ≥20%
- A more than 20% drop in hematocrit following volume replacement treatment compared to baseline
- Signs like pleural effusion, ascites, hypoproteinemia

Dengue Shock Syndrome (DSS):

All the above criteria for DHF + rapid and weak pulse and narrow pulse pressure (≤20 mm Hg) or hypotension for age, cold clammy skin and restlessness.

Expanded Dengue Syndrome (EDS)

- Mild or Severe organ involvement may be found in DF/DHF. Unusual manifestations of DF/DHF are commonly associated with co-morbidities and with various other co-infections. Clinical manifestations observed in EDS are as follows:

System	Unusual or atypical manifestations
CNS involvement	Encephalopathy, encephalitis, febrile seizures, I/C bleed
G. I. involvement	Acute Hepatitis / fulminant hepatic failure, cholecystitis, cholangitis acute pancreatitis
Renal involvement	Acute renal failure, hemolytic uremic syndrome, acute tubular necrosis
Cardiac involvement	Cardiac arrhythmia, cardiomyopathy, myocarditis, pericardial effusion
Respiratory	Pulmonary oedema, ARDS, pulmonary hemorrhage. pleural effusion
Eye	Conjunctival bleed, macular hemorrhage,visual impairment, Optic neuritis

Case Definition

- **Two types of cases : Probable and Confirmed cases**

Probable Dengue Fever

A case compatible with clinical description (Clinical Criteria) of Dengue Fever.

(*A positive test by RDT will be considered as probable due to poor sensitivity and specificity of currently available RDTs*.)

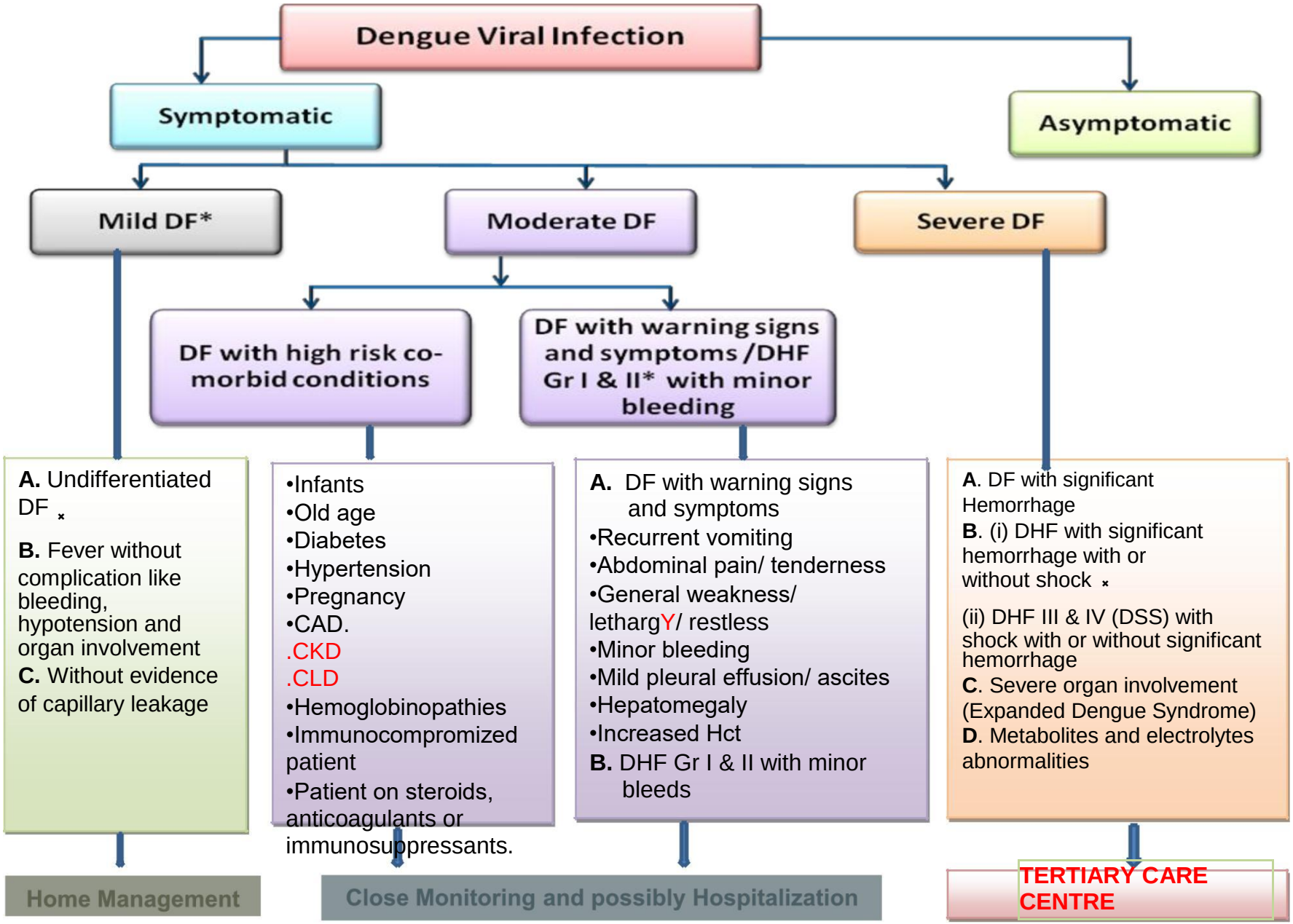
Case Definition

Confirmed Dengue Fever

A case compatible with the clinical description of Dengue Fever with at least one of the following:

- **Isolation of the Dengue virus (Virus culture +VE) from serum, plasma, leucocytes.**
- **Demonstration of Dengue virus antigen in serum sample by NS1-ELISA.**
- **Demonstration of IgM antibody titre by ELISA positive in single serum sample.**
- **IgG sero-conversion in paired sera after 2 weeks with four fold increase of IgG titre.**
- **Detection of virus by polymerase chain reaction (PCR).**

Dengue case classification



Tertiary level care

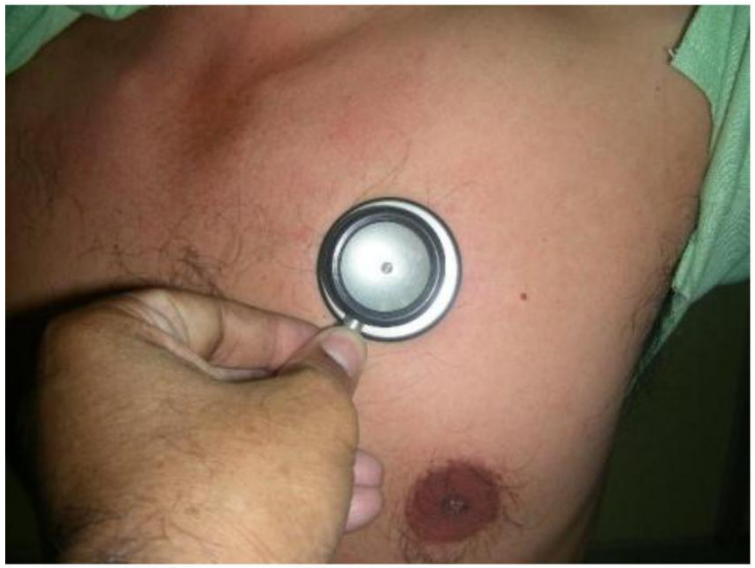
Lab investigations for diagnosis & confirmation

- NS1 ELISA test to be done on patient reporting during 1st five days of fever
- Serology to be done on or after day 5 by IgM ELISA

RDT

- -high rate of false positive compared to standard tests.Only a few RDTs have specificity comparable to standard tests.
- Hence, a RDT positive case will be considered only as a probable case.

Impression Signs in Dengue



Treatment of Dengue Fever & DHF I & II

- Fluids
- Rest
- Antipyretics (avoid aspirin, mefenamic acid and other non-steroidal anti-inflammatory drugs)
- Monitor blood pressure, hematocrit, platelet count, level of consciousness.

Treatment of DHF III & IV

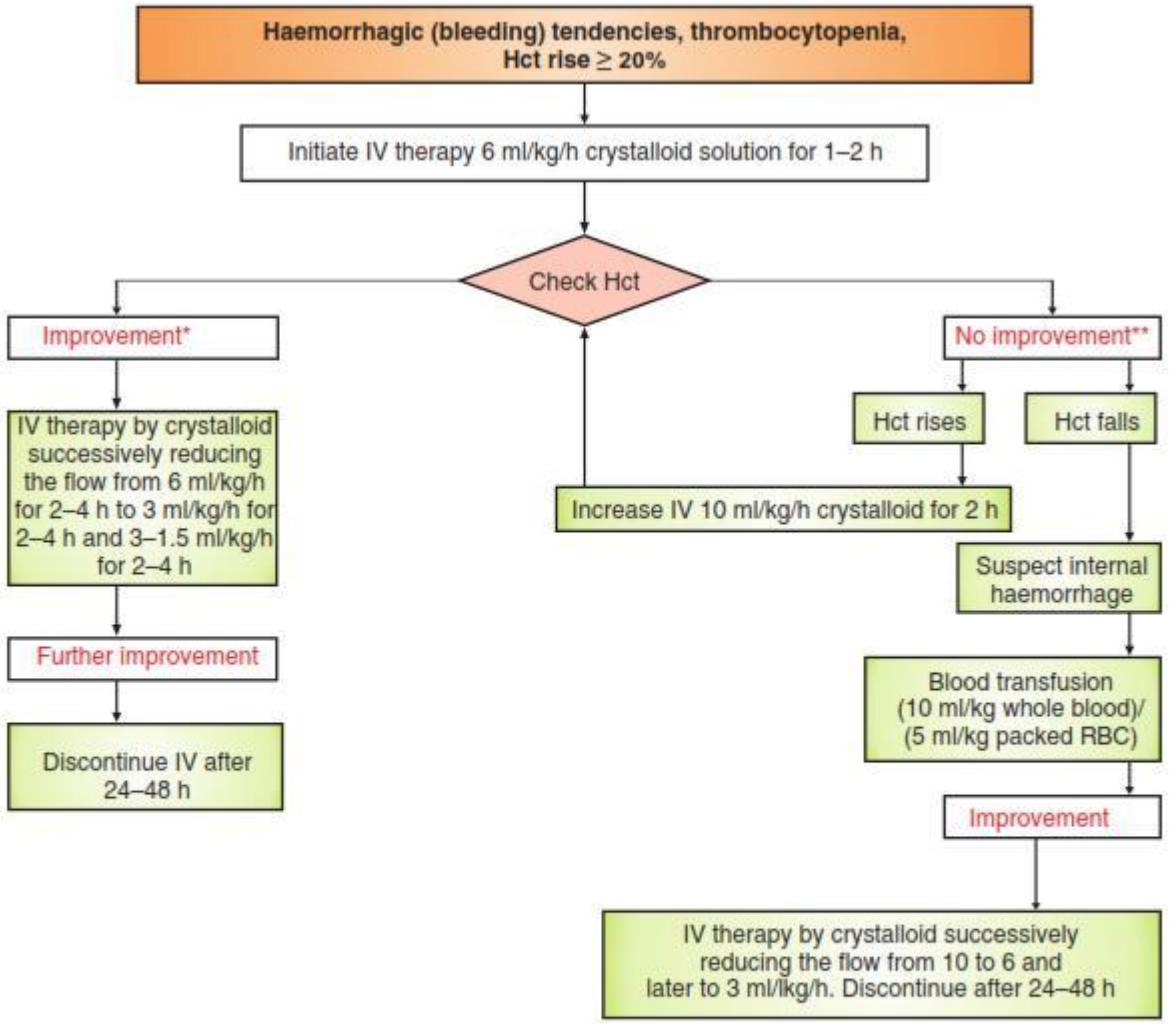
All the above treatment +

– In case of severe bleeding, give fresh whole blood 20 ml/kg as a bolus

– Give Platelet Concentrate/platelet rich plasma when platelet counts are below 10,000/ mm3 .

– After blood transfusion, continue fluid therapy at 10 ml/kg/h and reduce it stepwise to bring it down to 3 ml/kg/h and maintain it for 24-48 hrs

Chart 1. volume replacement algorithm for patients with moderate Dengue Fever (DHF grades I & II)

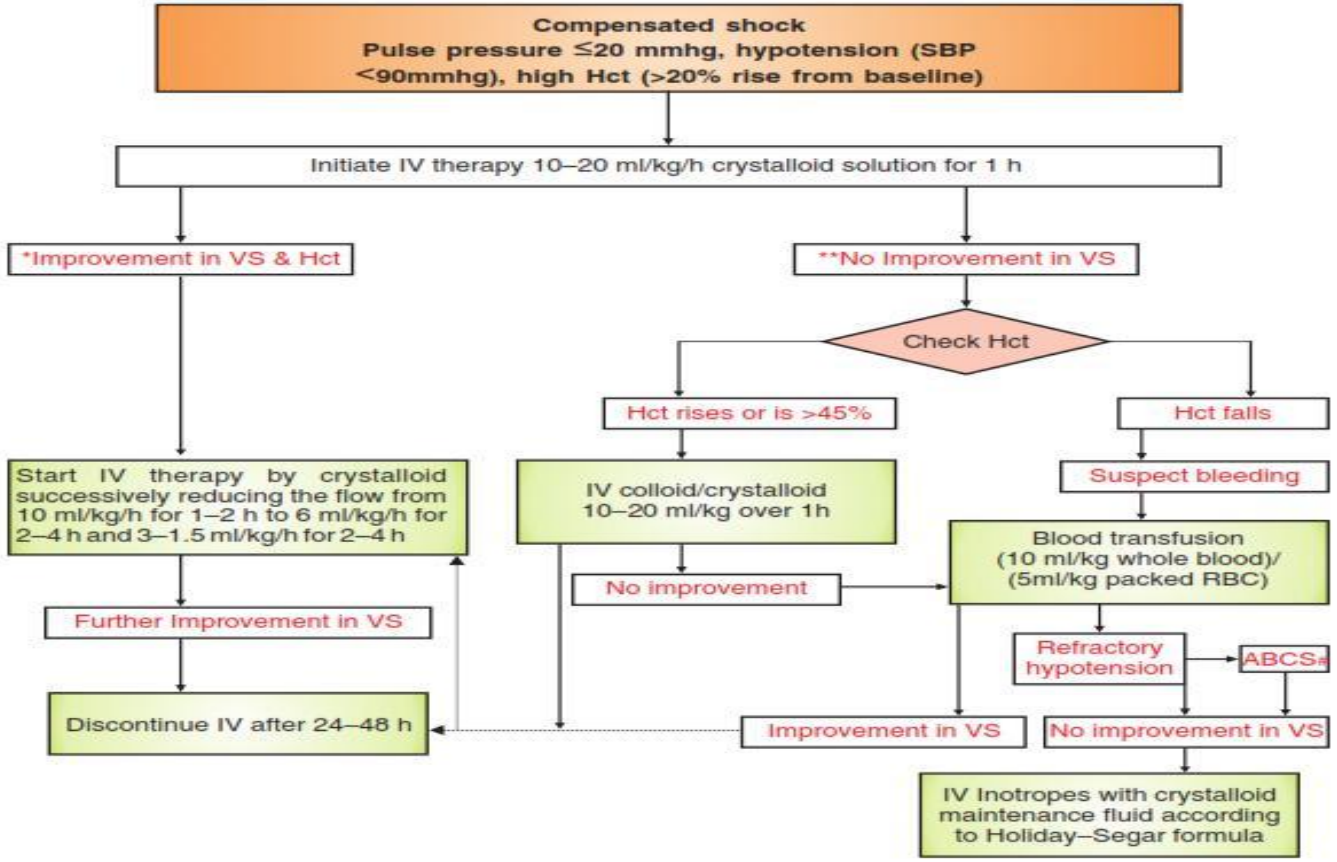


Notes:

*Improvement: Hct falls, pulse rate and blood pressure stable, urine output rises

**No Improvement: Hct or pulse rate rises, pulse pressure falls below 20 mmHg, urine output falls

Chart 2. Volume replacement algorithm for patients with Severe Dengue Fever (DHF grades III)

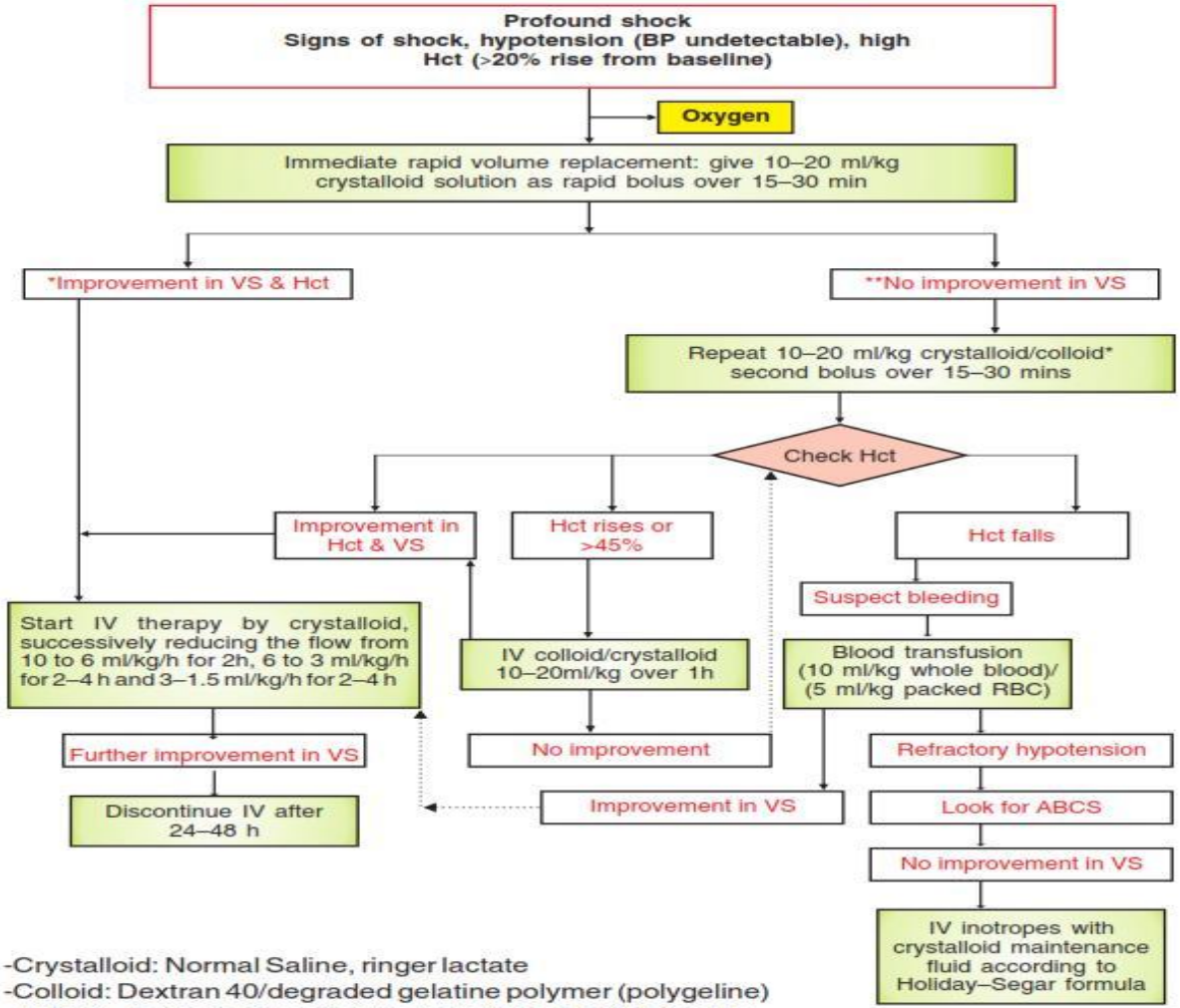


Crystalloid: Normal Saline, ringer lactate
Colloid: Dextran 40/degraded gelatine polymer (polygeline)
ABCS = Acidosis, Bleeding, Calcium (Na++ & K+), Sugar

Notes:
*Improvement: Hct falls, pulse rate and blood pressure stable, urine output rises
**No improvement: Hct or pulse rate rises, pulse pressure falls below 20 mmHg, urine output falls

- Unstable vital signs: urine output falls, signs of shock
- In cases of acidosis, hyperosmolar or Ringer's lactate solution should not be used
- Serial platelet and Hct determinations: drop in platelets and rise in Hct are essential for early diagnosis of DHF
- Cases of DHF should be observed every hour for vital signs and urine output

Chart 3. Volume replacement algorithm for patients with Severe Dengue Fever (DHF IV (DSS))



-Crystalloid: Normal Saline, ringer lactate
-Colloid: Dextran 40/degraded gelatine polymer (polygeline)
- ABCS = Acidosis, Bleeding, Calcium (Na++ & K+), Sugar

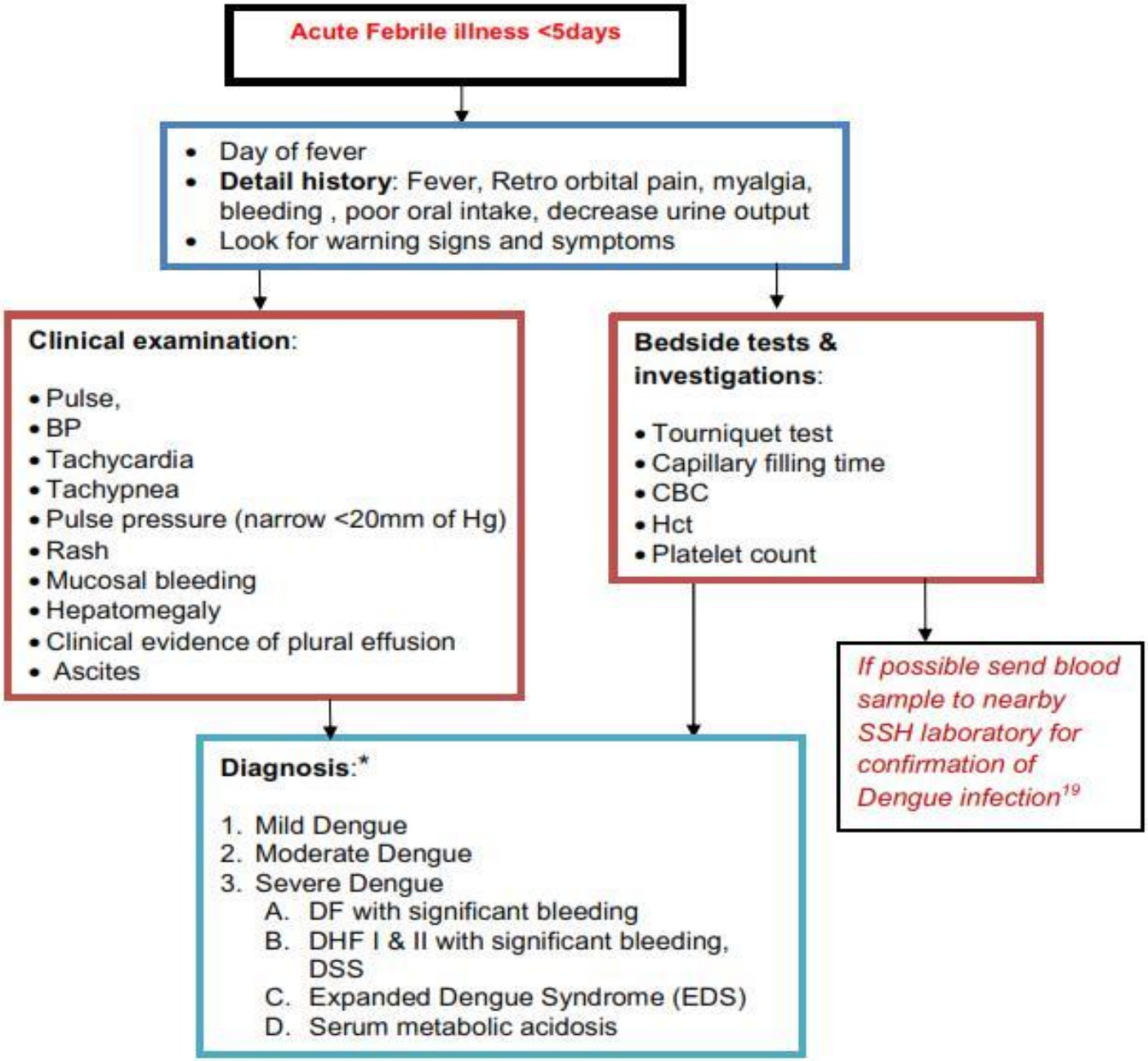
Notes:

*Improvement: Hct falls, pulse rate and blood pressure stable, urine output rises

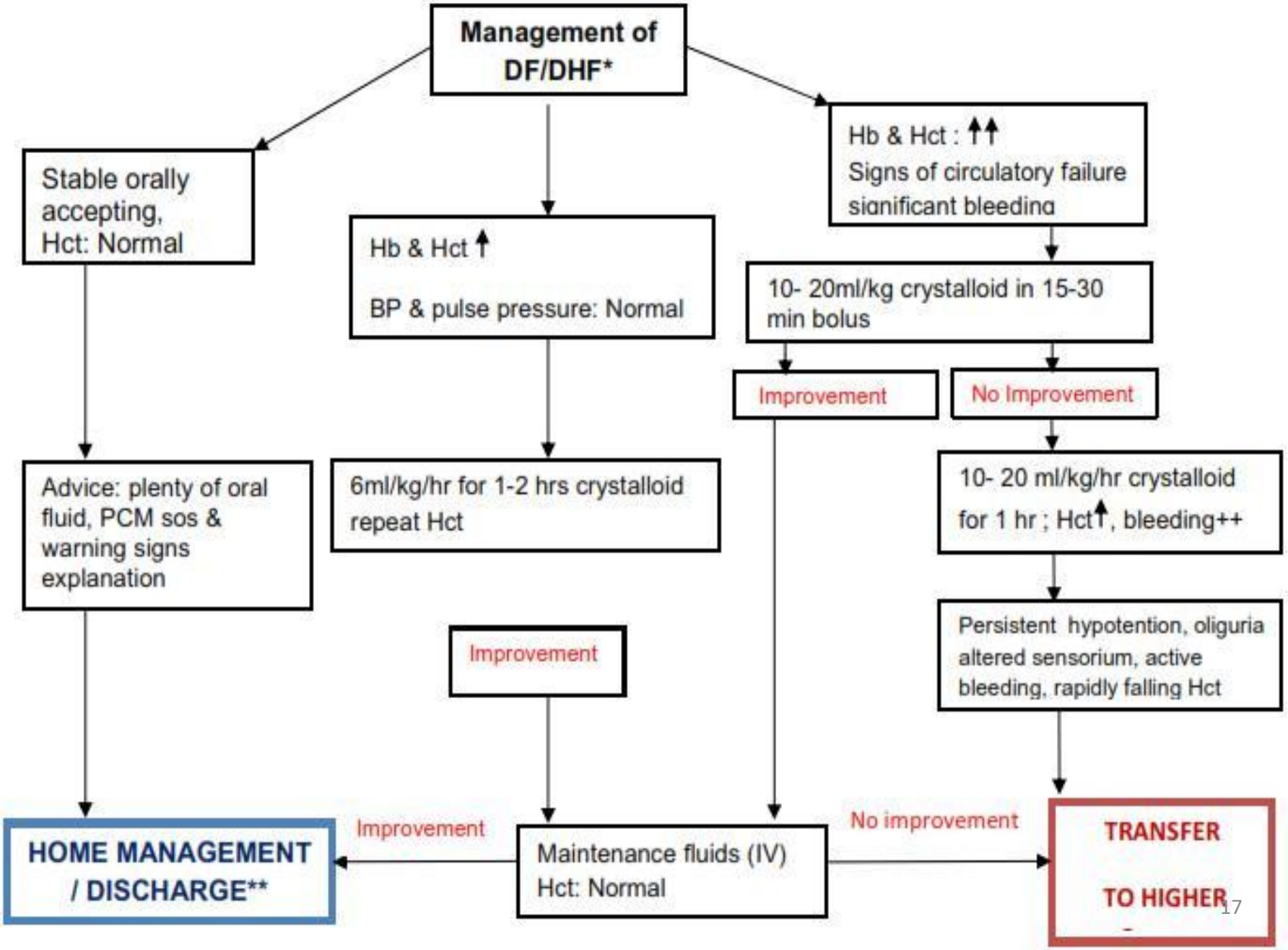
**No Improvement: Hct or pulse rate rises, pulse pressure falls below 20 mmHg, urine output falls

- Unstable vital signs: Urine output falls, signs of shock
- In cases of acidosis, hyperosmolar or Ringer's lactate solution should not be used
- Serial platelet and Hct determinations: drop in platelets and rise in Hct are essential for early diagnosis of DHF
- Cases of DHF should be observed every hour for vital signs and urine output

MANAGEMENT OF DENGUE CASES AT PRIMARY HEALTH CARE LEVEL AND REFERRAL



Management and referral of Dengue cases at PHC level



Management of severe bleeding

- Immediate attempt should be made to stop the bleeding.
- Always consider the possibility of occult Internal bleeding.and watch for specific signs like malena
- Watch for features of early shock and consider
  - IV fluid or plasma expander..
  - blood transfusion.
- In case of massive haemorrhage -rule out coagulopathy by testing for prothrombin time (PT) and aPTT.

Indication of Platelet transfusion

– Thrombocytopenia with haemorrhage.

– Platelet count less than 10000/cu.mm. in absence of bleeding manifestations. (Prophylactic platelet transfusion).

➢ Packed cell transfusion/FFP along with platelets may be required in cases of severe bleeding with coagulopathy.

Whole fresh blood transfusion has no role in managing thrombocytopenia.

Warning signs and symptoms

- Persistent High grade fever
- Intense continuous abdominal pain or tenderness
- Persistent Vomiting[3 episodes in 1 hour or 4 in 6 hours]
- Bleeding from any part of the body
- Decreased urine output
- Respiratory distress
- Convulsions/encephalopathy
- Fluid overload.
- Plasma leakage
- Shock/ impending shock

- NB:-

  Patients with above signs and symptoms with rapidly declining platelet count should be referred to tertiary care centre.

Indications for domiciliary management:

If patients have the following conditions:

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

Patient should come for follow up after 24 hrs for evaluation or 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; sudden drop in temperature

Criteria for admission of DF patient

–Significant bleeding from any site

–Any warning signs and symptoms

–Persistent high grade fever (40ºC and above)

–Impending circulatory failure

– tachycardia, postural hypotension, narrow pulse pressure(<20 mmHg with rising diastolic pressure e.g. 100/90 mmHg), increased capillary refilling time > 3 secs (paediatric age group)

–Neurological abnormalities - restlessness, seizures, excessive crying (young infant), altered sensorium and behavioural changes, severe and persistent headache

–Drop in temperature &/or rapid deterioration in general condition

–Shock- cold clammy skin, hypotension/ narrow pulse pressure, tachypnoea. A patient may remain fully conscious until late stage

Criteria for discharge of patients

- Absence of fever for at least 24 hours without the use of anti-pyretics.
- No respiratory distress from pleural effusion , ascites or ARDS
- Increasing trend in platelet count with a value > 50000/ cu.mm.
- Return of appetite
- Good urine output
- Minimum of 2 to 3 days after recovery from shock
- Visible clinical improvement

NURSING CARE IN ADMITTED CASES

- Basic management
- Look out for Warning sign and symptoms
- Identifying and managing common problems in Dengue patients with-
  - High grade fever
  - Abdominal pain
  - Bleeding
  - Plasma leakage
  - Shock/ impending shock
  - Decreased urine output
  - Respiratory distress
  - Convulsions/encephalopathy
  - Fluid overload.

Monitoring

- **Patients with bleeding manifestations**
  - Serial hematocrits and platelet count daily until temperature is normal for at least 2 days.
- **All patients**
  - If blood sample was taken within first 5 days after onset of fever, a convalescent sample should be taken between days 6 – 30 to confirm the diagnosis.
- **Patients treated at home**
  - ensure advice regarding danger signs
  - Consider repeat clinical evaluation

Conclusion

- The guideline will assist systematic case management at all levels and help to prevent complications and deaths.
- Proper Nursing Care is very important.
- Majority of the Dengue patients do not require platelet transfusion and there is no role of prophylactic platelet transfusion when platelet count is above 10000/cu.mm.
- High risk groups need to be monitored closely.
- Looking for warning signs is crucial and timely referral if needed should be ensured.`
- Fluid management as per protocol is very crucial.
- Unnecessary referral to tertiary centres is to be avoided.

- In patients with bleeding manifestations, serial haematocrit and Platelet count should be monitored at least 2days

after normalization of temperature. Clinical evaluation in case of danger sign or 48 hrs,which ever is earlier

Contacts and Clarifications

- For all queries about phone numbers, email etc of concerned officials of Health Services like DMO, District Surveillance Officer (DSO) District Programme Manager (DPM), RCH Officer (RCHO)of your district, State Officials, institutions, specialists, etc, please call
- 24 x 7 NHM Health Services helpline **DISHA** on
- **0471-2552056** (Normal call, any line)
- **1056** (toll free from BSNL Lines)