Dengue & Chikungunya

Presented By:
Dr. Deepak suman
M.D. (K.C.)

DENGUE

INTRODUCTION

- Dengue is a self limiting acute mosquito transmitted disease caused by dengue virus of genus *flavi virus*.
- Occurs in tropical and subtropical areas.

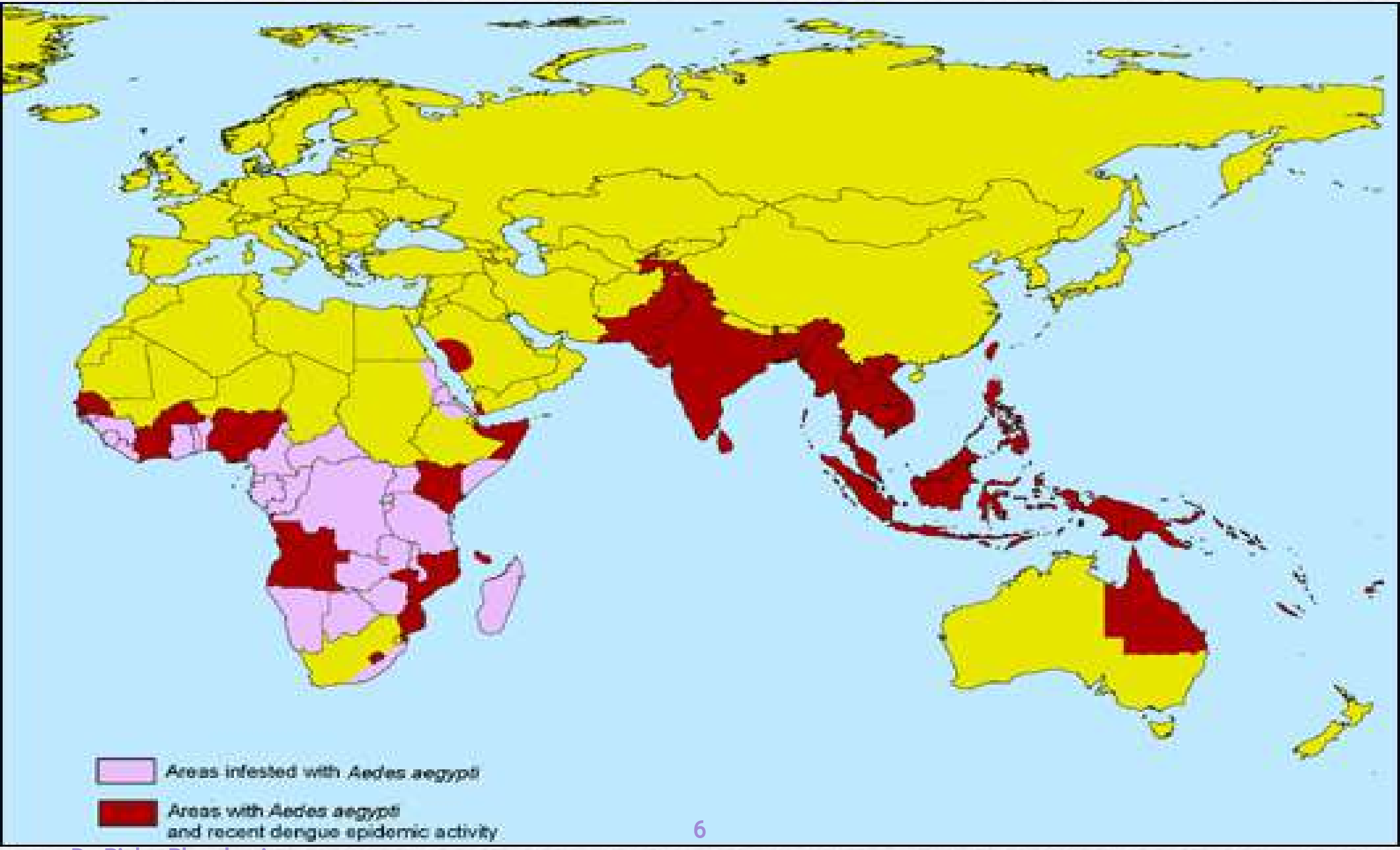
Known As

- Break – Bone fever
- Dandy fever
- Heamorrhagic fever
- Thai heamorrhagic fever

Epidemiology

- First epidemics reported in 1780 in Asia, Africa, and North America
- First outbreak in India -1812
- A double peak hemorrhagic fever epidemic occurred in India for the first time in Calcutta between July 1963 & March 1964
- In New Delhi, first outbreak of dengue fever reported in 1967.

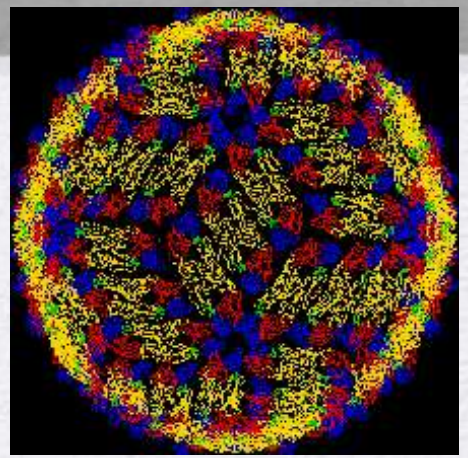
Distribution of dengue, Eastern Hemisphere



Epidemiology

- depends upon 3 factors
  1) host(man and mosquito)
  2) agent (virus)
  3) environment

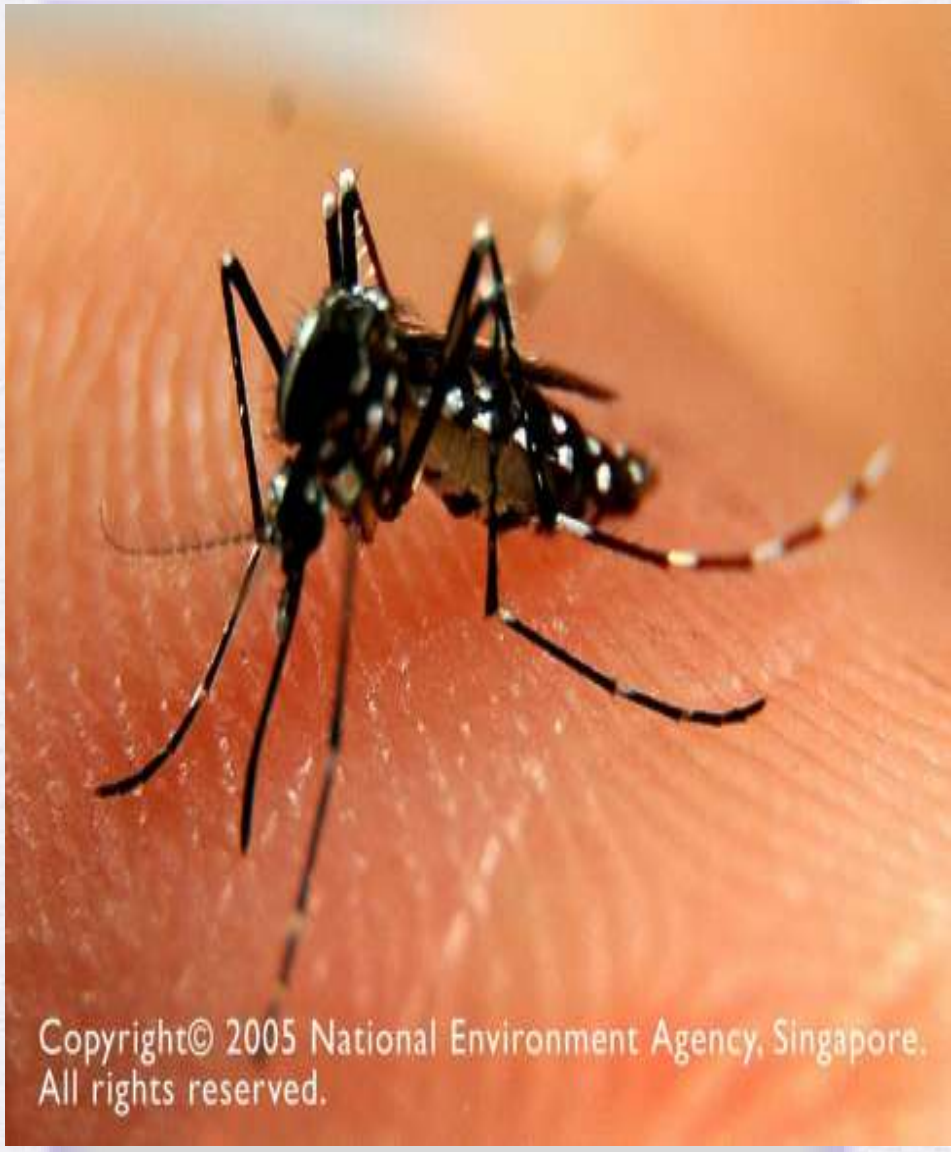
Dengue Virus



- Arbovirus
  - Mosquito born
- Family: Flaviviridae
- Genus: Flavivirus
- Species: Dengue virus
- Composed of single-stranded RNA
- Has 4 serotypes (DEN-1, 2, 3, 4)#
- Each serotype provides specific lifetime immunity, and short-term cross-immunity
- All serotypes can cause severe and fatal

Vector

- Female *Aedes aegypti* mosquito. Other species: *Aedes albopictus*& *Aedes niveus*.
- life cycle of aquatic stage is 1 week & eggs can survive upto 1 year without water.
- Adult has an average survival of 15 days.
- *Aedes* is a day time feeder & can fly upto 400meters.
- Lives around human habitation
- Lays its eggs in clean, stagnant water



Close-up of an Aedes mosquito

Aedes albopictus

Aedes aegypti

- **Most common epidemic vector.**
- **Can be identified by the white bands or scale patterns on its legs and thorax**

They are approximately 5 mm in size:

Magnified 5 times

Dengue mosquitos bite in the early morning and the late afternoon.

Life cycle of the *Aedes* Mosquito

1-2 days

Eggs

2-3 days

Larvae

4-5 days

Pupae

Stagnant water

Potential Breeding Sites

Flower pot

Flower Pot Plates

Hardened soil of potted plants

Collar of the toilet bowl

Potential Breeding Sites

Roadside drain

Roof gutter

Tree hole

Air-con tray

Potential Breeding Sites

Scupper drain

Plant axils

Canvas sheet

Common containers in which eggs develop into adult dengue mosquitoes:






Transmission cycle

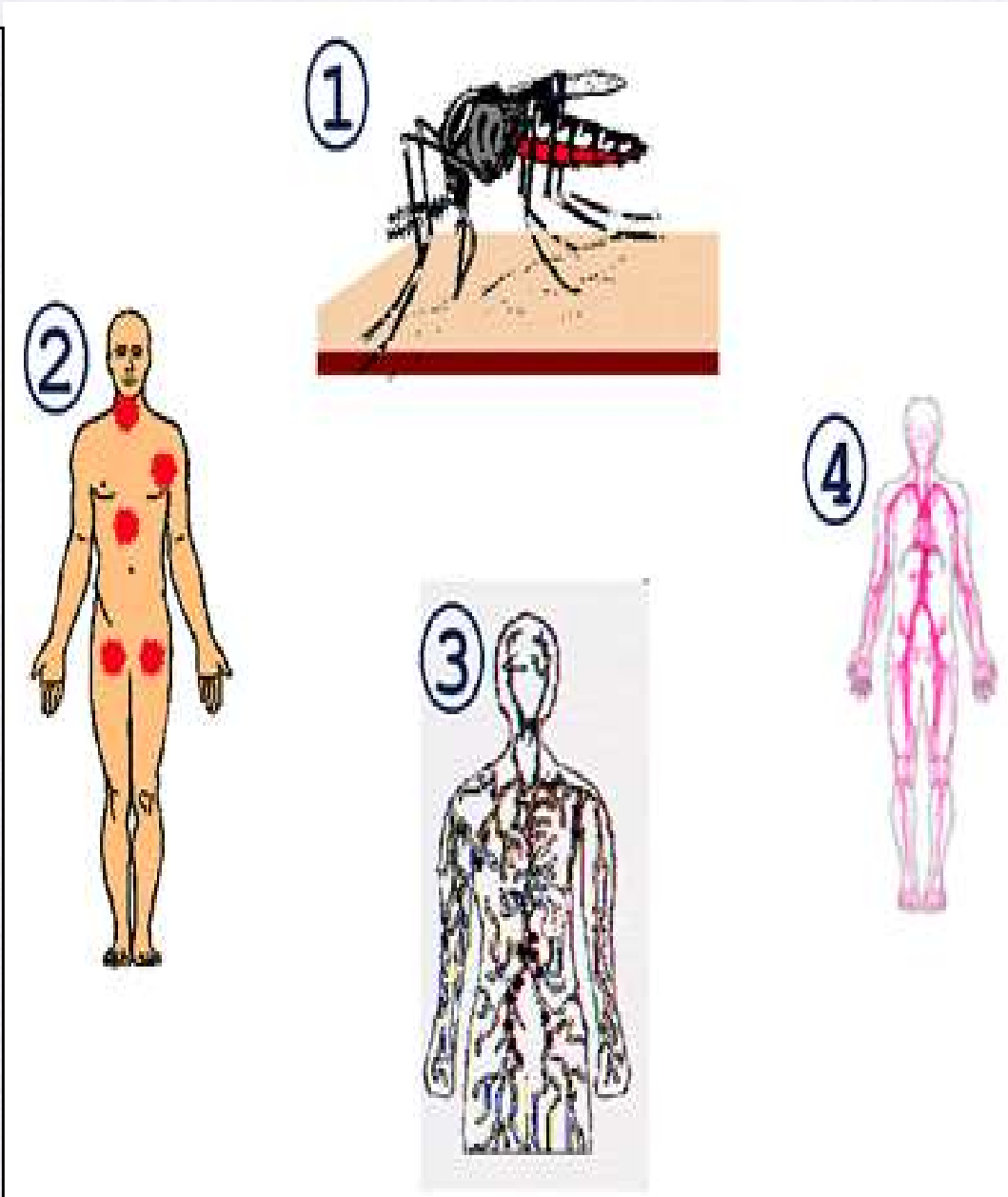
- Female *Aedes aegypti* gets infected when it takes blood from a person during acute febrile phase of illness.
- Only the female mosquito bites as it needs the protein in blood to develop its eggs.
- Incubation period is 8-10 days
- Virus is transmitted when mosquito bites and injects saliva into wound of the person.
- One mosquito bite can inflict the disease.
- Can lay eggs about 3 times in its lifetime, and about 100 eggs are produced each time.

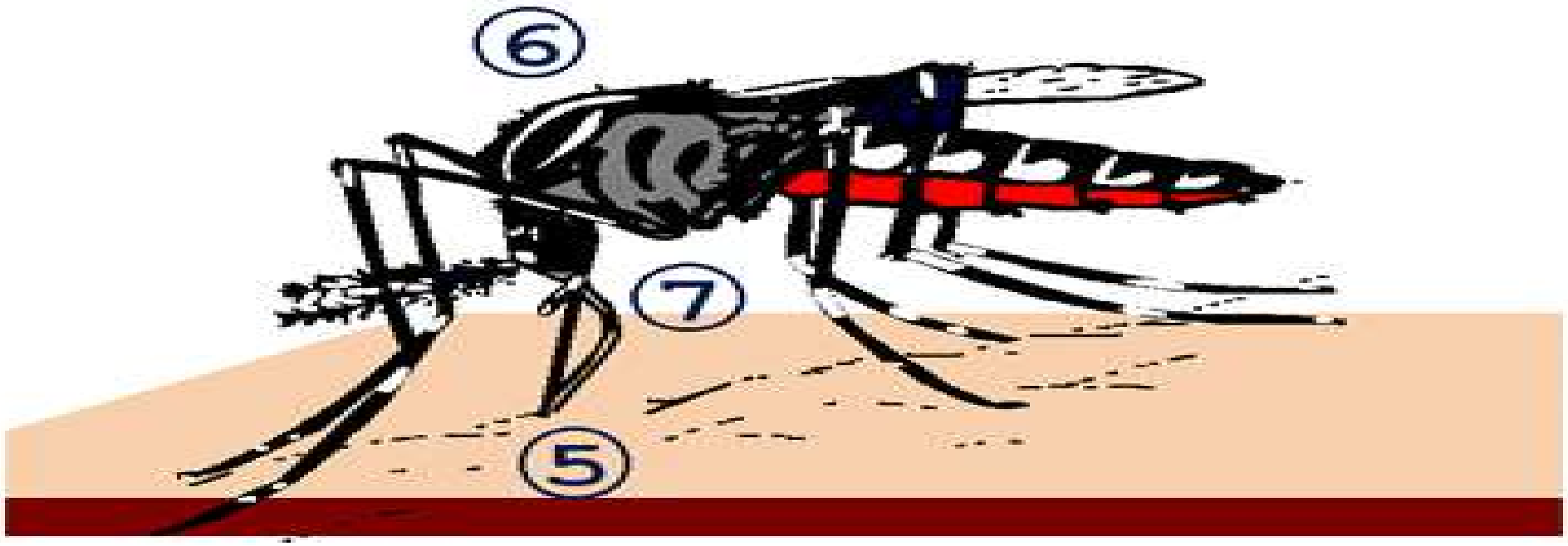
1. Virus inoculated into humans

2. Virus localizes and replicates in target organs

3. Virus released and spreads to infect white blood cells and other lymphatic tissues.

4. Virus released from these tissues and circulates in the blood.





5.Mosquito ingests blood containing the virus.

6.Virus replicates in mosquito's midgut, ovaries, nerve tissue and fat body. It then escapes into the body cavity, and later infects the salivary glands.

7.Virus replicates in the salivary glands and when the mosquito bites another human, the cycle continues.

Clinical Features

- **There are 3 clinical syndromes:**

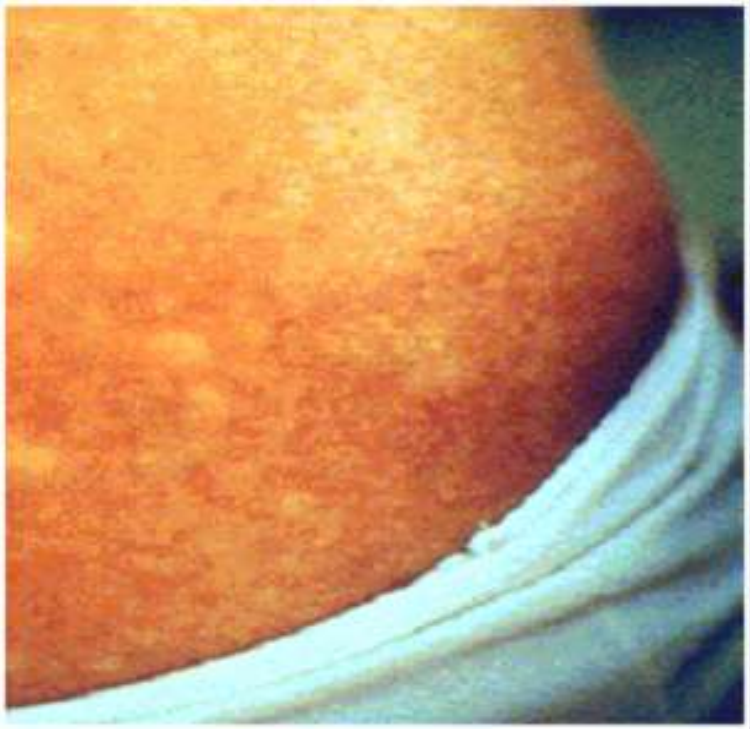
1. **Classic dengue fever;**
2. **Dengue hemorrhagic fever, or DHF; and**
3. **Dengue shock syndrome, or DSS.**

- **DENGUE FEVER** - Acute febrile illness of 2-7 days with chills and high fever & two or more symptoms like headache , retro orbital pain , myalgia , arthralgia. Temperature rises quickly as high as 104° F (40° C), with relative bradycardia and hypotension
- **DENGUE HAEMORRHAGIC FEVER** - a confirmed case or probable case of dengue with haemorrhagic tendencies & plasma leakage due to decrease vascular permeability.
- **DENGUE SHOCK SYNDROME** - all above criteria with evidence of circulatory failure manifested by rapid and weak pulse and hypotension.

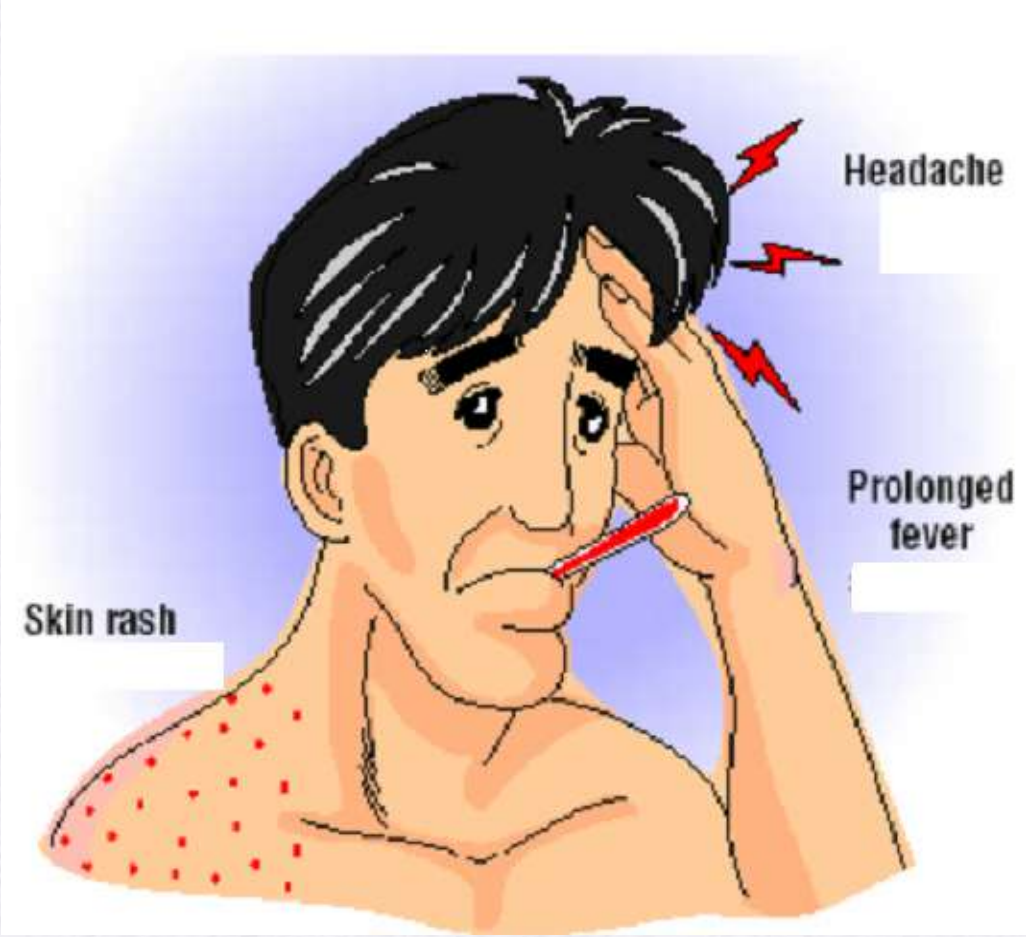
Dengue Fever

- Sudden fever 40-41 C
- headaches
- Severe muscle aches, retro-orbital pain
- Joint pain
- Hepatomegaly
- Rash, Facial flush
- Nausea/vomiting
- Leucopenia
- Fever subsides in 2-7 days, may be biphasic
- Other symptoms: itching and aberrations in the sense of taste, particularly a metallic taste, severe depression after the acute phase of the illness.
- Recovery is complete
- Case fatality is very low

Symptoms



Skin rash



Dengue Hemorrhagic Fever

- severe form of the viral illness.
- Caused by more than one dengue viruses.
- First infection sensitizes patient and second produce immunological catastrophe.

Manifestations include:

- Headache, high fever (continuous and lasting 2-7 days)
- Rash, and evidence of hemorrhage in the body (Petechiae)
- Bleeding in the nose or gums,
- Black stools, or easy This form of dengue fever can be life-threatening or even fatal.

Dengue Hemorrhagic Fever

Clinical Case Definition (WHO Criteria for diagnosis)

All of the following must be present:

1. Fever or recent history of acute fever
2. Hemorrhagic tendencies:
3. Thrombocytopenia (<=100,000/cu mm)
4. Evidence of plasma leak ("leaky capillaries")
    - elevated hematocrit > 20% above average
    - Pleural effusion/ascites
    - low albumin

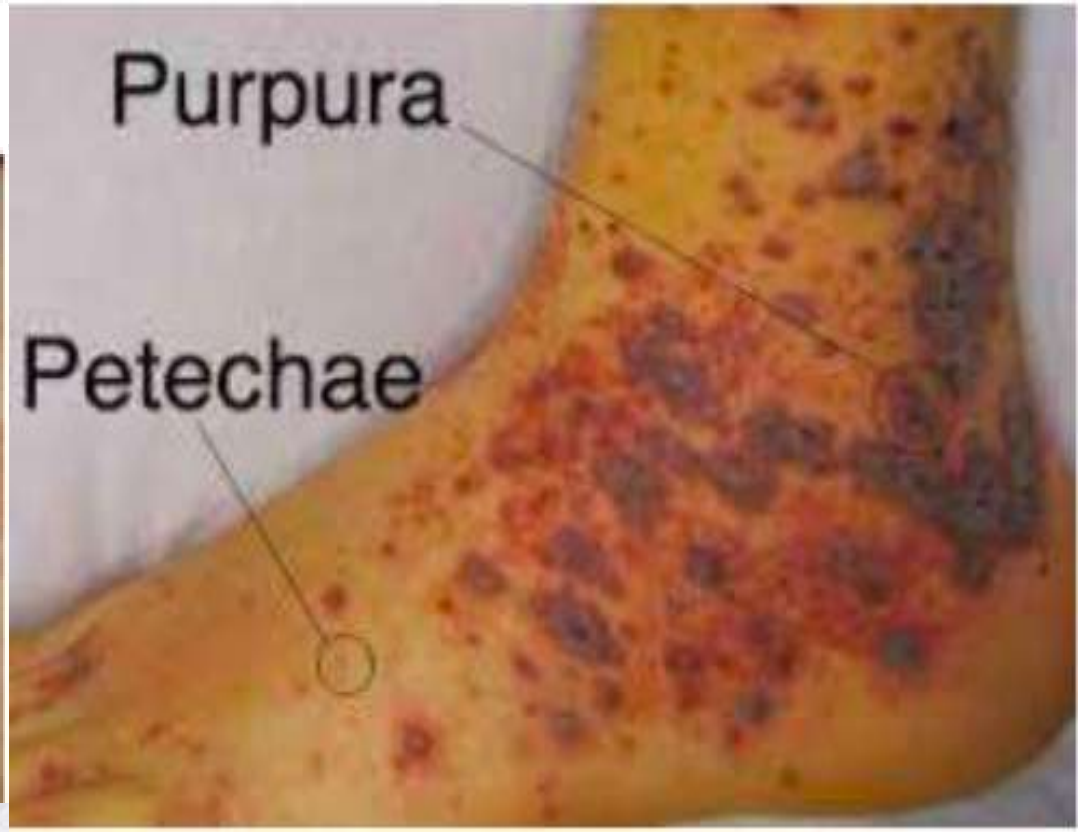
Hemorrhagic tendencies

+ve tourniquet test

- Inflate blood pressure cuff to a point midway between systolic and diastolic pressure for 5 minutes
- Positive test: 20 or more petechiae per 1 inch^2 (6.25 cm^2)

Petechiae, ecchymosis or purpura

Bleeding from other



Hemorrhagic Manifestations of Dengue

- Skin hemorrhages:
  petechiae, purpura, ecchymosis
- Gingival bleeding
- Nasal bleeding
- Gastrointestinal bleeding:
  Hematemesis, melena
- Hematuria
- Increased menstrual flow

3 Phases

1. Febrile phase : 2-7 days
   - Sudden onset fever
   - Severe headache
   - Epigastric discomfort,anorexia, vomiting
   - Arthralgia, myalgia
   - Flushing
   - Tender hepatomegaly, splenomegaly
   - Maculopapular rash

3 Phases

2. Leakage phase

- 1ST 24-48 HOURS
- Pleural effusion
- Ascities
- Pericardial effusion
- Haemorrhagic menifestation
- Haematemesis,malena ,epistaxis & menorrhagia

3 Phases

3. Convalescent phase(recovering)

- Short & uneventful
- Return of appetite
- Bradycardia

- Recovery rash
- Severe itching on palms & soles

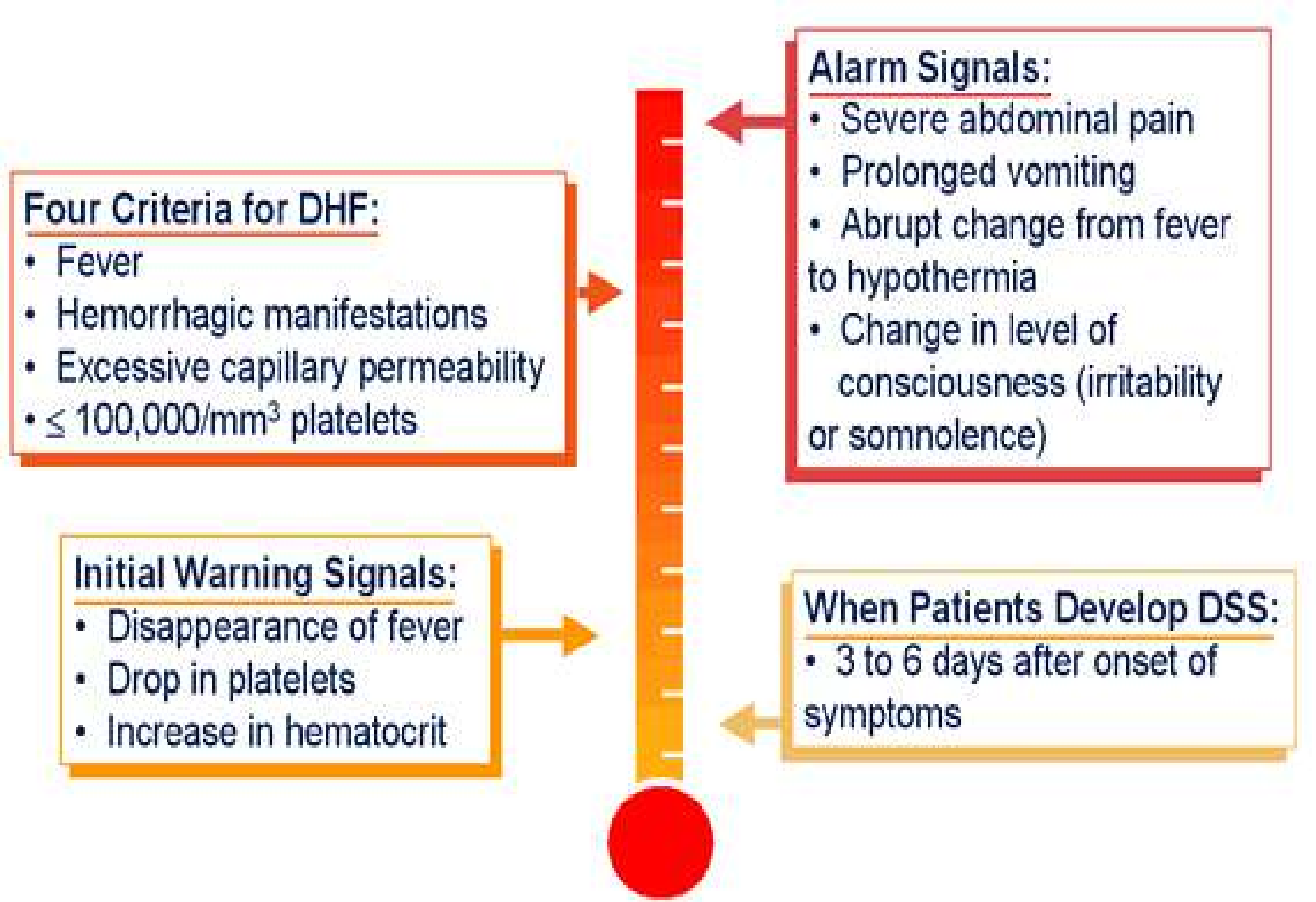
Four Grades of DHF

- Grade 1
  - Fever and nonspecific constitutional symptoms
  - Positive tourniquet test is only hemorrhagic manifestation
- Grade 2
  - Grade 1 manifestations + spontaneous bleeding
- Grade 3
  - Signs of circulatory failure (rapid/weak pulse, narrow pulse pressure, hypotension, cold/clammy skin)
- Grade 4
  - Profound shock (undetectable pulse and BP)

Danger Signs in Dengue Hemorrhagic Fever

- Abdominal pain - intense and sustained
- Persistent vomiting
- Abrupt change from fever to hypothermia, with sweating and prostration
- Restlessness or somnolence

★ All of these are signs of impending shock and the patient needs close observation and fluids.


Alarm Signals:
• Severe abdominal pain
• Prolonged vomiting
• Abrupt change from fever to hypothermia
• Change in level of consciousness (irritability or somnolence)
Four Criteria for DHF:
• Fever
• Hemorrhagic manifestations
• Excessive capillary permeability
• ≤ 100,000/mm3 platelets
Initial Warning Signals:
• Disappearance of fever
• Drop in platelets
• Increase in hematocrit
When Patients Develop DSS:
• 3 to 6 days after onset of symptoms

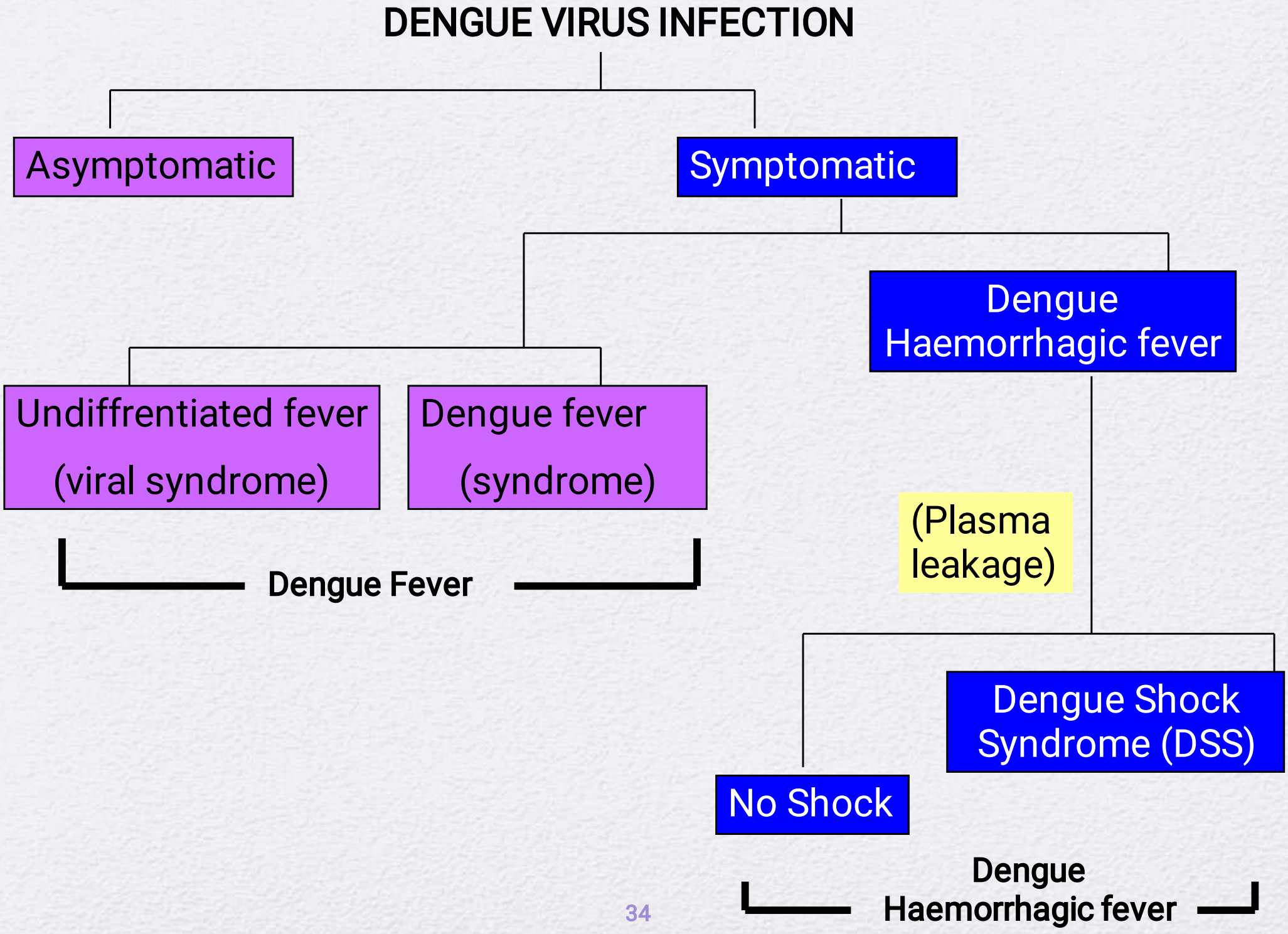
Dengue Shock Syndrome

Clinical Case Definition (WHO Criteria for diagnosis)

- **DHF**

  +

- **Evidence of circulatory failure manifested indirectly by all of the following:**
  - **Rapid, weak pulse**
  - **Narrow pulse pressure < =20 mm hg**
  - **Cold clammy skin**
  - **Restlessness**
  - **Altered mental status**


DENGUE VIRUS INFECTION
Asymptomatic
Symptomatic
Undiffrentiated fever
(viral syndrome)
Dengue fever
(syndrome)
Dengue Fever
Dengue
Haemorrhagic fever
(Plasma
leakage)
Dengue Shock
Syndrome (DSS)
No Shock
Dengue
Haemorrhagic fever

Laboratory Investigations

- isolation of dengue virus from serum, plasma .
- demonstration of dengue virus antigen by ELISA .
- detection of viral genome sequences in serum, CSF etc.
- Detection of IgM antibodies in the blood by PCR or Viral isolation (Serology)
- Thrombopenia
- Raised hematocrit
- Dengue HI test in paired sera showing 4 fold rise or fall: cross reactivity
- IgG type antibodies in high titre in secondary infection

Management

Dengue Fever

- No specific T/t
- Analgesics/antipyretics
- Avoid agents which may impair platelet function eg. aspirin
- Bed rest
- Cold sponging to keep temperature below 39° C
- Oral fluid or electrolyte therapy for patient with excessive sweating or vomiting

Management

Dengue Haemorrhagic Fever

- Hospitalize
- Closely monitor for shock; repeated hematocrit measurements
- If Hct rising by >20%, IV fluids as 5% deficit
- Start with DNS 6-7 ml/kg/hr.
- Improves → reduce gradually over 24-48 hrs
- No improvement → ↑ upto 15 ml/kg/hr → colloid solution

CHIKUNGUNYA

CHIKUNGUNYA

- Chikungunya fever is a self limiting, non fatal, febrile viral disease caused by an alphavirus that is transmitted by the bites from the *Aedes aegypti* mosquito.
- The chikungunya virus (CHIKV) is Single strand RNA virus.
- Name is derived from the Makonde verb - Kun gunyala meaning "*that which bends up*" in reference to the stooped posture developed as a result of the arthritic symptoms of the disease. In Swahili this means "*the illness of the bended walker*"

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Introduction

Synonyms:

- CHIKV Fever
- Buggy Creek virus infection
- Knuckle fever
- Me Tri virus infection
- Semliki Forest virus infection

History:

- First detected in 1952 at Makonde Plateau in Africa
- First described in Africa (Tanzania) in 1954 and then identified in Asia.
- India : first reported in 1963
- A major outbreak in 2005–2006 to most islands in the Indian Ocean.

Virological Aspects

- Causative agent: An enveloped positive-strand RNA virus of-
- Class – Arbor Virus (Arthropod Borne)
- Family – Togaviridae
- Genus – Alpha Virus
- Species –Chikungunya Vir

- Similar to Semliki Forest Viruses (SFV) in Africa and Asia.

Transmission

- Virus is transmitted only by mosquitoes
- No animal reservoir is found in India
- Maintained in nature by man – mosquito – man cycle
- Vector – *Aedes aegypti, Aedes albapticus* mosquito
- Infected mosquito remain infected all its life span & can transmit virus each time it bites
- No known mode - other than mosquito bite
- Incubation Period – 2 days to 12 days.

Aedes aegypti mosquito

Clinical Features

Acute Stage:

first 10 days after disease onset

- **Fever** :

  -Sudden onset, Usually high grade (Can Reach upto 40°C or 104°F) with chills

  -poorly responsive to antipyretics.
- Flu-like symptoms
- Anorexia, nausea, and vomiting
- Back pain, Headache, weakness
- Photosensitivity, stomatitis, mouth ulcers, exfoliative dermatitis, vesicles, bullae, and purpura.
- myalgias in adults, and transient confusion in elderly patients.

Acute Stage cont…

Maculopapular rash :

-last 2-3 days

-Transient, sometimes edematous and/or pruritic

-observed on the face and trunk

Arthralgias :

-Polyarticular, usually symmetric, small joints

-Larger joints(knee, ankle) may also be affected

-Migratory poly arthralgia – not much effusions

-Pain worse in the morning – less by evening

Rarely:

-myocarditis, hepatitis, nephritis, anterior uveitis, retinitis, optic neuritis

Chronic Stage:

Within the first 3 months, the life of patient infected with CHIKV impaired by–

- Exacerbation of pain in previously injured joints and bones.
- Inflammatory relapses, often triggered after exposure to cold.
- Long-lasting rheumatism
- A significant loss in the quality of life.

Chronic Stage cont…

- **Ocular changes** :

  -Develop a few weeks after disease onset

  -Anterior uveitis, retinitis, episcleritis, and optic neuritis, sometimes leading to blindness.

Deterioration is more frequent in patients over 40 years of age and/or with underlying diseases

Course of Illness

- Fever typically lasts for 2 - 3 days & then comes down
- Fever may reoccur after 3 days – '*saddle back*' fever
- Some rare cases - fever lasts up to a couple of weeks
- Patients have prolonged fatigue for several weeks
- Joint pain, intense headache, insomnia and an extreme degree of prostration may last for 5 to 7

Diagnosis

- By Clinical findings, epidemiology, lab confirmation
- **Diagnostic tests include**
  - Viral culture in first 3 days of illness
  - RT-PCR (**polymerase chain reaction)** for viral RNA in first 8 days
  - Serology for IgM and IgG by end of 1st week
  - Convalescent titers with four-fold increase in IgG

Differential Diagnosis

Feature	CHIKV	DENGUE
Arthralgia	Constant	Rare
Arthritis	Common, edematous	Absent
Retro orbital pain	Rare	Common
Myalgia	Common	Common
Tenosynovitis	Common	Absent
Hypotension	Possible	Common, Day 5 – Day 7
Thrombocytopenia	Early, Mild	Delayed, severe
Hemorrhage	None	May be present
Shock syndrome	Never	May occur
Immunity (IgG)	Life long	2nd attack fatality

Treatment

- Self-limiting and resolve with time over a week to 10 days
- No specific treatment for Chikungunya.
- No relapses occur as life long immunity is formed.
- No vaccine or preventive pill is available
- Supportive or Palliative Medical Care With Anti-inflammatories
- Rest to the patient with mild movements & exercise of joints
- Cold compresses to inflamed joints

Cont.....

- Analgesics and NSAIDS
  - Paracetamol ± Ibuprofen or aceclofenac or diclofenac
  - Aspirin should be avoided because of the risk of bleeding.
  - Hydroxy chloroquine sulphate & Chloroquine phosphate (250 mg/od)
  - Sulfasalazine, methotrexate, ribavirin, interferon-alpha
- Systemic corticosteroids are avoided because of the strong rebound effect after stopping.

Prevention

- Elimination of stagnant water at home, schools and work place to avoid breeding of mosquitoes.
- Using insect repellents over the exposed parts of the body.
- Using mosquito screens or nets
- Wearing long sleeved clothes.
- Properly covering all water tanks so that mosquitoes cannot get in
- Getting rid of any container capable of retaining water in the outdoor surroundings (used tyres, food cans, garbage, saucers under flower pots, etc)
- Renew water in flower vases at least once a week

Vector Control Methods:

Biological and Environmental Control

- Biological control
  - Largely experimental
  - Option: place fish in containers to eat larvae
- Environmental control
  - Elimination of larval habitats
  - Most likely method to be effective in the long term

Vector Control Methods:

Chemical Control:

- Larvicides may be used to kill immature aquatic stages

- Ultra-low volume fumigation against adult mosquitoes

- Mosquitoes may have resistance to commercial aerosol sprays

विषम ज्वर

NIRUKTI

- **विषमोविषमारम्भः क्रियाकालोनुषन्ङ्वान् ।** (वाग्भट्ट्)

  The *arambha* (onset), *kriya* (course), & *kala* (duration) is *vishama*.

- **यः स्याद नियतात् कालात् शीतोष्णाभ्यां तथेव च ।**

  वेगतस्चापि विषमः स ज्वरो विषमः स्म्रत्ः ॥

  (सिद्धान्त निदान ज्वर)

- Some time *shita*, some time *daha*.
- Vega of *jwara* is *anischita* (*vishama*)

निदान

- अभिघाताभिषन्गभिचराभिशापेभ्य आगन्तु (Ch.Ni.1/30)
- अभिघातग्रहणेन शरीराभिहननवचिनासत्म्य गन्धदयो ग्रह्या

(Teeka. Ch.Ni.1/38)

- परो हेतु: स्वभावो वा विषमे केश्चिदीरित: ।
- आगन्तुस्चानुबन्धो हि प्रायशो विषमज्वरे ॥ (su.ut.39/56)

- There will be involvement of external factors in *vishama jwara*.

रूप

- **क्वचिदुष्णेन शीतेन् क्वचिद्रात्रो क्वचिदिवो ।**

  प्रशमं याति कोपं च ज्वरः स विषमः स्मृतः ॥ (Y.R. 28)

- In *Vishama jwara* the presentation of *jwara* happens during *ushna kala* or *sheeta kala*, or during day and night & some time it is getting aggravated, some time it will subside by itself .
- In this specific *vishama jwara* the following *lakshanas* can be appreciated.

Asthi ruja

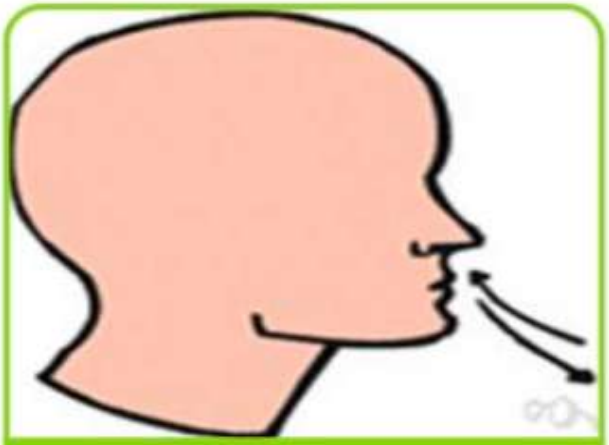
Chardi

Bahistapa

Angamarda

Bhrama

Trushna



Swasa

Netra shrava

Sandhi ruja

Shiroruja

Tandra

Raktastheevana

Nidranasha

Shirolotanam

Hrudayabadha

kasa

Daha

Raktavalochana

DENGUE in Ayurveda

- Description of dengue as *Dandaka Jwara* is found in the *parishishta chapter of Madhava Nidana.* It has been described that a particular species of mosquito is the basic cause of spread of fever called *Dandaka jvara*. This fever mostly subsides within a week; however, it is more dangerous for the children and old people.[7]

विशिष्टमशकोद्भवो जगति दण्डकाख्यो ज्वर :,
सदाऽस्थिनिचयं नरस्य परिपीडयन्निर्भरम् ।
स्थिति मुनिमितान्यहानि विदधाति नित्यं तनौ , ततो
निगदितो ज्वरो मुनिभिरेष सप्ताहक : ।।1।।

मा नि परिशिष्टम्

पूर्वरूप

यदा मानवस्यांगमध्येऽगमर्द : क्लम: चारुचि: दृश्यते दैवयोगात् ।
अथोत्क्लेशसादौ तदा दण्डकाख्य ज्वरस्य अग्ररूपं ।।

- Prodromal symptoms include अंगमर्द (bodyache), क्लम, अरुचि (anorexia), उत्कलेश, अवसाद

रूप

अस्थ्नां संधिषु घोरा दण्ड़ाहननजसमा पीड़ा ।
क्षिप्रोदयलयशाली समस्त तनुगोऽपि वीसर्प : ।।
संचारि संधिशूलं शोथयुतं लक्ष्यते यत्र ।
ज्वर मध्येऽपि च कास: कण्ठे पीड़ा प्रतिशयाय: ।।
पुनरावर्त्तनशीलो, मुञचत्यष्टाहतो ज्वरो यत्र ।
संधिरुजा: चिरकालं, सन्ति वदंति च दण्ड़क ज्वरं तम्।।
प्रायो जनपदजन्मा कफमारुतकोपजातनिजवष्र्मा ।

- **अस्थ्नां संधिषु घोरा दण्ड़ाहननजसमा पीड़ा**-pain in bone and joints as if beaten by stick
- **क्षिप्रोदयलयशाली समस्त तनुगोऽपि: वीसर्प** :- quick development and disappearance of Reddish or purpuric rashes on the body
- **संचारि संधिशूलं शोथयुतं लक्ष्यते** :- fleeting/shifting joint pain associated with swelling
- **कास: कण्ठे पीड़ा प्रतिशयाय**:- cough, sore throat, common cold
- **पुनरावर्त्तनशीलो** :recurrance/relapsing fever
- **संधिरुजा: चिरकालं** : painful joints for long duration
- **जनपदजन्मा कफमारुतकोपजात** which becomes endemic due to virulence of kapha and vata dosha.

Treatment

- No specific treatment for disease, Ayurveda stresses to strengthen immune system
- Amrita (Guduchi)Tulasi(Holi basil) Shunthi(Dried ginger)Papaya are the commonly available medicinal plants and used to prevent its complications

For Fever

- In initial phase, Kwath prepared of Dhanyak, Parpat, Kiratatikta, Musta may be advised.
- In case of Raktaja Jvara (Hemorrhagic condition), add Vasa, Rakta Chandana & Yashtimadhu along with sugar candy (Mishri).
- ♣ Shamshamani Vati (Guduchi Ghana Vati)
- ♣ Sudarshanaghana Vati
- ♣Godanti Bhasma
- ♣ Amritottara Kwath
- ♣ Tulsi

For Dehydration

- Shadanga Paneeya
- ♣ Dhanyakadi Hima (Dhaniya, Amla, Vasa, Draksha, Parpat)
- ♣ Water of cardamom and clove
- ♣ Green coconut water
- ♣ Any of these liquid preparations may be given in suitable quantity in 3 - 4 hours interval

- Leaves of coriander should be taken to reduce fever.
- Chyavanprash can be taken as an immune booster.
- Punarnava (Borhavia diffusa) Is a herb which helps in flushing out toxins through perspiration.
- Amritottaram kashayam,Amritha satva
- Boil tulasi in water and drink this water throughout the day to build up immune system.
- 10-15 basil leaves should be chewed twice a day, to strengthen body's defence mechanism.
- Pomegranate /black grape juice can be taken to increase blood count.

Diet During Dandaka jvara

- Rice gruel (Kanji),Rice porridge (khichari) cooked with ginger and lemon is useful.
- Tea prepared with Tulasi, Ginger and cardamom may be taken at two hourly interval.
- Spicy and Oily food should be strictly avoided.

Guduchi

- ***Rasa*** *– Kashaya, Tikta.* ***Guna****-lagu,snidgha.* ***Veerya*** *– Ushna.* ***Vipaka****-madhura*

- *Giloy* has antibacterial, anti-inflammatory, anti rheumatic, and anti-allergic actions.
- In dengue, platelets count is decreases and body strength is very weak. *Guduchi* increase platelet counts. *Guduchi* an amazing role in strengthening our natural immune system by helping the White Blood Cell count to increase in our body. This action of *Guduchi* as a major immunity booster is very remedial especially during the dengue spell.

Papaya(Eranda karkati)

- ***Rasa***- *katu, tikta tikshan*
- ***Virya***- *ushan*
- ***Guna***- *laghu, ruksha,*
- ***Vipak***- *katu*
- ***Virya***- *ushan*
- ***Karma-*** *kapha- vata shamak, pachan*
- *Papaya* leaves and seeds are inhibiting heamlysis. Platelets are very low in dengue. *Papaya* leaves increases thrombolytic counts.
- *Papaya* leaves also contain important nutrients, includ- ing vitamin A, C and E, they support the im- mune system.

CHIKUNGUNYA

Symptoms of chikungunya that can be correlated with jwar symptoms in texts

Name of the Text	Type of Jvara/ Roga	CHIKUNGUNYA SYMPTOMS									
		Fever	Chills	Arthritis/ Arthralgias	Head ache	Nausea	Vomit -ing	Fatigue	Sleep Less-ness	Constitutional symptoms	
										Loss of appetite	Heavi ness
Ch.S.Ch.	VP	+	-	+	+	-	+	+	+	-	-
	VK	+	+	+	+	-	-	-	-	-	-
Su. S.U.	VP	+	-	+	+	-	+	+	+	+	-
	VK	+	+	+	+	-	-	-	-	-	+
As. H. Ni	VP	+	-	+	+	-	+	+	+	-	-
	VK	-	-	+	+	-	-	-	-	+	
As.S.Ni.	VP	+	-	+	+	-	-	-	-	-	-
	VK	-	-	+	+	-	-	-	-	-	-
Ma.Ni.	VP	+	-	+	+	-	+	-	+	+	
	VK	+	+	+	+	-	-	-	-	-	+
Bh.Pr. Ma.	Sandhigata-Sannipata Jvara	+	-	+	-	-	-	-	+	-	-

Treatment

S. No.	Indication	Name of the Formulation	Reference
1.	*Jeerna Jvara, Sannipata Jvara*	*Amritottara Kvatha Curna*	*Sahasrayoga, Kashaya Prakarana,30*
2.	*Vata roga*	*Gandharvahastadi Kvatha Curna*	*Sahasrayoga, Kashaya Prakarana 394*
3.	*Sannipata Jvara*	*Chinnodbhavadi Kvatha Curna*	*Sahasrayoga, Kashaya Prakarana;38*
4.	*Parsva sula, Jvara*	*Dasamula Kvatha Curna*	*Bhaisajya Ratnavali Kasarogadhikara;13*
5.	*Jvara, Sannipata Jvara*	*Darunagaradi Kvatha Curna*	*Sahasrayoga, Kashaya Prakarana;34*
6.	*Kapha Jvara*	*Nimbadi Kvatha Curna*	*Cakradatta, Jvara Chikitsa;101*
7.	*Jvara*	*Patoladi Kvatha Curna*	*Astangahridaya, Sutrasthana,15:15*

9.	*Vata roga, Amavata*	*Rasnadi Kvatha Curna*	*Sahasrayoga, Kashaya Prakarana;396*
10.	*Parva sopha,*	*Rasna erandadi Kvatha Curna*	*Sahasrayoga, Kashaya Prakarana;428*
11.	*Sandhi vedana*	*Maharasnadi Kvatha Curna*	*Sarangadhara Samhita, Madhyama Khanda Adhyaya-2,89-91 ½*
12.	*Jvara*	*Sadanga kvatha Curna*	*Astangahridaya, Chikitsa Sthana 1:15 ½*
13.	*Sandhi sotha, Vata roga*	*Maha Yogaraj Guggulu*	*Sarangadhara Samhita, Madhyama Khanda Adhaya- 7, 56-60*
14.	*Sandhi sotha, Vata roga*	*Yogaraj Guggulu*	*Bhaishajya Ratnavali Amavatadhikara 90-93*
15.	*Jvara*	*Sudarshan Curna*	*Bhaishajya Ratnavali Jvaradhikara 308-312 ½*
16.	*Jvara*	*Ananda bhirava Rasa*	*Rasendra Sara Samgraha Jvaradhikara, Adhyaya 2;103*
17.	*Jirna Jvara*	*Arogyavardhani Gutika*	*Rasaratna Samuccahaya Visarpadi Chikitsa Adhyaya*

THANKS FOR LISTENING