GUIDELINES FOR HOMOEOPATHIC PRACTITIONERS FOR CLINICAL MANAGEMENT OF DENGUE FEVER

CENTRAL COUNCIL FOR RESEARCH IN HOMOEOPATHY
2015

Central Council for Research in Homoeopathy, New Delhi (India)

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Second edition

ISBN: 978-93-81458-17-4

Published by:
Central Council for Research in Homoeopathy,
(An autonomous body of the Ministry of AYUSH,
Government of India),
JawaharLal Nehru BhartiyaChikitsaAvum Homoeopathic AnusandhanBhavan,
61-65, Institutional Area, Janakpuri, New Delhi – 110058.

Preface

The first edition of the guidelines for homoeopathic practitioners was well accepted by the profession. The second edition is being published to update the readers about the modifications in the revised national guidelines issued under the National Vector Borne Disease Control Programme.

It has been reported that integrated care is the key for reduction of complications and mortality. Infected cases need to be treated by qualified homoeopathic practitioner. However, emergency treatment must be given in patients with low platelet counts, bleeding or dengue shock syndrome. These guidelines explicitly state the standard care required to be followed in such cases. The physicians can also share their experiences on the online web based system 'Dengue Clinical Experience Sharing system for Homoeopathic Practitioners' available at Council's website - www.ccrhindia.org

30th September 2015

Dr. R K Manchanda

Director General

Central Council for Research in Homoeopathy

Preface to First Edition

Increase in incidence of dengue every year in the country is attributed to a number of factors, including heavy rains, intense construction activity and better surveillance system that enables detection of more cases. Hospitals and clinics across the country are inundated with patients, putting a strain on emergency services.

The guidelines aim to present all relevant details to a practitioner in daily clinical practice for management of cases diagnosed or suspected to be of dengue. These will be helpful in clinical decision making for cases presenting with fever.

The guidelines provide updated practical information about definition, vector control, grading of the disease and management both general and homoeopathic. The document will help the practitioners to know the limitation of OPD management and guide them at what point, a patient needs hospitalization to prevent complications.

The physician is expected to be aware of the benefits and risks of the treatment and plan an appropriate treatment for each individual patient. In cases with dengue hemorrhagic fever or dengue shock syndrome, standard care is strongly recommended and homoeopathy can be used as an adjuvant for better clinical outcome.

We also invite homoeopathic practitioners to discuss/share their experience with the Council, which would be useful for devising better homoeopathic treatment strategy. Feedback on these guidelines is solicited for further improvement.

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INTRODUCTION

Dengue fever, also known as breakbone fever, is an infectious tropical disease caused by the dengue virus. Symptoms include fever, headache, muscle and joint pains, and a characteristic skin rash. In a small proportion of cases the disease develops into the life-threatening dengue hemorrhagic fever, resulting in bleeding, low levels of blood platelets and plasma leakage, or into dengue shock syndrome, where dangerously low blood pressure occurs.

Homoeopathy has a long record of success in the treatment of epidemics and recent experiences in Brazil and India favour its usefulness in the management of dengue. The treatment is holistic and individualized and selection of homoeopathic medicines depends upon the individual response to infection, severity of disease and clinical presentation of the case. Homoeopathy has a potential to reduce the intensity of fever, headache, body ache, weakness, loss of appetite, nausea and other associated symptoms and, also reduce the probability of developing shock, hemorrhage and other complications. The homoeopathic intervention can be preventive for unaffected/high risk population (relatives, neighbours of diagnosed patient) as well as curative for persons already suffering from dengue. With the rising incidence of dengue and dengue hemorrhagic fever, practitioners and associations have approached the Council for providing standard treatment guidelines for its clinical management and prevention. These guidelines are compiled after consulting publications of World Health Organization & National Vector Borne Disease Control Program in India, classical homoeopathic literature, research publications and experiences of senior practitioners. These can be referred for clinical management of cases and deciding about the *genus epidemicus*.

ABOUT THE DENGUE EPIDEMIC

Dengue is the most rapidly spreading mosquito borne viral disease in the world with wide clinical spectrum. In the last 50 years, incidence has increased 30-fold with increasing geographic expansion to new countries and, in the present decade, from urban to rural settings. An estimated 50 million dengue infections occur annually and over 2.5 billion people (about 40% of the world's population) are now at risk from dengue. According to World Health Organization (WHO), about 50-100 million new dengue infections are estimated to occur annually in more than 100 countries, with a steady increase in the number of countries reporting the disease. An estimated 500000 people with severe dengue require hospitalization each year, a large proportion of whom are children.

In India, Dengue virus was isolated for the first time in 1945. The first evidence of occurrence of dengue fever in the country was reported in 1956 from Vellore district in Tamil Nadu. The first dengue haemorrhagic fever outbreak occurred in Calcutta (West Bengal) in 1963.The first major wide spread epidemic of dengue hemorrhagic fever (DHF)/dengue shock syndrome (DSS) occurred in 1996 involving areas around Delhi and Lucknow and then it spread to the whole country. India has become an endemic zone for DF and DHF/DSS outbreaks. In 2006, the country witnessed another outbreak of DF/DHF, with more than 12,000 reported cases. Among the NE States, Manipur has reported Dengue outbreak for the first time in 2007. Out of the 36 states/UT , 35 (all except Lakshadeep) have reported dengue cases during the last two decades.

The incidence of dengue is increasing in the last few years. The case fatality ratio (CFR – deaths per 100 cases) has declined from 3.3% in 1996 to 0.4% in 2010 after the national guidelines on clinical management of DF/DHF/dengue shock syndrome (DSS) were developed and circulated in 2007. This further declined to 0.3% in 2013.

Every year, during the period of July – November, an upsurge of cases of dengue/DHF has been observed. The disease has a seasonal pattern, the case peak after the monsoons and are not uniformly distributed throughout the year.

Salient points

- DF is an acute viral infection characterized by high fever, severe headache & intense body ache.
- It can be caused by any one of the four types of dengue viruses; DEN-1, DEN-2, DEN-3 & DEN-4.
- Infection may lead to 'classical dengue fever' (DF) or DHF with or without out shock.
- DHF is a more severe form of disease, which may cause death.
- Recovery from infection by one serotype provides lifelong immunity against that particular serotype. However, cross-immunity to the other serotypes after recovery is only partial and temporary.
- It can be more severe and fatal in children.

- Homoeopathic intervention can be used along with standard treatment for clinical management.
- Homoeopathic *genus epidemicus* can be identified for its prevention.

Mosquito - Dengue Carrier

Aedes mosquitoes are the carriers of the dengue virus. These mosquitoes can be easily distinguished as they are larger in size and have black and white stripes on their body, so they are sometimes called tiger mosquitoes. The mosquito breeds in artificial accumulation of water (Figure 1) in and around human dwellings, such as water found in discarded tins, broken bottles, fire buckets, flower pots, coconut shells, earthen pots, tree holes etc. during & immediately after the rainy season.

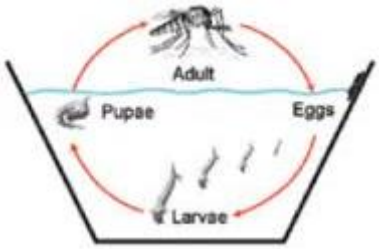

Figure 1 : Mosquito life cycle in artificial accumulation of water

It takes about 7 to 8 days to develop the virus in its body and transmit the disease. They usually bite during the daytime.

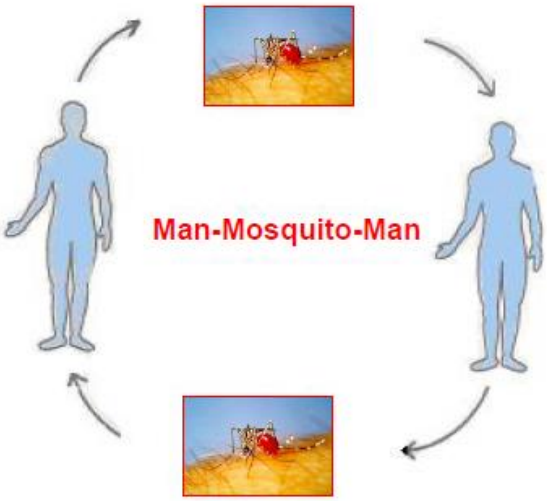

Figure 2

Source: Guidelines for clinical management of dengue fever, dengue haemorrhagic fever and dengue shock syndrome. 2008. Directorate of National Vector Borne Disease Control Programme, DGHS, Ministry of Health and Family Welfare, Govt. of India.

The female Aedesaegypti usually becomes infected with dengue virus when it takes blood meal from a person during febrile (viremia) phase of dengue illness. After an extrinsic incubation period of 8 to 10 days, the mosquito becomes infected and the virus is transmitted when the infective mosquito bites and injects the saliva into the person (Figure 2).

CLINICAL DESCRIPTION

Incubation period

The period from the entry of virus through mosquito bite to appearance of first sign/symptoms is 4-7days (range 3-14 days).

Clinical Criteria for DF/DHF/DSS
Dengue viral infected person may be asymptomatic or symptomatic and clinical manifestations vary from undifferentiated fever to florid haemorrhage and shock.

Clinical features of DF

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

- Severe headache
- Retro-orbital pain - Pain behind the eyes which worsens with eyemovement
- Myalgia
- Arthralgia
- Rash - Flushing over chest and upper limbs
- Mild haemorrhagic manifestations (petechiae bleeding from mucous membrane)

Dengue Haemorrhagic Fever

a) A case with clinical criteria of dengue fever

plus

b) Haemorrhagic tendencies evidenced by one or more of the following:
    1. Positive tourniquet test
    2. Petechiae, ecchymoses or purpura
    3. Bleeding from mucosa, gastrointestinal tract, injection sites or other sites

plus

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

plus

d) Evidence of plasma leakage due to increased vascular permeability, manifested by one or more of the following:
    1. A rise in average, haematocrit for age and sex ≥20%
    2. A more than 20 % drop in haematocrit following volume replacement treatment compared to baseline
    3. Signs of plasma leakage (pleural effusion, ascites, hypoproteinaemia)

Dengue Shock Syndrome

All the above criteria of DHF plus evidence of circulatory failure manifested by rapid, weak pulse and narrow pulse pressure (≤ 20mm Hg) or hypotension for age, cold and clammy skin and restlessness.

It is likely to occur in cases with mixed infection of more than one type of dengue virus. This is due to hypersensitivity which develops to one strain can trigger if there are more than one strain of virus at the same time. Co-existing conditions that may make dengue or its management more complicated include pregnancy, infancy, old age, obesity, diabetes mellitus, renal failure, chronic haemolytic diseases, etc.

Course of Illness

After the incubation period, the illness begins abruptly and is followed by the three phases -- febrile, critical and recovery (Figure 3).

- **Febrile phase**

  Patients typically develop high-grade fever suddenly. This acute febrile phase usually lasts 2–7 days and is often accompanied by facial flushing, skin erythema, generalized body ache, myalgia, arthralgia, headache, anorexia, nausea and vomiting. Mild haemorrhagic manifestations like petechiae and mucosal membrane bleeding (e.g. nose and gums) may be seen. The earliest abnormality in the full blood count is a progressive decrease in total white cell count, which should alert the physician to a high probability of dengue. Rash may be maculopapular or rubelliform and usually appears after 3^{rd}or 4^{th}day of fever and commonly seen on face , neck, and other parts of body and generally fades away in the later part of the febrile phase.

- **Critical phase**

  Around the time of defervescence, when the temperature drops to 37.5^0–38^0 C or less and remains below this level, usually on days 3–7 of illness, an increase in capillary permeability in parallel with increasing haematocrit levels may occur. Progressive leukopenia followed by a rapid decrease in platelet count usually precedes plasma leakage. The period of clinically significant plasma leakage usually lasts 24–48 hours. At this point patients without an increase in capillary permeability will improve, while those with increased capillary permeability may become worse as a result of lost plasma volume.Shock occurs when a critical volume of plasma is lost through leakage. It is often preceded by warning signs. The body temperature may be subnormal when shock occurs. With prolonged shock, the consequent organ hypoperfusion results in progressive organ impairment, metabolic acidosis and disseminated intravascular coagulation.

- **Recovery phase**

  If the patient survives the 24–48 hour critical phase, a gradual re-absorption of extra-vascular compartment fluid takes place in the following 48–72 hours. General well-being improves, appetite returns, gastrointestinal symptoms abate, haemodynamic status stabilizes and diuresis ensues. The haematocrit stabilizes or may be lower due to the dilutional effect of reabsorbed fluid. White blood cell count usually starts to rise soon after defervescence but the recovery of platelet count is typically later than that of white blood cell count.

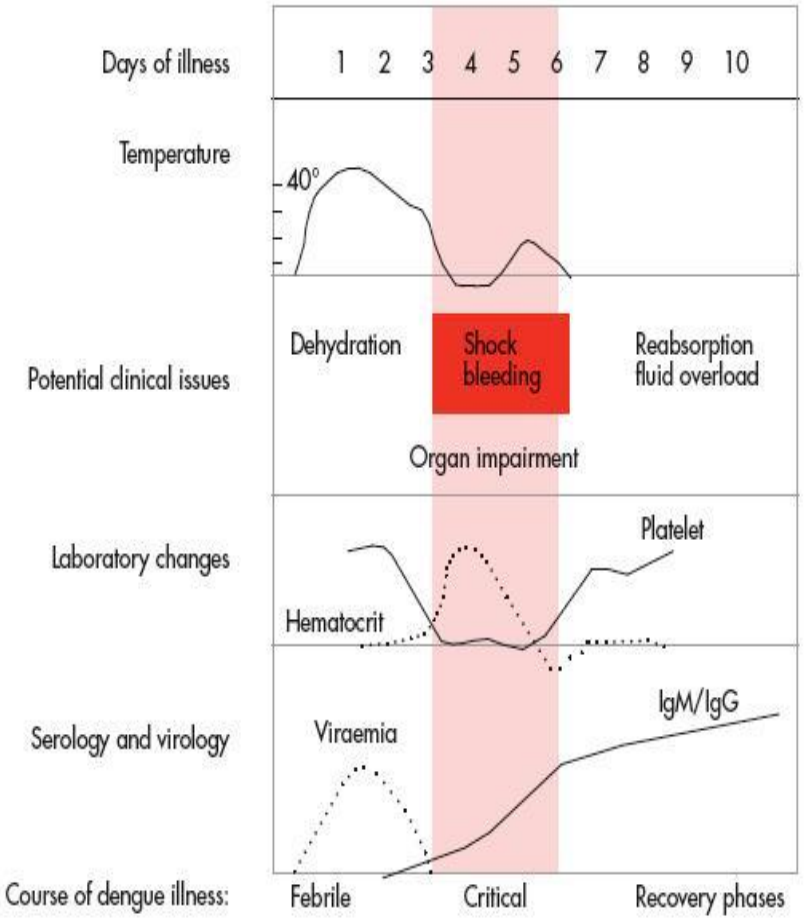

Figure 3 Course of illness

Source: Dengue Guidelines for Diagnosis, Treatment, Prevention and Control, new edition 2009, World Health Organization (WHO)

DIAGNOSIS

Blood test for leukocyte, platelet &hematocrit are conducted to diagnose dengue fever and for assessment. Laboratory diagnosis of dengue is best made during the acute phase of the illness when dengue virus circulates in the blood and can be detected by assays to detect the viral RNA genome or soluble antigens (i.e. NS1 antigen) or through serology.

ELISA –based NS1 antigen tests

- It has been found to be useful as a tool for diagnosis of acute dengue infection.
- It is a simple test that is more specific and shows high sensitivity.
- It enables detection of the cases early, i.e. in the viremic stage, which has epidemiological significance for containing the transmission.
- The NS1 assay may also be useful for differential diagnostic between falviviruses because of the specificity of the assasy.

IgM capture Enzyme Linked Immunosorbent Assay (MAC-ELISA) is a simple rapid test based on detection of dengue specific IgM antibodies in the test serum. The anti-dengue IgM antibody develops a little faster than IgG and is usually detectable by day five of the illness.

Box 1: Case definition

Probable DF/DHF: A case compatiblewith the clinical description of dengue fever during outbreak :
OR
Non-ELISA based NS1 antigen/IgM positive.

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

Confirmed Dengue Fever : A case compatible with the clinical description of dengue fever with atleast one of the following:

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

Source: National Guidelines for clinical management of dengue fever, 2014. Directorate of National Vector Borne Disease Control Programme, DGHS, Ministry of Health and Family Welfare, Govt. of India.

For confirmation of dengue infection, Govt of India recommends use of ELISA – based antigen detection test (NS1) for diagnosing the case from 1st day onwards and antibody detection test IgM capture ELISA (MAC-ELISA) for diagnosing the cases after 5thday of onset of disease.

MANAGEMENT

Approach towards patients suffering from dengue involves detailed history taking including details of onset & nature of fever/illness, individual characterizing symptoms especially physical generals and mentals and assessment for warning signs, and conditions in which, dengue is likely to be more severe.

Examination is done to identify warning signs and conditions in which dengue is likely to be more severe and includes assessment of hydration, hemodynamic status (pulse, systolic and diastolic blood pressure), checking for tachypnoea,pleural effusion, examination of rash and bleeding manifestations, assessment of abdominal tenderness, ascites and hepatomegaly. Appropriate investigations are advised for diagnosis and assessment of disease severity.

- Indications for domiciliary management:
  - No tachycardia
  - No hypotension
  - No narrowing of pulse pressure
  - No bleeding
  - Platelet count > 100,000/cumm
- Laboratory investigations for assessment
  - Complete blood count: haemoglobin, haematocrit, total leukocyte count, differential leukocyte count, platelet count, peripheral blood smear.
  - In epidemic situation, for every patient reporting with fever, these test are recommended, unless some other cause is identified.
- Specific laboratory investigation for diagnosis
  - NS1 ELISA test to be done on patients reporting during the first five days of fever
  - Serologyto be done on or after day 5 by MAC ELISA (in an outbreak all suspected patients of dengue need not undergo serology for purpose of clinical management).

General Management

- Rehydration plays a major role and all efforts must be directed to maintain adequate fluid intake. Encourage oral intake of oral rehydration solution (ORS), water, fruit juice, lime water, coconut water and other fluids containing electrolytes

and sugar to replace losses from fever and vomiting. Adequate oral fluid intake may be able to reduce the number of hospitalizations. [Caution: Fluids containing sugar/glucose exacerbate hyperglycaemia of physiological stress from dengue and diabetes mellitus.]

- Patients who are not able to tolerate oral fluids need intravenous fluid therapy.
- Advise patients to take adequate bed rest and continue on normal regular diet.
- In case of high fever advise for continuous cold sponging, till it recovers. If it is not controlled, suitable antipyretics such as paracetamol can also be given. The interval of paracetamol dosing should not be less than six hours. Aspirin / Disprin/acetyl-salicyclic acid /ibuprofen or other non-steroidal anti-inflammatory agents (NSAIDs) should not be given, as these may aggravate gastritis or bleeding.
- Instruct the care-givers that the patient should be brought to hospital immediately if any of the warning signs occur.

Warning signs needing immediate attention

- Severe and continuous pain in abdomen
- Bleeding from the nose, mouth and gums or skin bruising
- Frequent vomiting with or without blood
- Black stools, like coal tar
- Excessive thirst (dry mouth)
- Pale, cold skin, cold and clammy extremities
- Restlessness, or excessive sleepiness/drowsiness
- Clinical deterioration with reappearance of fever
- Inability to tolerate oral fluid
- Not passing urine for more than 6 hours
- Respiratory distress/ oxygen desaturation
- Altered sensorium, confusion, convulsions
- Rapid and thread pulse
- Narrowing of pulse pressure to less than 20mmHg
- Urine output less than 0.5ml/kg/h
- Laboratory evidence of thrombocytopenia/coagulopathy, rising hematocrit, metabolic acidosis, derangement of liver/kidney function tests

High risk group

The following high risk groups may have severe manifestations or complications with DF/DHF. Therefore this group of patients should be closely monitored for the development of severity:

- Pregnancy
- Infant
- Elderly
- Obesity
- Peptic ulcer diseases
- G6PD deficiency
- Thalassemia
- Coronary artery disease
- Chronic diseases: Diabetes, COPD, Bronchial asthma, Hypertension
- Patients on steroids, anti-platelets, anti-coagulant drugs
- HIV infected persons/Immuno-compromised persons

Follow up

Follow up of the patients requires strict monitoring for temperature pattern, volume of fluid intake and losses, urine output (volume and frequency) and appearance of warning signs. The investigations for haemoglobin, hematocrit(PCV)and platelet counts are important to assess the progress of each case.

Standard care of patients with DHF/DSS

Cases with dengue haemorrhagic fever and dengue shock syndrome require immediate evaluation of vital signs and degrees of hemo-concentration, dehydration and electrolyte imbalance. Close monitoring is essential and the cases require appropriate fluid replacement therapy and maintenance of hematocrit. In such cases, standard care as follows is strongly recommended.

- Consider admission in hospital of patient showing the following symptoms and signs:
  - Bleeding from any site
  - Any warning signs
  - Persistent high grade fever (40^0 C and above)
  - Severe abdominal pain, refusal to take orally/poor intake, persistent vomiting, any signs of dehydration.
  - Impending circulatory failure – tachycardia, postural hypotension, narrow pulse pressure (<20 mmHg, with rising dialostic 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 behavioral changes, severe and persistent headache
  - Drop in temperature and/or rapid deterioration in general condition
  - Shock-cold clammy skin, hypotension/narrow pulse pressure, tachypnoea. However, a patient may remain fully conscious until late state.

Indoor management of patients

- **Investigation for indoor patients**
  - Chest X-Ray : Right lateral decubitus one day after temperature drops.
  - Ultra-sonography abdomen and chest
  - Blood Biochemistry: Serum electrolytes, kidney function tests and liver function tests if required.
  - Stool examination for occult blood, pleural fluid tapping and blood culture for excluding other causes may be done.
- Indications of red cell transfusion
  - Loss of blood (overt blood) – 10% of or more of total blood volume
  - Refractory shock despite adequate fluid administration and declining haematocrit
  - Replacement volume should be 10 ml/kg body wt at a time and coagulogram should be done.
  - If fluid overload is present packed cells are to be given.
- Indications for platelet transfusion
  - In general there is no need to give prophylactic platelet even if at platelet counts

>10,000/cumm

- Prophylactic platelet transfusion may be given at level of <10,000/cumm in absence of bleeding manifestations
- Prolonged shock, with coagulopathy and abnormal coagulogram
- In case of systemic massive bleeding, platelet transfusion may be needed in addition to red cell transfusion.

- **Use of fresh frozen plasma/cryoprecipitate in coagulopathy with bleeding as per advice of physician and patient condition in the hospital.**

Homoeopathic Medicines

There are several references in the literature for treatment of dengue with homeopathic medicines. The aim of treatment is to provide symptomatic improvement, minimize complications and promote early recovery. Suggestive list of drugs is as follows, however, physician may choose beyond this list on the basis of indication.

For Dengue Fever:

Medicines most frequently indicated in cases of classical dengue fever are *Aconitum napellus,Arnicamontana*, *Arsenic album, Belladonna, Bryonia alba, Eupatorium perfoliatum, Ferrumphosphoricum, Gelsemium, Ipecacuanha, Natrummuriaticum, Nux vomica, Pulsatilla*and*Rhustoxicodendron*which are prescribed on the basis of symptom similarity.

For Dengue Haemorrhagic Fever:

Homoeopathic medicines can be given only as an add on supportive therapy. The group of medicines usually indicated includes *Carbovegetabilis*, *Chinaofficinalis*, *Crotalushorridus, Ferrummetallicum,Hamamelis, Ipecac., Lachesis, Millefolium, Phosphorus, Secalecornutum*and *Sulphuric acidum*.

Suggestive indications of these medicines are given in Box 2 & 3.

Box 2 Suggestive Indications of commonly used homoeopathic medicines for dengue

Eupatoriumperfoliatum

The chief indication is **severe pains in the bones as if broken all over**. Other prominent indications of the drug are: chill coming at morning , vomiting of bile between chill and heat and insatiable thirst before chill. Occipital pain after lying down with a sense of weight. Perspiration relieves all symptoms except headache. Tongue yellow coated with cracks in the corner of mouth. *Bryonia* is the nearest analogue, having free sweat but pains keep patient quiet; while *Eupatorium* has scanty sweat and pains make patient restless.

Bryonia alba

Gradual onset of symptoms. Fever with chilliness predominating, frequently with heat of head, red cheeks and thirst. Very irritable, inclined to be angry. Indicated in complaints with dryness of mucous membranes; **sluggishness, stitching pains, aggravated by any motion.** Dry mouth with tongue coated white in the middle. **Great thirst for large quantities of cold water at long intervals.** Sweat relieves fever. Pulse full, hard, tense and quick. There is intense headache, dull, stupefying with a sensation as if the head would burst through forehead. Constipation due to dryness of mucous membranes and complete inactivity of the rectum and stool expelled with much straining.

Gelsemium
Fever accompanied with dizziness, drowsiness, dullness and trembling. Patient**want to be held because he shakes so much.** Chill without thirst. Pulse is slow while quiet, but greatly accelerated on motion. Pain in forehead behind eyes. The patient wants to lie with head raised upon a high pillow, and lie perfectly still, sometimes the headache is relieved by a profuse flow of urine. Desire to be quiet, to be left alone; does not wish to speak or have any one near her, even if the person be silent.

Rhustoxicodendron
Indicated in slow fevers when sensorium becomes cloudy or stupefaction sets in, with low grade of muttering delirium. Fever with weakness of the whole body with desire to stretch the limbs. Great restlessness, cannot remain in bed, cannot stay long in one position. Dry and brown tongue or red. **Triangular red tip of tongue.**Loss of appetite, aversion for food, great thirst. Cough during chill, dry teasing fatiguing. Urticaria during heat.

Aconitum napellus
Indicated in the beginning of the disease when complaints are sudden, violent, with anguish and restlessness. Heat with burning thirst for large quantities of cold water, hard, full and frequent pulse, anxious, impatience, inappeasable, beside himself, tossing about with agony, becomes intolerable towards evening and on going to sleep. To be prescribed for fever with **skin dry and hot**, face red, or pale and red alternately. Cold stage is most marked. Cold sweat and icy coldness of the face. Coldness and heat alternate. Sweat drenching on parts lain on; relieving all symptoms.

Belladonna
Sudden onset of symptoms. **Fever accompanied with heat, redness, throbbing and burning**. N**o thirst with fever**. Cold extremities and throbbing headache. Pain in forehead behind eyes. The fever is worse at night. Fever with delirium and throbbing headache, eyes red & glistening, the skin is hot and burning. Pain comes and goes suddenly. Fever may be followed by a profuse sweat which brings no relief.

Arsenicum album
High temperature. **Periodicity marked with marked weakness**. Cold sweats, marked exhaustion. Delirium; worse after midnight. Great mental restlessness. Disproportionate weakness with rapid sinking of vital force, fainting. Unquenchable thirst, drinks water little and often.

Ferrumphosphoricum
Remedy for first stage of fever. Sensitive, pale, anemic with easy flushing of face. High fever, skin hot and dry, quick pulse, thirst increased. Chill daily at afternoon ., chill returning at the same time every day. This remedy stands midway between *Aconite*&*Gelsemium* in febrile conditions, may be differentiated by pulse which is full & bounding under *Aconite* while under *Gelsemium,* it is soft and flowing. No drowsiness & dullness of *Gelsemium*, no anxious restlessness of *Aconite*. It can be used frequently in biochemic doses in 3x/6x potencies in all cases as supportive drug during fever.

Ipecacuanha
Fever accompanied with gastric disturbances. **Persistent nausea** in one or all stages. Constant nausea is not relieved even by vomiting. Slightest chill with much heat, nausea,

vomiting, and dyspnoea. Indicated when **tongue is clean and there is thirstlessness** and bright red hemorrhages. Backache with short chill, long fever, heat, usually with thirst, headache, nausea and cough.

Natrummuriaticum
Fever appears with chill at morning . Violent thirst which increases with fever. Coldness of body and continuous chilliness very marked, sweats on every exertion. Fever blisters around mouth. **Tongue mapped**. Deep crack in the middle of lower lip. Fever, headache and all other symptoms are relieved by sweating. Sweats on every exertion. Weakness marked in the morning, in bed.

Nux vomica
Cold stage predominates, paroxysms anticipated in the morning. Chilly on least movement , from being uncovered , **must be covered in every stage of fever, chill heat or sweat**. Great heat, whole body burning hot, faces red and hot, yet patient **cannot move or uncover without being chilly**. Perspiration sour, only on one side of the body. Aching in limbs, back, with vomiting andnausea. Oversensitiveness to external influences; to odour, noise, light or music. **Frequent desire for stool, ineffectual.**

Pulsatilla

Chilliness, even in warm room, without thirst. Chilly with pains, in spots, worse evening. Intolerable burning heat at night. One- sided sweat, **pains during sweat,** during apyrexia, headache, diarrhoea, loss of appetite, nausea. **Symptoms ever changing**: no two chills, no two stools, no two attacks alike; very well one hour, very miserable the next; apparently contradictory. Pains: drawing, tearing, erratic, **rapidly shifting** *from one part to another* are accompanied with constant chilliness; the more severe the pain, the more severe the chill; appear suddenly, leave gradually.

Box 3 Drugs used for DHF/DSS cases along with standard care

These medicines given on symptomatic basis help in reducing the haemorrhagic tendency and can improve platelet counts. These medicines should always be used along with the standard care as detailed.

Crotalus horridus
Haemorrhagic diathesis; Blood dark fluid that forms no clots. Cold sweats. Indicated in those cases that come on with great rapidity, breaking down of blood, relaxation of blood vessels, bleeding from all orifices of the body, such as ears, eyes, nose, bowels, uterus, etc.; rapidly increasing unconsciousness, like one intoxicated and besotted in appearance.

Secale cornutum
It is characterized by slow persistent oozing, dark, thin, offensive bleeding. Debility, anxiety, emaciation, though appetite and thirst may be excessive. Face is pale, pinched, ashy, sunken, Hippocratic; drawn with sunken eyes; blue rings around eyes. Burning in all parts of body, as if sparks of fire were falling on the patient. Skin feels cold to touch, yet patient cannot tolerate covering.

Carbo vegetabilis
Continuous passive haemorrhages, skin is cold and bluish, pulse is rapid and weak; patient wants to be fanned. Burning pains across sacrum and lower spine, persistent nosebleed with sunken face. Deficient capillary circulation causes blueness of skin and coldness of extremities; vital powers nearly exhausted; desire to be constantly fanned.

Lachesis
Bleeds easily and profusely. Blood is more fluid, dark and non-coaguable, like charred straw. Hemorrhagic tendency is marked. Great mental and physical exhaustion; trembling in whole body, would constantly sink down from weakness. Great sensitiveness to touch, wants to be fanned, but slowly and at a distance. Fever with sunken countenance, falling of lower jaw; tongue dry, black, trembles, is protruded with difficulty or catches on the teeth when protruding; conjunctiva yellow or orange color; perspiration cold, stains yellow, bloody.

Ipecacuanha
Profuse bright red bleeding from any part and is accompanied by nausea. The surface of body may be cold and covered with cold sweat. Septic hemorrhages. Constant and continual nausea. Vomiting of white glairy mucus in large quantities, without relief. Pains as if bones were all torn to pieces. Oversensitive to heat and cold.

Hamamelis
Passive venous hemorrhages , when the parts feel sore and bruised and the patient is greatly exhausted by the flow. The blood is usually dark.

Ferrum metallicum
The Haemorrhages is bright red mixed with clots, and gushing. It thus stands between Cinchona and Ipecac. With Ferrum there is much flushing of the face.

Cinchona officinalis
Debility from exhausting discharges, from loss of vital fluids, Periodicity is most marked. All fever stages are well marked. Chill generally in forenoon, commencing in breast; thirst before chill, and little and often. Debilitating night-sweats. Free perspiration caused by every little exertion, especially

on single parts.

Millefolium
An invaluable remedy for various types of hæmorrhages; blood bright red. Hæmorrhage from bowels , lungs & uterus. Bleeding from exertion.

Phosphorus
Disorganizes the blood, causing fatty degeneration of blood vessels and every tissue and organ of the body and thus gives rise to hæmorrhages. Chilly every evening. Cold knees at night. Adynamic with lack of thirst, but unnatural hunger. Hectic fever, with small, quick pulse; viscid night-sweats. Stupid delirium. Profuse perspiration.

Sulphuricum acidum
Haemorrhages from every outlet of the body, with ecchymosed spots under the skin. Extreme weakness, with sense of internal trembling, which is not observable to others.

Box 4 Stage wise management at a glance

	Grade	Symptoms/signs	Laboratory findings	Management
DF		Fever with two or more following - Headache - Retro-orbital pain - Myalgia - Arthralgia - Flushed face - Rash	Leucopenia, Thrombocytopenia	General management and indicated homoeopathic medicine
DHF	I	Above criteria for DF plus positive tourniquet test, evidence of plasma leakage	Thrombocytopenia: Platelet count less than 100,000/cu.mm. Haematocrit rise 20% or more	Standard care with add on indicated homoeopathic medicine
DHF	II	Above signs and symptoms plus some evidence of spontaneous bleeding in skin or other organs (Black tarry stools, epistaxis, bleeding from gums, etc) and abdominal pain	Thrombocytopenia: platelet count less than 100,000/cu.mm. Haematocrit rise 20% or more	
DHF	III	Above signs and symptoms plus circulatory failure (weak rapid pulse, pulse pressure $\leq$ 20mm Hg, hypotension, cold clammy skin and restlessness Capillary refill time more than 2 seconds.	Thrombocytopenia: Platelet count less than 100,000/cumm Haematocrit rise 20% or more	
DHF	IV	Profound shock with undetectable blood pressure	Thrombocytopenia: Platelet count less than	

		or pulse	100,000/cumm Haematocrit rise 20% or more	

PREVENTION OF DENGUE FEVER

General Measures

1. Personal prophylactic measures
    - Use mosquito repellent creams, liquids, coils, mats, etc.
    - Wear full sleeve shirts and full pants with socks
    - Use bed nets for sleeping infants and young children to prevent mosquito bite

2. Environmental management & source reduction methods
    - Identify & eliminate mosquito breeding sources
    - Prevent collection of water on roof tops, porticos and sunshades
    - Properly cover stored water
    - Frequently change water in water pots, flower vases, water coolers, etc.
    - Waste must be disposed properly and should not be allowed to collect

3. Biological & Chemical control for control of mosquitoes breeding
    - Use larvivorous fishes in ornamental tanks, fountains, etc.
    - Use biocides or chemical larvicides for control of mosquitoes breeding
    - Aerosol space spray

3. Health education
    - Impart knowledge to common people regarding measures to reduce vector breeding and safeguards for preventing mosquito bites.

Homoeopathic medicine as preventive

As per the principles of homoeopathy, a *genus epidemicus* (a drug capable of prevention of a disease) can be identified for the sporadic and epidemic situations. The process of selection of genus epidemicus is specialized and involves following steps:

- The totality of symptoms (TOS) related to the current epidemic is formulated by in depth study of all the signs and symptoms of minimum 20-30 cases preferably from different regions to cover the complete spectrum of diseases in the community.
- The TOS to be thoroughly studied and following appropriate repertorization process, a group of medicines are to be identified. These medicines are required to be given to these cases on the basis of individualization. The medicine, which is most frequently indicated and has potential of providing the quick and favorable response to the patient, shall be the *genusepidemicus*.
- Drugs commonly found indicated as *genusepidemicus*in the past are *Eupatorium perfoliatum, Rhustoxicodendron, Bryoniaalba.* One of these in 30 or 200 potency can be safely taken twice daily for three days as prophylactic. Further research in this area is being undertaken.

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