A DISSERTATION ON

A STUDY OF CORRELATION BETWEEN PLATELET AND MEAN PLATELET VOLUME AND PLATELET DISTIBUTION WIDTH IN DETERMINING THE SIGNIFICANCE AND OUTCOME IN DENGUE FEVER IN TERTIARY CARE CENTRE, COIMBATORE

Dissertation Submitted to

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REGISTRATION NUMBER : 201711313

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COIMBATORE

MAY 2020

CERTIFICATE

Certified that this dissertation in "**A STUDY OF CORRELATION BETWEEN PLATELET AND MEAN PLATELET VOLUME AND PLATELET DISTRIBUTION WIDTH IN DETERMINING THE SIGNIFICANCE AND OUTCOME IN DENGUE FEVER IN TERTIARY CARE CENTRE, COIMBATORE**" is the bonafide dissertation done by **Dr.S.RAJESHKUMAR** and submitted in partial fulfillment of the requirements for the Degree of **M.D. General Medicine**, Branch I during the academic year 2017-2020 of **The Tamilnadu Dr. M.G.R. Medical University, Chennai.**

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CERTIFICATE OF APPROVAL

To
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Dear **Dr.Pranesh S**

The Institutional Ethics Committee of Coimbatore Medical College, reviewed and discussed your application for approval of the proposal entitled **"A Study of Activated Partial Thromboplastin time and Prothrombin time as Predictors for impaired Coagulation among patients with Dengue Virus infection in Coimbatore Medical College & Hospital, Coimbatore."**No.097/2017.

The following members of Ethics Committee were present in the meeting held on 28.11.2017.conducted at MM - II Seminar Hall, Coimbatore Medical College Hospital Coimbatore-18

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We approve the Proposal to be conducted in its presented form.

Sd/Chairman & Other Members

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

Member Secretary, Human's Committee

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DECLARATION

I Solemnly declare that the dissertation titled **"A STUDY OF CORRELATION BETWEEN PLATELET AND MEAN PLATELET VOLUME AND PLATELET DISTRIBUTION WIDTH IN DETERMINING THE SIGNIFICANCE AND OUTCOME IN DENGUE FEVER IN TERTIARY CARE CENTRE, COIMBATORE"** was done by me from MAY 2018 to APRIL 2019 under the guidance and supervision of **PROF.Dr.MANOHARI RAMACHANDRAN. M.D.** This dissertation is submitted to **The Tamilnadu Dr.M.G.R. Medical University** towards the partial fulfilment of the requirement for the award of MD degree in General Medicine (Branch 1)

Place: Coimbatore

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Dr.S. RAJESHKUMAR

LIST OF ABBREVIATIONS USED

- MPV - Mean Platelet Volume
- PDW - Platelet distribution width
- DF - Dengue Fever
- DHF - Dengue haemorrhagic fever
- DSS - Dengue shock syndrome
- DENV - Dengue virus
- CBC - Complete blood count
- PCT - Plateletcrit
- MPC - Mean platelet component
- MPM - Mean platelet mass
- PDCW - Platelet component distribution width
- P-LCR - Platelet larger cell ratio
- IPF - Immature platelet fraction
- Hb - Hemoglobin
- HCT - Hematocrit
- MCV - Mean corpuscular volume
- MCHC - Mean corpuscular haemoglobin concentration
- MCH - Mean corpuscular haemoglobin
- WBC - White blood corpuscles
- RBC - Red blood corpuscles

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INTRODUCTION

Dengue fever (DENV) is the most rapidly spreading mosquito borne viral disease in the world . Dengue is a global endemic and most prevalent human arbovirus .an estimated 50 million infections per year occur across approximately 100 countries. Incidence has increased 30 fold with increasing geographic expansion with potential for further spread [1]. The primary dengue vector *aedes aegypti*mosquito has become widely distributed across tropical and suptropical latitudes . Based on the antigenic difference, dengue fever can be divided into four serotypes ,DENV 1-4[2] .

The resurgence of dengue has been observed in India and dengue outbreak have been reported from different parts in both urban and rural populations [3,4.] Severity of the illness is determined by various risk factors such as age,pre existing illness, infecting serotype and secondary infection. A second infection with a different type of serotype leads to more severe form of the disease than the primary infection[5].

One of the most common laboratory findings in dengue is thrombocytopenia[2]. The complex mechanism of thrombocytopenia remains unclear. Possible mechanisms of thrombocytopenia could be

direct bone marrow suppression by the virus ; anti dengue antibody – mediated platelet destruction , peripheral consumption of platelets and isolated viral replication in the platelet . Thrombocytopenia leads to bleeding although the platelet count may not directly correlate with the bleeding manifestations[6] .

Recently ,novel platelet indices such as mean platelet volume (MPV), platelet distribution width (PDW) has been investigated as prospective platelet activation markers[7] .Platelet volume , a marker of platelet function and activity is measured as MPV by haematology analyzers. MPV can be used as independent predictor of bleeding. It is surrogate marker of bone marrow activity ; a high MPV indicates marrow suppression and increased risk of bleeding . Correlation of platelet count and MPV with bleeding and severity of the disease can potentially predict outcome[8].

Platelets with increased number and size of pseudopodia differ in size ,possibly affecting platelet distribution width (PDW) ,which increases with platelet activation[7].

REVIEW OF LITERATURE

DENGUE

Dengue is an acute viral illness caused by RNA virus of the family Flaviviridae and spread by Aedes mosquito.Presenting feature may range from asymptomatic fever to dreaded complications such as hemorrhagic fever and shock.Early and accurate diagnosis is important to reduce mortality.Dengue infection has come up as a public health challenge in the tropical and suptropical nations.

DENGUE VIRUS

The dengue virus ,a member of the genus *Flavivirus* of the family Flaviviridae serotypes (DEN -1, DEN-2, DEN-3, DEN-4)[2]. They belong to Arboviruses. All four serotypes have been associated with epidemics of dengue fever (with or without Dengue haemorraghic fever) with varying degree of severity. Although all four serotypes are antigenically similar ,they are different enough to elicit cross –protection for only a few months after infection by any one of them. Secondary infection with dengue serotype 2 or multiple infection with different serotypes lead to severe form of dengue.

VECTOR

Aedes aegypti and *Aedes albopictus*mosquitoes are the two most important for dengue. They both carry high vectorial competency for dengue virus. *Aedes aegypti* is highly domesticated , strongly anthropophilic,nervous feeder and is a discordant species(9). *Aedes albopictus* is an aggressive feeder and concordant species.

FIGURE 1

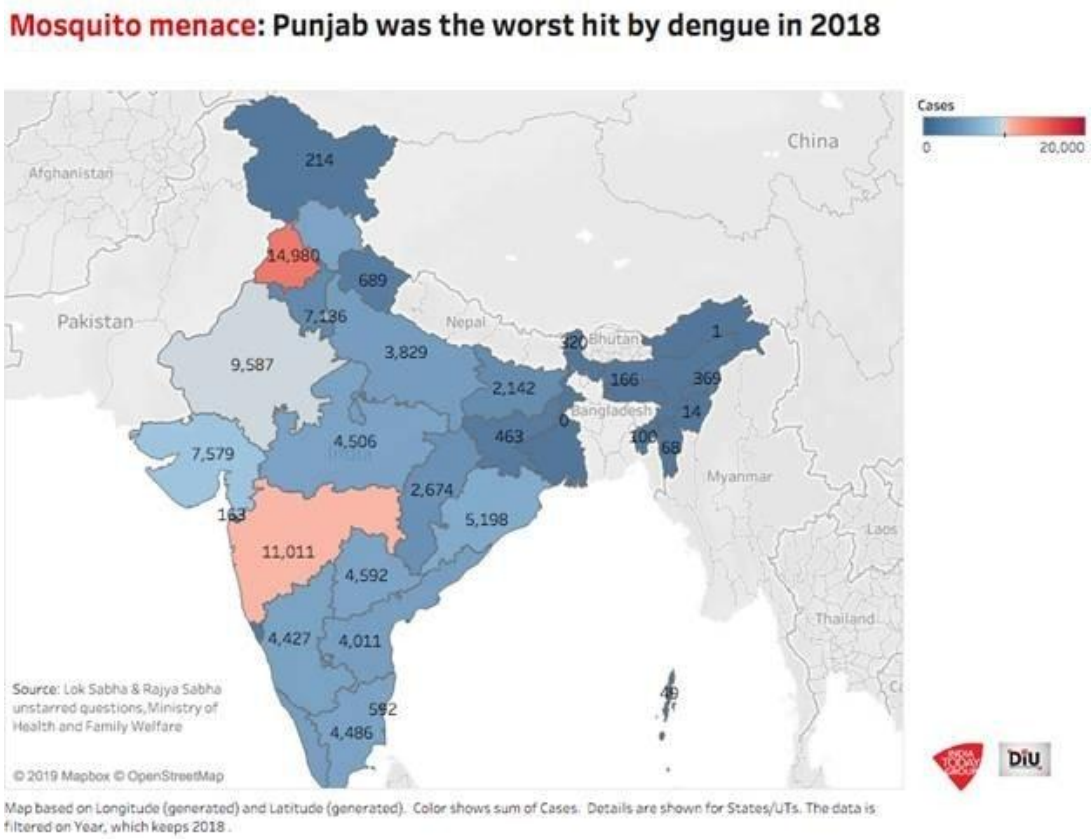
Aedes aegypti

The *Aedes* mosquito becomes infective by feeding on a patient from the day before the onset to the 5^{th} day of illness. After an extrinsic incubation period of 8 to 10 days ,the mosquito becomes infective and is able to transmit the infection.

PREVALENCE

In India ,the risk of dengue has shown an increase in recent years due to rapid urbanisation,lifestyle changes and deficient water management including improper water storage practices in urban ,peri-urban and rural areas leading to proliferation of mosquito breeding sites. The disease has a seasonal pattern i.e. the cases peak after monsoon.

FIGURE 2



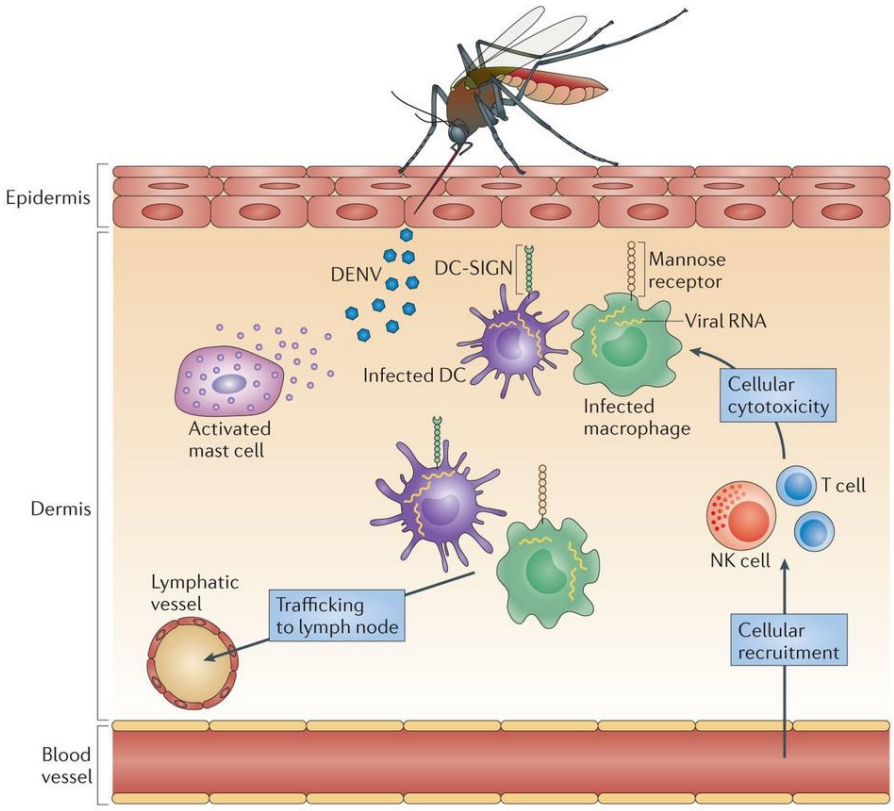
AVERAGE DENGUE INCIDENCE IN INDIA

ETIOPATHOGENESIS

The proposed etiolgies for dengue virus infection are :

- Viral replication ,primarily in macrophages[10]
- Direct skin infection by the virus[11]
- Immunological and chemical mediated mechanism induced by host-viral interaction[11].

FIGURE 3



PATHOGENESIS OF DENGUE VIRUS INFECTION

Dengue virus gains entry into the host organism through the skin following an infected mosquito bite . Humoral, cellular and innate host immune responses are implicated in the progression of the illness and the more severe clinical signs occur following the rapid clearance of the virus from the host organism.

Alterations in endothelial microvascular permeability and thromboregulatory mechanisms lead to an increased loss of protein and plasma. Proposed theories suggest that endothelial cell activation caused by monocytes , T-cells, the complement system and various inflammatory molecules mediate plasma leakage.

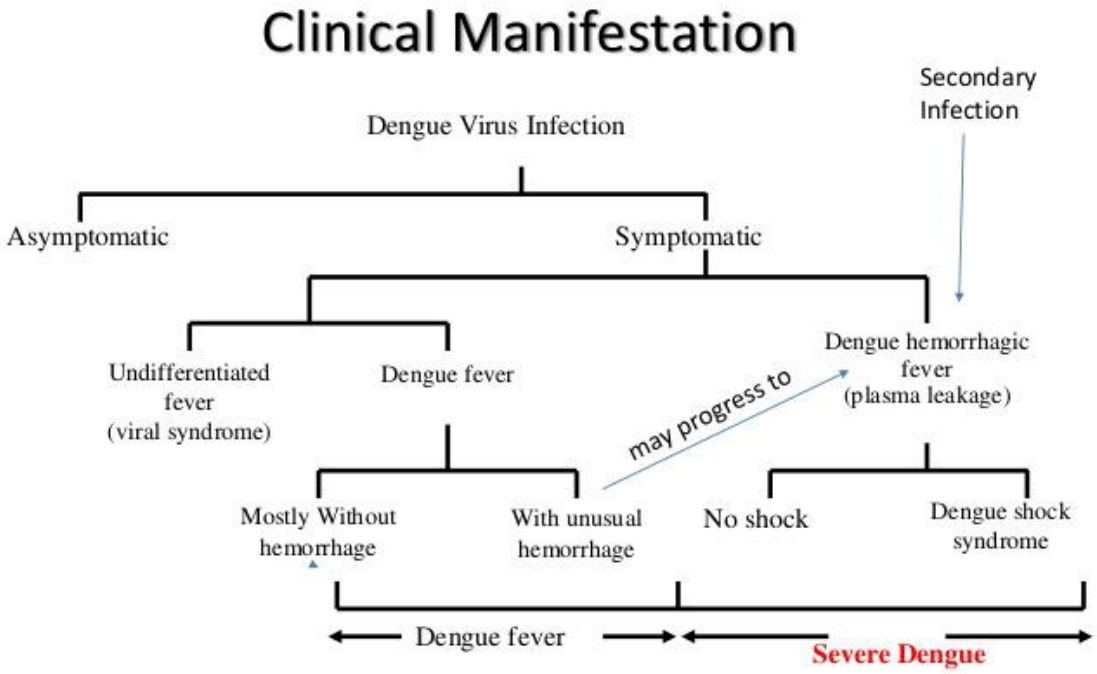
Thrombocytopenia may be related to alterations in mega karyocytopoiesis, manifested by infection of human hematopoietic cells and compromised progenitor cell growth. This may cause platelet dysfunction , damage or depletion leading to significant haemorrhages[12,13].

CLINICAL MANIFESTAIONS

Dengue virus infection may be asymptomatic or may cause undifferentiated febrile illness, dengue fever or dengue haemorrhagic fever including dengue shock syndrome[14].

MANIFESTION OF THE DENGUE VIRUS INFECTION

FIGURE 4



1. UNDIFFERENTIATED FEVER

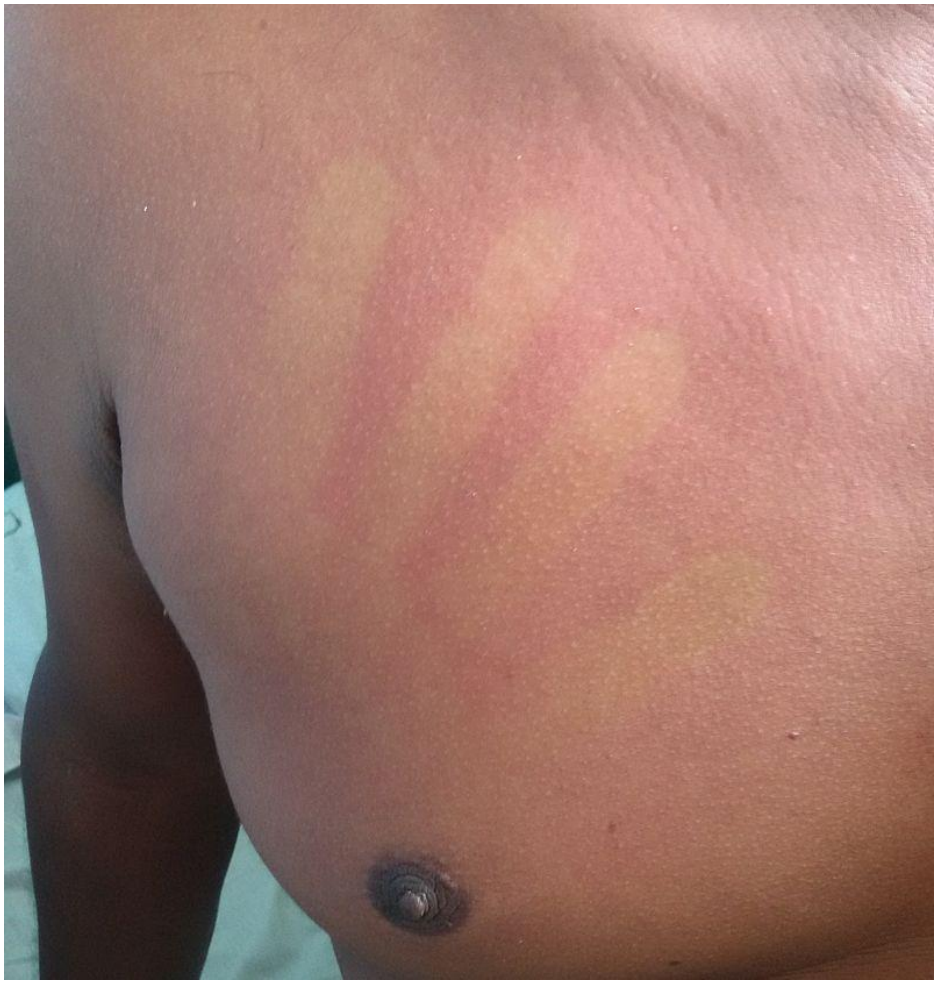
There may be simple fever indistinguishable from other viral infection. Maculopapular rashes may accompany the fever or may appear

during defervesence. Upper respiratory and gastrointestinal symptoms are common.

2. CLASSICAL DENGUE FEVER

The illness is characterised by an incubation period of 3-10 days[15,16]. The onset is sudden, with chills and high fever, intense headache,muscle and joint pains,which prevent all movement[17]. Within 24 hours retroorbital pain and photophobia develops. The skin eruptions appear in 80 percent of cases during the remission or during second febrile phase ,which lasts for 1-2 days. The case fatality is extremely low.

FIGURE 5



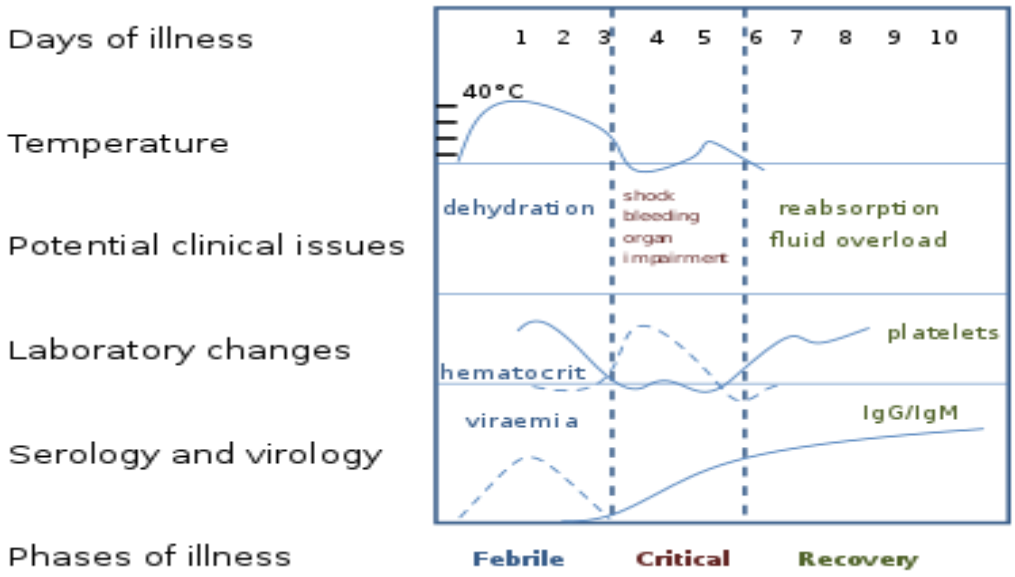
The rash of dengue fever in the acute stage of infection blanches when pressed.

3. DENGUE HAEMORRHAGIC FEVER

The course of dengue illness can be divided into three phases.

- Febrile phase
- Critical phase
- Recovery phase

COURSE OF DENGUE ILLNESS FIGURE 6



COURSE OF DENGUE ILLNESS :

1 .Febrile phase

The major pathophysiological changes that determines the severity of disease are plasma leakage and abnormal haemostasis[18]. It is manifested by a rising haematocrit value and moderate to marked

thrombocytopenia. A positive tourniquet test is the most common haemorraghic phenomenon. In Dengue haemorrhagic fever, the usually gives a definite positive with 20 petechiae or more.

2.Critical phase

Usually on days 3-7 of illness ,an increase in capillary permeability in parallel with increasing haematocrit levels may occur and the temperature drops to 37.5-38'C or less. Progressive leukopenia followed by a rapid decrease in platelet count usually precedes plasma leakage. Pleural effusion mostly in right side , ascites and gall bladder oedema may be clinically detectable[19,20.]

Shock occurs when a critical volume is lost through leakage. It is often preceded by warning signs,

- Abdominal pain or tenderness
- Persistent vomiting
- Clinical fluid accumulation
- Mucosal bleeding
- Lethargy
- Restlessness

- Liver enlargement more than 2cm
- Oliguria

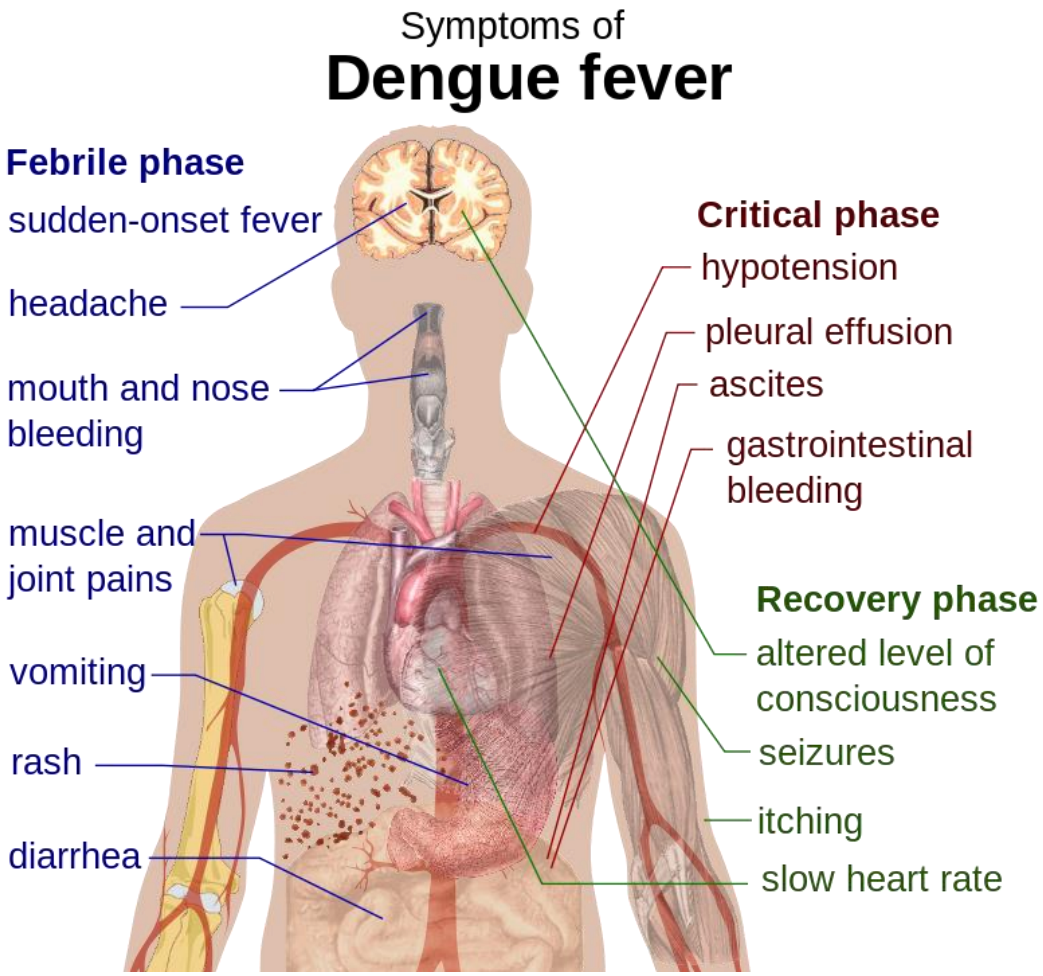


FIGURE 7

With prolonged shock ,the consequent organ hypotension results in

- Progressive organ impairment
- Metabolic acidosis
- Disseminated intra vascular coagulation

- Severe haemorrhage causing haematocrit to decrease in severe shock
- Severe hepatitis
- Encephalitis
- Myocarditis

Cases of dengue with warning signs will probably recover with early intravenous dehydration. Some cases may deteriorate to severe dengue.

3. RECOVERY PHASE

If the patient survives the 24-48 hours critical phase ,a gradual reabsorption of extravascular compartment fluid takes place in the following 48-72 hours. General well being improves, appetite returns, gastrointestinal symptoms abate, haemodynamic status stabilises and diuresis ensues.

The haematocrit stabilizes or may be lower due to the dilutional effect of reabsorbed fluid. White blood cell count usually stars to rise soon after defervescence but the recovery of platelet count is typically later than that of white blood cell count.

4. SEVERE DENGUE

It is defined by one or more of the following

- Plasma leakage that may lead to shock and fluid accumulation with or without respiratory distress
- Severe bleeding
- Severe organ impairment

As dengue vascular permeability progresses, hypovolaemia worsens and result in shock. Patient with severe dengue may have coagulation abnormalities .

CRITERIA FOR CLINICAL DIAGNOSIS

DENGUE FEVER

PROBABLE DIAGNOSIS

Acute febrile illness with two or more of the following,

- Headache
- Retroorbital pain
- Myalgia
- Arthralgia / bone pain
- Rash
- Haemorrhagic manifestations

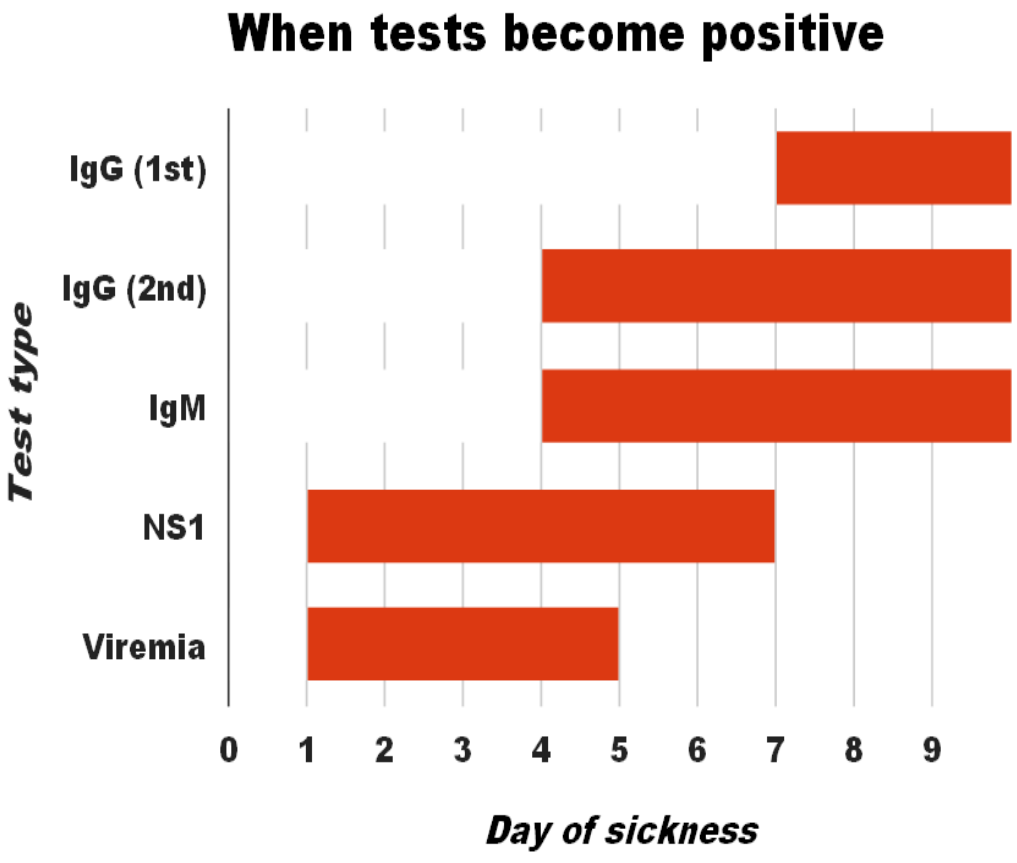
- Leucopenia (WBC <_ 5000 cells/mm^3)
- Thrombocytopenia (platelet count <150,000cells/mm^3)
- Rising haematocrit (5-10%)

And at least one of the following

- Supportive serology or testing positive in IgM antibody test
- Occurrence at the same location and time as confirmed cases of dengue fever[6.]

DENGUE SEROLOGY

FIGURE 8



CONFIRMED DIAGNOSIS

Probable case with at least one of the following:

- Isolation of dengue virus from serum ,CSF or autopsy samples
- Fourfold or greater increase in serum IgG or increase in IgM antibody specific to dengue virus
- Detection of dengue virus or antigen in tissue ,serum or CSF
- Detection of dengue virus genomic sequences by reverse transcription –polymerase chain reaction[5].

DENGUE HAEMORRHAGIC FEVER

All of following :

- Acute onset of fever of 2- 7 days duration
- Haemorrhagic manifestations
- Platelet count <_100,000 cells/mm^3
- Rising haematocrit /haemoconcentration >_20% from baseline or evidence of plasma leakage such as pleural effusion, ascites or hypoproteinaemia /albuminaemia[21].

DENGUE SHOCK SYNDROME

Criteria for dengue haemorrhagic fever as above with signs of shock including :

- Tachycardia
- Cool extremities
- Delayed capillary refill
- Weak pulse
- Lethargy
- Restlessness due to reduced brain perfusion
- Pulse pressure <_ 20 mm Hg with increased diastolic pressure
- Hypotension

LABORATORY DIAGNOSIS

The following laboratory tests are available to diagnose dengue fever

- Virus isolation
- Virus nucleic acid detection by reverse transcriptase polymerase chain reaction assay (RT-PCR) and real time RT-PCR[5]

- Immunological response and serological test
    - Haemagglutination inhibition assay
    - Complement fixation
    - Neutralisation test
    - IgM capture enzyme linked immunosorbent assay (MAC-ELISA)
    - Indirect IgG –ELISA
    - IgM/IgG ratio
- Viral antigen detection
- Rapid diagnostic test for anti-dengue IgM and IgG antibodies
- Analysis of haematological parameters
    - White blood cell count (WBC)
    - Haemotocrit
    - Platelet count
    - Mean platelet volume (MPV)
    - Platelet distribution width (PDW)

Rapid and accurate dengue diagnosis is of paramount importance for

- Clinical management
- Epidemiological surveillance
- Research and vaccine trial

PLATELET INDICES

PLATELET

Platelets are fragments of cytoplasm that are derived from the megakaryocytes of the bone marrow and then enter the circulation[22]. One major function of platelets is to contribute to hemostasis. First ,Platelets attach to the substances outside the interrupted endothelium – adhesion. Second ,they change shape ,turn on the receptors and secrete chemical messengers - activation. Formation of this platelet plug is associated with activation of the coagulation cascade with resultant fibrin deposition and linking. Normal platet count is 150,000 to 450,000 per microliter of blood.

Low platelet concentration is called thrombocytopenia and is due to either decreased production or increased destruction .

PLATELET IN DENGUE

Reduced proliferative capacity of haemotopoietic cells in bone marrow and /or increased destruction of platelets from peripheral blood are two main events associated with thrombocytopenia in dengue. The WHO guidelines says rapid decline or platelet count below 150,000/mm^3 of blood are one of the indicators of clinical dengue worsening.

Platelets are one of the major cell population affected in dengue , both thrombocytopenia and platelet dysfunction are common manifestation of infection and strongly related to patient's clinical outcome. Dysfunction of platelets is implicated in prothrombotic complications associated with severe cases of dengue.

PLATELET INDICES

Platelet indices are a group of derived platelet parameters obtained as a part of the automatic complete blood count. Emerging evidences suggest that platelet indices may have diagnostic and prognostic value in certain diseases.

Complete blood count (CBC) tests with automated haematology analysers are one of the commonly ordered tests in clinical laboratories.

Modern haematology analysers use impedance counting or optical light scatter counting techniques to measure platelet indices.

Platelet indices are biomarkers of platelet activation. They allow extensive clinical investigations focusing on the diagnostic and prognostic values in a variety of settings without bringing extra cost[23].

Platelet indices are:

- Mean platelet volume (MPV)
- Platelet volume distribution width (PDW)
- Plateletcrit (PCT)
- Mean platelet component (MPC)
- Mean platelet mass (MPM)
- Platelet component distribution width (PCDW)
- Platelet larger cell ratio (P-LCR)
- Immature platelet fraction (IPF)

MEAN PLATELET VOLUME (MPV) :

It is the analyser calculated measure of thrombocyte volume. It is measured in femtoliters (FL).Typically ,the average cell volume is 9.4 - 12.3fL in healthy persons.

It is determined directly by analysing the platelet distribution curve, which is calculated from a log transformation of the platelet volume distribution curve ,to yield a geometric mean for this parameter in impedence technology systems. MPV is determined in the progenitor cell , the bone marrow megakaryocyte[24].

When platelet production is decreased ,the young platelets become bigger and more active and MPV levels increase . Increased MPV indicates increased platelet diameter ,which can be used as a marker of production rate and platelet activation.

A low MPV indicates marrow suppression and increased risk of bleeding. In the case of ineffective platelets formation in the bone marrow, as their size is smaller then there is low MPV. Therefore ,MPV can be used as independent predictors of bleeding. MPV is very useful in case of thrombocytopenia.

In dengue, correlation of platelet count and MPV with bleeding and severity of the disease can potentially predict outcome.

PLATELET VOLUME DISTRIBUTION WIDTH (PDW) :

It is an indicator of volume variability in platelet size .It is expressed in femtoliter (fl). PDW is increased in presence of platelet

anisocytosis[25]. The PDW reported varies with reference intervals ranging from 8.3 -25 fl.

PDW is a distribution curve of platelets measured at the level of 20 % relative height in a platelet- size distribution curve ,with a total curve height of100 %[26]. It directly measures variability in platelet size ,changes with platelet activation and reflects the heterogeneity in platelet morphology [7,8].

It is a simple , practical and specific marker of activation of coagulation. PDW is more specific marker of platelet activation since it does not increase during simple platelet swelling. PDW has been receiving attention due to its usefulness for distinguishing between reactive thrombocytosis and thrombocytosis associated with the myeloproliferative disorder.

Platelets with increased number and size of pseudopodia differ in size, possibly affecting PDW.

PLATELETCRIT (PCT) :

Plateletcrit is a measurement of total platelet mass. It is the volume occupied by the platelets in the blood as a percentage . It is expressed in

percentage (%). The normal range of PCT is 0.22 -0.24% [27,28]. It is calculated according to the formula ,

PCT= PLATELET COUNT *MPV/10,000

Under physiological conditions ,the amount of platelets in the blood is maintained in the equilibrium state by regeneration and elimination.

In healthy subjects , platelet mass is closely regulated to keep it constant ,while MPV is inversely related to platelet counts[28]. Genetic and acquired factors such as race ,age, smoking status, alcohol consumption and physical activity modify blood platelet count and MPV[27,28,29].

Plateletcritis an effective screening tool for detecting platelet quantitative abnormalities.

MEAN PLATELET COMPONENT (MPC) :

It is the measure of mean refractive index of the platelets. It is expressed in gram/decilitre (g/dl). It is measured by modified two- angle light scatter. It is useful in determining changes in the status of platelet activation.

MEAN PLATELET MASS (MPM) :

It is calculated from the platelet dry mass histogram. It is expressed in pictogram (pg). It is a new platelet activation parameter measured by the Siemens Advia 120 haematology analyser.

PLATELET COMPONENT DISTRIBUTION WIDTH (PCDW) :

It is the measure of the variation in platelet shape. It is expressed in gram /decilitre (g/dl). It is a new platelet activation parameter measured by the Siemens Advia 120 haematology analyser .

PLATELET LARGER CELL RATIO (P-LCR) :

It is an indicator of larger (>12 fl) circulating platelets . It is expressed in percentage (%). The normal percentage range is 15 -35 %. It has also been used to monitor platelet activity.

IMMATURE PLATELET FRACTION (IPF) :

It is the percentage of immature platelets . It is expressed in percentage (%). It is the percentage of the total platelet population measured in the reticulocyte / optical platelet channel of the haematology analyser by flow cytometry , in which dye penetrates the cell membrane , staining the RNA in the cytoplasm of immature or reticulated platelets on

the Sysmex XE-2100 analyser The IPF percentage increases as production of platelets increases and low value indicate suppressed thrombopoiesis[30].

PLATELET INDICES AS DIAGNOSTIC AND PROGNOSTIC MARKERS :

Simultaneous measurement of all of the platelet indices will provide us a valid instrument for measuring disease severity and an insight into the potential etiology resulted in platelet indices changes. Platelet volume heterogeneity occurs during its production and increases MPV and PDW comparatively,suggesting that bone marrow produces platelets and rapidly releases them into circulation[26]. A simultaneous reduction of platelet count and PCT indicates that platelets have been excessively consumed[31].

P-LCR is significantly decreased in patient with thrombocytosis than in normal while it is increased in thrombocytopenia . P-LCR is inversely related to platelet count and directly related to PDW.

Using these parameters we can know about the severity of dengue fever , risk of haemorrhage ,prognosis of the patient .

CLINICAL MANAGEMENT OF DENGUE FEVER

These are patients who are able to tolerate adequate volumes of oral fluids and pass urine at least once every six hours and do not have any of the warning signs. Those with stable haematocrit can be sent home after being advised to return to the hospital immediately if they develop any of the warning signs.

They are adviced to adhere to following action plan:

- Encourage intake of oral rehydration solution, fruit juice, other fluids containing electrolytes and sugar to replace losses from fever and vomiting.
- Give paracetomol for high fever if the patient is uncomfortable.
- Instruct the care takers that the patient should be brought to the hospital immediately if any one of the warning signs occur.

The warning signs include no clinical improvement , deterioration, severe abdominal pain ,bleeding, persistent fever and vomiting ,not passing urine for more than 4-6 hours. Immediate medical attention should be sort by care takers if these signs arises.

MANAGEMENT OF DENGUE HAEMORRHAGIC FEVER: (GRADE 1 AND 2):

Patient should be closely monitored for the initial signs of shock. The critical period is during the transition from the febrile to afebrile stage .it usually occurs after the third day illness . Serial Haematocrit determinations are essential guide for treatment ,since they reflect the degree of plasma leakage and need for intravenous administrations of fluids .

Any person who has dengue fever with thrombocytopenia and haemoconcentration and presents with abdominal pain ,black tarry stools , epistaxis, bleeding from the gums and infection needs to be hospitalized. All these patients should be observed for signs of shock.

A rise of haemoconcentration indicates need for IV fluid therapy. If despite of treatment ,the patient develops fall in BP,decrease in urine output or other features of shock ,the management of grade 3 and 4 DHF or dengue shock syndrome should be instituted.

FIGURE 9

MANAGEMENT OF DENGUE FEVER

Group A – Sent home (all of following)	Group B (any of following)	Group C (any of following)
1. Give anticipatory guidance before sending home (see patient handout) 2. Follow up daily 3. Do serial CBCs 4. Identify warning signs early	1. Admit for inpatient care 2. Monitor haemodynamic status frequently 3. Use HCT to guide interventions 4. Use isotonic IVF judiciously 5. Titrate fluid resuscitation to haemodynamic state 6. Correct metabolic acidosis, electrolytes as needed	As Group B **PLUS**: 1. Larger initial volume at a faster rate 2. Use colloids if several boluses of crystalloids already given 3. After improvement, a further resuscitation precedes step-wise IVF reduction 4. Monitor for occult bleeding 5. Prophylactic platelet transfusions not indicated

FIGURE 10

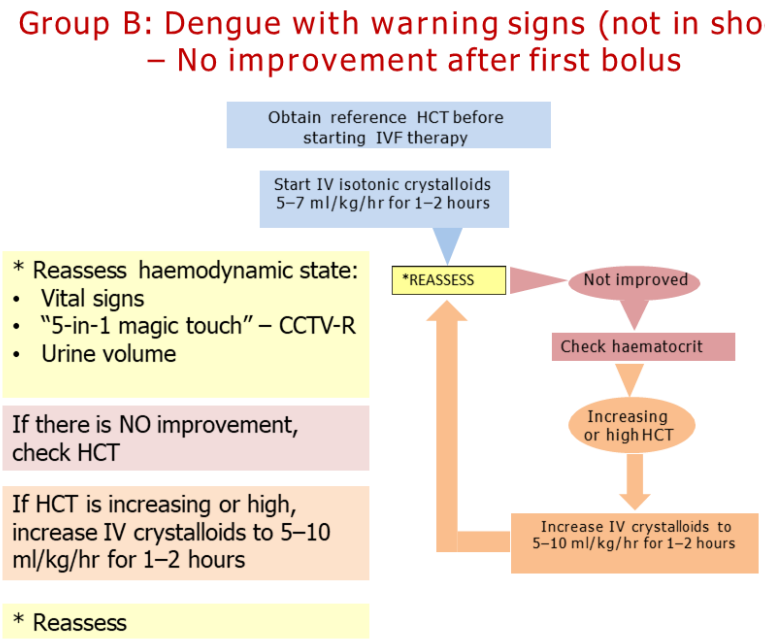

Group B: Dengue with warning signs (not in shock)
– No improvement after first bolus
Obtain reference HCT before starting IVF therapy
Start IV isotonic crystalloids 5–7 ml/kg/hr for 1–2 hours
* Reassess haemodynamic state:
• Vital signs
• "5-in-1 magic touch" – CCTV-R
• Urine volume
*REASSESS
Not improved
Check haematocrit
Increasing or high HCT
Increase IV crystalloids to 5–10 ml/kg/hr for 1–2 hours
If there is NO improvement, check HCT
If HCT is increasing or high, increase IV crystalloids to 5–10 ml/kg/hr for 1–2 hours
* Reassess

FIGURE 11

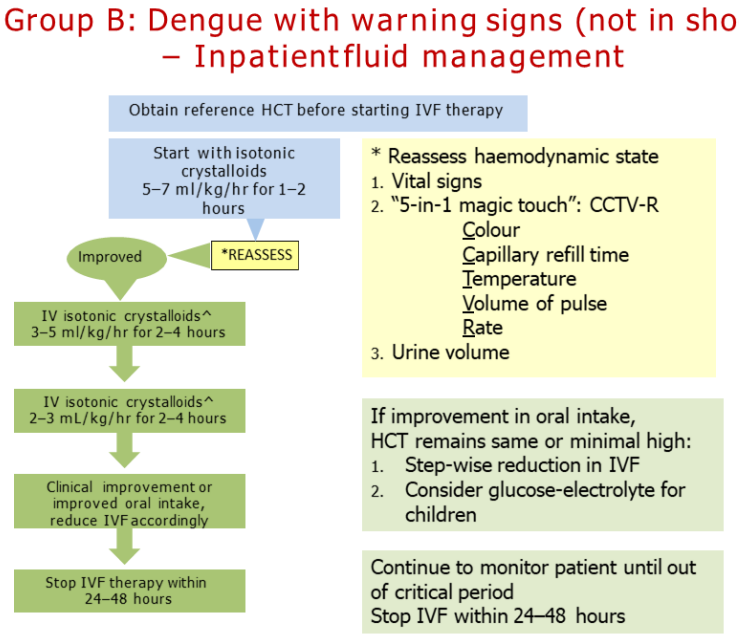

Group B: Dengue with warning signs (not in shock) – Inpatientfluid management
Obtain reference HCT before starting IVF therapy
Start with isotonic crystalloids 5–7 ml/kg/hr for 1–2 hours
Improved
*REASSESS
IV isotonic crystalloids^ 3–5 ml/kg/hr for 2–4 hours
IV isotonic crystalloids^ 2–3 mL/kg/hr for 2–4 hours
Clinical improvement or improved oral intake, reduce IVF accordingly
Stop IVF therapy within 24–48 hours
* Reassess haemodynamic state
1. Vital signs
2. "5-in-1 magic touch": CCTV-R
Colour
Capillary refill time
Temperature
Volume of pulse
Rate
3. Urine volume
If improvement in oral intake, HCT remains same or minimal high:
1. Step-wise reduction in IVF
2. Consider glucose-electrolyte for children
Continue to monitor patient until out of critical period
Stop IVF within 24–48 hours

FIGURE 12

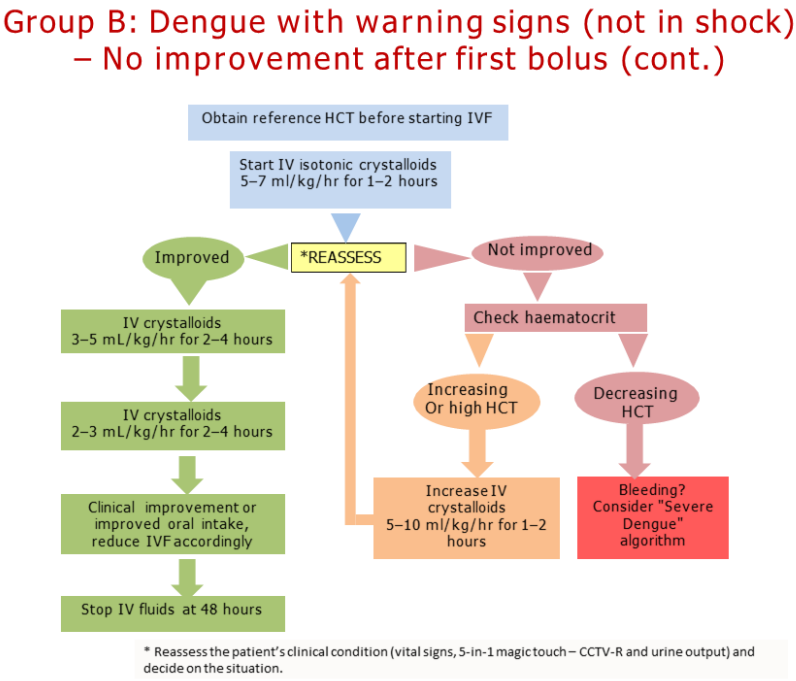

Group B: Dengue with warning signs (not in shock)
– No improvement after first bolus (cont.)
Obtain reference HCT before starting IVF
Start IV isotonic crystalloids
5–7 ml/kg/hr for 1–2 hours
*REASSESS
Improved
Not improved
IV crystalloids
3–5 mL/kg/hr for 2–4 hours
IV crystalloids
2–3 mL/kg/hr for 2–4 hours
Clinical improvement or
improved oral intake,
reduce IVF accordingly
Stop IV fluids at 48 hours
Check haematocrit
Increasing
Or high HCT
Decreasing
HCT
Increase IV
crystalloids
5–10 ml/kg/hr for 1–2
hours
Bleeding?
Consider "Severe
Dengue"
algorithm
* Reassess the patient's clinical condition (vital signs, 5-in-1 magic touch – CCTV-R and urine output) and
decide on the situation.

FIGURE 13

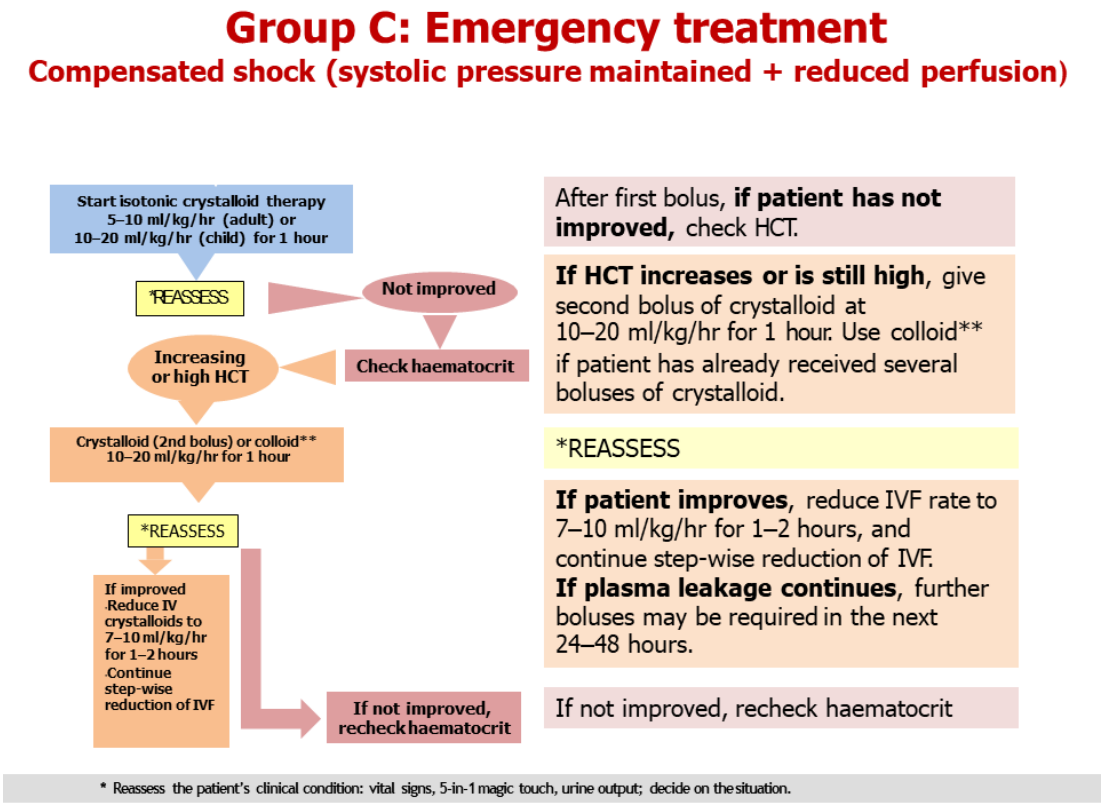

Group C: Emergency treatment
Compensated shock (systolic pressure maintained + reduced perfusion)
Start isotonic crystalloid therapy 5–10 ml/kg/hr (adult) or 10–20 ml/kg/hr (child) for 1 hour
*REASSESS
Not improved
Check haematocrit
Increasing or high HCT
Crystalloid (2nd bolus) or colloid** 10–20 ml/kg/hr for 1 hour
*REASSESS
If improved
·Reduce IV crystalloids to 7–10 ml/kg/hr for 1–2 hours
·Continue step-wise reduction of IVF
If not improved, recheck haematocrit
After first bolus, if patient has not improved, check HCT.
If HCT increases or is still high, give second bolus of crystalloid at 10–20 ml/kg/hr for 1 hour. Use colloid** if patient has already received several boluses of crystalloid.
*REASSESS
If patient improves, reduce IVF rate to 7–10 ml/kg/hr for 1–2 hours, and continue step-wise reduction of IVF.
If plasma leakage continues, further boluses may be required in the next 24–48 hours.
If not improved, recheck haematocrit
* Reassess the patient's clinical condition: vital signs, 5-in-1 magic touch, urine output; decide on the situation.

FIGURE 14

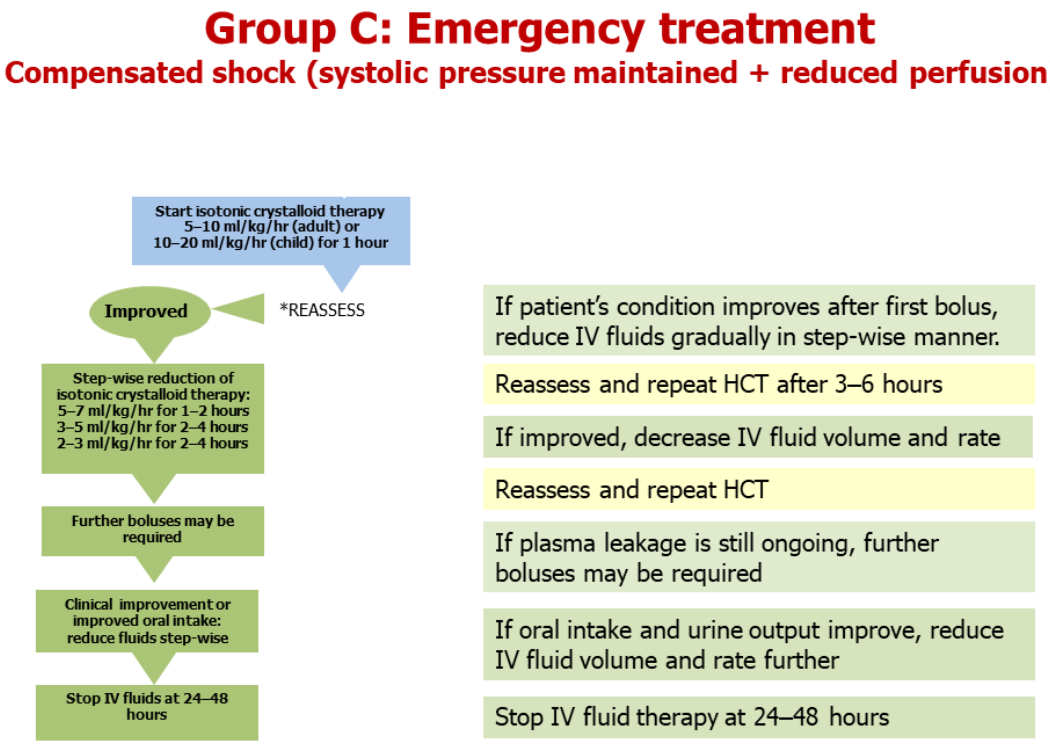

Group C: Emergency treatment
Compensated shock (systolic pressure maintained + reduced perfusion)
Start isotonic crystalloid therapy
5–10 ml/kg/hr (adult) or
10–20 ml/kg/hr (child) for 1 hour
Improved
*REASSESS
Step-wise reduction of isotonic crystalloid therapy:
5–7 ml/kg/hr for 1–2 hours
3–5 ml/kg/hr for 2–4 hours
2–3 ml/kg/hr for 2–4 hours
Further boluses may be required
Clinical improvement or improved oral intake: reduce fluids step-wise
Stop IV fluids at 24–48 hours
If patient's condition improves after first bolus, reduce IV fluids gradually in step-wise manner.
Reassess and repeat HCT after 3–6 hours
If improved, decrease IV fluid volume and rate
Reassess and repeat HCT
If plasma leakage is still ongoing, further boluses may be required
If oral intake and urine output improve, reduce IV fluid volume and rate further
Stop IV fluid therapy at 24–48 hours

FIGURE 15

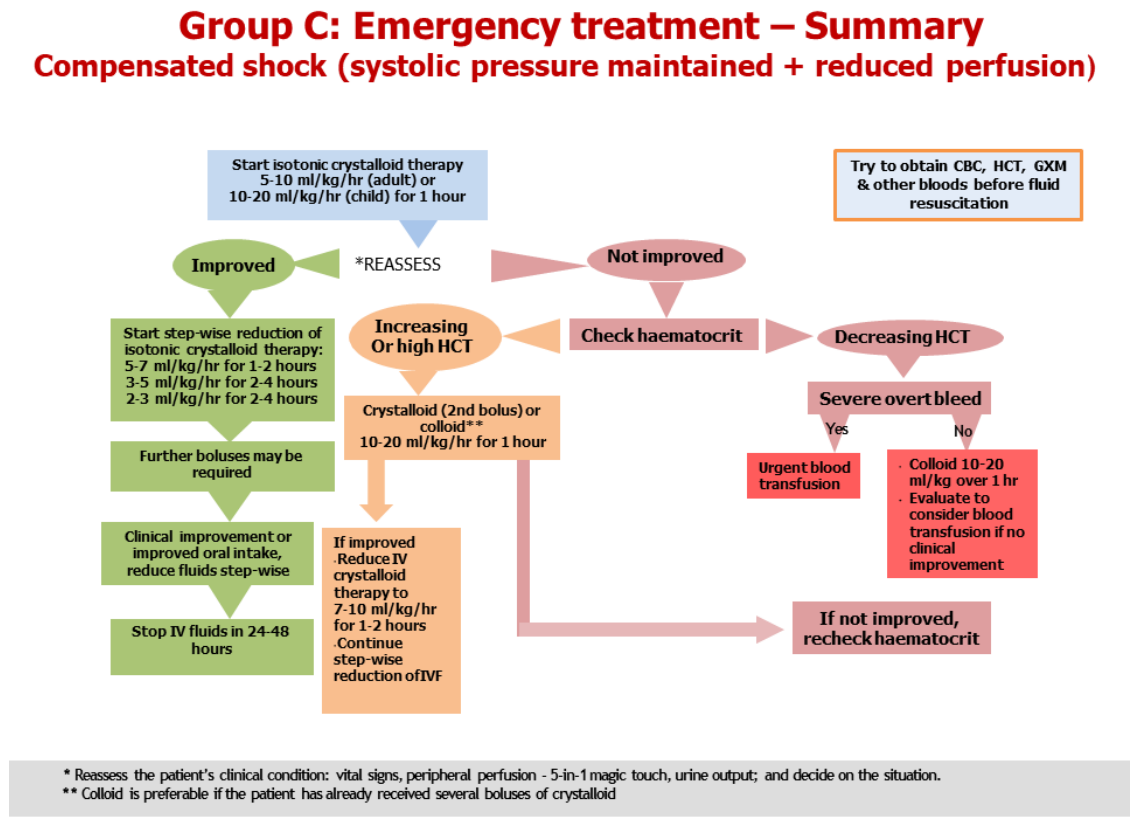
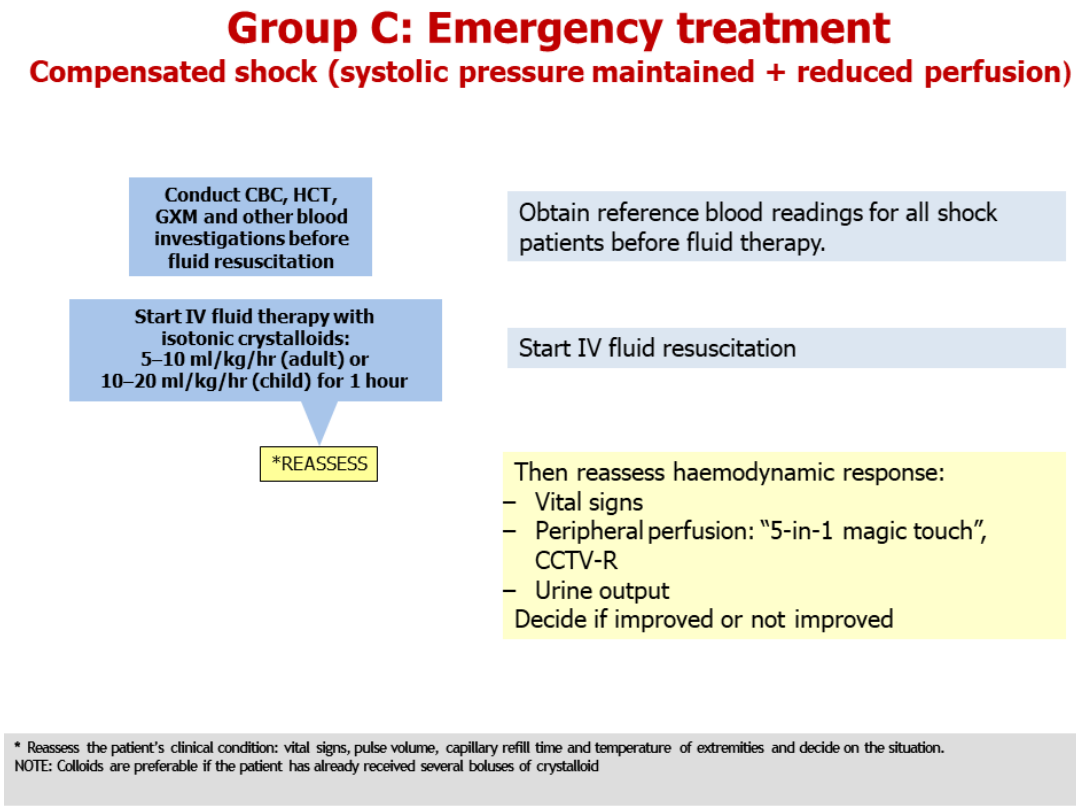

Group C: Emergency treatment – Summary
Compensated shock (systolic pressure maintained + reduced perfusion)
Start isotonic crystalloid therapy 5-10 ml/kg/hr (adult) or 10-20 ml/kg/hr (child) for 1 hour
Try to obtain CBC, HCT, GXM & other bloods before fluid resuscitation
Improved
*REASSESS
Not improved
Start step-wise reduction of isotonic crystalloid therapy: 5-7 ml/kg/hr for 1-2 hours 3-5 ml/kg/hr for 2-4 hours 2-3 ml/kg/hr for 2-4 hours
Increasing Or high HCT
Check haematocrit
Decreasing HCT
Severe overt bleed
Yes
No
Urgent blood transfusion
Colloid 10-20 ml/kg over 1 hr
Evaluate to consider blood transfusion if no clinical improvement
Crystalloid (2nd bolus) or colloid** 10-20 ml/kg/hr for 1 hour
Further boluses may be required
Clinical improvement or improved oral intake, reduce fluids step-wise
Stop IV fluids in 24-48 hours
If improved
Reduce IV crystalloid therapy to 7-10 ml/kg/hr for 1-2 hours
Continue step-wise reduction of IVF
If not improved, recheck haematocrit
* Reassess the patient's clinical condition: vital signs, peripheral perfusion - 5-in-1 magic touch, urine output; and decide on the situation.
** Colloid is preferable if the patient has already received several boluses of crystalloid

FIGURE 16



* Reassess the patient's clinical condition: vital signs, pulse volume, capillary refill time and temperature of extremities and decide on the situation.
NOTE: Colloids are preferable if the patient has already received several boluses of crystalloid

FIGURE 17

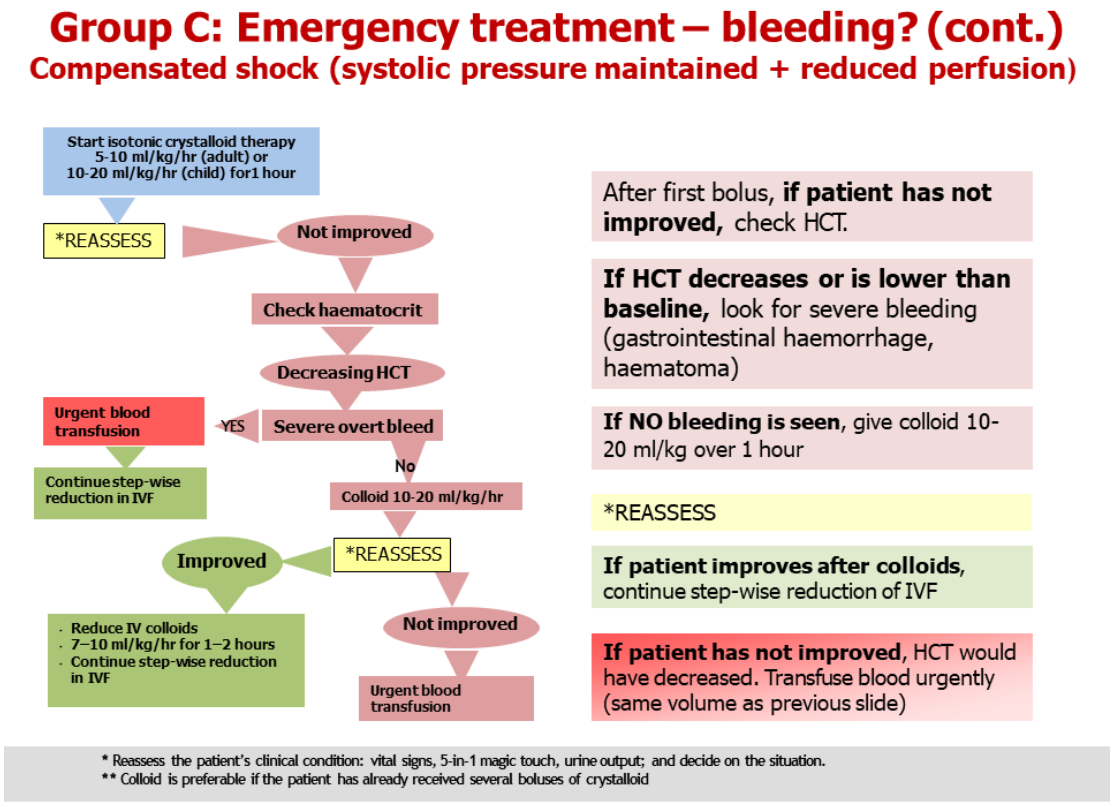
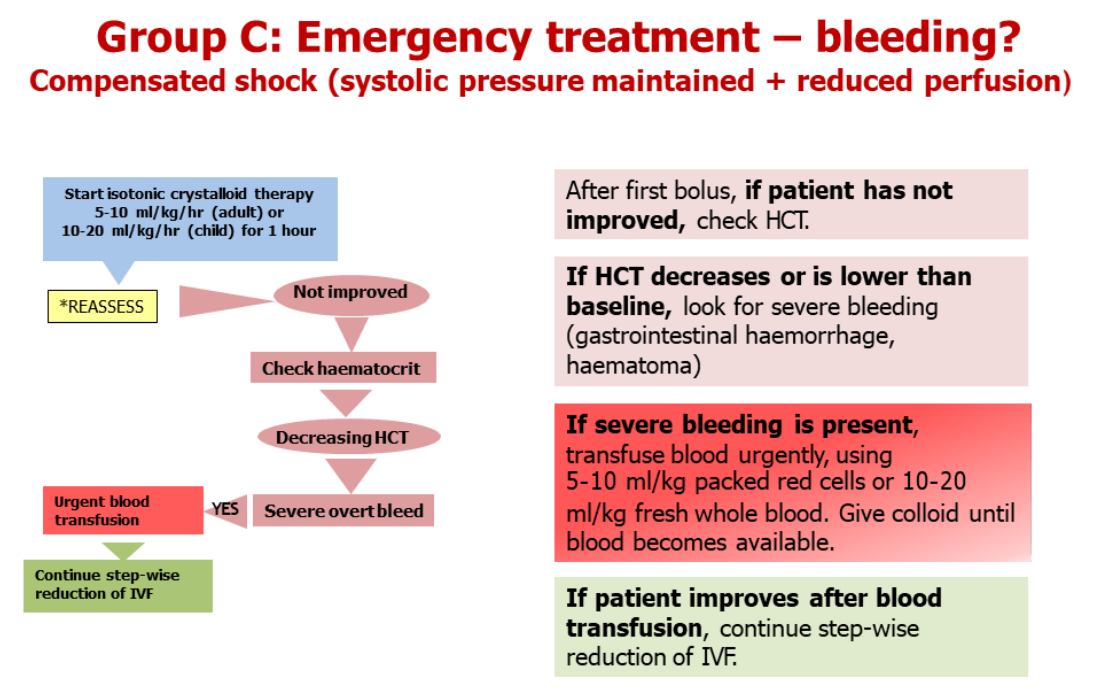

Group C: Emergency treatment – bleeding? (cont.)
Compensated shock (systolic pressure maintained + reduced perfusion)
Start isotonic crystalloid therapy 5-10 ml/kg/hr (adult) or 10-20 ml/kg/hr (child) for1 hour
*REASSESS
Not improved
Check haematocrit
Decreasing HCT
Urgent blood transfusion
YES
Severe overt bleed
No
Continue step-wise reduction in IVF
Colloid 10-20 ml/kg/hr
Improved
*REASSESS
Not improved
· Reduce IV colloids
· 7–10 ml/kg/hr for 1–2 hours
· Continue step-wise reduction in IVF
Urgent blood transfusion
After first bolus, if patient has not improved, check HCT.
If HCT decreases or is lower than baseline, look for severe bleeding (gastrointestinal haemorrhage, haematoma)
If NO bleeding is seen, give colloid 10-20 ml/kg over 1 hour
*REASSESS
If patient improves after colloids, continue step-wise reduction of IVF
If patient has not improved, HCT would have decreased. Transfuse blood urgently (same volume as previous slide)
* Reassess the patient's clinical condition: vital signs, 5-in-1 magic touch, urine output; and decide on the situation.
** Colloid is preferable if the patient has already received several boluses of crystalloid

FIGURE 18



* Reassess the patient's clinical condition: vital signs, 5-in-1 magic touch, urine output; and decide on the situation.
** Colloid is preferable if the patient has already received several boluses of crystalloid
IV: intravenous, HCT: hematocrit, IVF: intravenous fluids

FIGURE 19

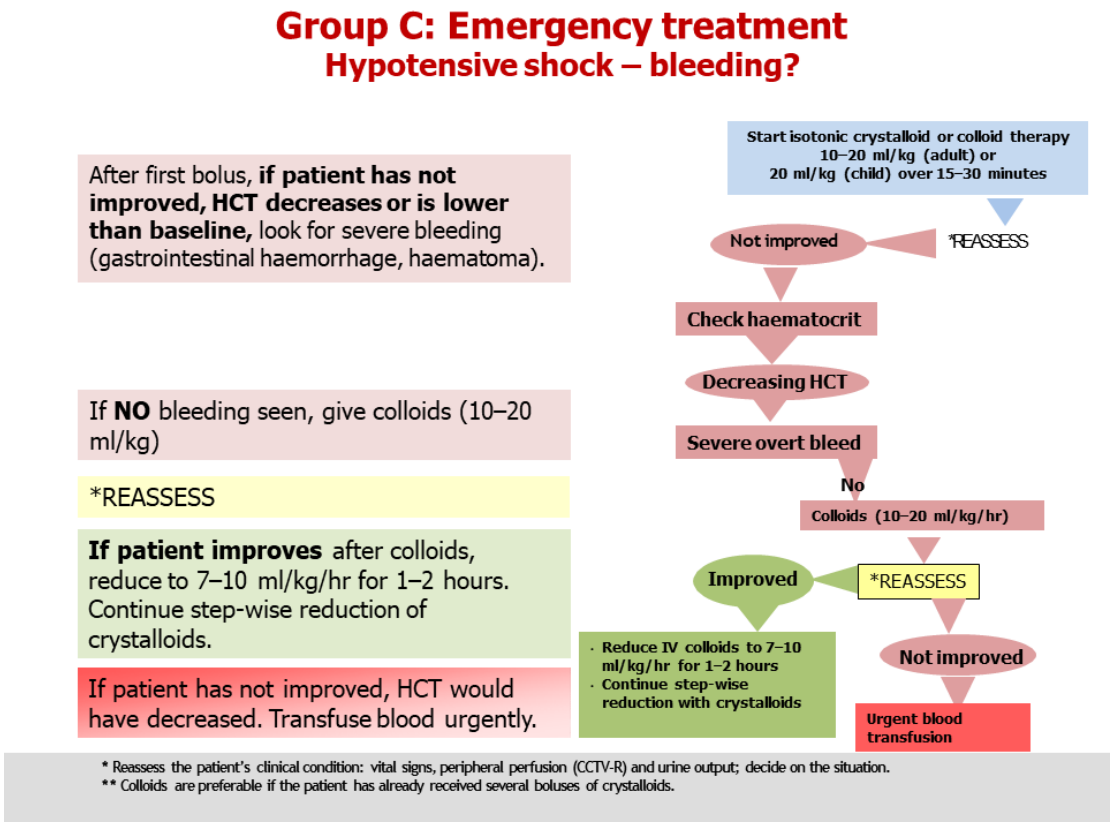

Group C: Emergency treatment
Hypotensive shock – bleeding?
After first bolus, if patient has not improved, HCT decreases or is lower than baseline, look for severe bleeding (gastrointestinal haemorrhage, haematoma).
If NO bleeding seen, give colloids (10–20 ml/kg)
*REASSESS
If patient improves after colloids, reduce to 7–10 ml/kg/hr for 1–2 hours. Continue step-wise reduction of crystalloids.
If patient has not improved, HCT would have decreased. Transfuse blood urgently.
Start isotonic crystalloid or colloid therapy 10–20 ml/kg (adult) or 20 ml/kg (child) over 15–30 minutes
Not improved
*REASSESS
Check haematocrit
Decreasing HCT
Severe overt bleed
No
Colloids (10–20 ml/kg/hr)
Improved
*REASSESS
Not improved
· Reduce IV colloids to 7–10 ml/kg/hr for 1–2 hours
· Continue step-wise reduction with crystalloids
Urgent blood transfusion
* Reassess the patient's clinical condition: vital signs, peripheral perfusion (CCTV-R) and urine output; decide on the situation.
** Colloids are preferable if the patient has already received several boluses of crystalloids.

FIGURE 20

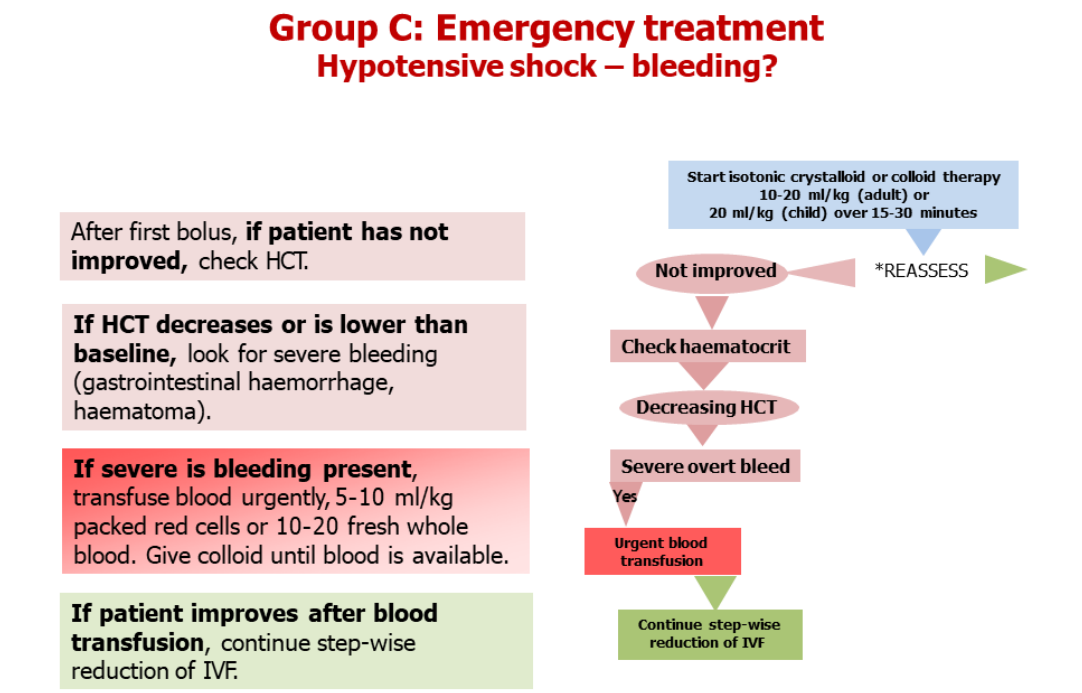
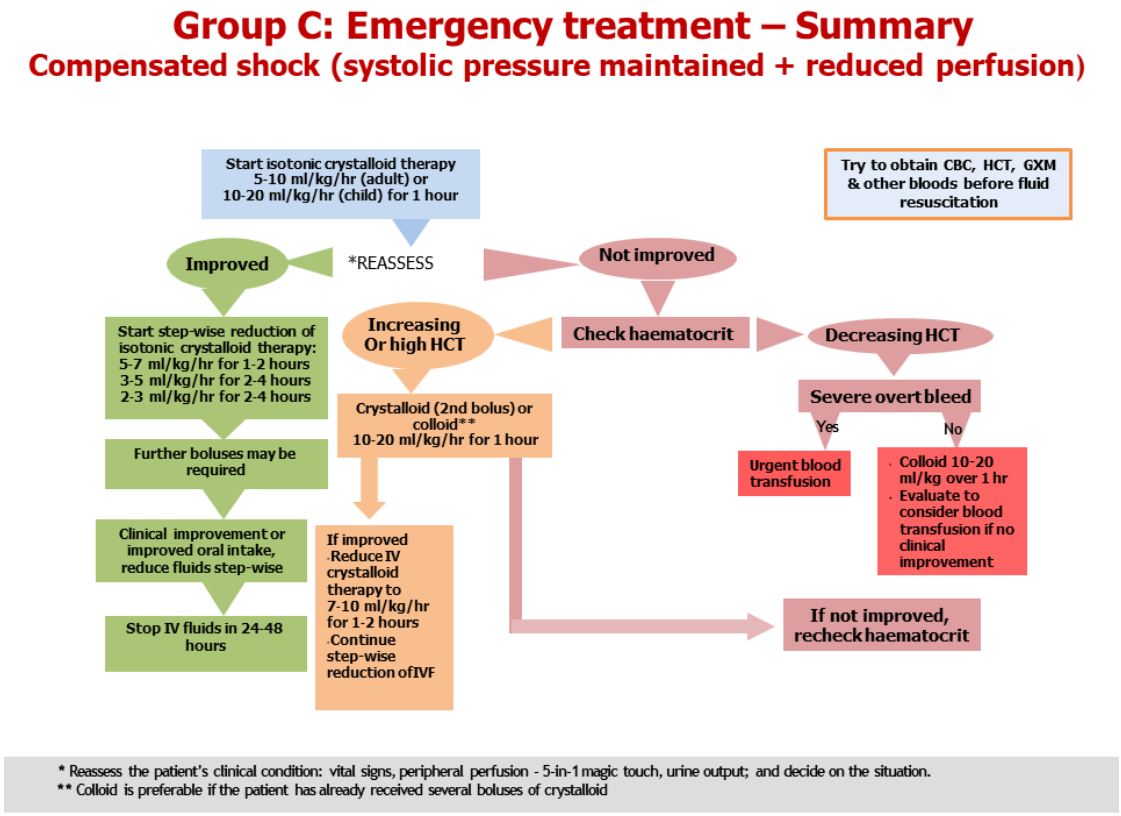

Group C: Emergency treatment
Hypotensive shock – bleeding?
After first bolus, if patient has not improved, check HCT.
If HCT decreases or is lower than baseline, look for severe bleeding (gastrointestinal haemorrhage, haematoma).
If severe is bleeding present, transfuse blood urgently, 5-10 ml/kg packed red cells or 10-20 fresh whole blood. Give colloid until blood is available.
If patient improves after blood transfusion, continue step-wise reduction of IVF.
Start isotonic crystalloid or colloid therapy 10-20 ml/kg (adult) or 20 ml/kg (child) over 15-30 minutes
Not improved
*REASSESS
Check haematocrit
Decreasing HCT
Severe overt bleed
Yes
Urgent blood transfusion
Continue step-wise reduction of IVF
* Reassess the patient's clinical condition: vital signs, peripheral perfusion (CCTV-R) and urine output; decide on the situation.
** Colloids are preferable if the patient has already received several boluses of crystalloids.

FIGURE 21


Group C: Emergency treatment – Summary
Compensated shock (systolic pressure maintained + reduced perfusion)
Start isotonic crystalloid therapy
5-10 ml/kg/hr (adult) or
10-20 ml/kg/hr (child) for 1 hour
Try to obtain CBC, HCT, GXM & other bloods before fluid resuscitation
Improved
*REASSESS
Not improved
Start step-wise reduction of isotonic crystalloid therapy:
5-7 ml/kg/hr for 1-2 hours
3-5 ml/kg/hr for 2-4 hours
2-3 ml/kg/hr for 2-4 hours
Increasing Or high HCT
Check haematocrit
Decreasing HCT
Severe overt bleed
Yes
No
Crystalloid (2nd bolus) or colloid**
10-20 ml/kg/hr for 1 hour
Urgent blood transfusion
Colloid 10-20 ml/kg over 1 hr
Evaluate to consider blood transfusion if no clinical improvement
Further boluses may be required
Clinical improvement or improved oral intake, reduce fluids step-wise
If improved
Reduce IV crystalloid therapy to 7-10 ml/kg/hr for 1-2 hours
Continue step-wise reduction of IVF
If not improved, recheck haematocrit
Stop IV fluids in 24-48 hours
* Reassess the patient's clinical condition: vital signs, peripheral perfusion - 5-in-1 magic touch, urine output; and decide on the situation.
** Colloid is preferable if the patient has already received several boluses of crystalloid

INDICATIONS OF PLATELET TRANSFUSION[32]:

- Prophylactic platelet transfusion may be given at level of <10,000 /cu.mm
- Prolonged shock, with coagulopathy and abnormal coagulogram
- In case of systemic massive bleeding.

CRITERIA FOR DISCHARGE OF PATIENT:

- Absence of fever for atleast 24 hours without the use of antipyretic drugs
- Return of appetite
- Visible clinical improvement
- Good urine output
- Minimum of 2-3 days after recovery from shock
- No respiratory distress from pleural effusion or ascites
- Platelet count >50,000/cu.mm

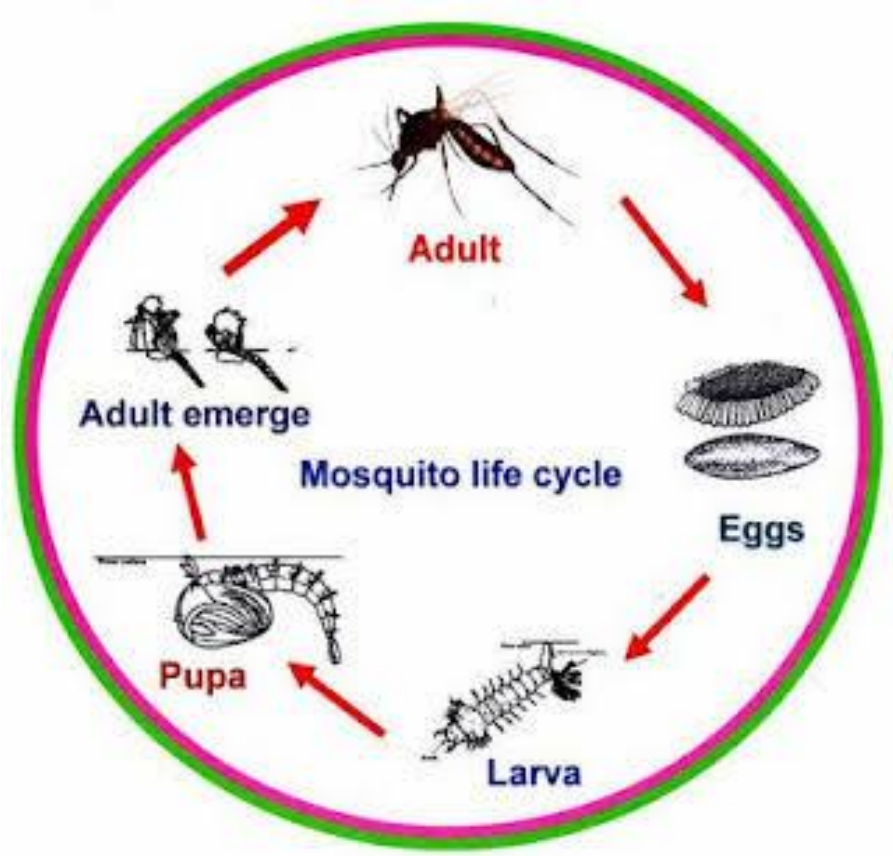
CONTROL MEASURES FOR DENGUE FEVER:

1. MOSQUITO CONTROL

The vectors of dengue fever *Aedes aegypti* breed in and around houses and in principle can be controlled by individual and community

action using antiadult and antilarval measures. For effective vector control life cycle of the mosquito should be made clear.

FIGURE 22



LIFE CYCLE OF MOSQUITO

Mosquito life cycle should be interrupted for effective control of dengue fever and prevent the transmission of disease from one person to other. It can be done at the adult mosquito and larva stage using larvicides and insecticides.

INTEGRATED VECTOR CONTROL MEASURES:

No single method is likely to provide a solution in all situations . Present trend is to adapt integrated vector control approach. It is combining two or more methods with a view to obtain maximum results with minimum efforts .

It is defined as utilisation of all appropriate technological and management techniques to bring out an effective degree of vector suppression in a cost effective manner and also to avoid the overuse of one of the methods.

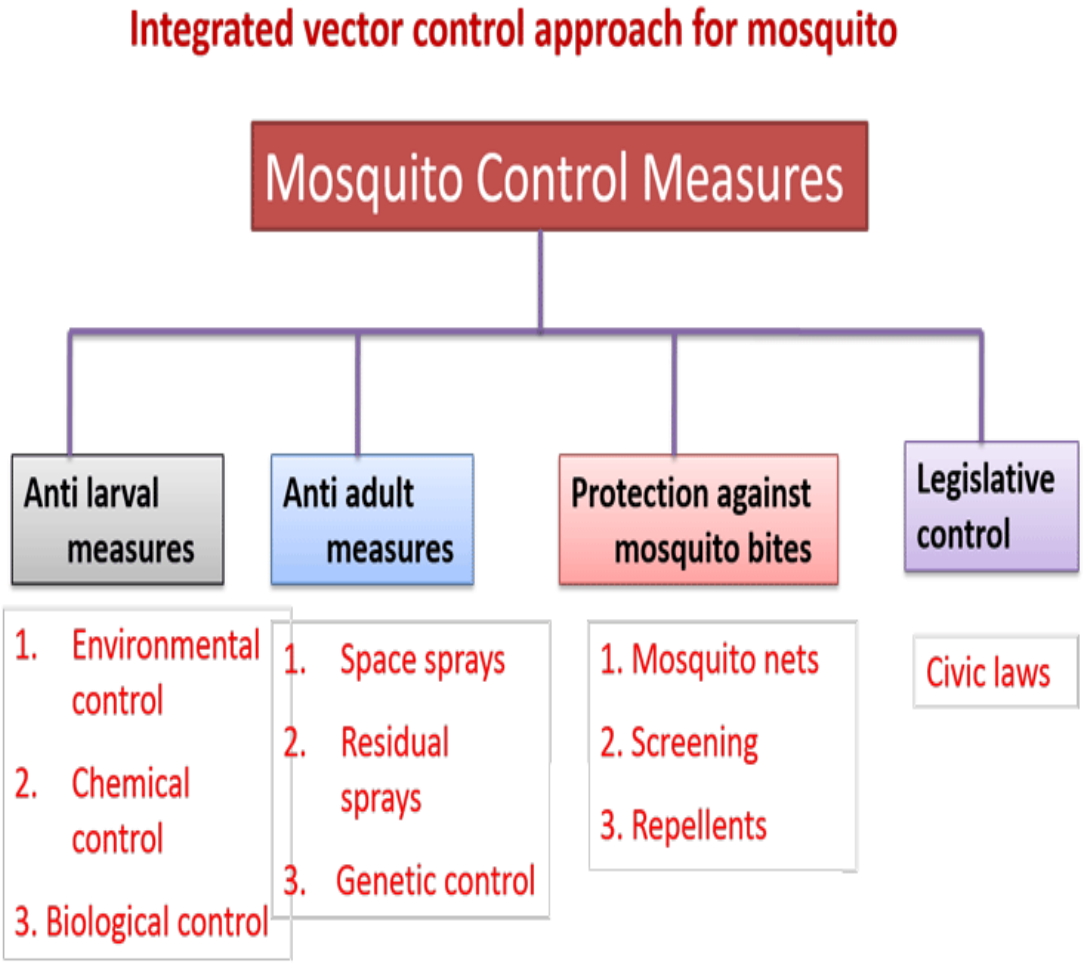
Selection of methods is not possible without detailed field information on the ecology, bionomics of vectors, role in disease transmission.

It includes following measures ;

- Biological
- Chemical
- Source reduction
- Personal protection
- Health education

INTEGRATED VECTOR CONTROL APPROACH FOR MOSQUITO:

FIGURE 23



Source reduction includes intermittent irrigation, water level management, land filling, channelling ,draining . Biological control includes exotic natural elements , larvivorous fish and microbial agents .

Community and Personal protective measures include the following:

FIGURE 24

VACCINES :

CYD-TDV is a prophylactic ,tetravalent live attenuated viral vaccine . The vaccination schedule consists of 3 injections of 0.5 ml administered at 6 –months intervals.

AIM AND OBJECTIVES OF THE STUDY

AIM OF THE STUDY:

- To investigate the platelet indices in patients
- To assess the role of it in dengue infection

OBJECTIVES OF THE STUDY:

- To find the correlation between platelet and mean platelet volume and platelet distribution width in dengue fever.
- To establish the significance of platelet and mean platelet volume and platelet distribution width in dengue fever.

MATERIALS AND METHODS

METHODOLOGY OF STUDY:

This is prospective study of 100 cases of dengue fever in the fever ward of Coimbatore medical college hospital, Coimbatore. All the tests are done with the permission from the Institutional Ethical Committee and informed consent from the subjects.

DESIGN OF STUDY:

It is a Prospective study.

PERIOD OF STUDY:

One year (May 2018- April 2019)

INCLUSION CRITERIA:

- All patients above the age of 18 years
- Both genders
- Patients positive for IgM dengue serology

EXCLUSION CRITERIA:

- Patients less than 18 years
- Patients negative for IgM dengue serology

- Patients with underlying haemostatic disease
- If routine laboratory testing suggested a bacterial, parasite, or any viral infection other than dengue infection or any other disease.
- Consent not given

INVESTIGATIONS:

- History of the patients
- Clinical examination of the patients
- Complete hemogram
- Dengue IgM serology

RESULTS

TABLE 1

AGE DISTRIBUTION

AGE IN YEARS	NO OF PATIENTS	PERCENTAGE
LESS THAN 30	61	61%
31-45	29	29%
46-60	6	6%
MORE THAN 60	4	4%

CHART 1

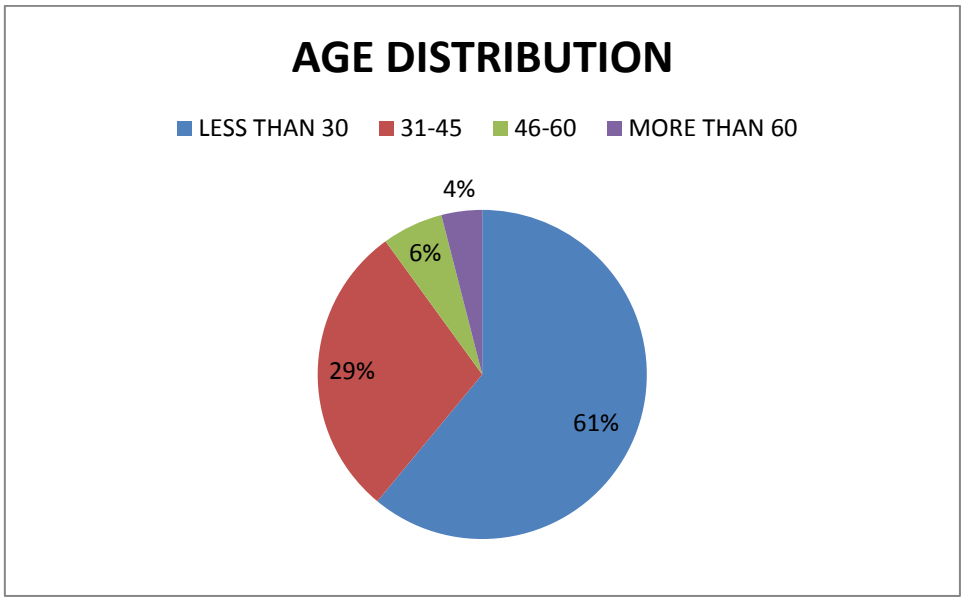


TABLE 2

SEX DISTRIBUTION

SEX	NO OF PATIENTS	PERCENTAGE
MALE	68	68%
FEMALE	32	32%

CHART 2

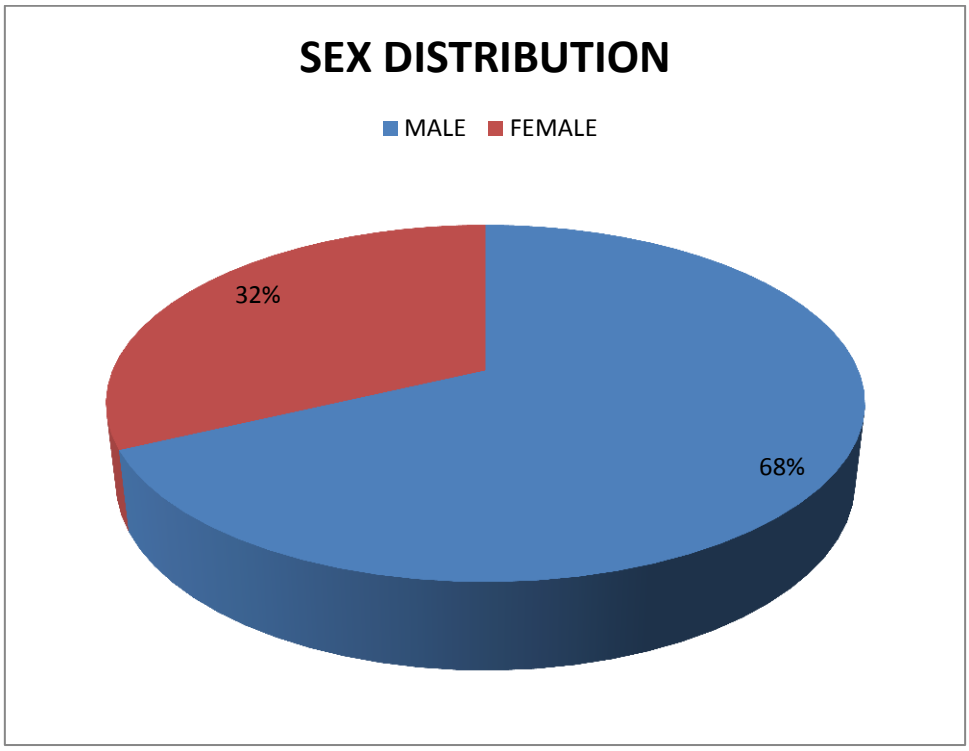


TABLE 3

AREA WISE DISTRIBUTION

AREAWISE	NO OF PATIENTS	PERCENTAGE
COIMBATORE	66	66%
TIRUPUR	27	27%
NILGRIS	3	3%
POLLACHI	4	4%

CHART 3

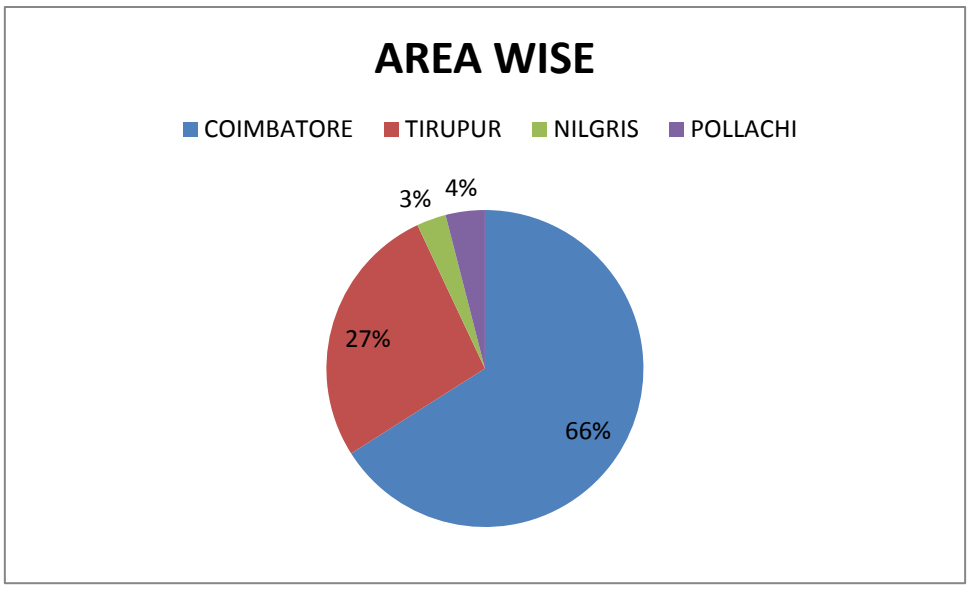


TABLE 4

PLATELET COUNT

PLATELET COUNT	NO OF PATIENTS	PERCENTAGE
< 50,000	30	30%
50,000-1,00,000	61	61%
1,00,000 - 1,50,000	9	9%

CHART 4

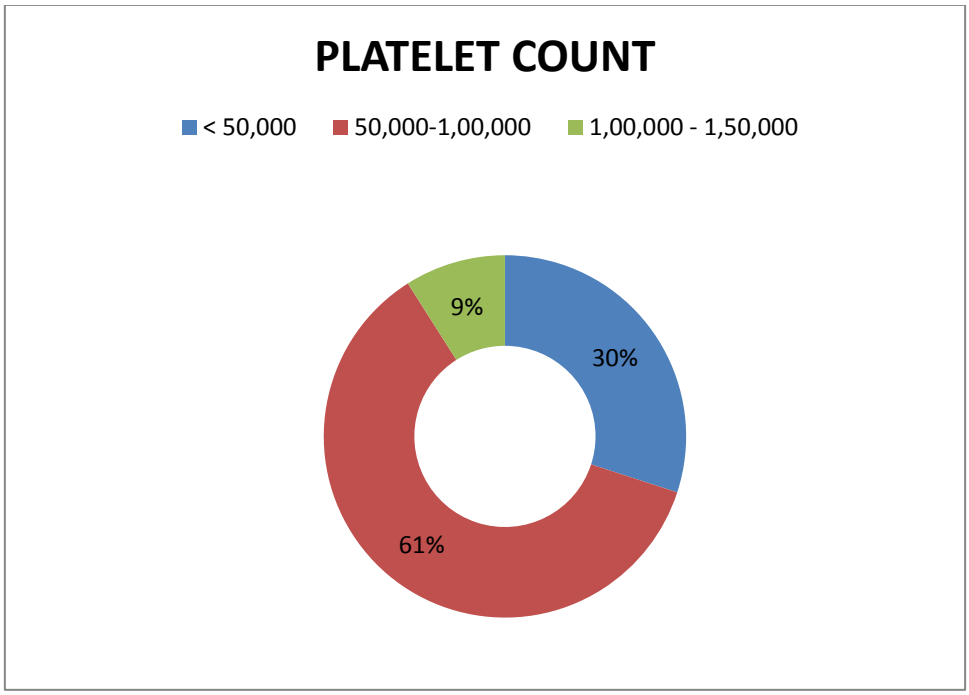


TABLE 5

AGE DISTRIBUTION OF PLATELET COUNT

AGE IN YEARS	<50,000	50,000-1,00,000	1,00,000-1,50,000
LESS THAN 30	4	50	7
31-45	16	11	2
46-60	6	0	0
MORE THAN 60	4	0	0

CHART 5

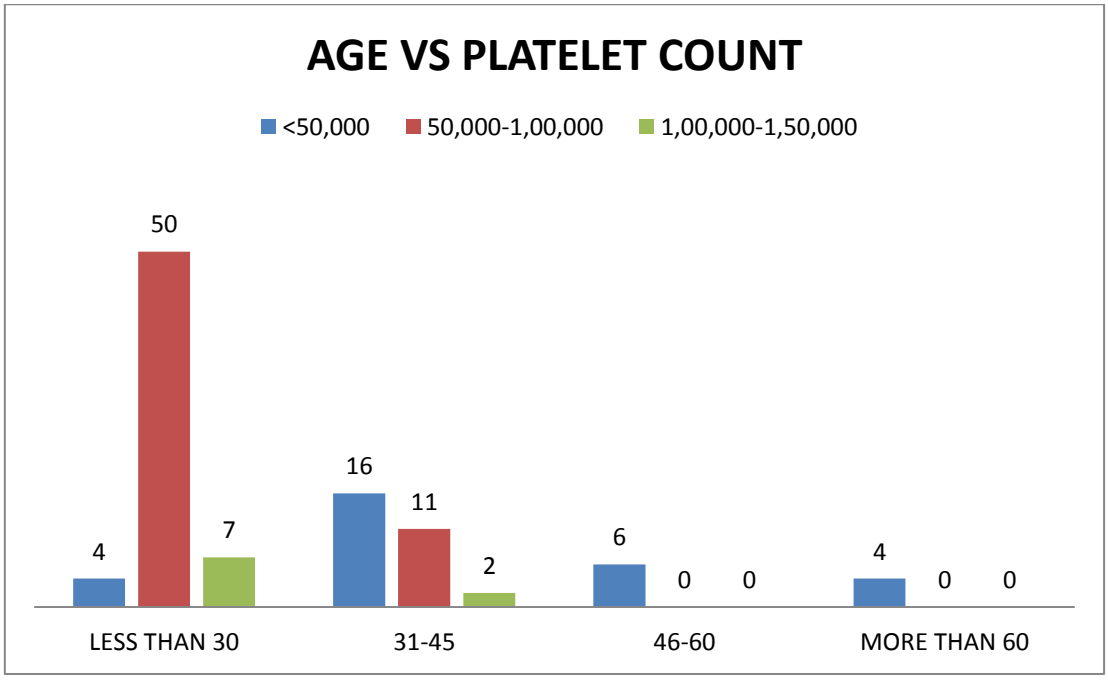


TABLE 6

DIAGNOSIS

DIAGNOSIS	NO OF PATIENTS	PERCENTAGE
DENGUE FEVER	80	80%
DENGUE HEMORRHAGIC FEVER	20	20%

CHART 6

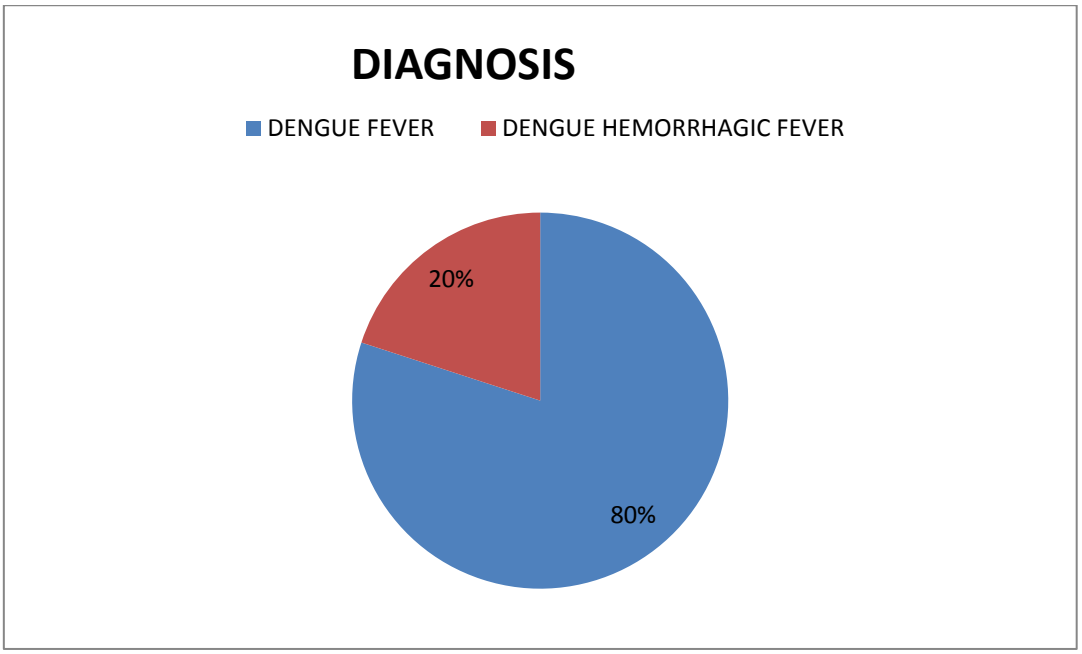


TABLE 7

MEAN PLATELET VOLUME

MEAN PLATELET VOLUME	NO OF PATIENTS	PERCENTAGE
< 9	93	93%
> 9	7	7%

CHART 7

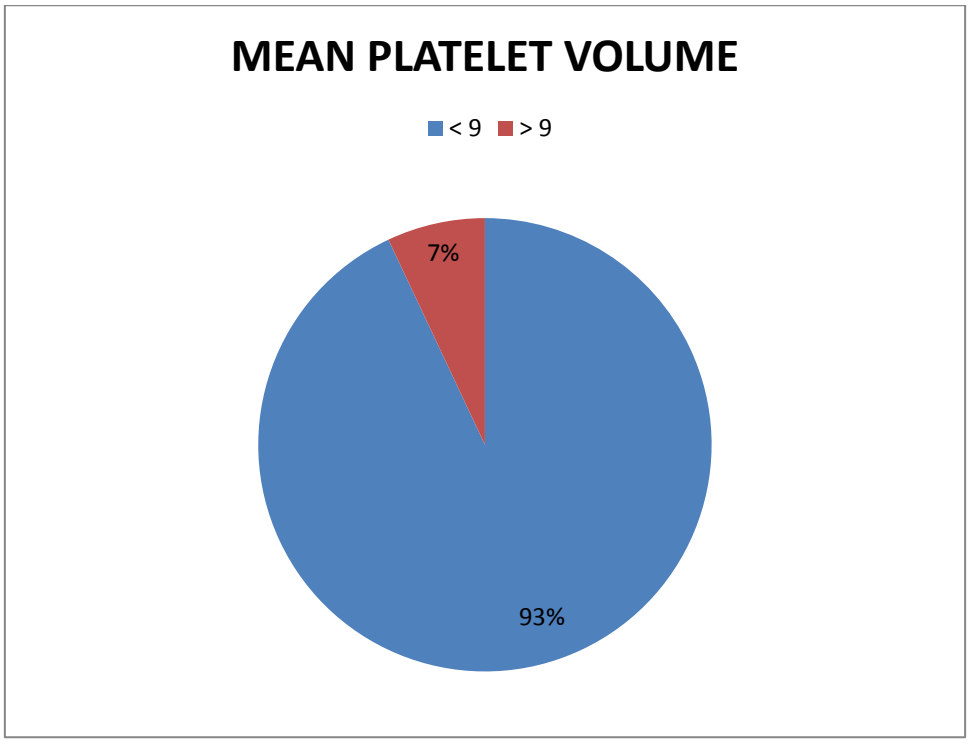


TABLE 8

PLATELET DISTRIBUTION WIDTH

PLATELET DISTRIBUTION WIDTH	NO OF PATIENTS	PERCENTAGE
< 13	7	7%
> 13	93	93%

CHART 8

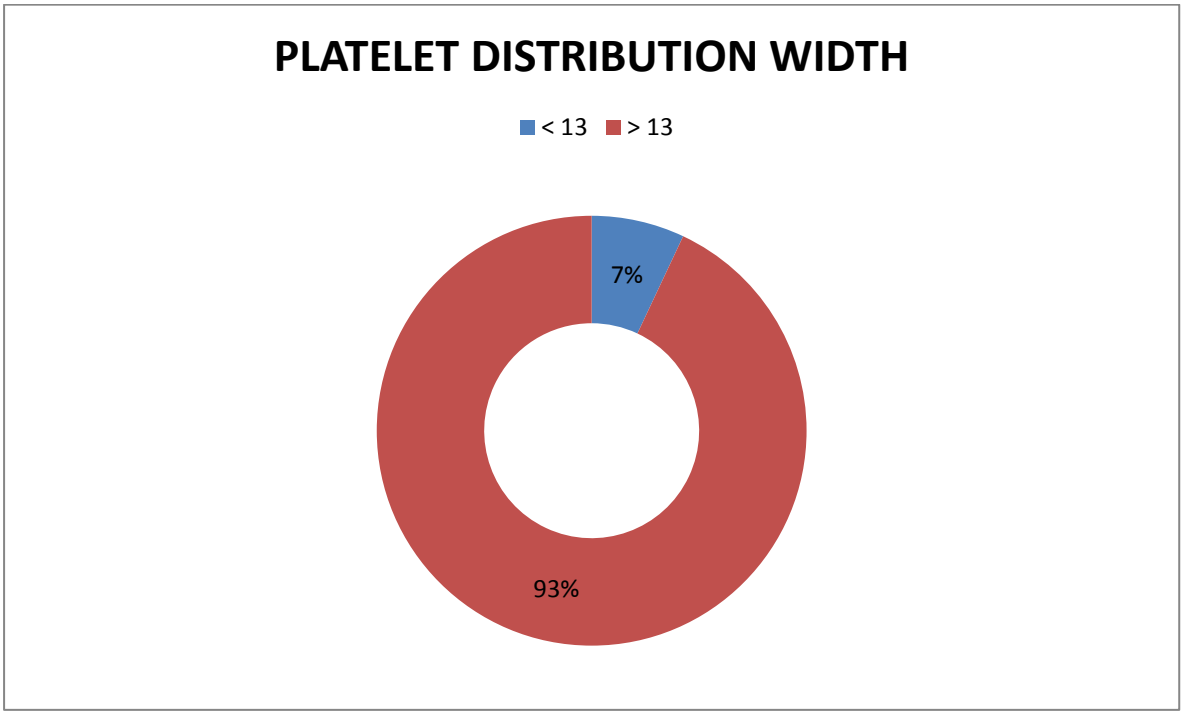


TABLE 9

DIAGNOSIS VS MPV

DIAGNOSIS	MPV		TOTAL
	< 9	> 9	
DENGUE FEVER	75	5	80
DENGUE HEMORRHAGIC FEVER	18	2	20
TOTAL	93	7	100

CHART 9

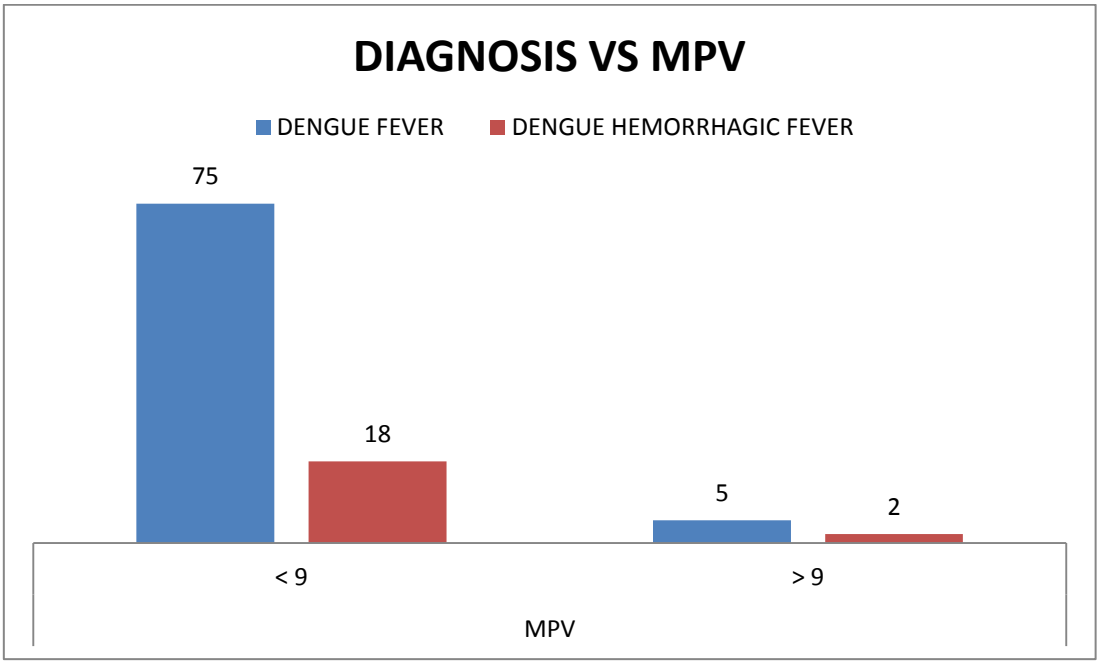


TABLE 10

DIAGNOSIS VS PDW

DIAGNOSIS	PDW		TOTAL
	<13	> 13	
DENGUE FEVER	2	78	80
DENGUE HEMORRHAGIC FEVER	5	15	20
TOTAL	7	93	100

CHART 10

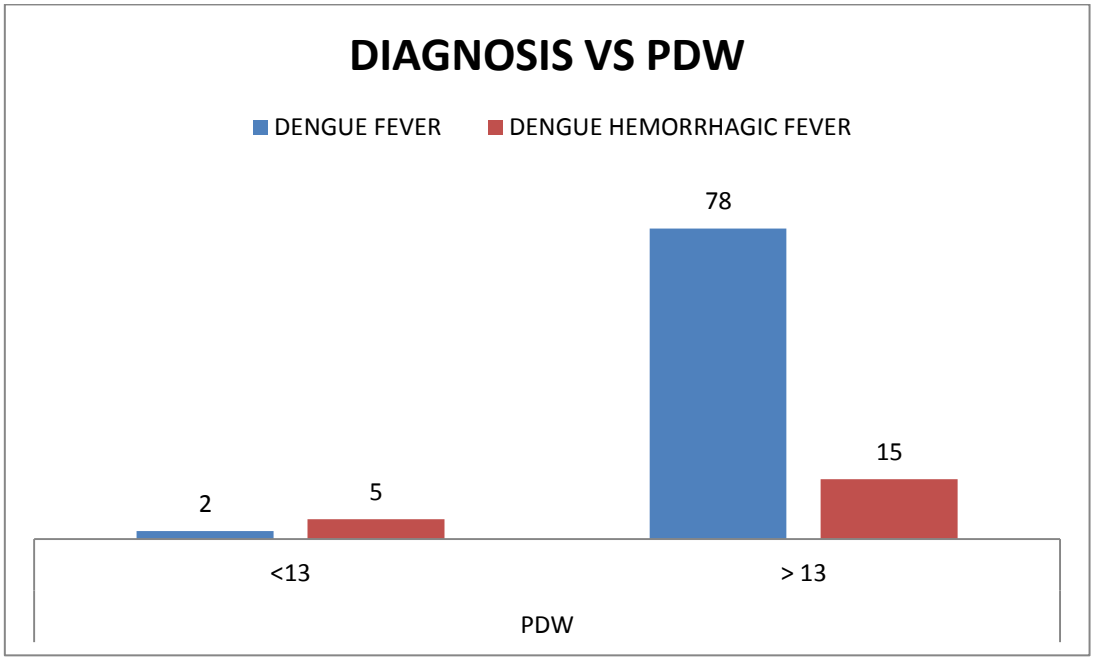


TABLE 11

PLATELET COUNT AND MPV

PLATELET COUNT	MPV	
	< 9	**> 9**
< 50,000	30	0
50,000-1,00,000	55	6
1,00,000 - 1,50,000	8	1

CHART 11

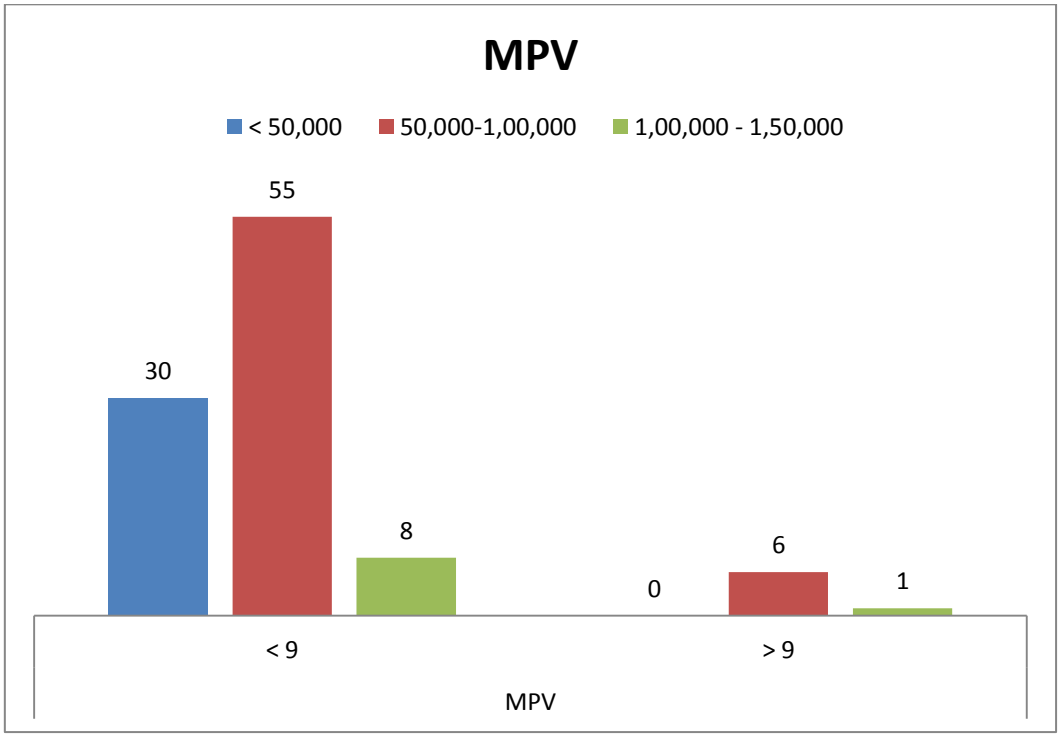


TABLE 12

PLATELET COUNT AND PDW

PLATELET COUNT	PDW	
	<13	> 13
< 50,000	0	30
50,000-1,00,000	6	55
1,00,000 - 1,50,000	1	8

CHART 12

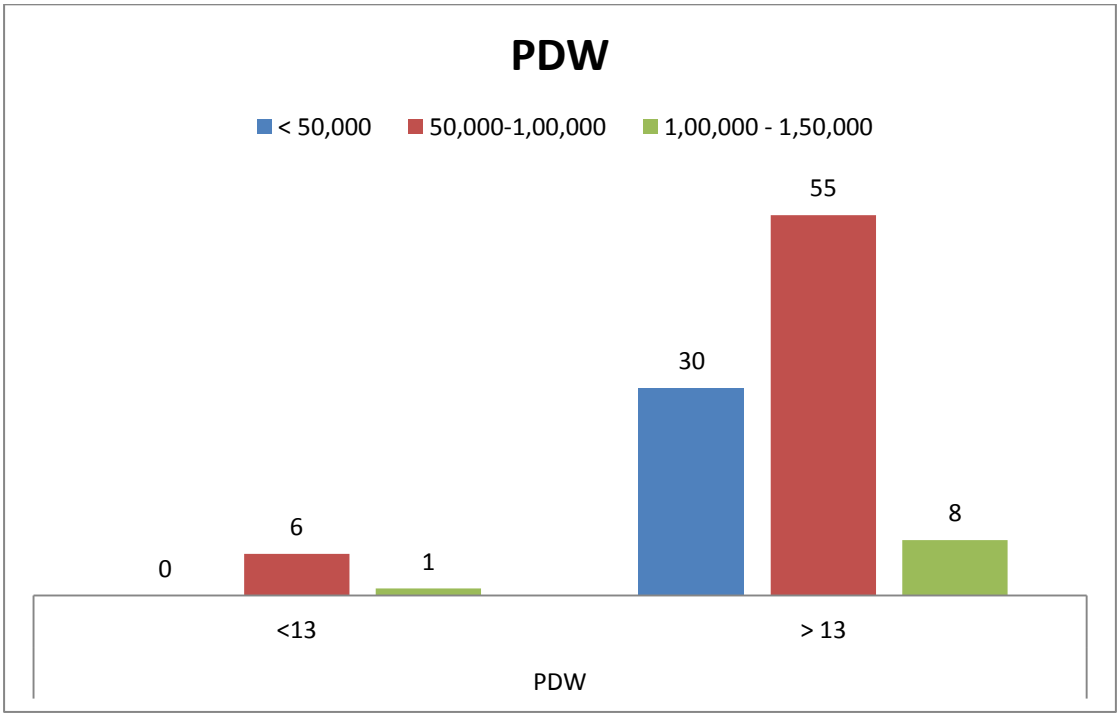


TABLE 13

WHITE BLOOD CELLS

WHITE BLOOD CELLS	NO OF PATIENTS	PERCENTAGE
NORMAL	74	74%
ABNORMAL	26	26%

CHART 13

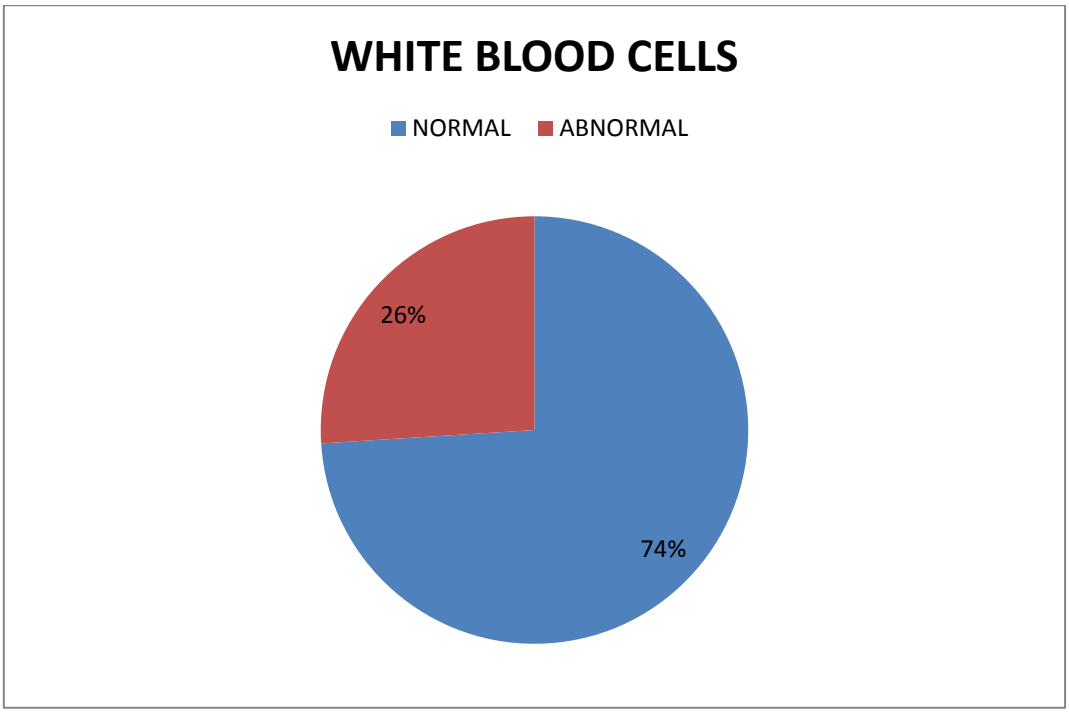


TABLE 14

RED BLOOD CELLS

RED BLOOD CELLS	NO OF PATIENTS	PERCENTAGE
NORMAL	45	45%
DECREASED	41	41%
INCREASED	14	14%

CHART 14

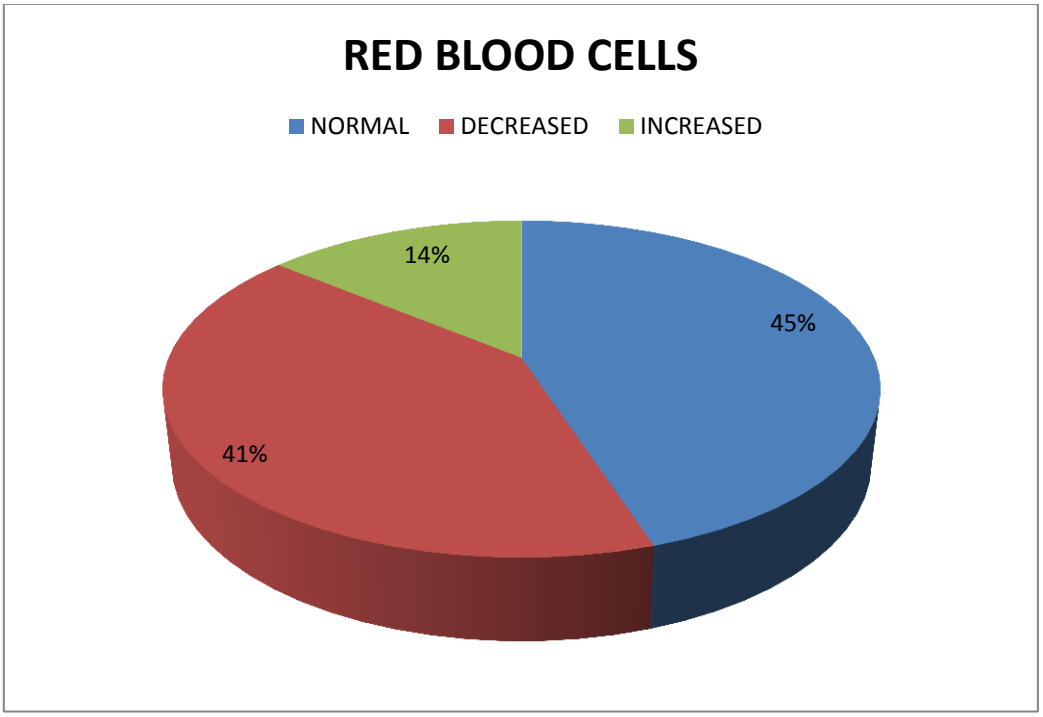


TABLE 15

HAEMOGLOBIN

HAEMOGLOBIN	NO OF PATIENTS	PERCENTAGE
NORMAL	43	43%
DECREASED	57	57%

CHART 15

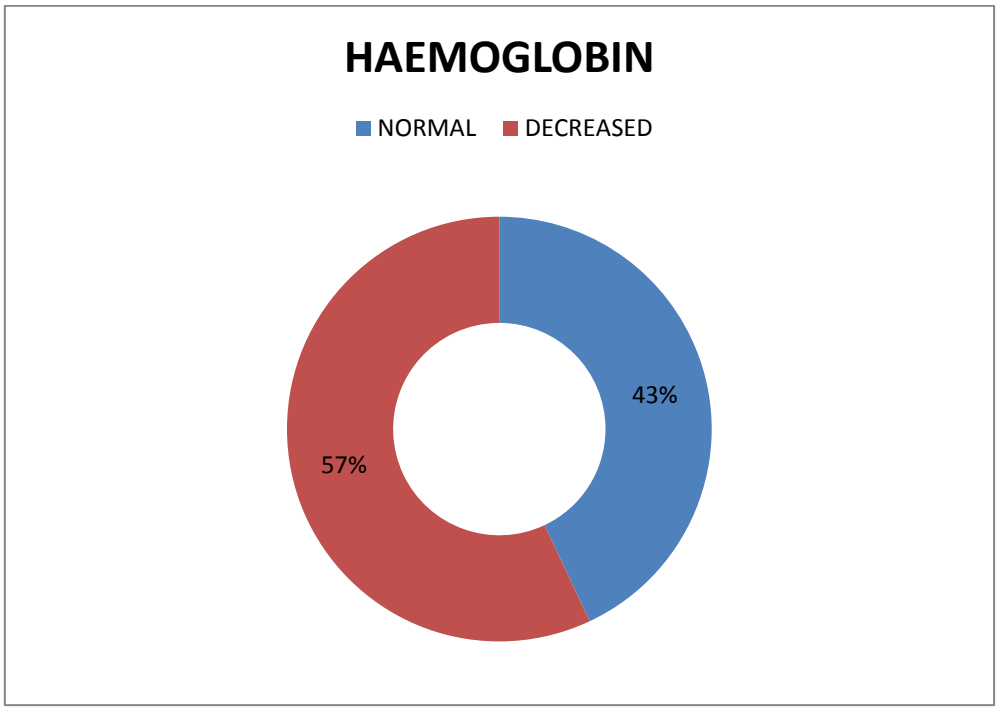


TABLE 16

HAEMATOCRIT

HAEMATOCRIT	NO OF PATIENTS	PERCENTAGE
NORMAL	46	46%
INCREASED	54	54%

CHART 16

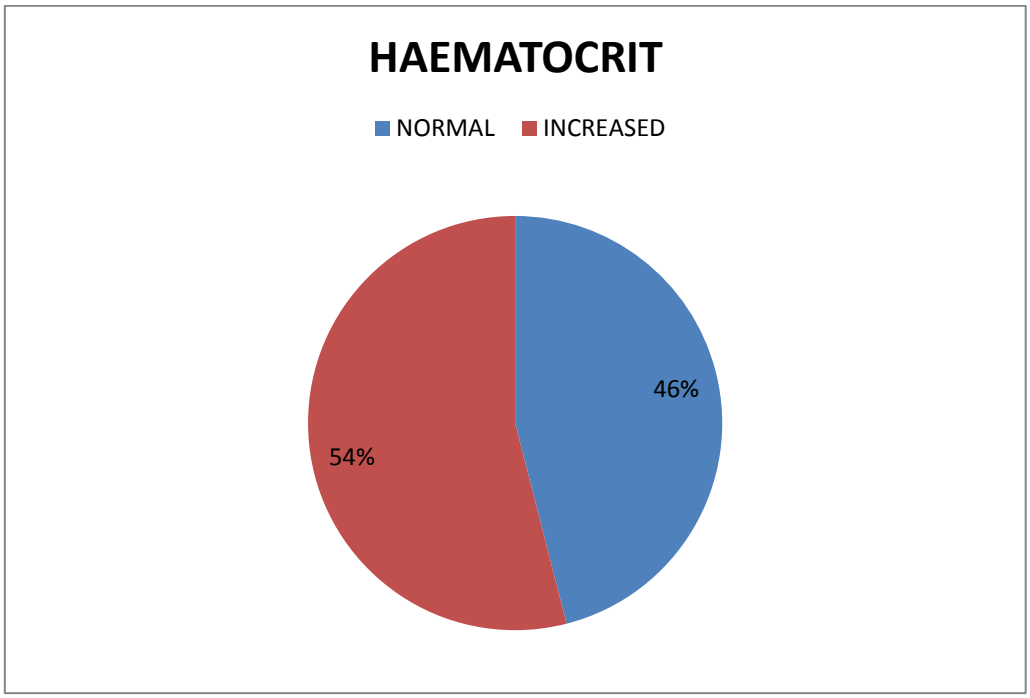


TABLE 17

MEAN CORPUSCULAR VOLUME

MEAN CORPUSCULAR VOLUME	NO OF PATIENTS	PERCENTAGE
NORMAL	88	88%
DECREASED	5	5%
INCREASED	7	7%

CHART 17

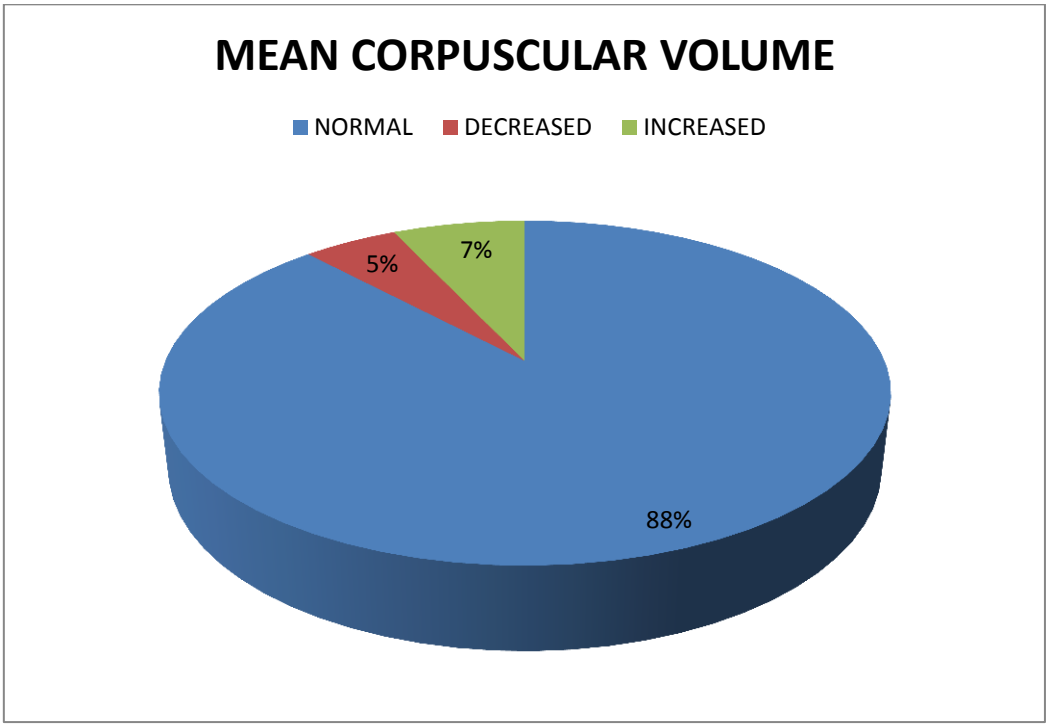


TABLE 18

MCH

MCH	NO OF PATIENTS	PERCENTAGE
NORMAL	83	83%
DECREASED	8	8%
INCREASED	9	9%

CHART 18

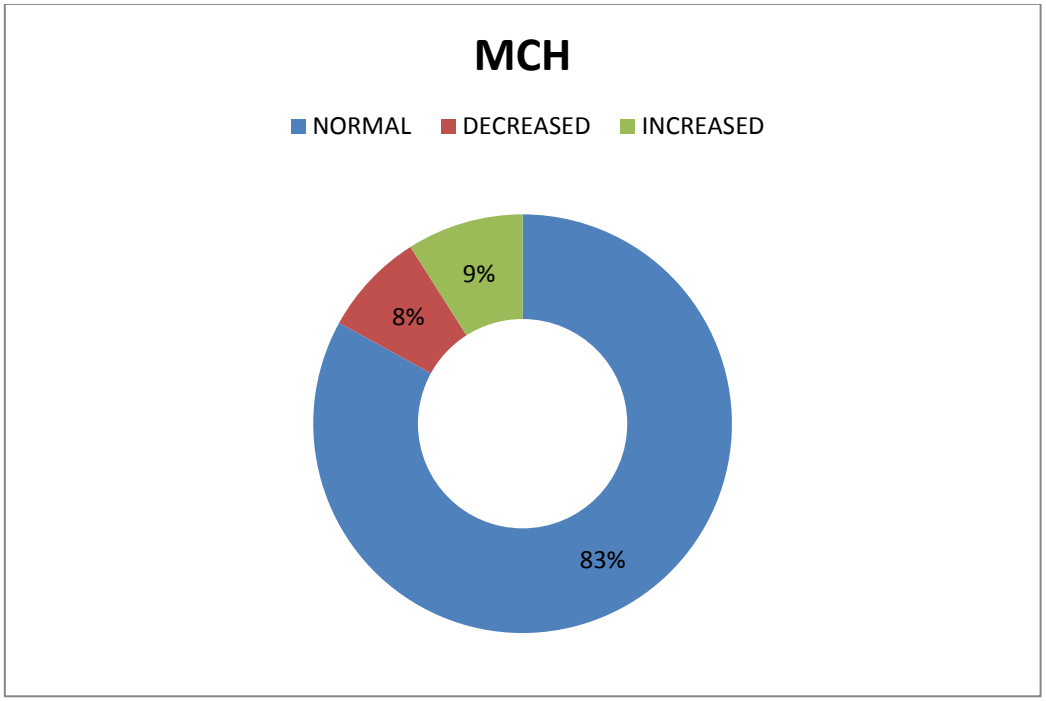


TABLE 19

MCHC

MCHC	NO OF PATIENTS	PERCENTAGE
NORMAL	32	32%
DECREASED	66	66%
INCREASED	2	2%

CHART 19

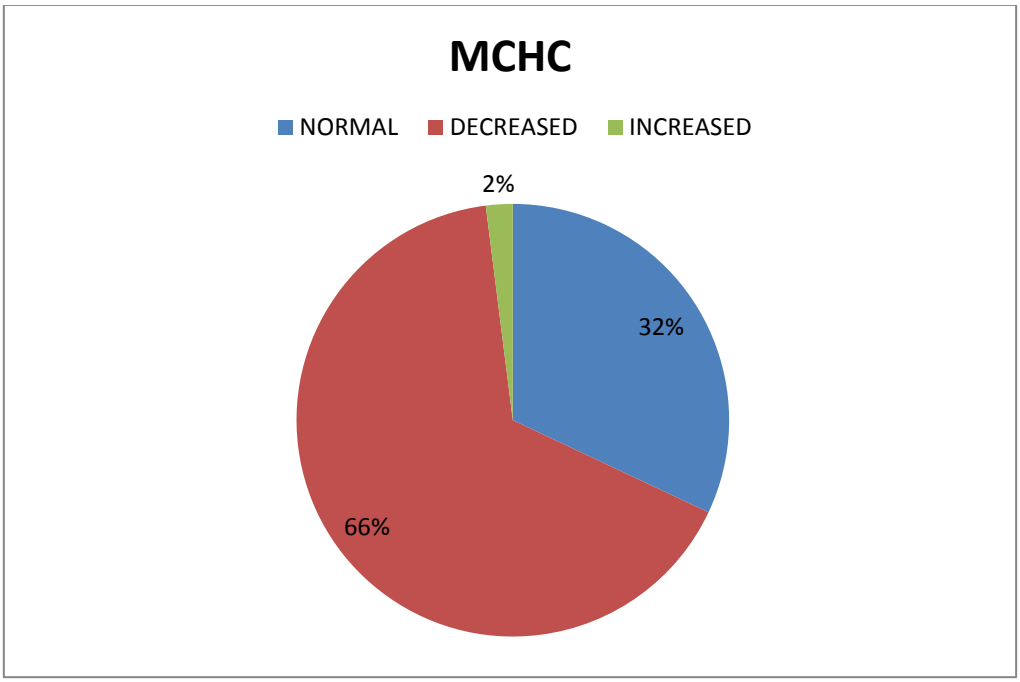


TABLE 20

PLATELET COUNT VS AGE

PLATELET COUNT	AGE IN YEARS	
	MEAN	SD
< 50,000	43.6	14.28
50,000-1,00,000	28.75	5.68
1,00,000 - 1,50,000	25.66	5.95
P VALUE - 0.001		
ANOVA		
SIGNIFICANT		

CHART 20

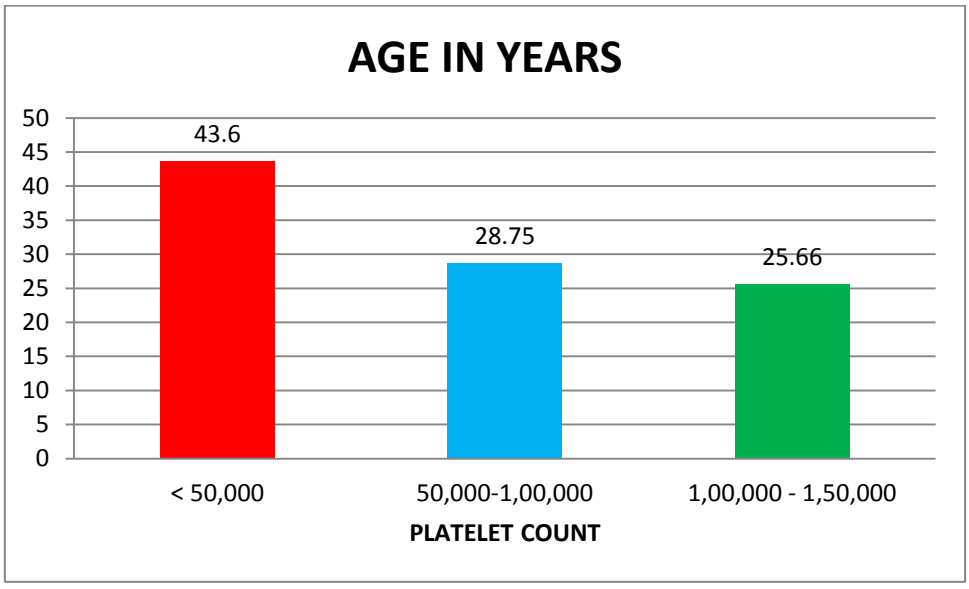


TABLE 21

PLATELET COUNT VS SEX

PLATELET COUNT	SEX	
	MALE	FEMALE
< 50,000	22	8
50,000-1,00,000	40	21
1,00,000 - 1,50,000	6	3
P VALUE - 0.754		
KRUSKAL WALLIS TEST		
NON SIGNIFICANT		

CHART 21

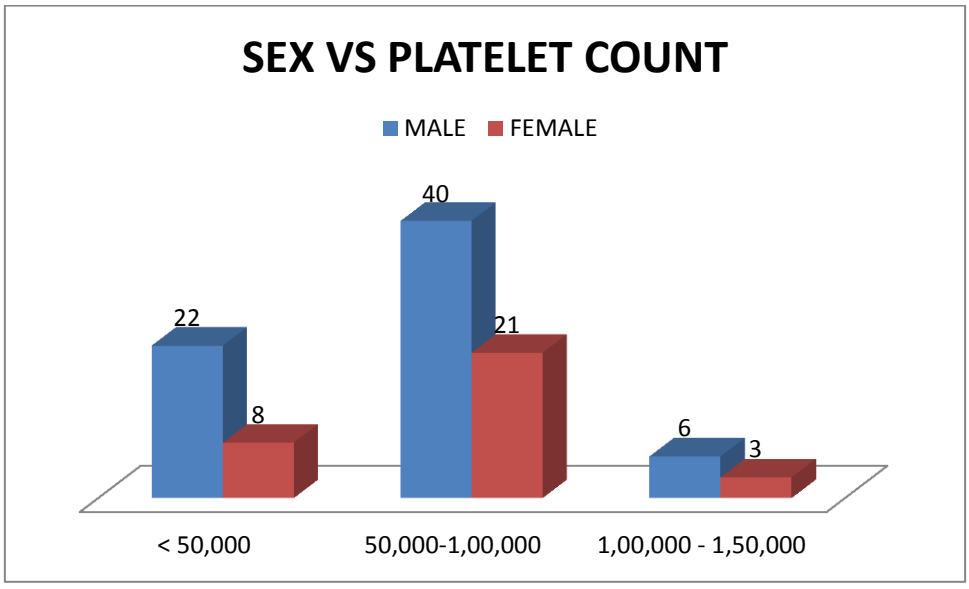


TABLE 22

PLATELET COUNT VS MPV

MPV	PLETELET COUNT(X10^3)	
	MEAN	SD
<9	63.95	30.2
>9	83.85	27.38
P VALUE - 0.05		
UNPAIRED T TEST		
SIGNIFICANT		

CHART 22

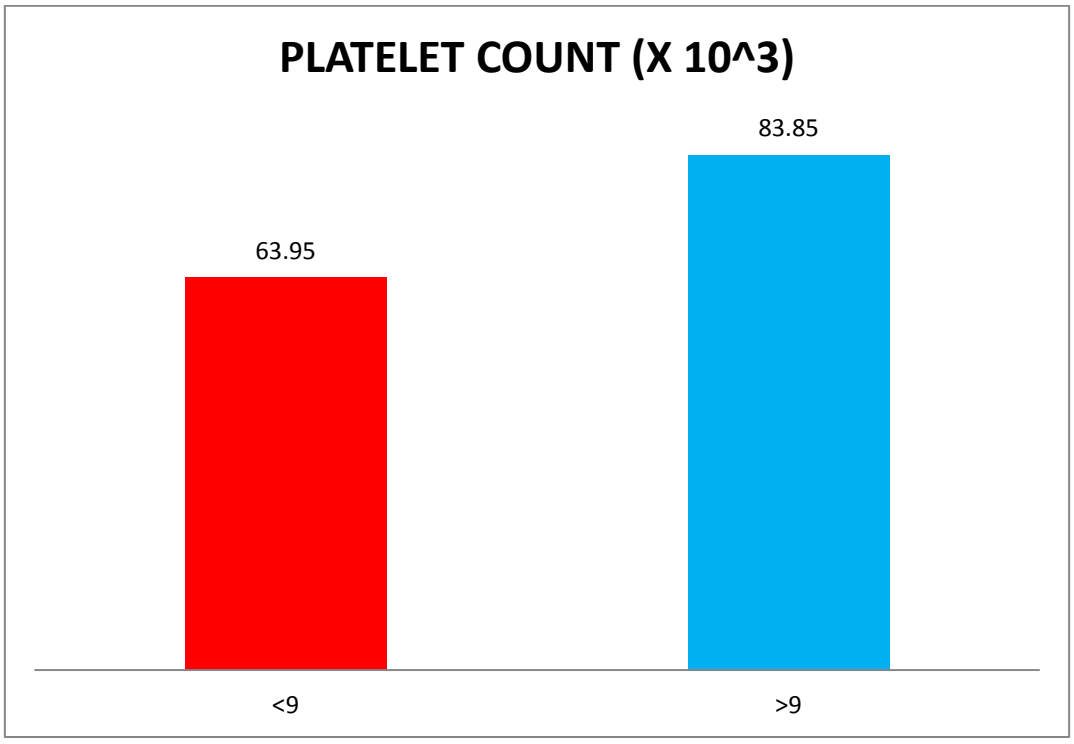


TABLE 23

PLATELETCOUNT VS PDW

PDW	PLETELET COUNT(X10^3)	
	MEAN	SD
<13	85.14	21.31
>13	63.86	30.14
P VALUE - 0.039		
UNPAIRED T TEST		
SIGNIFICANT		

CHART 23

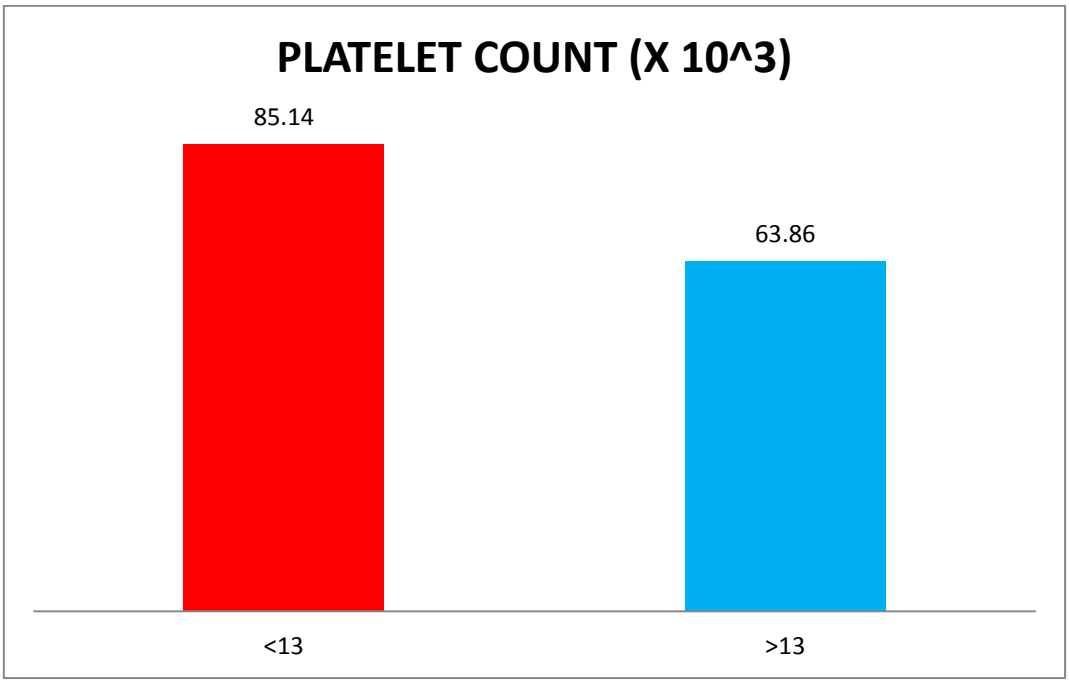


TABLE 24

PLATELET COUNT VS WBC

PLATELET COUNT	WHITE BLOOD CELLS	
	MEAN	SD
< 50,000	5.88	1.51
50,000-1,00,000	5.98	1.55
1,00,000 - 1,50,000	6.56	1.65
P VALUE - 0.507		
ANOVA		
NON SIGNIFICANT		

CHART 24

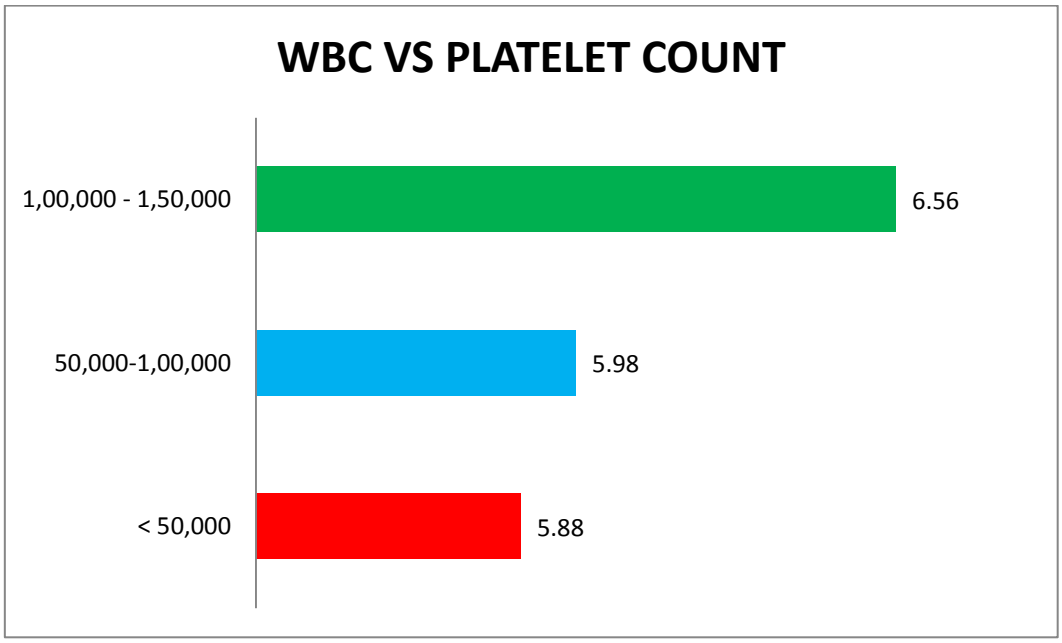


TABLE 25

PLATELET COUNT VS RBC

PLATELET COUNT	RED BLOOD CELLS	
	MEAN	SD
< 50,000	4.81	0.61
50,000-1,00,000	4.59	0.73
1,00,000 - 1,50,000	4.9	0.71
P VALUE - 0.223		
ANOVA		
NON SIGNIFICANT		

CHART 25

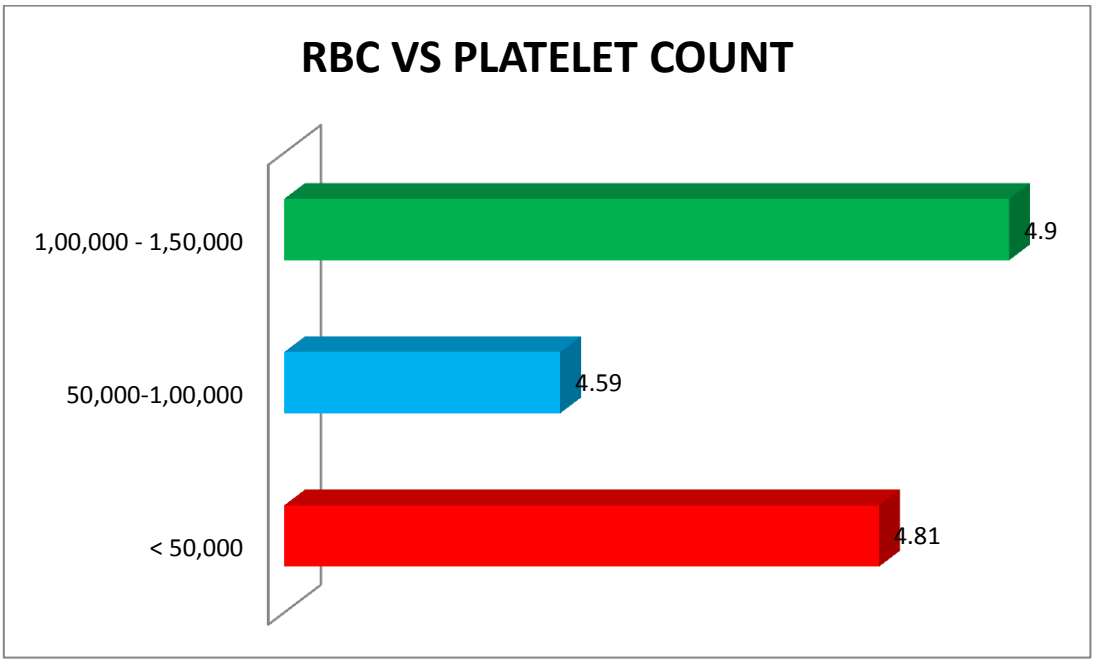


TABLE 26

PLATELET COUNT VS HAEMOGLOBIN

PLATELET COUNT	HAEMOGLOBIN	
	MEAN	SD
< 50,000	14.2	1.54
50,000-1,00,000	13.72	1.57
1,00,000 - 1,50,000	13.67	1.77
P VALUE - 0.375		
ANOVA		
NON SIGNIFICANT		

CHART 26

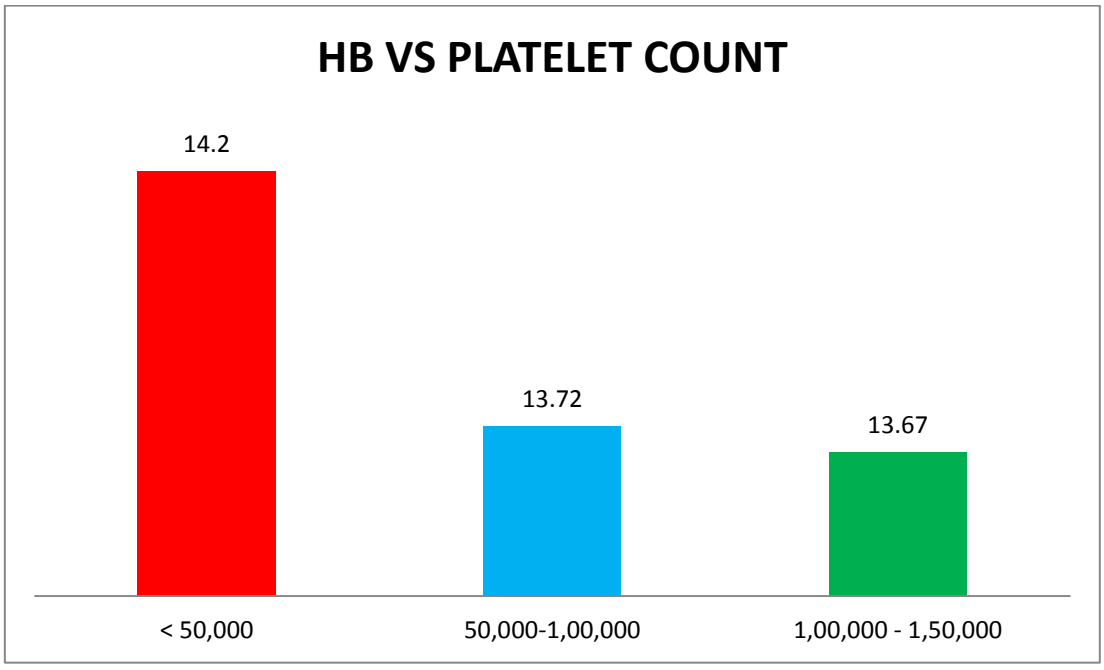


TABLE 27

PLATELET COUNT VS HAEMATOCRIT

PLATELET COUNT	HAEMATOCRIT	
	MEAN	SD
< 50,000	40.32	5.62
50,000-1,00,000	39.79	4.13
1,00,000 - 1,50,000	38.89	3.54
P VALUE - 0.25		
ANOVA		
NON SIGNIFICANT		

CHART 27

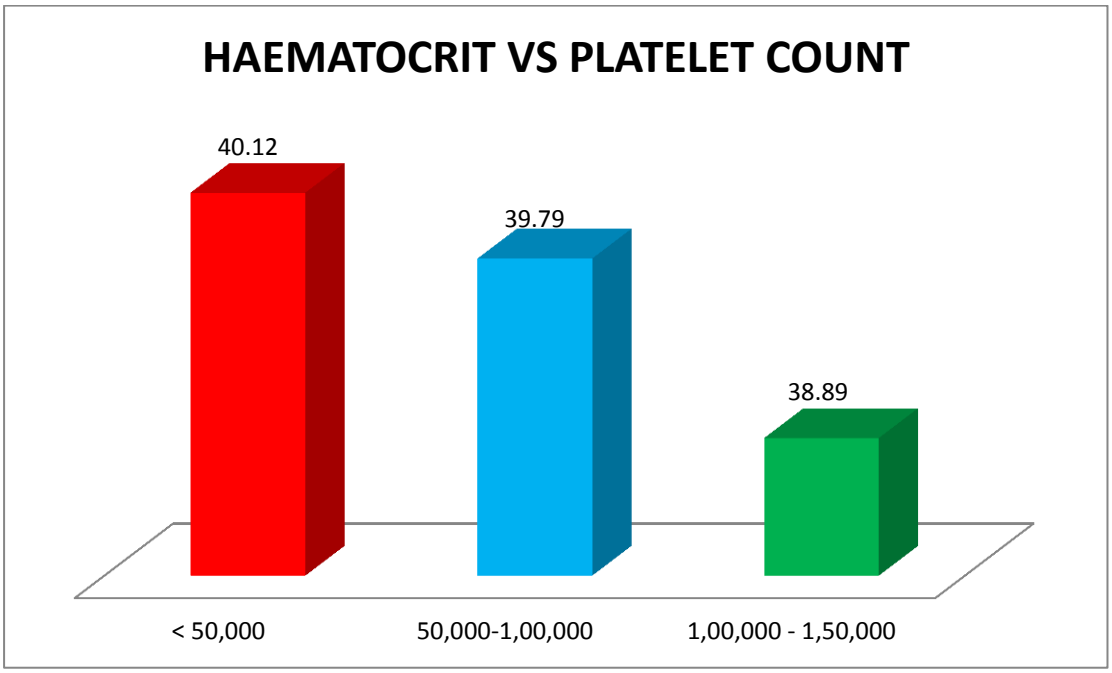


TABLE 28

PLATELET COUNT VS MCV

PLATELET COUNT	MEAN CORPUSCULAR VOLUME	
	MEAN	SD
< 50,000	84.28	4.96
50,000-1,00,000	84.94	7.37
1,00,000 - 1,50,000	85.48	3.18
P VALUE - 0.881		
ANOVA		
NON SIGNIFICANT		

CHART 28

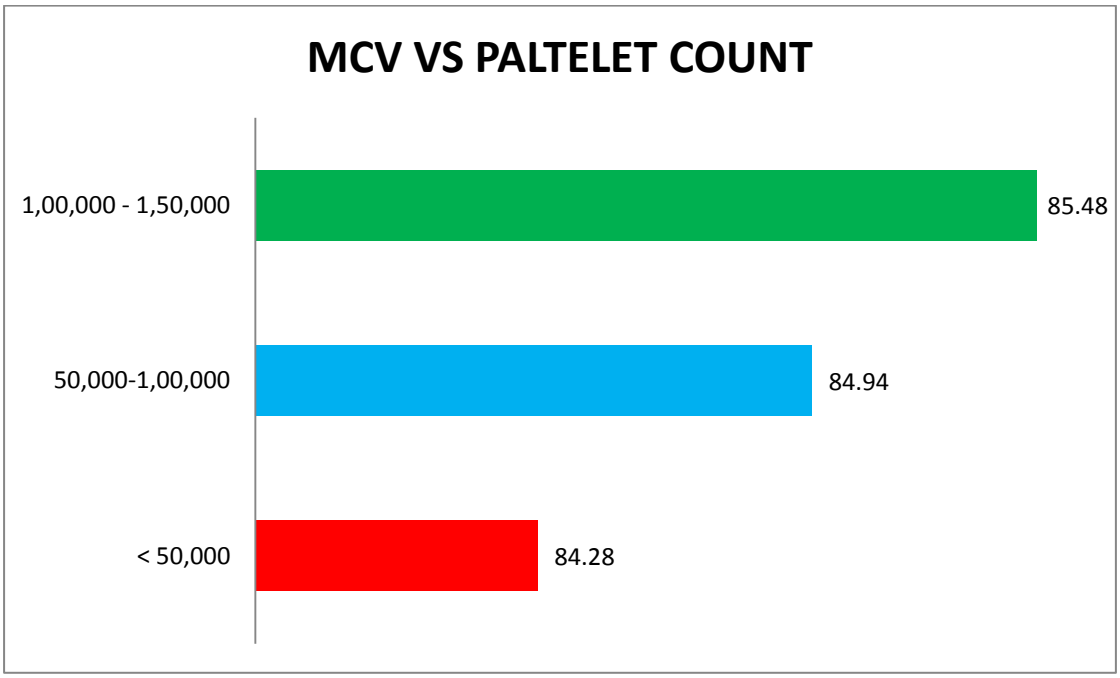


TABLE 29

PLATELET COUNT VS MCH

PLATELET COUNT	MCH	
	MEAN	SD
< 50,000	30.27	3.37
50,000-1,00,000	30.65	3.91
1,00,000 - 1,50,000	30.55	6.04
P VALUE - 0.911		
ANOVA		
NON SIGNIFICANT		

CHART 29

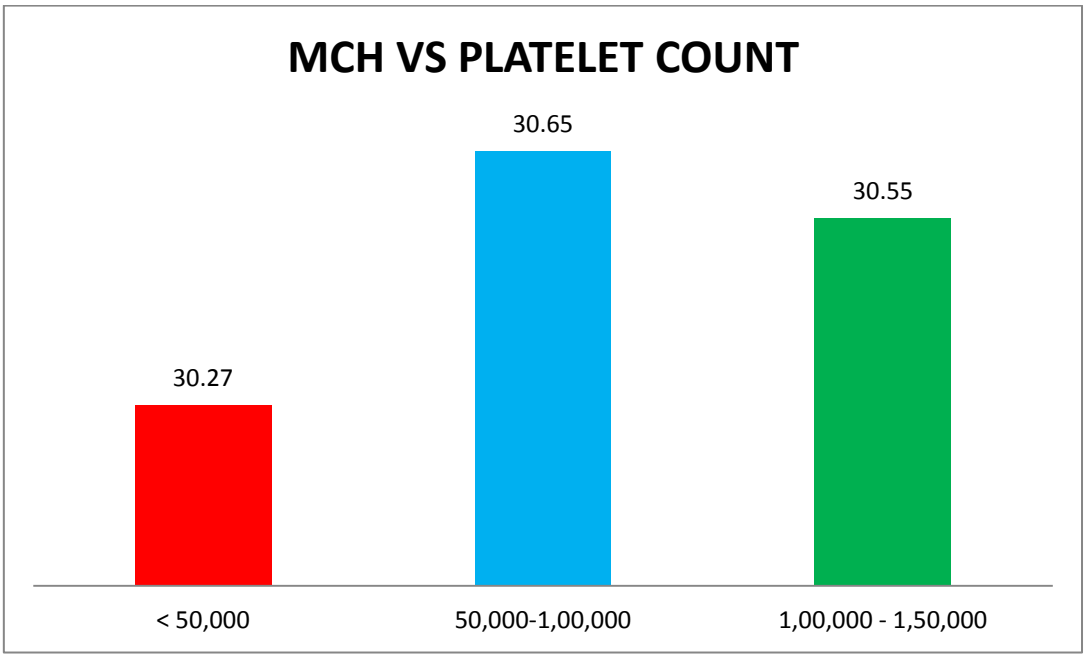
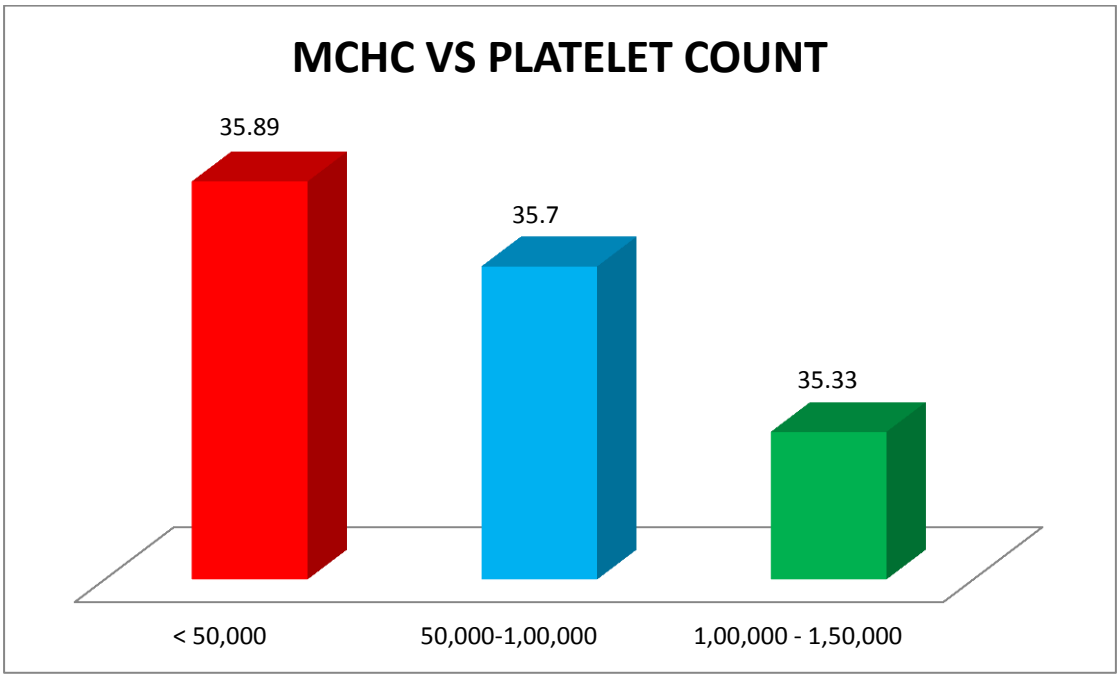


TABLE 30

PLATELET COUNT VS MCHC

PLATELET COUNT	MCHC	
	MEAN	SD
< 50,000	35.89	3.35
50,000-1,00,000	35.7	2.04
1,00,000 - 1,50,000	35.33	2.38
P VALUE - 0.751		
ANOVA		
NON SIGNIFICANT		

CHART 30



From this study

1) Mean age group of population affected is 18 to 30 yrs
2) Males are more commonly affected than females
3) Urban population (coimbatore) has more prevalence of dengue cases
4) 80% Of study population had only dengue fever ,remaining 20 % had dengue hemorrhagic fever
5) Mean platelet count at the time of admission is 50,000 to 1,00,000 which is significant in age group of less than 30
6) Most of the patients (93%) had a mean platelet volume of less than 9 with a p value of 0.05
7) Most of the patients (93%) had a platelet distribution width of more than 13 with a p value of 0.039

DISCUSSION

DF is a self-limited febrile illness; DHF is characterized by prominent hemorrhagic manifestations associated with thrombocytopenia and an increased vascular permeability.Theclinical diagnosis of DHF especially in the early phase of illness is not easy. Laboratory findings such as thrombocytopenia and a rising hematocrit in DHF cases are usually observed by day 3or 4 of the illness[33].The complex mechanism of thrombocytopenia remains unclear. Possible mechanism of thrombocytopenia could be direct bone marrow suppression by the virus;anti dengue antibody –mediated platelet destruction, peripheral consumption of platelets and isolated viral replication in the platelet[34].Thrombocytopenia can be due to increased peripheral destruction, inadequate production or abnormal pooling[35].The release of high levels of platelet activating factor may induce platelet consumption and augment adhesiveness of vascular endothelial cells resulting in thrombocytopenia[36].Thrombocytopenia leads to bleeding although the platelet count may not directly correlate with the bleeding manifestation .

Recently, novel platelet indices such as MPV and PDW have been investigated as prospective platelet activation markers. Platelet volume, a marker of platelet function and activity is measured as MPV by

hematology analyzers. MPV can be used as independent predictors of bleeding. It is surrogate marker of bone marrow activity ; a high MPV indicates increased megakaryocyte activity. A low MPV indicates marrow suppression and increased risk of bleeding. Correlation of platelet count and MPV with bleeding and severity of the disease can potentially predict the outcome(34).The present effort for finding simple and widely used platelet activation indices focused on the fact that platelet activation causes morphologic changes of platelets, including both the spherical shape and pseudopodia formation. Platelets with increased number and size of pseudopodia differ in size, possibly affecting PDW[37,38].

According to the study conducted by Jayashree K et al there was a significant association between platelet counts and severity of the disease which is similarto this study, thus concluding that platelet count can be used as predictive parameters for diagnosing DF/DHF[33].

CONCLUSION

The study focuses the importance of platelet parameters in dengue infection, In conclusion, significant differences were observed in the MPV, PDW and PLT in patients with dengue infection. Lowplatelet count, MPV, and PDW may be used as probable indicators for dengue in endemic area. Low MPV <9 fl and high PDW >13fl shows considerable sensitivity for dengue fever thus reflecting a predictive marker for diagnosing dengue fever.

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ANNEXURE

PROFOMA

NAME :

AGE :

SEX :

IP NO :

CHIEF COMPLIANTS:

1. FEVER
2. HEADACHE
3. ABDOMINAL PAIN
4. VOMITING
5. RETROORBITAL PAIN
6. MYALGIA
7. JOINT PAIN
8. SKIN RASH
9. BLEEDING MANIFESTATIONS-BLEEDING GUMS/ MALENA

PAST HISTORY

PERSONAL HISTORY

TREATMENT HISTORY

GENERAL EXAMINATION:

Built and nourishment

Pallor/ cyanosis / clubbing / Icterus /pedal edema / lymphadenopathy/

VITALS :

1.BP -

2.PR -

3.RR-

4.TEMP-

SYSTEMIC EXAMINATION:

CVS :

RS :

P/A :

CNS :

INVESTIGATIONS:

Complete haemogram

Dengue IgM serology

ஒப்புதல் படிவம்

நோயாளியின் பெயர்:

பாலினம் :

வயது :

பெற்றோர் பெயர் :

முகவரி :

அரசு கோவை மருத்துவக் கல்லூரியில் பொதுமருத்துவ துறையில் பட்ட மேற்படிப்பு பயிலும் மரு. ராஜேஷ்குமார் அவர்கள் மேற்கொள்ளும்ஆய்வில் செய்முறை மற்றும் அனைத்து விளக்கங்களையும் கேட்டுக் கொண்டு எனது சந்தேகங்களை தெரிவுபடுத்திக் கொண்டேன் என்பதை தெரிவித்துக் கொள்கிறேன்.

இந்த ஆய்வில் நான் முழு சம்மதத்துடனும், சுயசிந்தனையுடனும் கலந்து கொள்ள சம்மதிக்கிறேன்.

இந்த ஆய்வில் என்னைப் பற்றிய அனைத்து விவரங்கள் பாதுகாக்கப்படுவதுடன் இதன் முடிவுகள் ஆய்விதழில் வெளியிடப்படுவதில் ஆட்சேபனை இல்லை என்பதை தெரிவித்துக்கொள்கிறேன். எந்த நேரத்திலும் இந்த ஆய்விலிருந்து நான் விலகிக் கொள்ள எனக்கு உரிமை உண்டு என்பதையும் அறிவேன்.

இடம் :

தேதி : **கையொப்பம் / ரேகை**

MASTER CHART

S.NO	PATIENT'S NAME	AGE	SEX	IP NO	ADDRESS	PLATELET COUNT(*10^3/microlitre)	PLATELET DISTIBUTION WIDTH (PDW)(fl)	MEAN PLATELET VOLUME (MPV)(fl)	WBC(*10^3/microlitre)	RBC(*10^6/microlitr)	HEMOGLOBIN(g/dl)	HEMOTOCRIT(HCT)(%)	MCV(fl)	MCH(pg)	MCHC(g/dl)
1	MANIMARAN	37	MALE	231204	S/O MUNIYANDI,6/67,AAMAIKULA MEDU,COIMBATORE	44	16.1	8.3	11	6.46	14.2	55.8	86.4	29.7	34.4
2	RAJU	35	MALE	231085	S/0 PALANISAMY,MUUYANAPATTY,UDUMALAI,TIRUPUR	85	14.1	8.6	4.6	5.43	12.7	44.1	81.6	28.2	34.6
3	CHINNADURAI	20	MALE	228257	S/O MANIKAM,GOUNDAMPALAYAM,COIMBATORE	32	14.8	7.8	2.9	3.96	10.1	54.1	89	34	36.8
4	PERUMAL	39	MALE	228272	S/O MARAN,3/129,INDIRA NAGAR,COIMBATORE	16	18.4	8.5	5.8	4.73	16.1	42	88.8	34	38.3
5	BILASHINI	35	FEMALE	228023	W/O PRAMATH,KANIYAMPOONDI,TIRUPUR	65	13.8	8.2	4.2	4.21	13.3	35	83.1	31.6	38
6	SATHYA	28	FEMALE	226711	6/93,M.RANGARPALAYAM,KARUMATHAPATTI,COIMBATORE	78	11.6	9	4.3	5.31	16	44.9	80.8	30.1	37.3
7	VEERAMMAL	27	FEMALE	223996	W/O SHANMUGAM,ONNAKATTOR,JALRPATTI,TIRUPUR	23	16.4	8.1	5	4.5	14.9	48.8	86.2	33.1	38.4
8	BALAKRISHNAN	21	MALE	225253	RUBAN SANGAM NAGAR,CHETTIPALAYAM, COIMBATORE	56	13.4	7.9	3.5	5.18	16	54.4	87.3	30.9	35.4
9	VIJAYALAKSHMI	32	FEMALE	225150	W/O MURUGAN,NUNTHALA,OOTY	87	13.2	8.8	4.4	2.95	11.3	40	103	38.3	37.3
10	SHAJU	44	MALE	225566	59,PN PUTHUR,VADAVALLI,COIMBATORE	18	18.3	7.8	3.1	4.73	16.1	52	88.8	34	38.2
11	VANJIKUMAR	23	MALE	224549	3/29,KONGANATHA PUDUR,POLLACHI,COIMBATORE	64	16.6	8.2	5.1	4.9	13.5	41.3	84.3	27.6	32.6
12	SUMITHA	32	FEMALE	222208	8/2,KUMALAN AMMAN KUTTAI,SIGANALLUR,COIMBATORE	34	17.4	7.8	6.7	4.68	10.8	50.1	69.9	23.1	33
13	ARUN	20	MALE	224822	28 A,KK PUDUR,SAIBABA COLONY,COIMBATORE	126	10.8	10.1	5.8	4.79	14.9	49.6	85.4	31.1	36.4
14	PRAMODH	19	MALE	224444	80,RAMJA COLONY ,TIRUPUR	98	13.8	8.9	3.6	5.31	16	42.9	80.8	30.1	37.3
15	KONAMMAL	65	FEMALE	224518	W/O,NATRAJ,UKKADAM,COIMBATORE	49	14.6	8.1	5.6	4.07	13.2	37.1	89.2	33	36.8
16	SABITHA	21	FEMALE	224130	7/B KRISHNA NAGAR THONDAMUTHUR ,COIMBATORE	70	15.3	7.6	5.3	4.48	13.4	42.1	85	29.9	35.2
17	AMIR KHAN	22	MALE	223883	C/O LAKSHMI NAGAR MILLS,TIRUPUR	76	16.2	8.1	2.8	4.4	11.9	47.8	78.6	27	34.4
18	PRASANTH	27	MALE	223935	S/O LOGANATHAN,KINATHUKADAVU,COIMBATORE	58	17.1	7.5	5.7	5.72	13.6	47.3	82.7	30.8	37.2
19	RUBALAKSHMI	31	FEMALE	221697	92,ANNANAGAR,SOWRIPALAYAM PIRUVU,COIMBATORE	41	18.8	7.8	5.3	4.48	13.4	38.1	85	29.9	35.2
20	NANDHINI	22	FEMALE	218608	4,SANTHI NAGAR,RAKIYAMPALAYAM,TIRUPUR	94	13.4	8.8	3.4	4.89	14.1	50.6	79.8	28.8	36.9
21	SENTHILKUMAR	21	MALE	221506	S/O ARUMUGAM,POVYALUR,TIRUPUR	128	13.5	8.7	3.1	3.44	11.2	58.4	86.9	32.6	37.5
22	BALACHANDAR	23	MALE	220654	111,JEEVA NAGAR,KK PUDUR,KAVUNDAMPALAYAM,CBE	54	14	7.7	10	5.12	15.7	55.1	83.4	30.7	36.8

23	SUDALAYAMMAL	75	FEMALE	218658	ESWARAN KOVIL STREET,KOTTAIMEDU,COIMBATORE	46	15.9	8.1	4.3	5.31	15.8	39.9	80.8	30.1	37.4
24	MAHESWARI	20	FEMALE	218662	W/O DIVAKARAN,1/10,EDAYARPALAYAM ,COIMBATORE	94	14.6	8.8	3.7	3.95	11.2	47.2	102	38.3	37.3
25	THANGA SARASWATHY	28	FEMALE	218408	W/O LAKSHMANAN,OOTHAKAL MANDAPAM,COIMBATORE	86	10.4	9.2	5.8	4.73	15.8	49.9	88.8	34	38.3
26	VINOTH	32	MALE	218531	S/O KANAGAVEL,KARUVALUR,AVINASHI,COIMBATORE	17	17.8	7.4	4.2	4.21	13.3	54.2	83.1	31.6	38
27	ABIRAMI	27	FEMALE	218304	W/O DHAMODARAN,KINATHUKADAVU, COIMBATORE	56	16.1	7.8	6.1	5.91	11.2	45	61.3	19.3	31.5
28	SALAVUDEEN	19	MALE	217816	S/O THINO,VEERAPANDI,TIRUPUR	69	14.7	8.2	3	2.95	11.1	52.3	101	37.6	36.5
29	ALLIYAMMAL	60	FEMALE	217623	W/O KRISHNAN,SUNDARAPURAM,COIMBATORE	19	18.5	7.2	4.5	4.89	14.1	39	79.8	28.8	36.2
30	MALLIKA	45	FEMALE	217409	W/O RAJENDREN,ANNUR,COIMBATORE	74	14.8	8.9	5	4.5	14.9	38.8	86.2	33.1	38.4
31	SURESH	35	MALE	212876	S/O DATCHINAMOORTHY,PAPPA NAGAR,TIRUPUR	38	16.9	7.8	7.2	4.37	14.3	52.3	90.2	32.7	36.3
32	SATHYAMOORTHY	22	MALE	213015	S/O RAMASAMY,UDUMALPET,TIRUPUR	86	14.3	8.1	6.4	4.13	13.2	43	89.6	32	35.7
33	SURESH	33	MALE	213304	S/O NARAYANAN,SOMANUR,COIMBATORE	29	17.1	7.4	7.9	5.25	16.8	44.6	88.2	33.5	38
34	SAJINA	21	FEMALE	213485	D/O HAKKIM,SREENIVASAPURAM,POLLACHI,COIMBATORE	71	15.1	8.4	2.6	4.83	14.9	46.6	83.4	30.8	37
35	ARUMUGAM	45	MALE	212362	75,RAJA STREET,KUNIYAMUTHUR,COIMBATORE	43	16.7	8.2	7.4	4.5	14.1	45	83.3	31.3	37.6
36	MEENA	30	FEMALE	213844	75,EDAYARPALAYAM,COIMBATORE	54	15.9	9.4	4.8	4.79	14.9	44.5	85.6	31.1	36.3
37	ADTHIYA	20	MALE	214511	55,SARADHA NAGAR,TIRUPUR	62	11	8.9	5.8	4.73	16.1	49.8	88.8	34	38.3
38	SELVI	35	FEMALE	214615	W/O MANIKANDAN ,PERUMANALLUR,TIRUPUR	14	18.4	7.4	3.9	4.99	14.6	44.8	85.2	29.3	34.4
39	ELANGO	28	MALE	214830	S/O DHARMAN,MAHALINGAMMAL KOVIL STREET,COIMBATORE	82	14.6	8.6	6.6	4.34	13.4	54	83.6	30.9	36.9
40	SEEMAN	30	MALE	217180	S/O VIJAYENDRAN,UDAYAMPALAYAM,COIMBATORE	68	15.1	7.9	5.4	4.43	13.3	53.6	87.8	30	34.2
41	MOHAMMED MUNJI	29	MALE	204350	6/23,SAIBABA NAGAR,KOVAIPUTHUR,COIMBATORE	99	13.2	8.7	8.6	5.83	13.2	48.9	86.3	29.8	34.6
42	DEVI	27	FEMALE	204302	68,GANAPATHI NAGAR,MALUMACHAMPATTI,COIMBATORE	87	14.4	8.6	5.8	3.96	12.1	45	88.4	30.6	34.6
43	KARTHICK	30	MALE	276973	1/36,MULLAI NAGAR,THUDIYALUR,COIMBATORE	34	17.6	7.8	5.3	4.44	11	42.7	88.3	24.8	28.1
44	KRISHNAVENI	28	FEMALE	203456	70,NETHAJI MAIN ROAD,UDAYARPALAYAM,COIMBATORE	59	16.7	7.9	4.5	4.97	15.3	45.8	84.1	30.8	36.6
45	SARAN	21	MALE	209740	C/OCRM KALYANAMANDAPAM,CHETTIPALAYAM ,COIMBATORE	65	13.2	8.6	2.8	4.6	15.2	40.9	88.9	33	37.2
46	NANDHALAL	24	MALE	210868	S/O BHUDURAI,200/3,SIRUPODUVPATTY,TIRUPUR	117	13.6	8.9	7.3	6.06	16.1	53.6	79.7	26.6	33.3
47	AYYAPPAN	19	MALE	212312	S/O PONNAIYAN,VELANDIPALAYAM,COIMBATORE	72	15.3	7.4	4.7	4.59	14.7	48.9	85.8	32	37.3
48	GOPAL MANDAL	26	MALE	212352	S/O RUPSON,MUDHALIPALAYAM,SIDCO,TIRUPUR	95	10.6	8.9	2.1	4.15	13.7	55	89.6	33	36.8
49	VIJAYAKUMAR	40	MALE	212762	S/O KRISHNAN,KRISHNAPURAM,COONOOR,THE NILGIRIS	12	18.9	7.2	3.4	4.74	13.6	50.3	84.8	28.7	33.8
50	BALAN	70	MALE	211225	18,RAJAN COLONY,PN PUDUR,VADAVALLI,COIMBATORE	40	16.4	8.8	4.8	4.55	14.5	43.7	85.5	31.9	37.3
51	RAJESH KUMAR	30	MALE	202093	15/16,VASATHAM NAGAR,SARAVANAMPATTI,COIMBATORE	98	13.4	8.9	7.7	3.44	11.2	49.7	86.9	32.6	37.5
52	PANDI	34	MALE	202403	7,PONNUSAMY LAYOUT,RATHINAPURI,COIMBATORE	82	14.5	10.2	7.1	3.59	11.2	41	87.3	31.5	36.1
53	SHERIF BASHAR	19	MALE	202616	1/50,SAMUNDIPURAM,TIRUPUR	76	14.8	8.3	9.6	5.57	15.4	49.3	79.5	27.6	34.8
54	SANJANA	27	FEMALE	203867	PAPPANAYAKANPALAYAM,COIMBATORE	60	13.6	8.4	7.3	6.06	16.1	48.3	79.7	26.6	33.3

55	THIRUCHOWDRY	36	MALE	202769	4/581,THIRUMOORTHY NAGAR,POTHANUR,COIMBATORE	52	14.2	8.1	8.7	4.93	15.3	42.9	87	31	35.7
56	ANANTHA KUMAR	19	MALE	199970	8,ADVANI NAGAR,KOVUNDAMPALAYAM,COIMBATORE	65	16.6	7.9	3.6	3.71	11.1	44.7	84.6	29.9	35.4
57	PRAVEEN	20	MALE	194428	S/O PALRAJ,CHINNANPALAYAM,POLLACHI,COIMBATORE	78	15.3	9.8	2.8	5.03	12.9	43.7	78.3	25.7	32.7
58	PRAMILA	46	FEMALE	199429	W/O PALRAJ,CHINNANPALAYAM,POLLACHI,COIMBATORE	45	13.8	8.7	5.6	4.82	13.3	38.3	79.5	27.6	34.7
59	ARJUN	33	MALE	199440	S/O MANIKKAM,VENGAMEDU,TIRUPUR	90	14.8	8.5	4.4	4.72	15.1	54.5	86	32	37.2
60	PALANISAMY	60	MALE	196434	10/7,KALYANPUDUR,THOONDAMUTHUR,COIMBATORE	27	17.5	7.5	7.5	5.44	15.7	53.4	80.3	28.9	35.9
61	PRASANNA	33	MALE	238665	S/O CHANDRANMOHAN,15/A,MANIKARTHOTTAM,COIMBATORE	116	13.4	8.9	7.8	4.43	11.2	56.4	86.3	29.8	34.6
62	PREMKUMAR	26	MALE	239172	S/O VISHWANATHAN,6/95B,MGP NAGAR,SULUR,COIMBATORE	78	14.7	9.2	6.5	3.45	13	52.6	88.4	30.6	34.6
63	AJIBA	19	FEMALE	239241	D/O,ABDUL RAHMAN,32/A,SM NAGAR,METTUPALAYAM,CBE	58	16.2	8.2	3.5	4.65	13.2	49.8	88.3	24.8	28.1
64	KUMAR	43	MALE	239877	S/O GANESHAN,36/50E,KULLATHALA ,ARAVENU,KOTHAGIRI	15	17.3	7.6	4.6	5.42	15.5	44.8	84.1	30.8	36.6
65	BIJAY DOSS	29	MALE	239946	S/O GANESH DOSS,CHINAVEDAMPATTI,COIMBATORE	64	13.8	8.4	2.3	3.71	14.8	54	88.9	33	37.2
66	MOHAMMED RAFIF	30	MALE	241043	S/O MOHAMMED KAMAL,11,PALLIVASAL,METTUPALAYAM,CBE	82	13.8	8.8	5.6	5.54	11.4	40.8	79.7	26.6	33.3
67	JOSEPH	36	MALE	241616	S/O SOWRIMUTHU,PARASURAMAR ST,OOTY	124	14.3	8.6	7.8	4.87	12.4	43.8	102	38.3	37.3
68	RAJAN	21	MALE	241479	S/O KRISHNAN ,122,NAJUNDAPURAM,COIMBATORE	56	15.5	8.1	4.5	5.78	12.8	53.5	88.8	34	38.3
69	VIJISH KUMAR	20	MALE	242131	NO 38,GANDHI NAGAR,UKKADAM,COIMBATORE	96	13.2	8.4	3.6	4.47	13.7	54.3	83.1	31.6	38
70	MANIKANDAN	23	MALE	242330	S/O RASU,POOMARKET,COIMBATORE	82	14.8	8.7	6.2	3.78	14.8	52.1	61.3	19.3	31.5
71	DULIMAN	27	FEMALE	242256	S/O SADHAM HUSSAIN,SULUR, COIMBATORE	130	13.4	8.4	8.8	4.74	15.3	46.3	101	37.6	36.5
72	PORNU	23	MALE	242596	S/O SANJAY PATHRU,15 VELAMPALAYAM,TIRUPUR	73	16.4	8.1	3.2	4.43	13.4	43.2	79.8	28.8	36.2
73	ROTHAN	28	MALE	242395	S/O SANJAY PATHRU,15 VELAMPALAYAM,TIRUPUR	37	14.8	7.8	5.7	5.67	14.4	44.4	86.2	33.1	38.4
74	SHANTHI	24	FEMALE	243145	W/O PATHARAJA,VELAMMAL NAGAR,RATHNAPURI,CBE	85	15.7	8.2	7.6	4.78	15.6	43.6	78.3	25.7	32.7
75	SUBASHINI	22	FEMALE	242538	W/O GUNASEKAR,NALLIKUMARANPALAYAM ,COIMBATORE	83	13.5	10.2	4.7	5.42	14.8	49.1	79.5	27.6	34.7
76	NORMOHAMMED	37	MALE	243201	S/O SULAIMAN,14,CHERAN NAGAR,SELVAPURAM,COIMBATORE	10	18.8	7.4	6.1	5.89	13.2	50.7	86	32	37.2
77	SATHYA	20	FEMALE	243217	52/2,RADHAKRISHNAN ROAD,NS PALAYAM,COIMBATORE	74	14.3	8.3	3	4.56	11.8	48.2	80.3	28.9	35.9
78	RAMKUMAR	24	MALE	243562	S/O MUTHAIAH,THIRUVADANAI,RAMANATHAPURAM,CBE	66	11.4	8.7	4.8	4.31	13.6	42.6	88.8	38.3	34.2
79	ARUNACHALAM	60	MALE	243925	S/O GEMINI,83,THILAGAR NAGAR,TIRUPUR	46	14.4	8.1	5.3	5.56	14.4	43.2	83.1	34.4	37.8
80	SARAVANAN	29	MALE	244732	S/O BALASUBRAMANIAN,67/1,PN PUTHUR,COIMBATORE	64	15.8	8.4	6.4	4.38	13.6	50.4	85.5	36.6	34.4
81	USHANANDHNI	31	FEMALE	244202	W/O MUNISHWARAN,SRP MILLS,COIMBATORE	94	14.7	8.8	4.6	3.34	12.2	47.8	79.7	26.6	33.3
82	SUKIRAN	25	MALE	243982	S/O SANJAYDOSS,SIDCO,MUTHUPALAYAM,TIRUPUR	83	11.6	8.6	3.1	4.56	13.4	49.6	87	31	35.7
83	ARUMUGAM	55	MALE	241113	S/O NATCHI,656,MUTHU NAGAR,THEKKUPALAYAM,PALLADA,TIRUPUR	11	18.9	7.4	6.4	3.47	15.6	50.6	84.6	29.9	35.4
84	YUVASHRI	20	FEMALE	244561	D/O RAVICHANDRAN,3/7,KAMARAJAR STREET,MARATHAMALAI,CBE	102	14.2	8.6	3.8	4.87	14.4	48.7	78.3	25.7	32.7
85	KANDHASAMY	33	MALE	245053	S/O VEERAMUTHU,PAPPANAIKANPALAYAM,COIMBATORE	59	14.7	8.2	5.5	5.78	15.8	43.3	79.5	27.6	34.7
86	HEBJU RAHMAN	32	MALE	245824	S/O SULTHAN ALI,TIRUPUR	72	13.7	8.4	7.5	4.47	11.2	45.5	86	32	37.2

87	JAIKRU REHMAN	24	MALE	245835	S/O ROSE ALI ,TIRUPUR	57	15.8	7.9	8.8	3.78	12.8	54	80.3	28.9	35.9
88	VELUSAMY	67	MALE	246163	S/O OORKALAN,SIVAN MALAI ESTATE,MUNNAR	30	16.4	7.7	7.5	4.74	15.6	48.9	87.3	30.9	35.4
89	LAKSHMIRAJ	26	MALE	242526	S/O SENTHIL,THOTTIPALAYAM,TIRUPUR	64	15.8	8.3	4.3	4.43	14.4	54.2	103	38.3	37.3
90	GOWSHIK	21	MALE	242822	S/O KUMAR,AVINASHI ROAD,PN PALAYAM,COIMBATORE	135	13.6	8.8	2.8	5.25	13.2	45	88.8	34	38.2
91	AJITH KUMAR	22	MALE	240958	S/O SURESH,PERUMAL KOVIL STREET,OONDIPUDHUR,CBE	83	14.4	8.5	6.1	4.83	12.3	43.5	84.3	27.6	32.6
92	ANTONY	50	MALE	239875	S/O KURUSAI,63,SAMY STREET,ODAKUDI,TIRUPUR	36	16.4	7.8	4.5	4.5	14.6	44.5	69.9	23.1	33
93	VISHWA	21	MALE	238460	S/O CHANDRAN,38/3,CHINNATHASULLI STREET,RATHINAPURI ,CBE	74	14.3	8.3	2.9	4.93	15.2	52.6	85.4	31.1	36.4
94	SUDHARSHAN	24	MALE	236932	S/O RAVI,66,THILAGAR STREET,SERANAIKAN PALAYAM,CBE	66	15.3	8.9	5.6	3.71	13.8	40.3	80.8	30.1	37.3
95	RAJIV	39	MALE	209571	186/3,SANTHOSHI MADAHA KOVIL STREET,MADUKKARAI,CBE	13	18.8	7.4	5.8	5.03	14.5	49.8	79.7	26.6	33.3
96	AISHA	19	FEMALE	207032	D/O SYED,16 C.M.NAJIV FOWTHUKKED STREET,UKKADAM,CBE	82	14.6	8.8	6.3	4.82	16.2	45.6	102	38.3	37.3
97	MAHENDRAN	38	MALE	209327	S/O VINAYAGAM,43/D,DSC HOSPITAL BACKSIDE,TIRUPUR	21	17.4	7.3	8.1	4.72	14.7	49.5	88.8	34	38.3
98	DEVI	38	FEMALE	204362	68,GANAPATHI NAGAR,MALUMACHAMPATTI,COIMBATORE	92	14.6	8.6	7.4	3.84	13.6	36.5	83.1	31.6	38
99	SANJANA	29	FEMALE	203847	W/O JOTHISH,PAPPANAYAKANPALAYAM,COIMBATORE	123	14.5	8.9	3.9	5.67	14.4	45	61.3	19.3	31.5
100	THIRUCHOWDRY	35	MALE	202761	4/581,THIRUNEELAKONDAPURAM,TIRUPUR	42	15.6	8.3	5.4	4.43	13.8	43.3	86.5	23.4	32.5