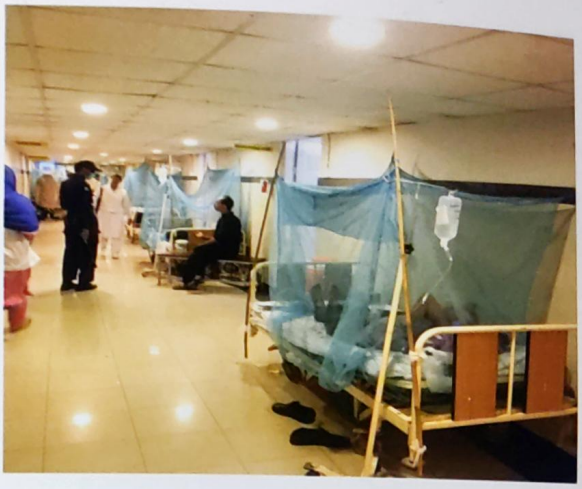
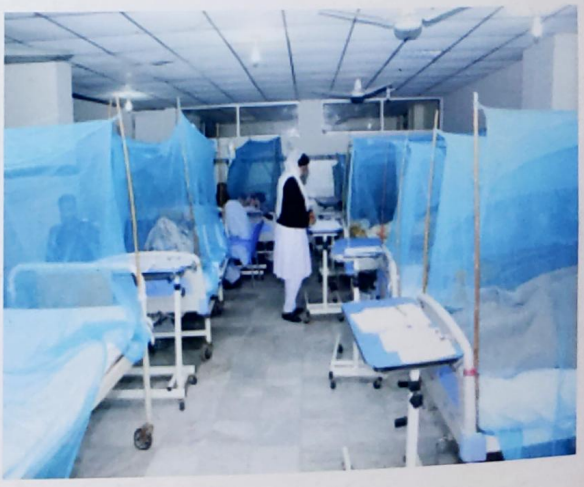
Dengue Patient Care & Training Model

Rawalpindi Medical College & Allied Hospitals, Rawalpindi

HFH - Department of Infection Diseases (DID)





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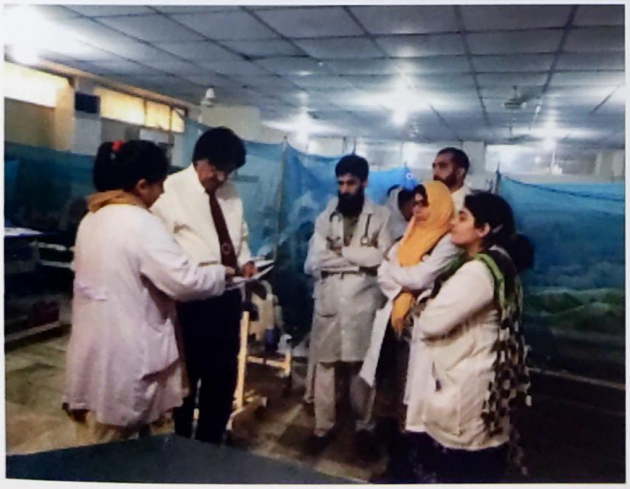

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Introduction

Dengue is a viral disease caused by flavivirus transmitted by the bite of the Aedes mosquito. It is caused by one of the four serotypes (DEN1, DEN2, DEN3, DEN4), widely distributed globally between the tropics of Capricorn and cancer. Approximately 70-500 million cases of dengue fever and several hundred thousand cases of DHF occur each year with number increasing in both DF and DHF due travel, climate change and urbanization. Nowadays, about 2.5 billion people, or 40% of the world's population, live in areas where there is a risk of dengue transmission. Dengue has spread to more than 100 countries in Asia, the Pacific, the Americas, Africa, and the Caribbean.

Symptoms typically begin three to fourteen days after infection. This may include a high fever, headache, vomiting, muscle and joint pains, and a characteristic skin rash. Recovery generally takes two to seven days. 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 blood plasma leakage, or into **dengue shock syndrome**, where dangerously low blood pressure occurs. There are no specific antiviral drugs for dengue, however maintaining proper fluid balance is important.

Dengue Virus Infection in Rawalpindi

Dengue is now endemic in Pakistan with its usual peak incidence in the post monsoon period. Rawalpindi division is among the few regions in Punjab which had to face four epidemics from 2013 to 2016 of which most patients were managed at RMC and Allied Hospitals. An over view of these epidemics is a follow.

	2013	2014	2015	2016
OPD	25914	22126	44337	20449
Admissions		2422	6139	5258
Confirmed cases	1223	1571	3917	3306
DHF	339	570	1384	992
DSS		32	84	55
Expiries/Mortality	7 (0.57%)	2 (0.127%)	8 (0.204%)	3 (0.09%)
Prevalent genotype	DEN2	DEN3 (85.9%)	DEN2 (62%)	DEN2 (48.16%) DEN3 (42.18%)
International Mortality	2.5%			

Management of Dengue Epidemic 2016

Rawalpindi Medical College & Allied Hospitals.

2016 was the fourth consecutive dengue epidemic year for the Rawalpindi. Most of the patients were managed at the Allied Hospitals Rawalpindi Medical College i.e. Holy Family Hospital, Benazir Bhutto Hospital & District Head Quarter Hospital.

First patient with dengue fever was reported on 28th March, 2016. A total of suspected 20,449 patients reported to dengue OPD, out of which 5258 patients were admitted as a case of probable dengue fever and 3306 were confirmed to have dengue fever. 992 patients were managed at DHF (Dengue hemorrhagic Fever) and 55 as DSS (Dengue Shock Syndrome). PCR revealed that predominant genotypes were DEN-2(48.16%) and DEN-3(42.18%). Mortality rate remained less than 0.09% in patients who are admitted to RMC and Allied hospitals, which is very low as compare to the international reported rate of 1%.

This year not only Rawalpindi division was affected but Islamabad also had to face dengue epidemic. As per record of RMC and Allied hospitals, 1233(37.29%) patients presented from Rawalpindi, whereas 1925(58.22%) patients were from Islamabad. Moreover 148(4.47%) patients were from other areas of Rawalpindi division. This lesser disease burden from Rawalpindi as compared to previous year seems to be due to;

1) Improved preventive steps, and
2) Development of immunity in local population.

In future preventive steps need to be implemented in Islamabad area for eradication of Aedes mosquito as otherwise dengue patients will continue to pour and epidemic may have to be faced again in next season.

Dengue Expert Advisory Group (DEAG)

Dengue expert advisory group has been established by government of Punjab in 2011 which includes doctors who are expert in managing dengue. This group has established its first guidelines in 2012 to provide standardize care to all patients of dengue in Punjab. DEAG has appointed one doctor in each division of Punjab to act as a Convener/Focal Person.

Divisional Dengue Expert Advisory Group (DDEAG)

DDEAG per TOR provides clinical advice/guidance regarding clinical management in the light of guidance issued by provincial DEAG from time to time and verifies dengue related deaths in Rawalpindi Division, also refers the case to the provincial DEAG, if required for advice.

Dengue Management Training of Healthcare Professionals in DID,

- A training module has been developed by the DEAG, Punjab for training of healthcare professionals including Doctors, Nurses and Paramedics. DID Rawalpindi Medical College is being used as Centre for Training in the Rawalpindi Division.
- DEAG certified master trainers from the faculty of Rawalpindi Medical College impart the said training every Wednesday.
- Healthcare professionals from all the public and private sector are being trained here in collaboration with the Health Department and the Divisional /District administration.
- The data of the above mentioned training for last 3 years is as follows.

		2014	2015	2016
Doctors	Government Sector	303	598	397
	Private Sector	128	61	136
Nurses	Government Sector	377	273	216
	Private Sector	07	37	26
Paramedics	Government Sector	11	09	79
	Private Sector	21	10	17
Total		**847**	**988**	**871**

- These training sessions are interactive specifically designed to develop skills for management of all dengue patients during non-epidemic as well as epidemic season with special emphasis on standardization regarding the dengue management.
- At the end of each session written test is taken from all candidates to assess the acquisition of necessary skills /level of knowledge required for expert management of dengue patients.
- CME credit hours are being awarded by King Edward Medical University for attending these sessions after passing the post session test.
- These training sessions are mandatory for every Doctor, Nurse, paramedical staff working in RMC & Allied Hospitals, Rawalpindi.

Hand on Training

Special hand on training for the participants of dengue training session are also conducted in the Department Infectious Diseases during epidemics with emphasis on the clinical management of DHF and DSS patients in the setting of HDU and ICU under the supervision of consultants. During last year healthcare professionals from Allied Hospital Punjab Medical College Faisalabad, Nishtar Medical College Multan and Gujrat Medical College Gujrat have been provided this hand on training in addition to the Healthcare professionals of Rawalpindi Division

Dengue management module in epidemic has been established by the Chief Executive Officer and Principal, RMC & Allied hospitals in the DID, HFH and all the medical units of RMC with collaboration of DEAG, Punjab.

In order to enhance the capacity building and overcome the shortage of trained dengue staff, regular training for dengue management were conducted at DID, HFH for Doctors, Paramedics and Nurses on weekly basis under the supervision of Divisional DEAG Rawalpindi.

In addition to training of local hospitals staff, the Health Care Professionals from the public and private sector of other Districts including Attock, Chakwal and Mianwali were also trained. During last year a total of 39 such training sessions were held and 871 Health Care Professionals were trained.

During epidemic season (September to November 2016, duty doctors (MOs, PGs and Hos) worked on 24 hours duty on alternate days and about 22 to 24 trained doctors remained on the floor at a given time for smooth management of dengue patient as per guidelines.

A total of 84 staff nurse deputed in DID ward at Holy Family Hospital during this epidemic. Staff Nurses work in 8 hourly shifts under the supervision of 2 Head Nurses per shift. 24 staff nurses remained at the floor at a given time and managed the Dengue patients. Detailed working of dengue module of Rawalpindi Medical College & Allied Hospitals is outline as follow.

Outpatient Management (Annex 1, 2 & 3)

Patients presenting to hospital with fever of 2-10 days are immediately referred to dengue OPD counter (Annex 1) after initial evaluation. Patients are referred from OPD and ER of medicine, pediatrics, Gynae/Obs, surgery and other departments within hospital as well as from primary and secondary health care to Dengue OPD counter which is working 24/7.

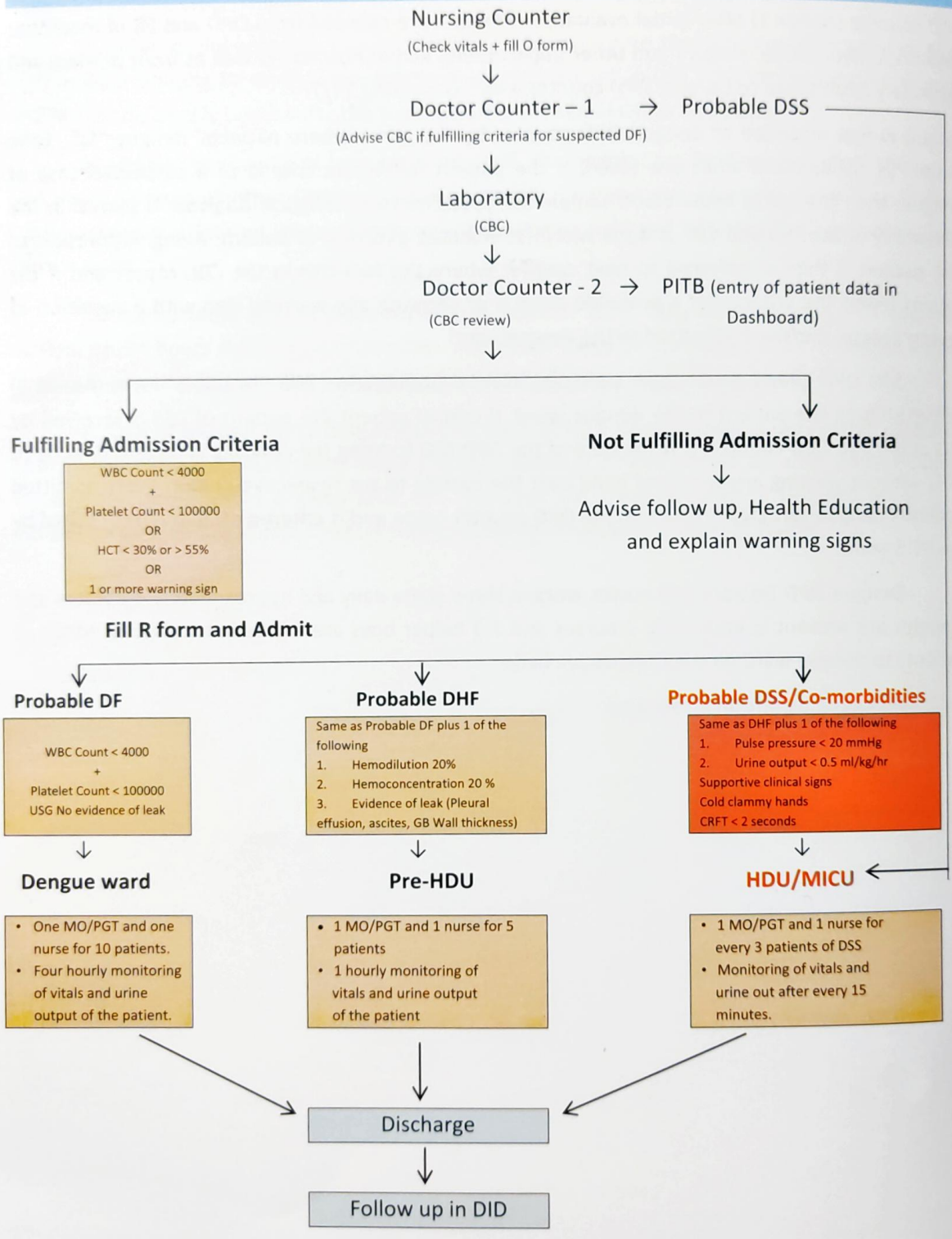
Patient is first attended at dengue OPD counter by the nurse where patients' dengue "O" form (Annex 2) is filled and vitals are taken. If the patient fulfills the criteria of a suspected case of dengue, then the nurse takes blood sample for CBC. The Hematological Analyzer is placed in the laboratory of the DID and CBC is done within 15 minutes of arrival of patient. Along with report of CBC patient is then transferred to next counter where the MO checks the CBC report and if the patient fulfills the criteria for a probable dengue or showing any warning sign with a suspicion of severe dengue, he/she is admitted to the dengue ward.

MO OPD charts down short summary, clinical examination and fills the R" form (Annex 3) before shifting the patient to the dengue ward. If critical patient like patient of DSS is received by MO at dengue OPD counter, it is the duty of the OPD MO to bring the critically ill patient directly to HDU without wasting any time and hand over the patient to the respective doctor. Every admitted patient's dengue serology is taken by the OPD counter nurse and is entered on to the dash board by the PTIB team.

Dengue OPD Doctors and nurses work in three shifts daily and approximately 4 doctors and 6 nurses are present in each shift. 2 nurses and 2-3 helper boys are available for shifting admitted patients to dengue ward on their respective beds.

Following algorithm is followed

Flow Diagram: Management of Dengue Patients in Department of Infectious Diseases, Holy Family Hospital, Rawalpindi



Indoor Management of Dengue Patients

Patients who are admitted from dengue OPD counter are shifted to HDU, Pre-HDU or Dengue fever Bay based on whether they have DF(Dengue fever), DHF (Dengue Hemorrhagic Fever),DSS (Dengue shock Syndrome).

One PGT/MO and a nurse for 10 patients of DF is responsible for patient management. He/She charts down patient history, writes down the relevant clinical examination, differential diagnosis, and orders necessary lab investigation. Unified history sheets are used for documentation which are color coded. Green color sheets are for DF patients and red color sheets for DHF and DSS patients. Standardized flow charts for monitoring (sample attached) are used by the doctor and nurses. Monitoring of the patient is the duty of the nurse. According to the DEAG protocol nurse takes the vitals including pulse, BP, RR, temp, pulse pressure, capillary refill time four hourly for DF, 1 hourly for DHF and every 15mins for DSS respectively. Graduated transparent urinals are provided to the patients to collect their urine 4 hourly, this allows the nurse not only to measure urine output but also to keep an eye on urine color as dark urine is an early sign of impending shock. The concerned doctor guides the nurse regarding fluid management of the dengue patient and writes notes during his/her shift.

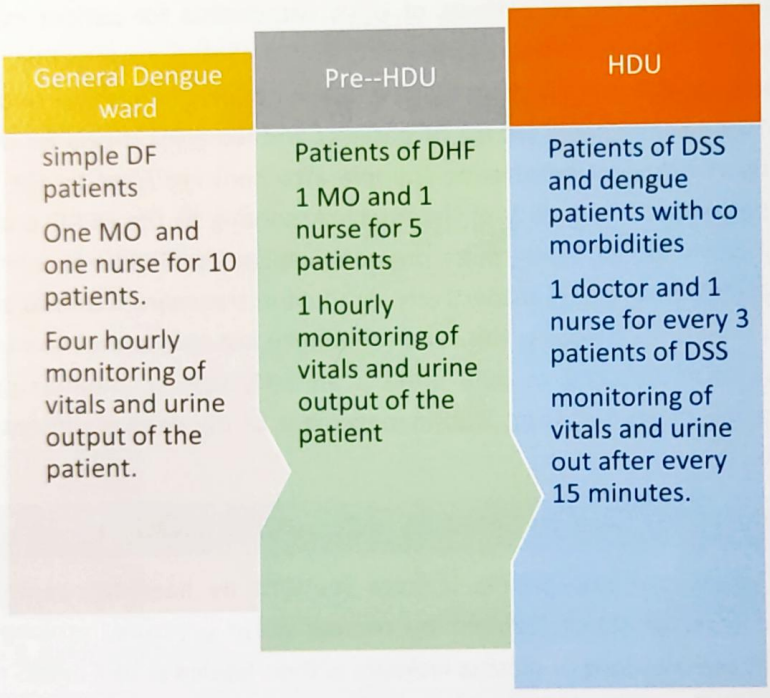
Management of Dengue Patients in HDU

Dengue patient when develops plasma leakage (evident by haemoconcentration >20% and/or third space fluid loss) or shock (evident by narrow pulse pressure, prolong CRFT and decreased urine output in the presence of plasma leakage) is then labeled as DHF or DSS respectively and is shifted to HDU from the general ward. Similarly, patients with comorbidities like diabetes mellitus, hypertension, heart disease are also admitted in the HDU.

For every 5 patients of DHF/DSS there is one PGT/MO and one nurse is available. Management of the patient is according to the algorithms (Annex 4 & 5) provided by DEAG.

Management of Dengue Patient in MICU:

If a patient needs ventilatory support or ICU care for standard MOF management. Patient is shifted to MICU and one nurse and one doctor is appointed from dengue team for management.



Dengue Ward Round:

A clinical and administrative round of department of infectious diseases and other medical units is being done by Chief Executive and the Principal of RMC and allied hospital and Medical superintendent on daily basis during early hours and midnight.

Principal nominates one Professor of Medicine exclusively for supervision of dengue epidemic.

All the patients are daily seen by the DID consultants and Senior Registrars. Following diagram shows the duties of Consultant / senior registrar and their round routine.

CHIEF EXCECTIVE AND PRINCIPAL RMC AND ALLIED	• Clinical and adminstrative round of dengue ward on daily basis.
PROFESSOR/ CONSULTANT DID	• Incharge of the unit regarding patient management and smooth running of the unit. • Does daily round of all the admitted patients • Provide guidance to Senoir registrars and Assistant consultant. • Consult DDEAG members for problematic clinical issue.
SENOIR REGISTERAR	• Does morning and evening round of all the admitted patients. • Evaluate every new and problematic patient as and when required. • Supervised by DID consultant. • Consult DID consultant in case of any problematic patient. • Generates clinical alerts.

Management of Paediatric Patients With Dengue Fever

Paediatric patients are also admitted in the dengue ward which are managed by Paediatric doctors, nurses trained in managing dengue. Consultant DID, Consultant and SR Paeds do daily rounds of the patients.

Consultations from other Departments

A multi-disciplinary approach has been established for dengue patients and consultants of different specialties including Cardiology, Nephrology, Pathology and Surgery who are approached for their expert opinion regarding the management of comorbidities or acute clinical issues related to other system diseases.

Use of Modern Technology / Smart Phones:

Internet service is available in the dengue ward round the clock. This helps the doctors to get reference information regarding dengue.

A whatsapp group having all the dengue team members (clinical and administrative) has been developed which helps to improve effective communication between the team members. Clinical alerts are generated on this group by the SR so that both clinical and administrative members are aware of number of critical patients and their active clinical issues. Moreover this also serves the purpose of academic forum.

Lab Investigations

Dengue Serology –NS1, IGM, IGG, PCR

During epidemic season dengue serologies are sent to the hospital main pathology lab in two shifts. First batch of samples are sent at 5:am and results are available at 9:00 am. Second shift of samples is sent at 1:00 pm and results are available at 5 pm. This allows the consultant / senior registrars to take decision regarding the discharge of the patients and shifting the patients to medical wards if their dengue serology is found to be negative to arrange space in case of shortage of beds. PCR test of all NS1 Positive patients is done.

Other Investigations

CBC machine is working round the clock with a lab technician available in the department of infectious diseases. CBC is done 12 hourly for DF patient and every 6 hourly for DHF/DSS patient. All other necessary lab investigations are done on daily basis and as advised by the concerned doctor e.g. RFTs, LFTs, S. electrolytes, PT/APTT, Urine RE, ECG, CXR. Special investigations like serum albumin, serum cholesterol, serum calcium, cardiac enzymes, ABGs are done in DHF/DSS patient only

Imaging/ Radiological Services:

Ultrasound abdomen/chest is done daily in all DF patients once and when needed. Radiologist is physically available 24/7 for urgent ultrasound and reporting.

Chest X ray machine is available in DID with a technician and is done immediately as advised by the doctor. Reporting of chest X ray is also done by radiologist on daily basis.

Pharmacy:

A Pharmacy has been established in the dengue ward/ DiD which provides all the medicines to the patients round the clock. There is ample supply of crystalloids and colloids like Dextran 40 and Hexastarch. All lifesaving emergency medicines are available in DID. Hospital administration is responsible for supply of free of cost medicines to all patients admitted in ward.

Blood Bank:

Blood bank makes sure of arrangement and supply of blood and blood products and provides daily statistics regarding supply of blood/blood products on weekly basis.

Involvement of Community Medicine Personnel:

On the direction of Principal RMC and Allied community medicine department provides doctors for the education of patients and their attendants about preventive measures in addition to routine counseling by the treating physicians

Admission Counter:

An exclusive admission counter has been established in DiD to facilitate patients. It Provides guidance to the patients regarding admission protocol and gives information to the attendants about their patients bed in the ward.

Security

During epidemic a team of security guards is appointed at the entrance of the dengue ward for smooth and crowd free working in the department.

Dengue DMS:

Hospital administration appoints DMS round the clock in the dengue ward during epidemic. He is responsible for smooth running of the dengue ward including

1) Provision of adequate supportive staff,

2) Investigation,

3) Blood arrangement,

4) Medication availability,

5) Cleanliness,

6) Stationary provision,

7) Compliance of the calls to other units,

8) Security

9) Ensures mosquito free, clean, and aesthetic environment

10) Record keeping

Dengue Focal Person:

AMS dengue ward acts as focal person. He liaisons with DEAG headquarter in Lahore and is responsible for Dengue statistics. It is his responsibility to deal with press and electronic media.

Death Certification:

Convener DEAG/ member of Divisional DEAG certifies every death.

Punjab Information Technology Board (PITB)

PITB has established a dashboard in the department and is responsible for record keeping, file maintenance including DEAG communication. He makes sure of dengue Performa completion, record keeping and entry into SSPS. On daily basis he provides updated report of admitted patients including their demographic detail, results of dengue markers, dengue diagnosis to the DMS/AMS.

Non Epidemic Season Module

In non-epidemic season along with dengue fever patients of other infectious diseases are also admitted in the DID ward under the supervision of incharge infectious disease.

Training Workshop

Dengue Training Workshops are being conducted on weekly basis even in non-epidemic season in order to prepare more and more medical personals for next upcoming epidemic season.

Dengue OPD

The dengue OPD remains open from 8 am to 2pm daily except on Sunday and public holidays. All suspected dengue patients are managed and are admitted in consultation with head of infectious disease department or SR on duty with filling of both O and R form by the dengue OPD Doctor.

In the evening and night shifts on working days, Sunday and public holidays, all suspected cases are seen by the CMO on duty and are sent to SR on duty in Main ER. SR admits the patient in DID as probable dengue and fills the R form. He makes sure that patient along with dengue R form is received by on call dengue ward MO.

Dengue Serology

The charge nurse in dengue ward is responsible for sending dengue serology of probable cases to main pathology lab before 9 am every day and also makes sure that the result of dengue serology is sent to dengue ward as early as possible but not later than 12:00 pm. Dengue negative patient remains admitted in DID and are evaluated for alternate diagnosis.

Dengue Ward Round:

Dengue positive patients are managed in DID under supervision of head of infectious disease department. There is 1 MO and 1 nurse is available for every 1 to 5 dengue patients round the clock.

Daily morning round is done by the consultant DID and evening round by SR.

Laboratory Investigations and Imaging:

CBC of a dengue patient is done in EMERGENCY pathology lab and results are available with 15 to 30mins.Ultrasound and chest x-ray are also done within 1 hour on the advice of SR/consultant.

AMS/DMS:

DMS is available in the DID in morning shift daily and deals with all administrative issues.

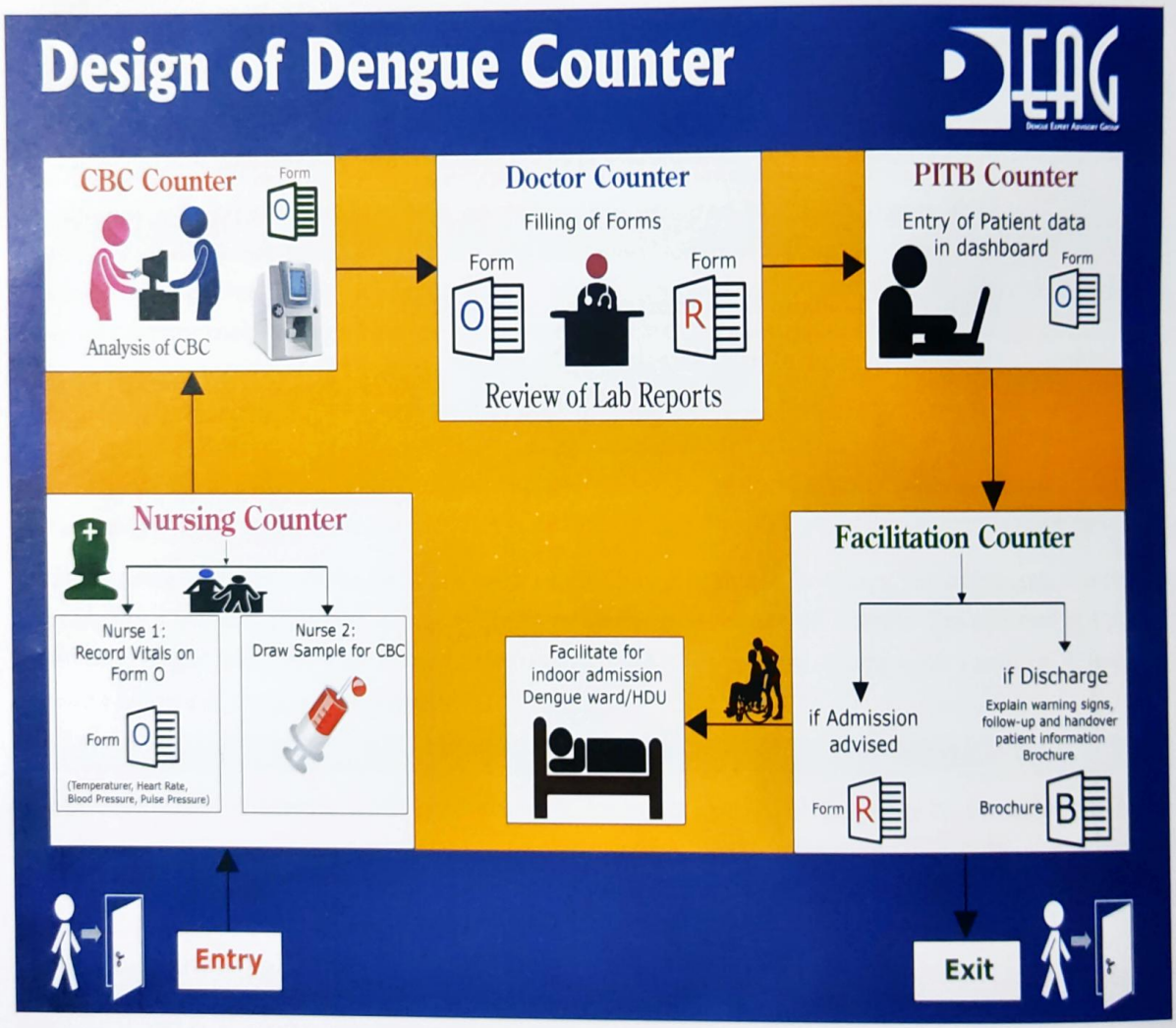
AMS/focal person dengue makes sure that all positive dengue patients should be entered on dashboard.

Key to Success

Key to success of this model is a multidisciplinary approach which has resulted in

1. Early identification of patients proceeding to DHF and prevention of compensated DSS and progression to decompensated DSS through frequent monitoring
2. Frequent training of junior doctors and nursing staff.
3. Provision of educational materials to the doctor and nurses.
4. Generating awareness in the general population regarding preventive measures

Annex 1


Design of Dengue Counter
CBC Counter
Form
Analysis of CBC
Doctor Counter
Filling of Forms
Form
Form
Review of Lab Reports
PITB Counter
Entry of Patient data in dashboard
Form
Nursing Counter
Nurse 1: Record Vitals on Form O
Form
(Temperaturer, Heart Rate, Blood Pressure, Pulse Pressure)
Nurse 2: Draw Sample for CBC
Facilitate for indoor admission Dengue ward/HDU
Facilitation Counter
if Admission advised
Form
if Discharge
Explain warning signs, follow-up and handover patient information
Brochure
Brochure
Entry
Exit

Annex 2

DEAG FORM - O
Revised, January 2016

Dengue Expert Advisory Group

DEAG

Filling of all fields is compulsory

Hospital ..... MR # ..... Unit: ..... Date: .....

Name ..... s/o d/o w/o ..... Age & Sex: .....

NIC # ..... Profession .....

Home Address ..... Contact # .....

Workplace Address ..... Contact # .....

Essential Criterion ☐ Fever > 2 and < 10 days

Associated symptoms

- ☐ Headache
- ☐ Retro orbital pain
- ☐ Myalgia
- ☐ Arthralgia/ severe backache/ bone pains
- ☐ Irritability in infants
- ☐ Rash
- ☐ Bleeding manifestations (epistaxis, gum bleed, bloody stools, hematemesis, hemoptysis, menorrhagia, hematuria)
- ☐ Severe abdominal pain
- ☐ Decreased urinary output despite adequate fluid intake

Presence of any 2 associated symptoms in addition to fever

Declared Suspected Case

Record vitals; Temperature:_____ HR:_____ BP:_____ PP:_____

Request CBC & Look for presence of any Warning Signs

DoF	HCT	WBC	Platelet
D3	☐	☐	☐
D4	☐	☐	☐
D5	☐	☐	☐

WBC < 4000 + Platelet <100000 or Falling on any occasion or HCT < 30% or > 55%

OR

Warning Signs (one or more)

- No clinical improvement / worsening clinical parameters
- Persistent vomiting
- Severe abdominal pain
- Lethargy and or restlessness
- Bleeding: severe epistaxis, black stools, hematemesis, extensive menstrual bleeding, hematuria
- Giddiness
- Pale cold clammy extremities
- Pulse Pressure < 25mmHg
- Less / no urine output for 4 - 6 hours

Declared Probable Case

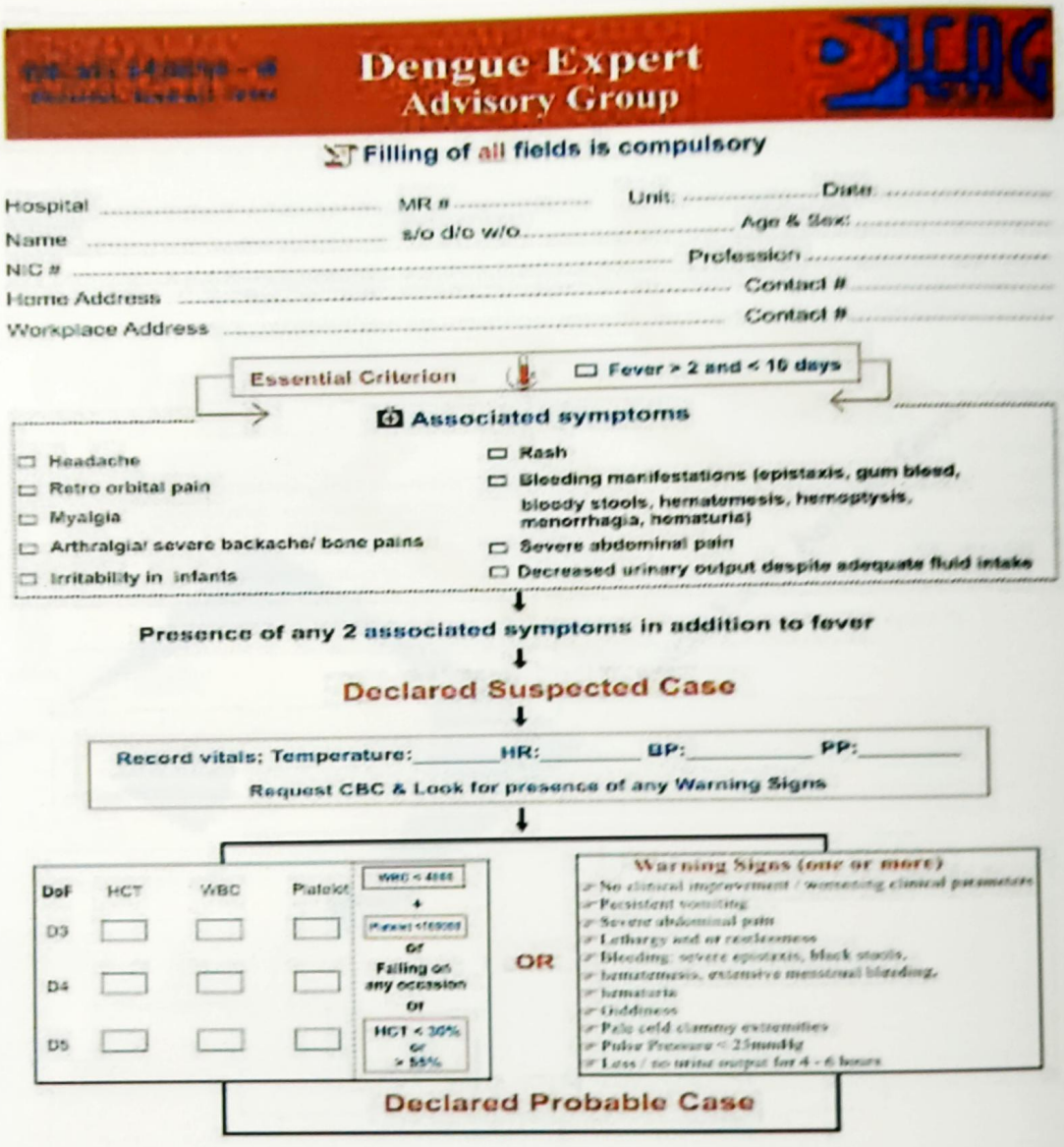
Admit Patient & fill Reporting Form R

*** If Admission is not indicated, explain warning signs and advise treatment and followup.**

Name, Signature and Date

PTO

Annex 3


Dengue Expert Advisory Group
Filling of all fields is compulsory
Hospital
MR #
Unit:
Date:
Name
s/o d/o w/o
Age & Sex:
NIC #
Profession
Home Address
Contact #
Workplace Address
Contact #
Essential Criterion
Fever > 2 and < 10 days
Associated symptoms
Headache
Retro orbital pain
Myalgia
Arthralgia/ severe backache/ bone pains
Irritability in infants
Rash
Bleeding manifestations (epistaxis, gum bleed, bloody stools, hematemesis, hemoptysis, menorrhagia, hematuria)
Severe abdominal pain
Decreased urinary output despite adequate fluid intake
Presence of any 2 associated symptoms in addition to fever
Declared Suspected Case
Record vitals: Temperature:_____ HR:_____ BP:_____ PP:_____
Request CBC & Look for presence of any Warning Signs
DoF
HCT
WBC
Platelet
WBC < 4000
+
Platelet <100000
or
Falling on any occasion
or
HCT > 20% or > 55%
D3
D4
D5
OR
Warning Signs (one or more)
No clinical improvement / worsening clinical parameters
Persistent vomiting
Severe abdominal pain
Lethargy and or restlessness
Bleeding: severe epistaxis, black stools, hematemesis, extensive menstrual bleeding,
hematuria
Giddiness
Pale cold clammy extremities
Pulse Pressure < 25mmHg
Less / no urine output for 4 - 6 hours
Declared Probable Case
Name, Signature
Registrar
Name, Signature
Sr. Registrar
Name, Signature
Focal Person
Received by Focal Person
Patient Name
MR #

After Admissions Confirm Case based on any one of the Confirmatory Evidence Below

Positive NS1 antigen ☐

OR

Viral detection by PCR ☐

OR

Seroconversion from negative for dengue virus specific IgM antibody in acute phase (< 5 days after onset of symptoms) to positive for dengue virus specific IgM antibody in convalescent phase specimen collected ≥ 5 days after onset of symptoms ☐

OR

≥ 4 - fold rise in titre of IgG in paired acute and convalescent serum sample ☐

Declared confirmed case

↓

For confirmed cases fill in Dengue Case Report Form & report to dengue desk for change of status from suspected to confirmed case

ڈینگی بخار کے متعلق ہدایات

1. مریض کے گھر والے دن میں تین مرتبہ مچھر بھگاؤ لوشن کا استعمال کریں۔
2. اپنے آپ کو مچھر کے کاٹنے سے بچائیں۔
3. پانی اور نمکول ڈاکٹر کی ہدایت کے مطابق استعمال کریں۔
4. بخار کی صورت میں Paracetamol کی ایک یا دو گولیاں چار گھنٹے بعد (حسب ضرورت) چوبیس گھنٹے میں چھ سے زیادہ گولیاں نہ لیں۔
5. تیز بخار کی صورت میں ٹھنڈے پانی کی پٹیاں کریں۔
6. Ibuprofen, Disprin اور درد کی دیگر ادویات سے پرہیز کریں۔
7. ہر 24 گھنٹے بعد CBC with Platelet Count کا ٹیسٹ کروا کر قریبی ڈاکٹر کو چیک کروائیں۔
8. لال رنگ کے مشروبات سے گریز کریں۔

خطرے کی علامات

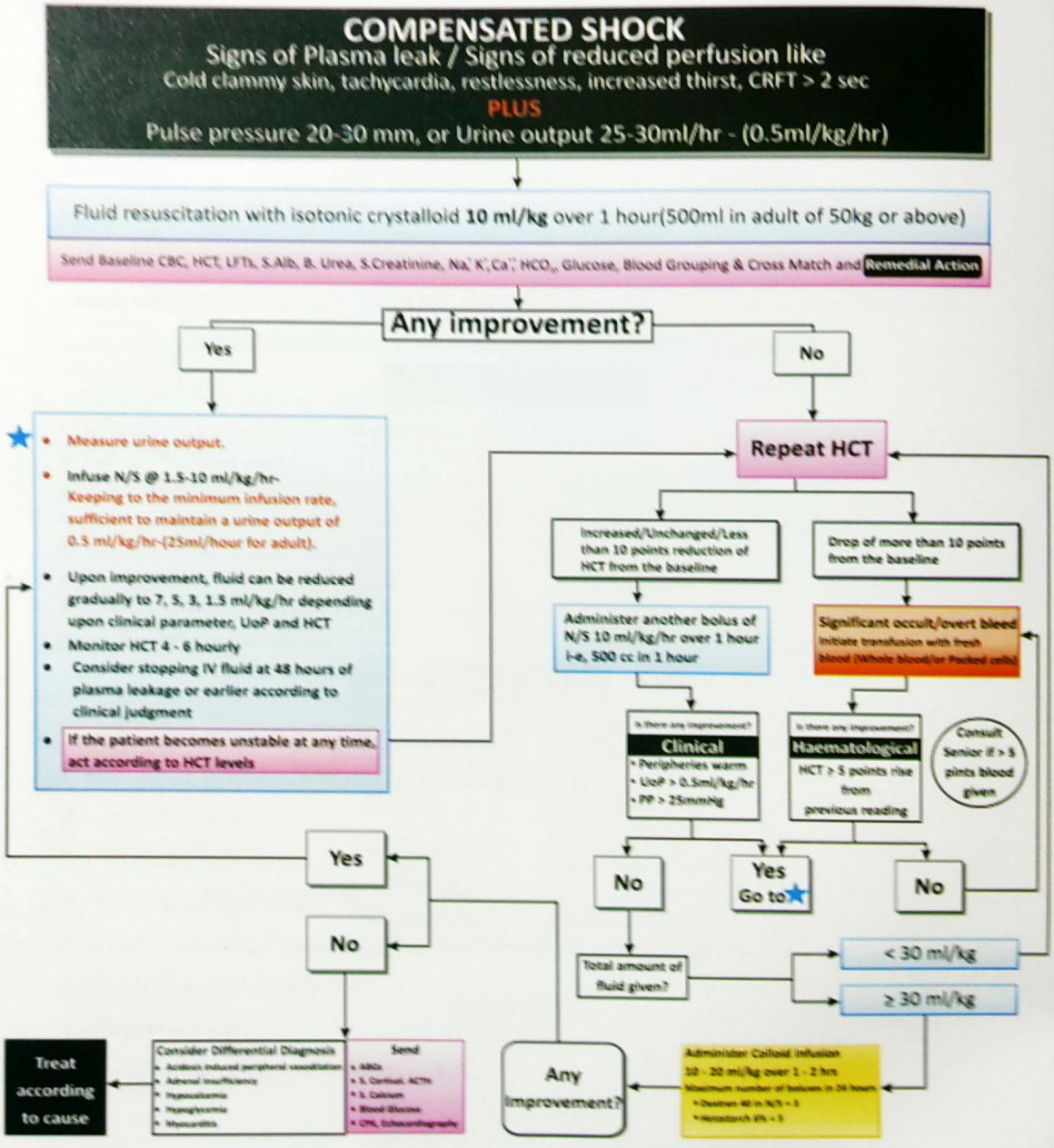
مندرجہ ذیل میں کسی بھی علامت کی موجودگی میں فوراً (15 منٹ کے اندر) ہسپتال کی ایمرجنسی میں رجوع کریں۔

1. بخار اترنے کے باوجود طبیعت کا بحال نہ ہونا یا پہلے سے بگڑ جانا۔
2. پیٹ میں شدید درد۔
3. مسلسل قے یا متلی کی کیفیت۔
4. طبیعت میں بے چینی، گھبراہٹ یا سستی۔
5. ناک، مسوڑھے، کھانسی، الٹی، پخانے یا پیشاب کے ساتھ خون یا معمول سے زیادہ یا پہلے ماہواری۔
6. چکر آنا یا آنکھوں کے آگے اندھیرا آنا۔
7. ہاتھ پیر کا ٹھنڈا ہو جانا۔
8. مناسب مقدار میں پانی پینے کے باوجود پیشاب میں کمی۔

Annex 4

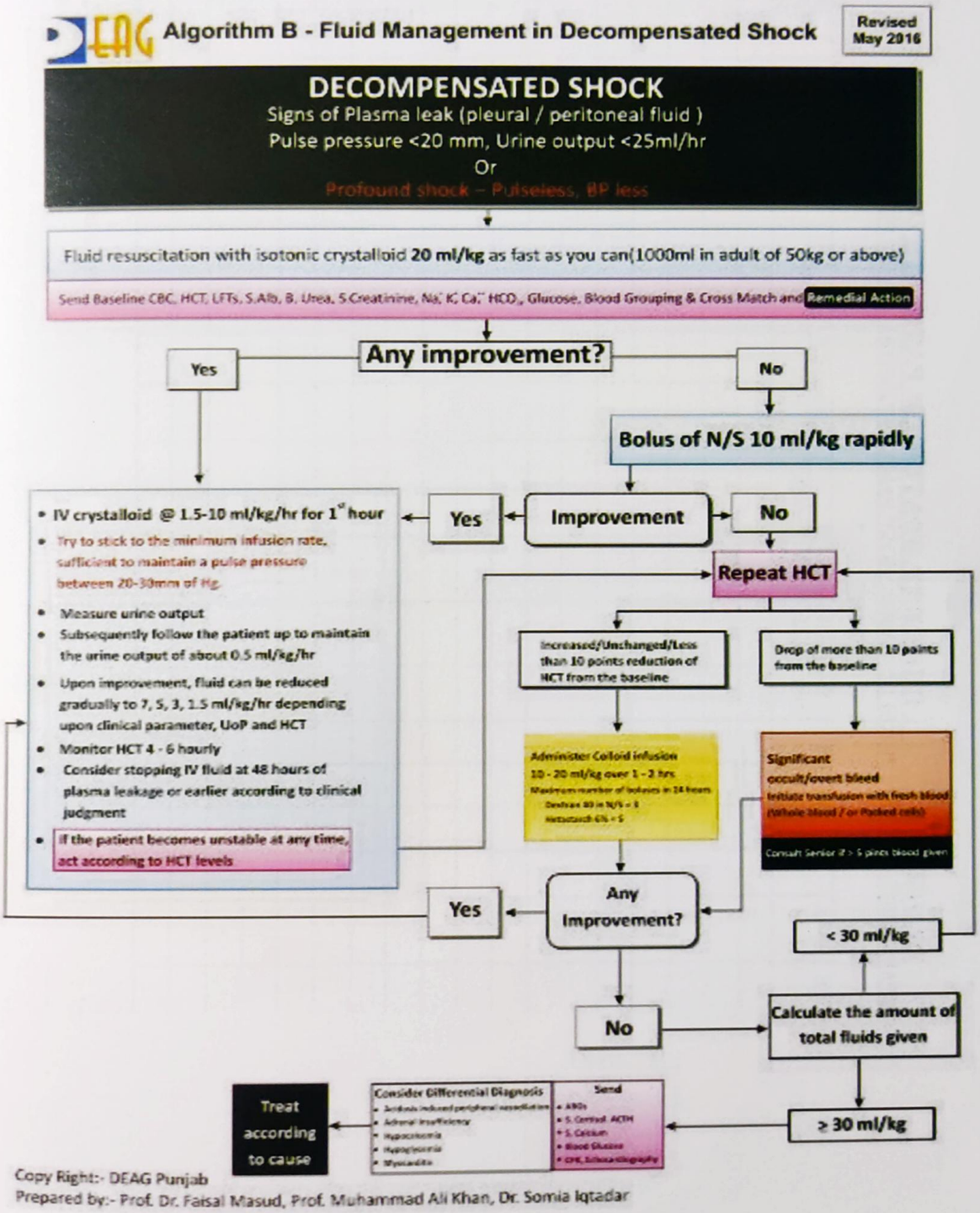
Algorithm A - Fluid Management in Compensated Shock

Revised May 2016



Prepared by:- Prof. Dr. Faisal Masud, Prof. Muhammad Ali Khan, Dr. Somia Iqtadar

Annex 5



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DENGUE : CURRENT STATUS OF PATIENTS

EPARTMENT OF INFECTIOUS DISEASES, HOLY FAMILY HOSPITAL, RAWALPINDI

Dated: _____

DOI	Temp	PP		U/OP		Dengue Serology			Blood CP						Ultrasound	DF/ DHF/ DSS
						NS1	IgM	IgG	WBC		HCT		PLT			

Name of Doctor _____