APPROACH TO DENGUE FEVER IN PRIMARY CARE USING DENGUE ASSESSMENT CHECKLIST

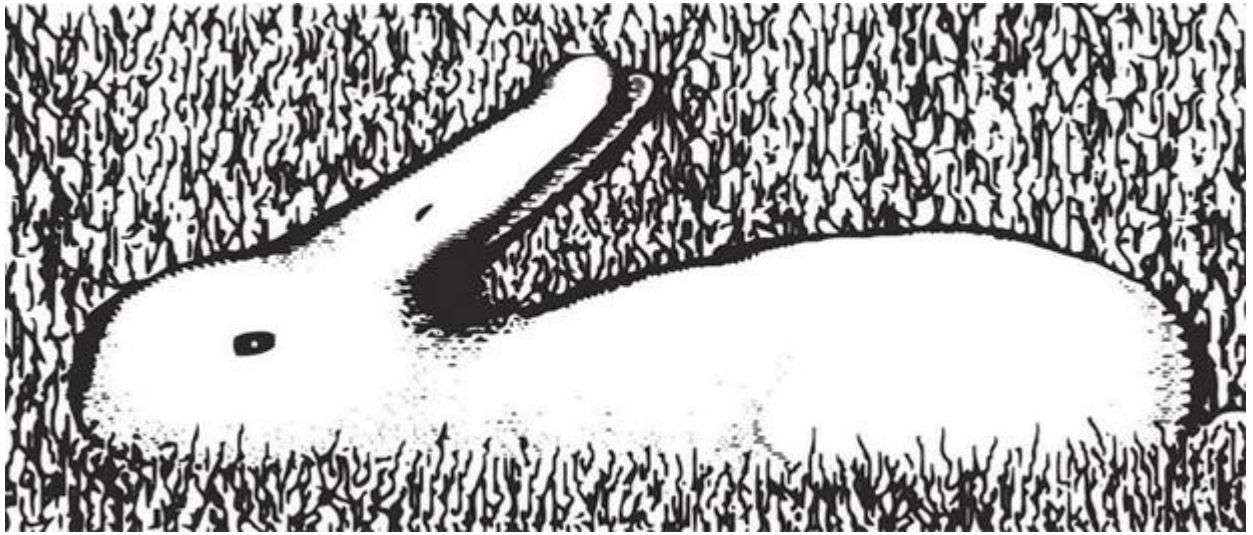
CPG Dengue 2015

CDC/WHO

Slide from JKN JOHOR

Dengue mimics many clinical syndromes

- Flu-like illness
- Viral exanthem
- Acute abdomen
- Infections
- Autoimmune diseases
- Haematological disorders



CLUES TO DIAGNOSE DENGUE:

Understanding the **dynamic and systemic nature** of dengue

Knowing its various manifestations as the **disease progresses** from febrile phase to critical phase and evolves into recovery phase

Slides courtesy of Prof Lucy Lum . Source : Dengue clinical Management . WHO

INTRODUCTION

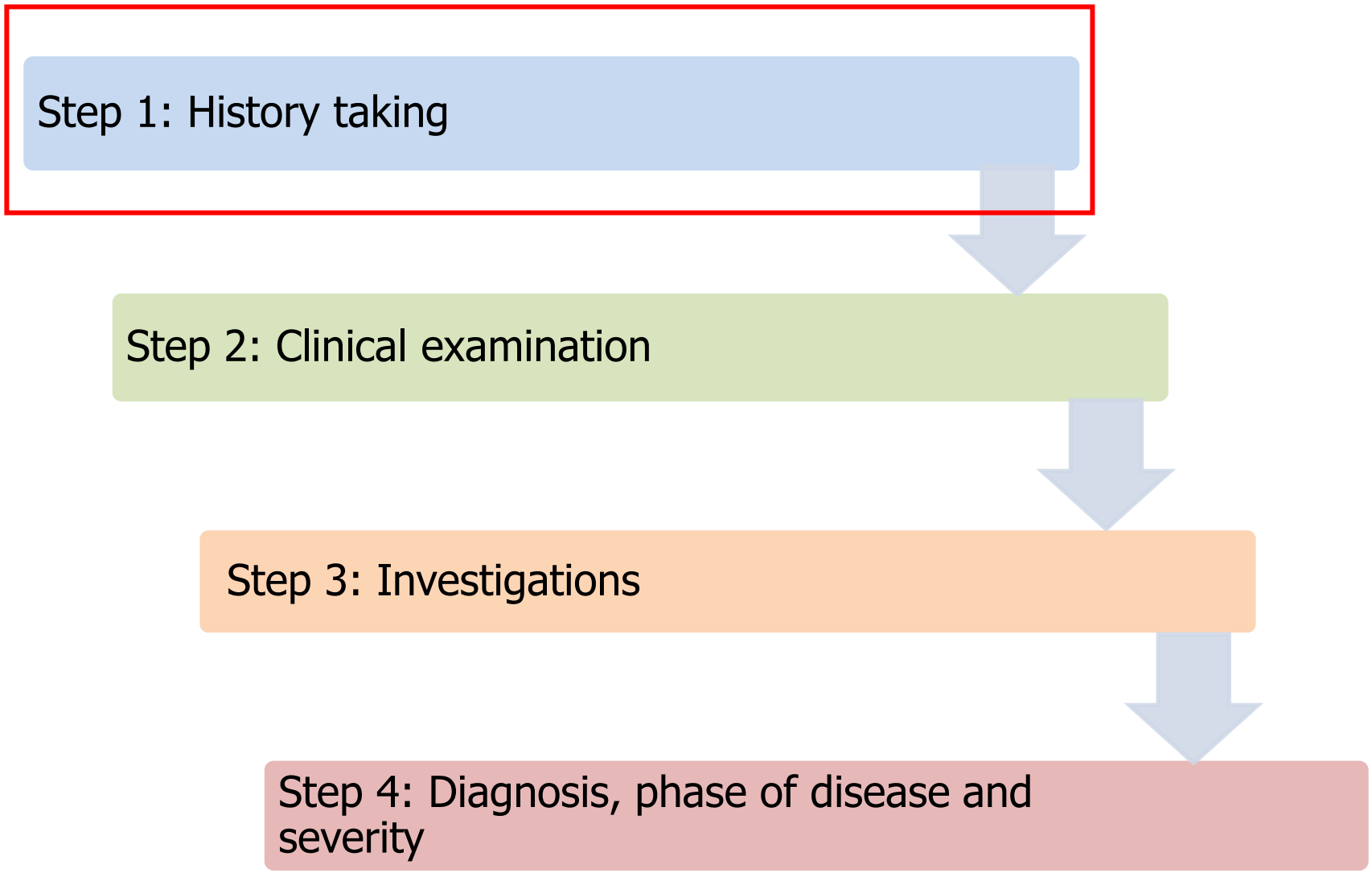
Dengue patient seek medical attention **early in the febrile phase**.

Why do patients die if they seek treatment early?

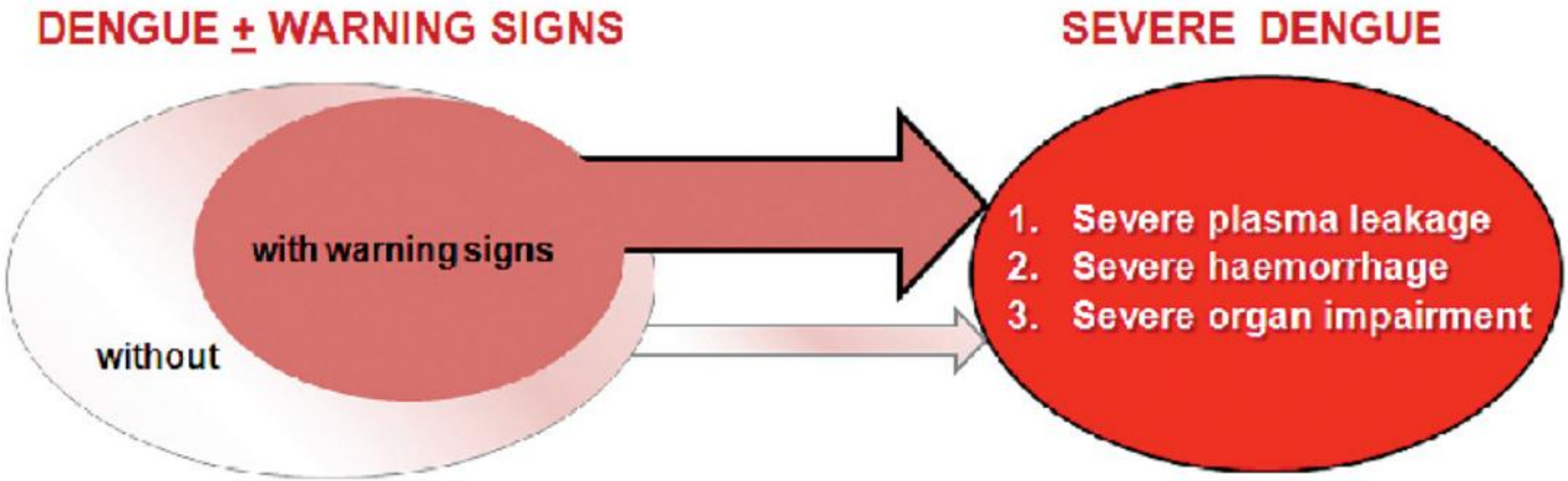
Failure to suspect dengue sufficiently early in illness
Failure to identify cases at increased risk for severe disease for referral
* major contributors to poor outcome.

The key to achieve a good clinical outcome is to have an **understanding of the different phases** of the disease and be alert to the **clinical problems** that could arise during these phases.

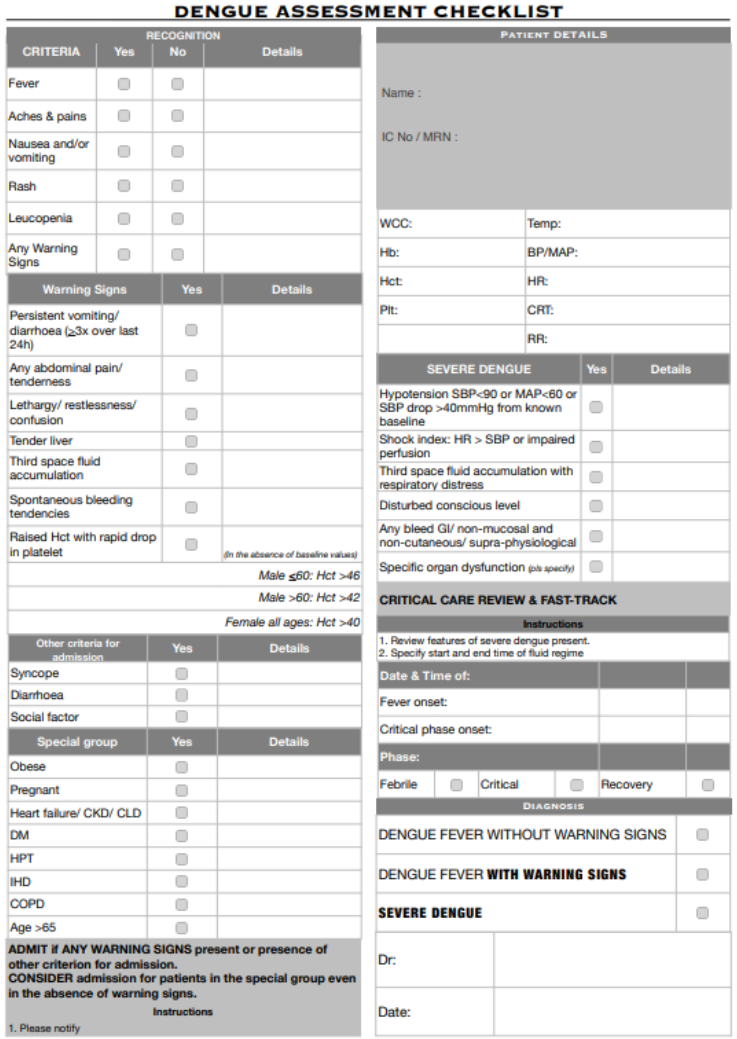
Patient assessment: four important steps



2009 WHO DENGUE CLASSIFICATION AND LEVEL OF SEVERITY



DENGUE ASSESSMENT CHECKLIST



DENGUE ASSESSMENT CHECKLIST

RECOGNITION CRITERIA	Yes	No	Details
Fever	☐	☐	
Aches & pains	☐	☐	
Nausea and/or vomiting	☐	☐	
Rash	☐	☐	
Leucopenia	☐	☐	
Any Warning Signs	☐	☐	

Warning Signs	Yes	Details
Persistent vomiting/ diarrhoea (≥3x over last 24h)	☐	
Any abdominal pain/ tenderness	☐	
Lethargy/ restlessness/ confusion	☐	
Tender liver	☐	
Third space fluid accumulation	☐	
Spontaneous bleeding tendencies	☐	
Raised Hct with rapid drop in platelet	☐	*(In the absence of baseline values)*
Male ≤60: Hct >46		
Male >60: Hct >42		
Female all ages: Hct >40		

Other criteria for admission	Yes	Details
Syncope	☐	
Diarrhoea	☐	
Social factor	☐	

Special group	Yes	Details
Obese	☐	
Pregnant	☐	
Heart failure/ CKD/ CLD	☐	
DM	☐	
HPT	☐	
IHD	☐	
COPD	☐	
Age >65	☐	

ADMIT if ANY WARNING SIGNS present or presence of other criterion for admission.
CONSIDER admission for patients in the special group even in the absence of warning signs.

Instructions
1. Please notify

PATIENT DETAILS

Name :

IC No / MRN :

WCC:	Temp:
Hb:	BP/MAP:
Hct:	HR:
Plt:	CRT:
	RR:

SEVERE DENGUE	Yes	Details
Hypotension SBP<90 or MAP<60 or SBP drop >40mmHg from known baseline	☐	
Shock index: HR > SBP or impaired perfusion	☐	
Third space fluid accumulation with respiratory distress	☐	
Disturbed conscious level	☐	
Any bleed GI/ non-mucosal and non-cutaneous/ supra-physiological	☐	
Specific organ dysfunction *(pls specify)*	☐	

CRITICAL CARE REVIEW & FAST-TRACK

Instructions
1. Review features of severe dengue present.
2. Specify start and end time of fluid regime

Date & Time of:		
Fever onset:		
Critical phase onset:		
Phase:		

Febrile ☐ Critical ☐ Recovery ☐

DIAGNOSIS

DENGUE FEVER WITHOUT WARNING SIGNS	☐
DENGUE FEVER **WITH WARNING SIGNS**	☐
SEVERE DENGUE	☐

Dr:	
Date:	

CPG Management of Dengue Infection In Adults (Third Edition) | **2015**

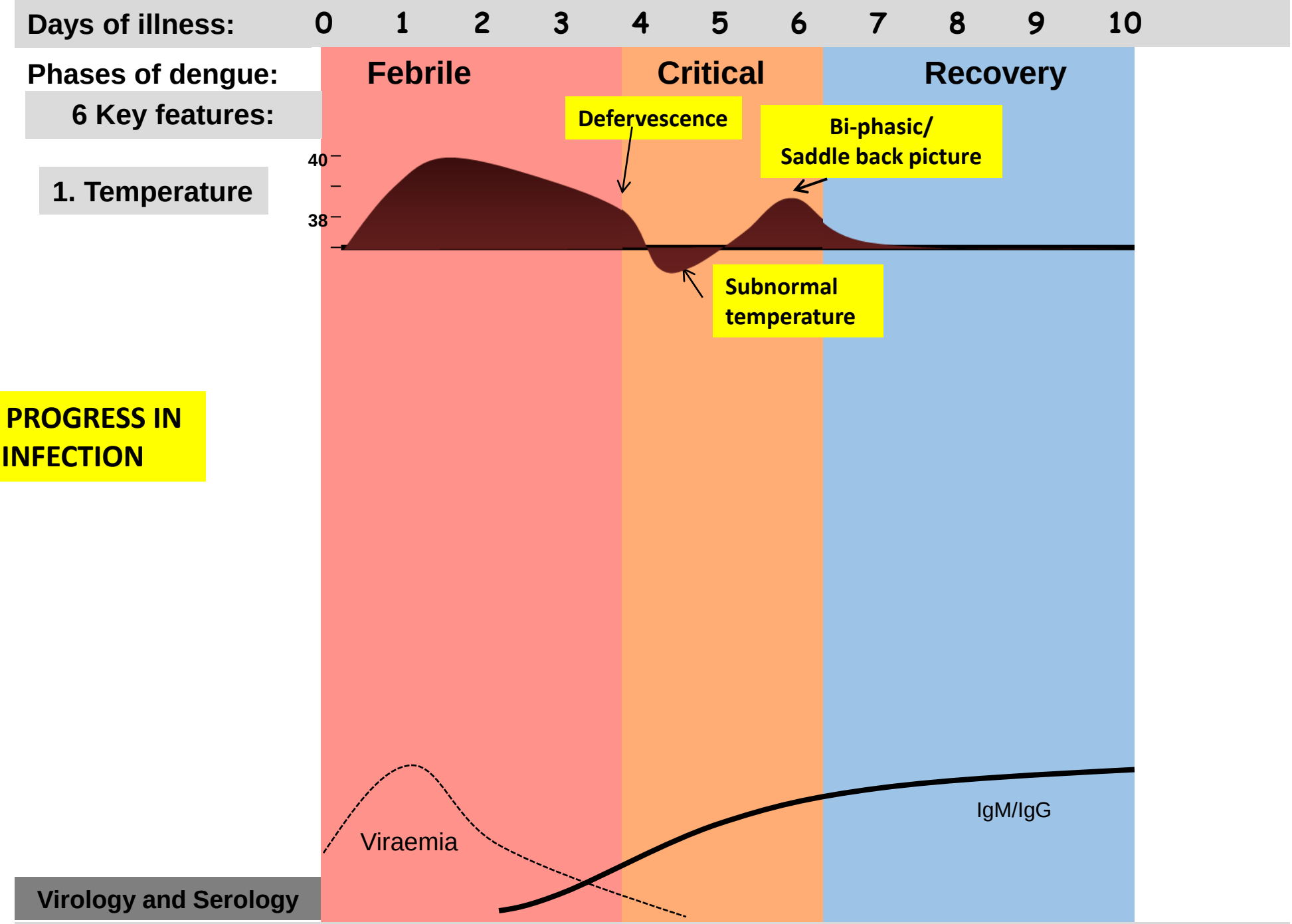
Recommendation 4

- Dengue assessment checklist should be filled by the attending doctor for all patients with suspected dengue infection (refer to **Appendix 8**).
- All dengue patients requiring admission should be **immediately** started on an appropriate fluid therapy [oral or intravenous (IV)].
  - When indicated, IV fluid therapy should be initiated and adjusted accordingly.
- In monitoring of dengue patients, the following must be done and documented:
  - serial monitoring of vital signs
  - strict monitoring of ongoing fluid losses and hourly fluid input/output charting
- Dengue patients with deteriorating vital signs must be uptriaged accordingly.

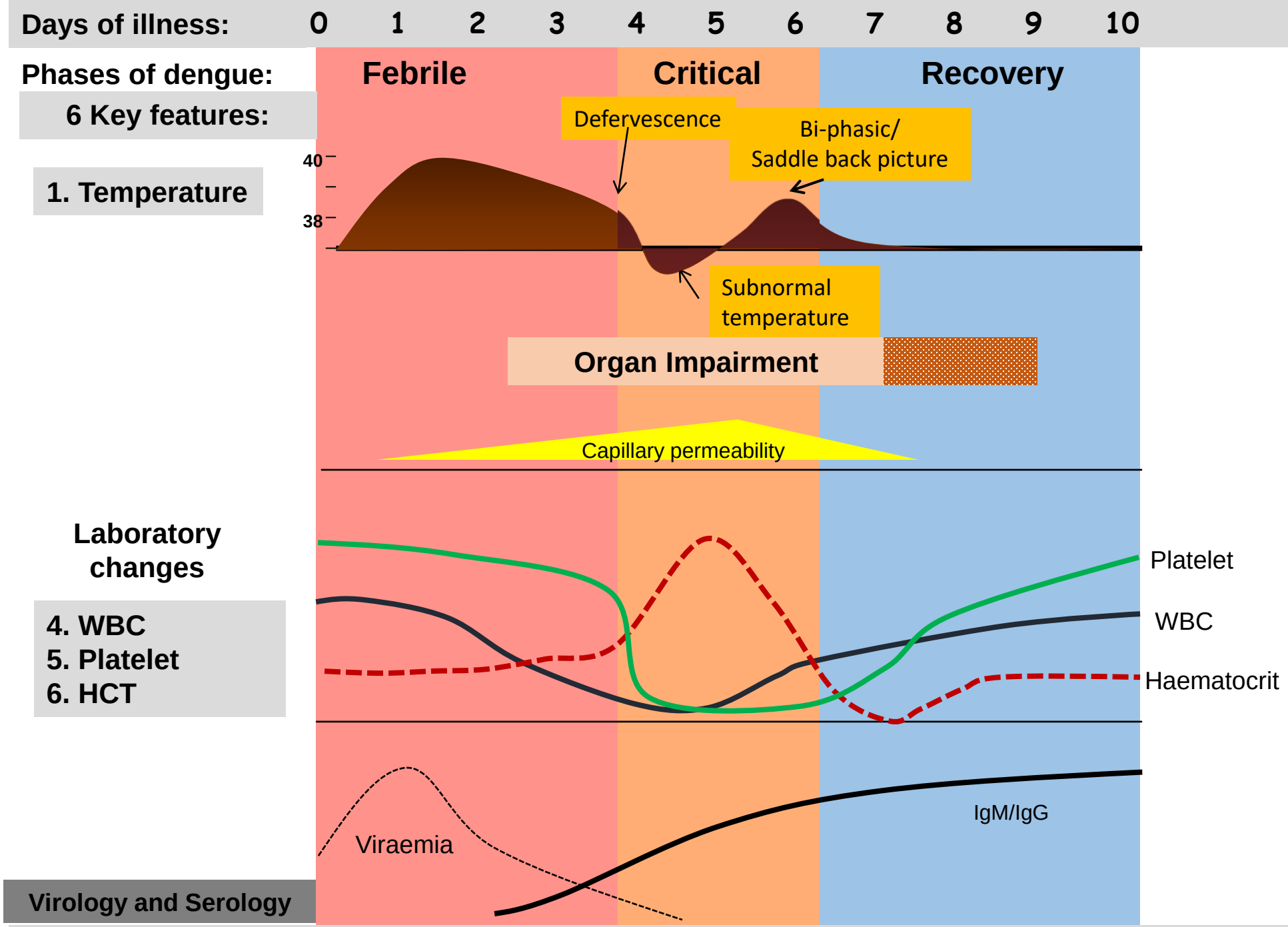
APPROACH TO OUTPATIENT EVALUATION OF DENGUE

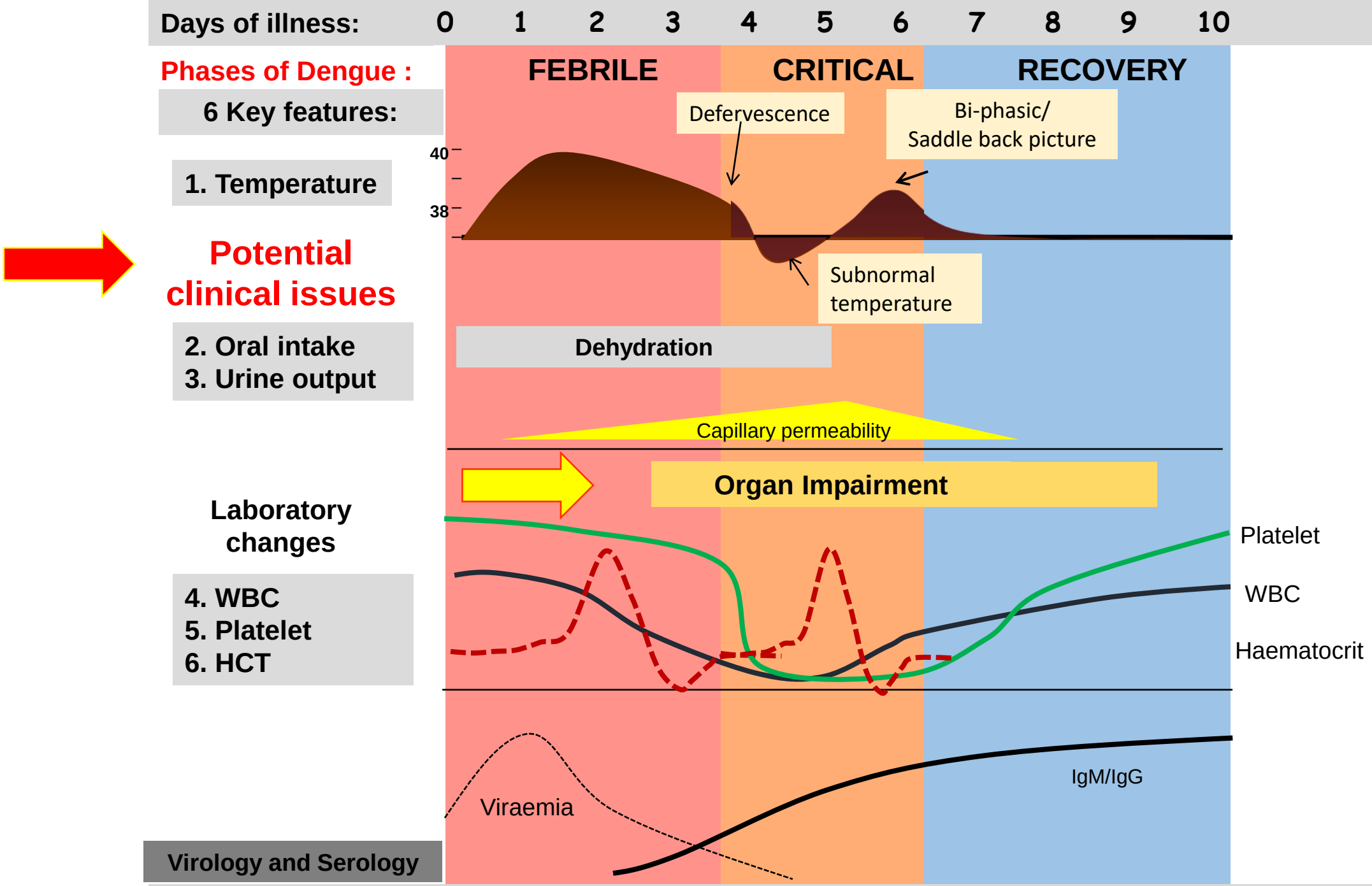
1. Does the patient have dengue or other illnesses?
2. Which phase of dengue (febrile/critical/recovery)?
3. What is the hydration state?
4. Are dengue warning signs present?
5. What is the haemodynamic state?
6. What is the best medical plan for the patient?

CLINICAL PROGRESS IN DENGUE INFECTION



Adapted from WCL Yip, 1980 by Hung NT, Lum LCS, Tan LH


Days of illness:
0 1 2 3 4 5 6 7 8 9 10
Phases of dengue:
Febrile
Critical
Recovery
6 Key features:
1. Temperature
40
38
Defervescence
Bi-phasic/
Saddle back picture
Subnormal
temperature
Organ Impairment
Capillary permeability
Laboratory
changes
4. WBC
5. Platelet
6. HCT
Platelet
WBC
Haematocrit
Viraemia
IgM/IgG
Virology and Serology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clinical issues
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Platelet
WBC
Haematocrit
Viraemia
IgM/IgG
Virology and Serology

HYDRATION ASSESSMENT

3 golden questions:

- How much oral fluid intake?
- How much urine output?
- What activities they can do during the febrile illness?

HYDRATION ASSESSMENT

3 GOLDEN QUESTIONS TO ASK IN DENGUE INFECTION :

1. How much oral fluid intake: quantity and quality?

NORMAL FLUID INTAKE : 2 – 3 LITRES PER DAY

6 – 8 GLASSES PER DAY FOR ADULTS

What types of fluid?

Milk, coconut water, fruit juice (caution with diabetes patient), oral rehydration solution, barley water, rice water, clear soup

Water alone may cause electrolyte imbalance.

HYDRATION ASSESSMENT

3 GOLDEN QUESTIONS TO ASK IN DENGUE INFECTION :

2. How much urine output:

- What is frequency, volume and time of most recent voiding?
  - Normal frequency 3 – 4 times per day
  - To check if urine is concentrated = sign of dehydration

IMPORTANT TO CHECK when was last time pass urine to detect early oliguric kidney failure.

HYDRATION ASSESSMENT

3 GOLDEN QUESTIONS TO ASK IN DENGUE INFECTION :

1. **How much oral fluid intake: quantity and quality?**

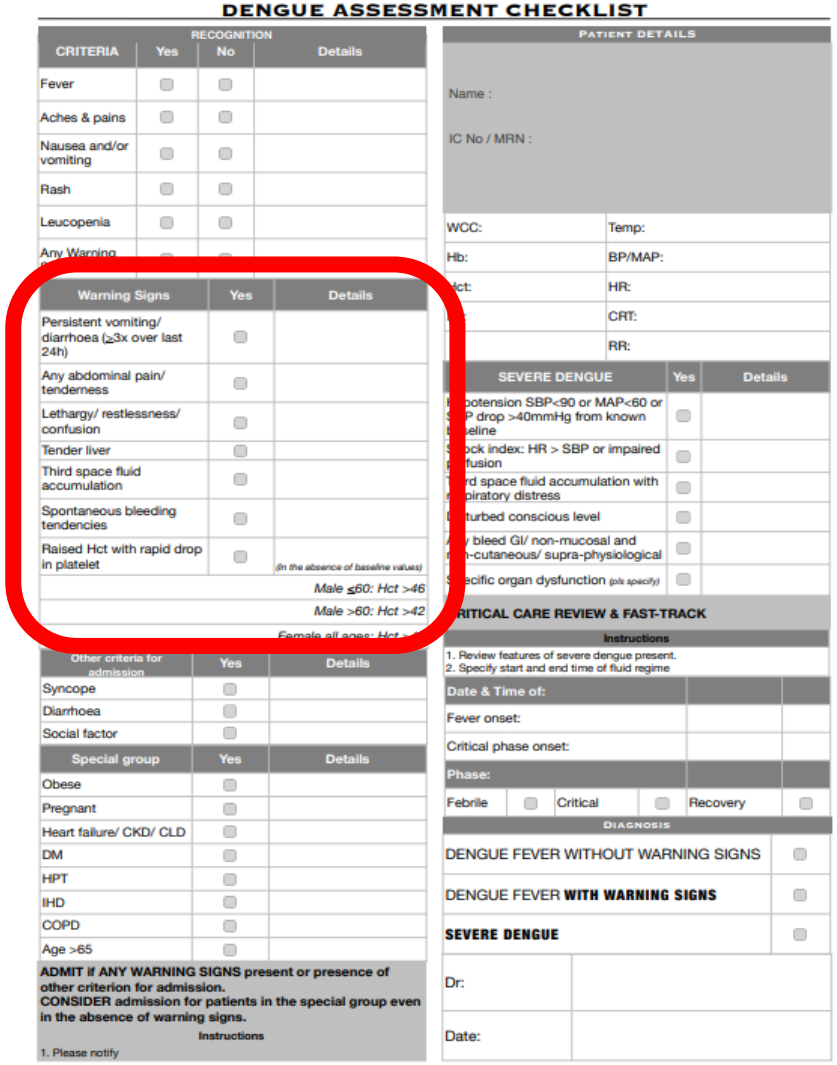
2. **How much urine output:**
   - What is frequency, volume and time of most recent voiding?

3. **What activities can the patient do during the febrile illness?**
   - To detect lethargy

DENGUE WARNING SIGNS

- **Any abdominal pain/tenderness**
- **Persistent vomiting (≥3 times over 24 hours)**
- **Persistent diarrhoea (≥3 times over 24 hours)**
- **Third space fluid accumulation (such as ascites, pleural pericardial effusion)**
- **Spontaneous bleeding tendency**
- **Lethargy/restlessness/confusion**
- **Tender liver**
- **Raised HCT with rapid drop in platelet:**
  - **HCT male ≤60 years – 46%**
  - **HCT male >60 years – 42%**
  - **HCT female (all age groups) – 40%**

*median values of normal HCT in Malaysian population[33,level II-2.



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Critical phase onset:					
Phase:					
Febrile	☐	Critical	☐	Recovery	☐

DIAGNOSIS

DENGUE FEVER WITHOUT WARNING SIGNS	☐
DENGUE FEVER **WITH WARNING SIGNS**	☐
SEVERE DENGUE	☐
Dr:	
Date:	

CPG Management of Dengue Infection In Adults (Third Edition)

REMEMBER: ALWAYS LOOK OUT FOR THE WARNING SIGNS OF DENGUE

"ALL LOVES"

- **Abdominal pain**
- **Liver** TENDER
- **Laboratory** - ↓ platelet + ↑ Haematocrit

- **Lethargy**/restlessness/confusion / fainting (CNS)
- **Open Bowel - Diarrhoea**
- **Vomiting** & Diarrhoea
- **Effusion** (pleural effusion/ascites)
- **Spontaneous bleeding tendency**

Table 3: Warning Signs

- Any abdominal pain/tenderness
- Persistent vomiting (≥3 times over 24 hours)
- Persistent diarrhoea (≥3 times over 24 hours)
- Third space fluid accumulation (such as ascites, pleural and pericardial effusion)
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Adapted : World Health Organization. Dengue Guidelines for Diagnosis, Treatment, Prevention and Control - New Edition 2009. WHO: Geneva; 2009

HSAJB Dr Kan & Dr Amin 2013
Modified Mas 2016

Dengue Warning signs
Pearls: persistent vomiting

What is persistent vomiting?

- **Three or more times per day (Muntah lebih dari 3 kali dalam sehari)**
- **Patient is not able to tolerate oral fluid.**

(Pesakit tidak boleh minum/muntah selepas minum air)

What does persistent vomiting signify?

Important sign of **plasma leakage**

Source: Tan LH & Lum LCS

Dengue Warning signs
Pearls and pitfalls: abdominal pain

What is "significant" abdominal pain?

- Severe enough to be patient's **chief complaint (Aduan yang utama)**

  - patient complains , but not as an answer when asked during history taking

- Could be mistaken as surgical condition

What does significant abdominal pain signify?

Severe abdominal pain is associated with increased vascular permeability and/or shock in the defervescence phase.

Pitfall:

Tense abdomen due to ascites + liver congestion can cause abdominal pain;

Consider fluid overload instead!

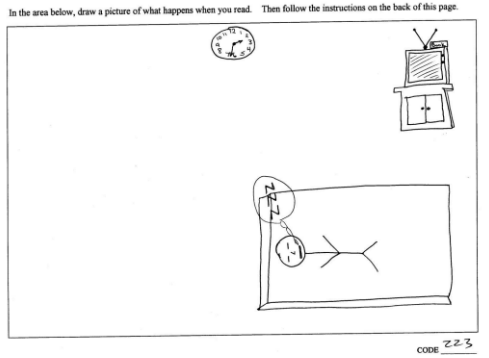
If IV fluid therapy increases, this can cause acute pulmonary oedema

Source: Tan LH & Lum LCS

Pearls: lethargy

When is lethargy is more than usual?

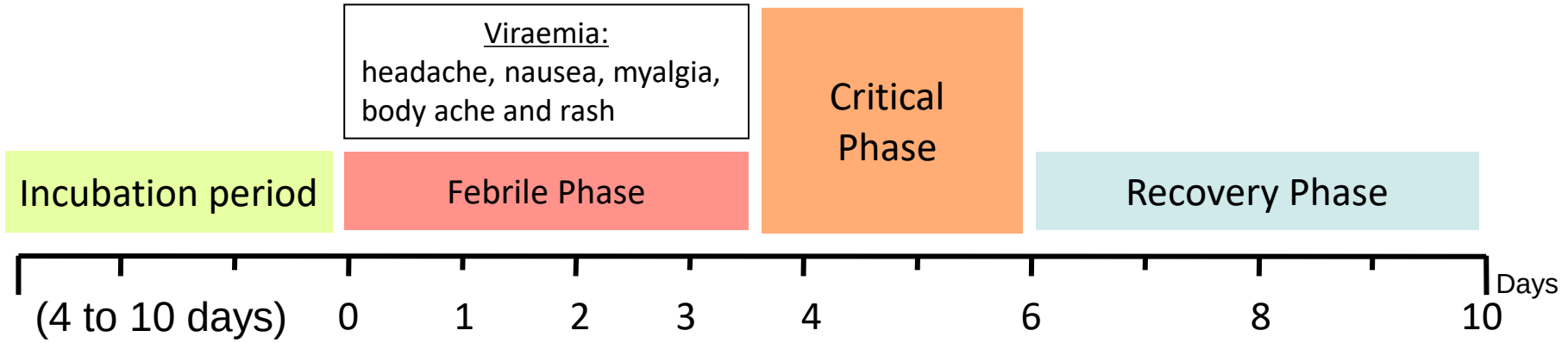
- **Patient sleeps most of the time.** (Pesakit sentiasa tidur)
- **Confined to bed for most of the day.**
- **Patient is uninterested in food / television / handphone**
- **Patient is too weak to walk to toilet. (Need assistance)**



Remember:
restlessness = severe shock + cerebral hypoperfusion

Source: Tan LH & Lum LCS

Clinical course of dengue



After the incubation period, the illness begins abruptly.

It is characterized by 3 phases:

Febrile phase – commences at symptom onset. Usually lasts 2 to 7 days

Critical phase – commences around time of defervescence*

Defervescence * Defined as when body temperature drops to less than 38° C and remains below this level.

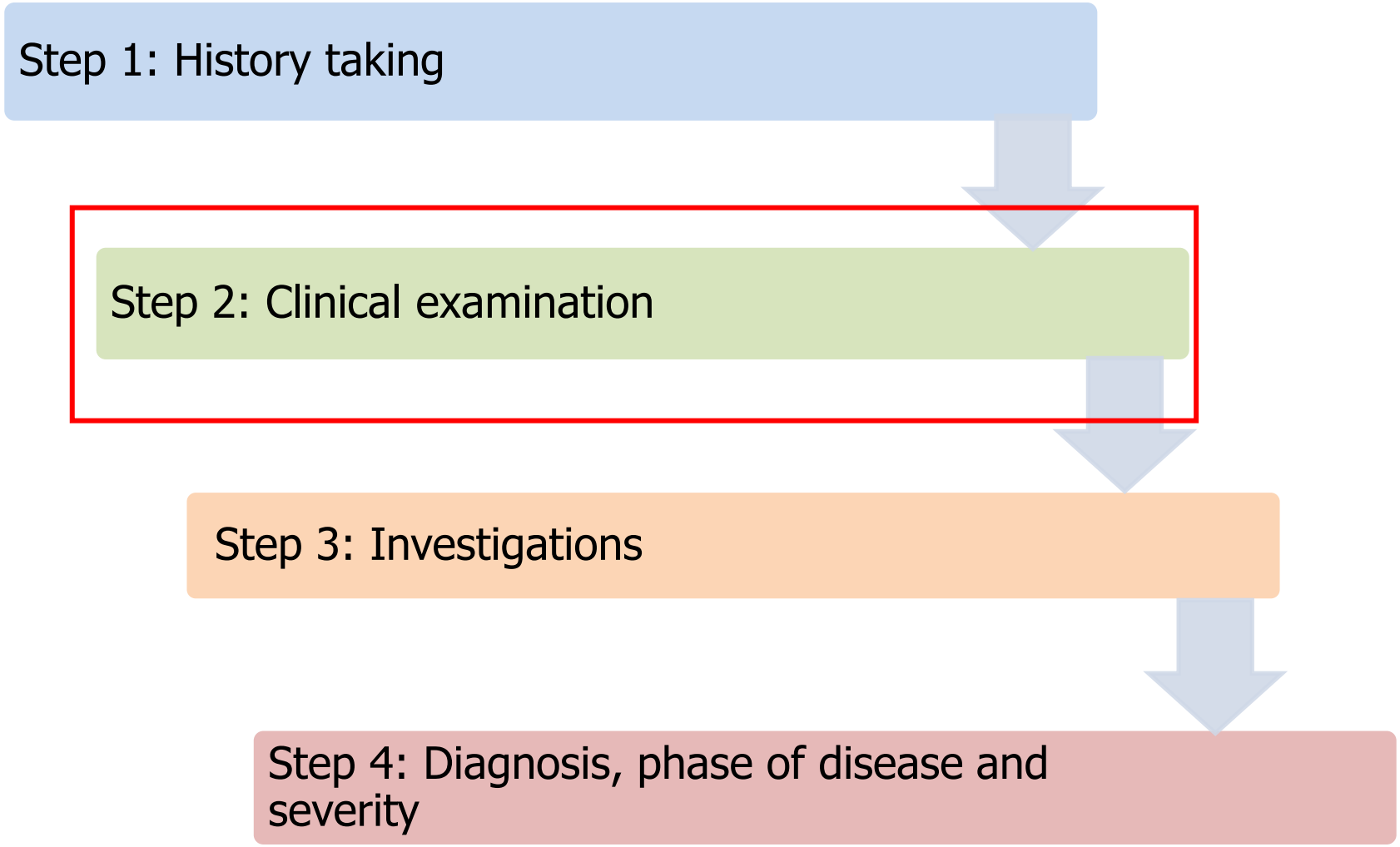
Recovery phase – commences when plasma leakage resolves

Source: Tan LH & Lum LCS

Transition from febrile phase to critical phase

- Usually day 4 to day 7 of illness
- **Could be as early as day 3 or as late as day 7 or 8**
- **Coincides with defervescence**

Patient assessment: four important steps



Monitoring vital signs

BACK TO BASIC

RASA NADI UNTUK 60 SAAT :
RATE : LAJU ? NORMAL ? LAMBAT ?
VOLUME : GOOD ? WEAK ?
TREND : SEMAKIN LAJU ?

PEGANG TANGAN DAN RASA :
IS THE PERIPHERIES WARM OR COLD?
WHAT IS THE CAPILLARY REFILL TIME ?

HEIGHT
WEIGHT
BMI
IBW
ABW

BLOOD PRESSURE
- SBP LOW ?
- INCREASING DBP?
- NARROWING PULSE PRESSURE?
- MAP LOW ?

RESPIRATORY RATE FOR 60 SECONDS
IS IT FAST?

ORAL FLUID INTAKE
IV FLUID
URINE OUTPUT
ANY DIARRHOEA / VOMITING

MAKE SURE VENOUS ACCESS IS FUNCTIONING

Hemodynamic Assessment - Clinical Parameters

Parameters	
Conscious level	3a. Organ perfusion (brain)
Capillary refill time	1. Peripheral perfusion
Extremities (color, temp)	
Peripheral pulse volume	
Heart rate (HR)	2. Cardiac output
Pulse pressure (PP)	
Blood pressure (BP)	
Respiratory rate (RR)	4. Respiratory compensation for tissue hypoxia
Urine output	3b. Organ perfusion (kidney)

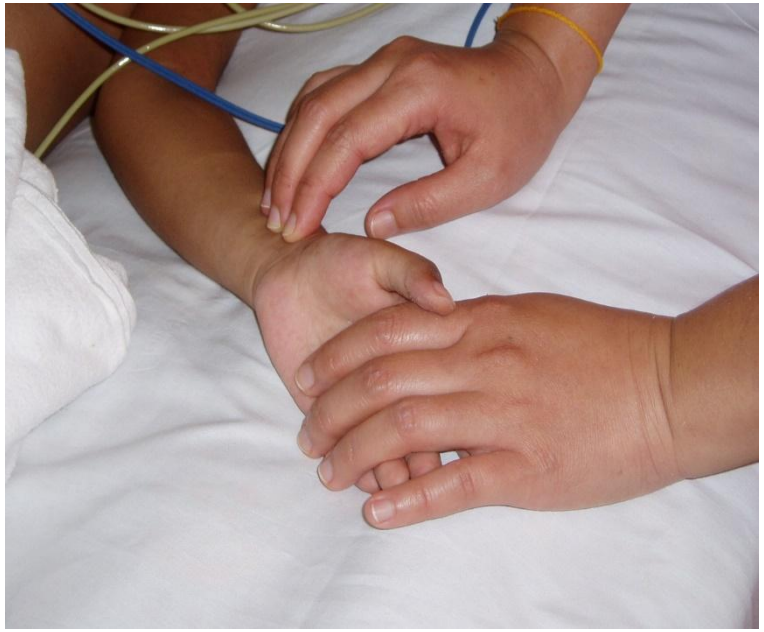
HEMODYNAMIC ASSESSMENT- CCTVR

Save Lives in 30 seconds to recognise SHOCK

The "5-in-1 maneuver" magic touch – CCTV-R

Hold the patient's hand to evaluate peripheral perfusion.

1. **C**olour
2. **C**apillary refill
3. **T**emperature
4. Pulse **Volume**
5. Pulse **R**ate
   RESP RATE



Hemodynamic Assessment - Compensated Shock (cont.)

Parameters	Stable Circulation	Compensated shock
Conscious level	Clear and lucid	**Clear and lucid**
Capillary refill time	Brisk (<2 sec)	Prolonged (>2 sec)
Extremities	Warm and pink	Cool peripheries
Peripheral pulse volume	Good volume	Weak & thready
Heart rate (HR)	Normal HR for age	Tachycardia for age
Blood pressure (BP)	Normal BP for age	**Normal systolic** pressure, **rising diastolic** pressure
Pulse pressure (PP)	Normal PP for age	Narrowing PP Postural hypotension
Respiratory rate (RR)	Normal RR for age	"Quiet" tachypnea
Urine output	Normal	Reducing trend

Note that changes are seen in all parameters except **conscious level and systolic** blood pressure

Hemodynamic Assessment – Hypotensive Shock (cont.)

Parameters	Stable Circulation	Compensated shock	Hypotensive shock
Conscious level	Clear and lucid	Clear and lucid	Restless, combative
Capillary refill time	Brisk (<2 sec)	Prolonged (>2 sec)	Very prolonged, mottled skin
Extremities	Warm and pink	Cool peripheries	Cold, clammy
Peripheral pulse volume	Good volume	Weak & thready	Feeble or absent
Heart rate (HR)	Normal HR for age	Tachycardia for age	Severe tachycardia or bradycardia in late shock
Blood pressure (BP)	Normal BP for age	Normal systolic pressure, rising diastolic pressure	Hypotension Unrecordable BP
Pulse pressure (PP)	Normal PP for age	Narrowing PP Postural hypotension	Narrowed pulse pressure (≤20 mmHg)
Respiratory rate (RR)	Normal RR for age	"Quiet" tachypnea	Kussmaul breathing
Urine output	Normal	Reducing trend	Oliguria or anuria

Reduced brain perfusion

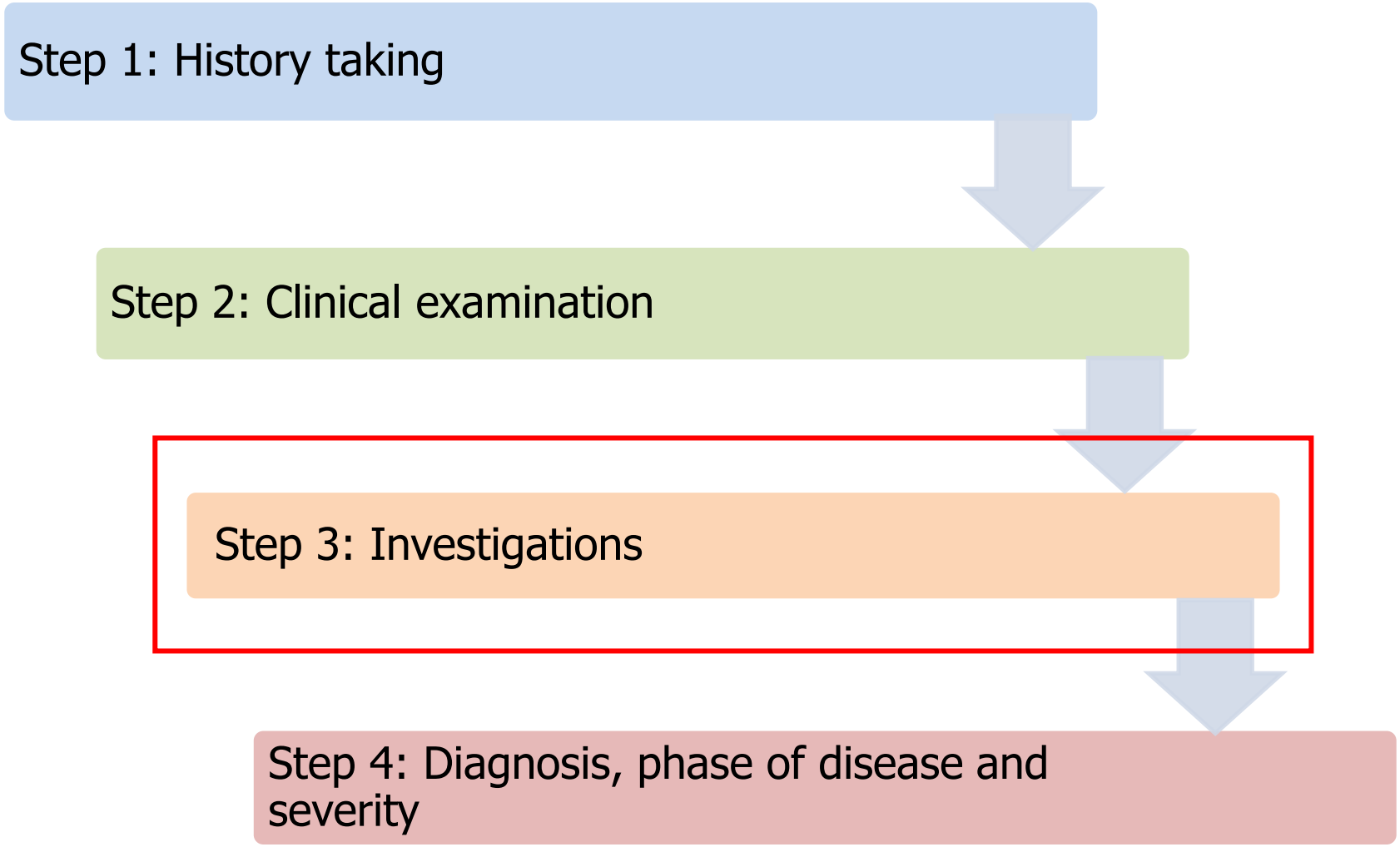
Reduced peripheral perfusion

Reduced cardiac output

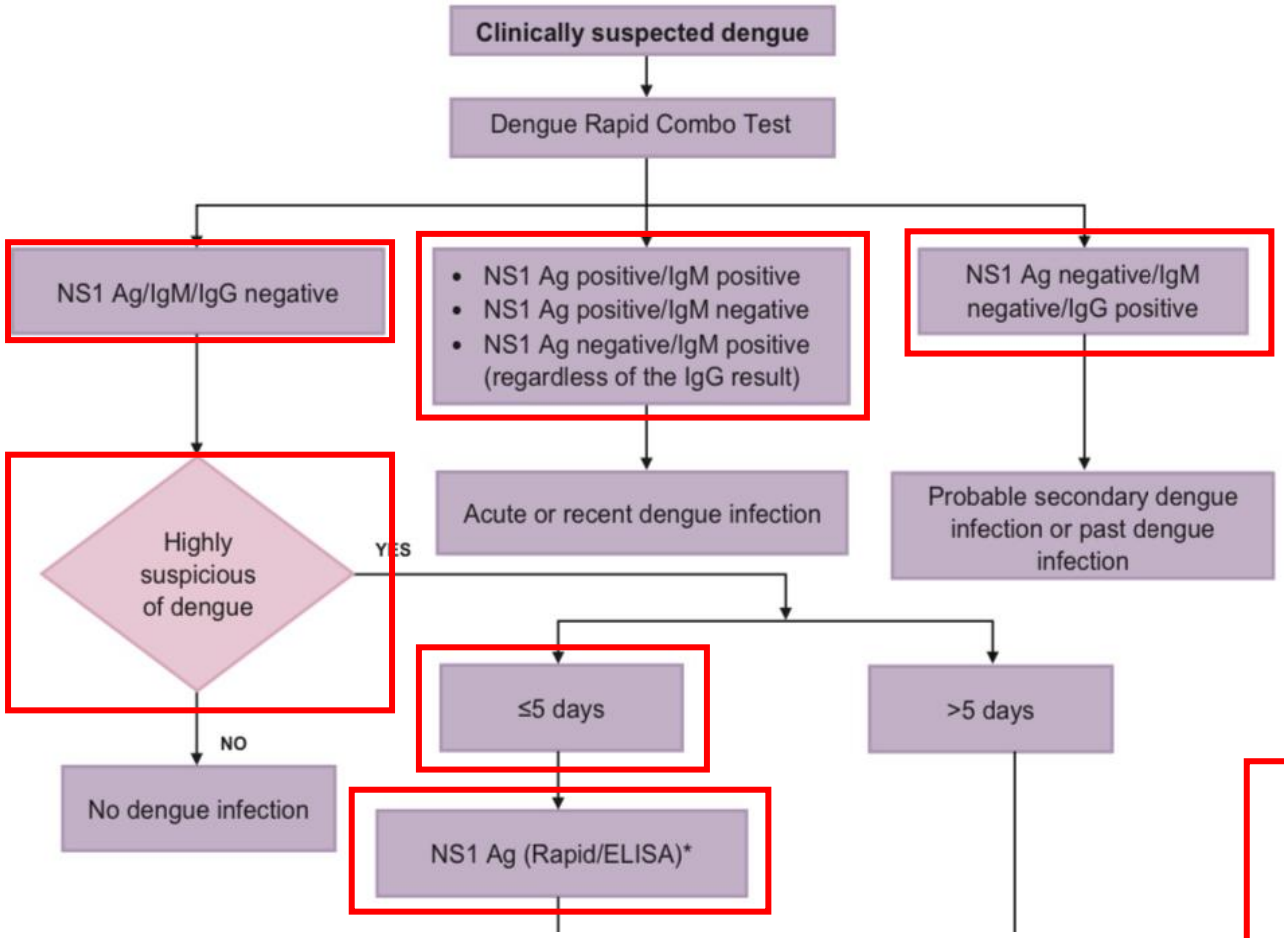
Severe tissue acidosis

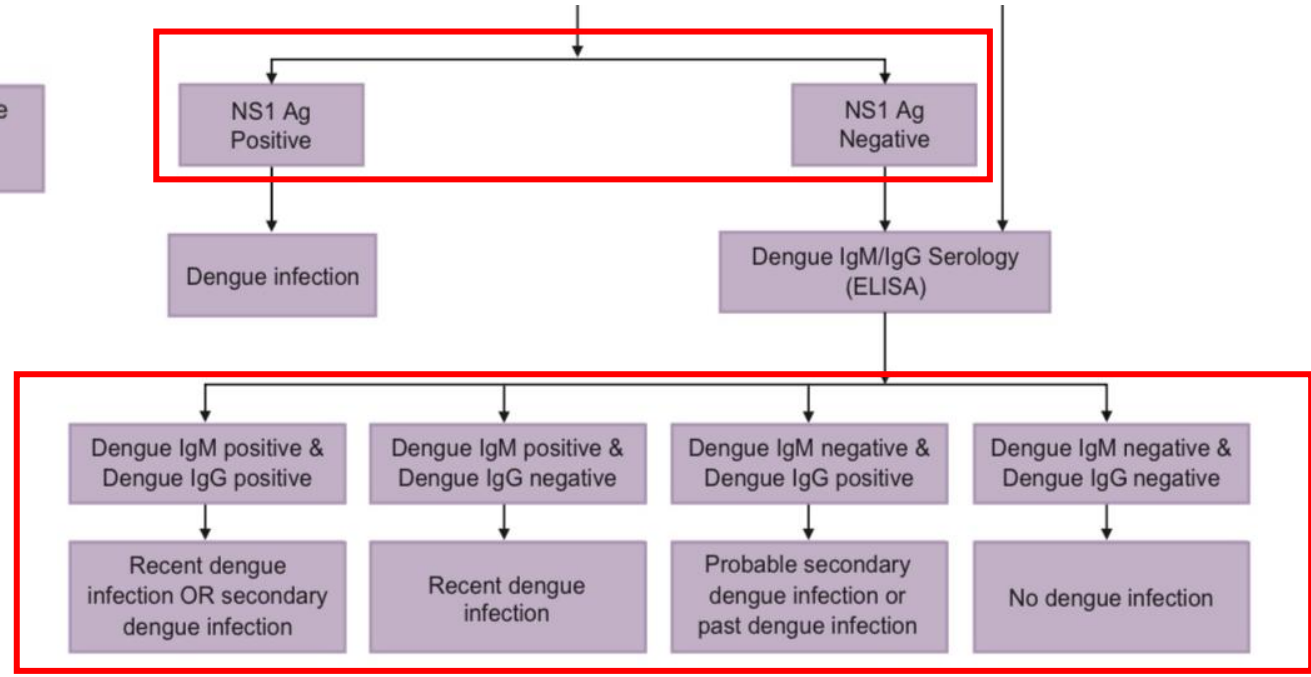
No kidney perfusion

Patient assessment: four important steps



Algorithm 1: Dengue Laboratory Diagnosis





*Alternatively, Dengue Rapid Combo Test may be repeated

- PCR should be sent if NS1 Ag/serology is negative in suspected severe dengue or mortality cases.
- ELISA for dengue may be used in centres where combo test is not offered.

ELISA - enzyme-linked immunosorbent assay
IgG - Immunoglobulin G
IgM - Immunoglobulin M
NS1 Ag - Non-structural protein 1 Antigen
PCR - polymerase chain reaction

Disease factors that change HCT levels

Haematocrit levels	Increase	Decrease	NO CHANGE
Disease progression	Plasma leakage	1. Bleeding 2. Reabsorption	Plasma leak + Bleeding “BLEAKER”
Treatment related			
Disease + Treatment			

Source: Tan LH & Lum LCS

Treatment factors that change HCT levels

Hematocrit levels	Increase	Decrease	NO CHANGE
Disease progression	Plasma leakage	1. Bleeding 2. Reabsorption	Plasma leak + bleeding
Treatment related	Blood transfusion	IV fluid therapy: Crystalloids Colloids Plasma	
Disease + Treatment			

Source: Tan LH & Lum LCS

Disease and treatment factors that change HCT levels

Haematocrit levels	Increase	Decrease	**NO CHANGE**
Disease progression	Plasma leakage	1. Bleeding 2. Reabsorption	Plasma leak **+** bleeding
Treatment related	Blood transfusion	IV fluid therapy: Cyrstalloids Colloids Plasma	
Disease + Treatment	Plasma leakage **+** blood transfusion ⇑⇑	Bleeding **+** IV fluids ⇓⇓	Plasma leak + IV fluids OR Bleeding + blood transfusion

Source: Tan LH & Lum LCS

Haematocrit should not be interpreted on its own

Haematocrit should always be interpreted **in the context of** and **"in phase" with**:

1. **Haemodynamic evaluation** at time of sampling
2. Before or after IV fluid therapy?
3. Before or after transfusion with whole blood or packed cells?
4. Phase of disease, where in the clinical course is the patient: day 2 vs day 5

IMPORTANT REMINDER:

Haemodynamic state should be the principal driver of IV fluid therapy

Haematocrit level should only be a guide

NOT the other way around!

Interpretation of rising or persistently high haematocrit

A rising or persistently high haematocrit

Unstable vital signs

Active plasma leakage

↓

Need for further fluid replacement

A rising or persistently high haematocrit

Stable haemodynamic status

Does not require extra intravenous fluid

↓

Continue to monitor closely. HCT should start to fall within next 24 hours as plasma leakage stops.

Interpretation of a decrease in haematocrit

A decrease in haematocrit

Unstable vital signs

Major haemorrhage

↓

Need for urgent transfusion

A decrease in haematocrit

Stable haemodynamic status

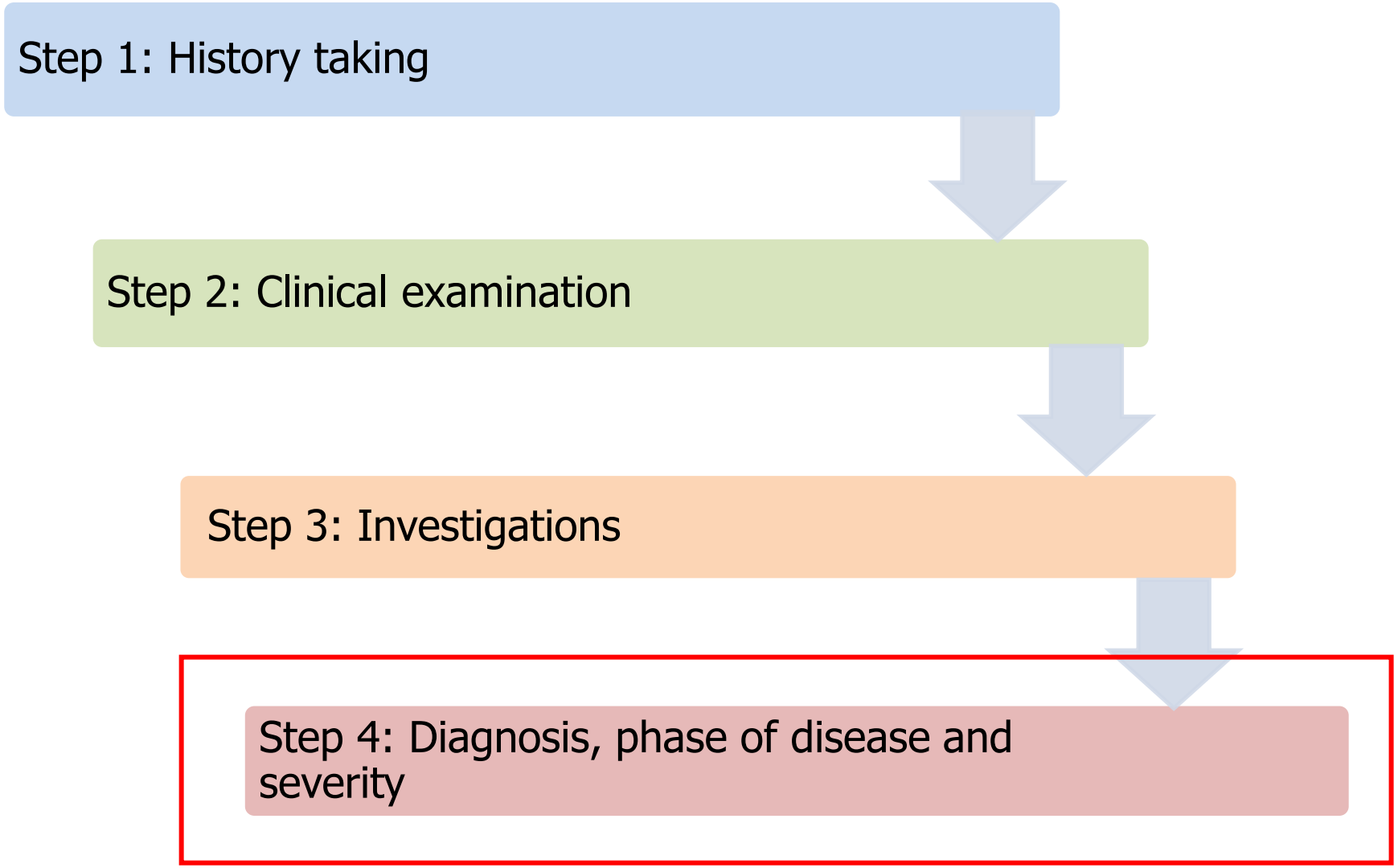
Haemodilution and/or reabsorption of extravasated fluids

↓

IV fluids should be reduced in step-wise manner or discontinued immediately to avoid pulmonary oedema

DENCO Slide

Patient assessment: four important steps



Step : Diagnosis, phase of disease and severity

1 • DAY ____ ILLNESS (DATE OF ONSET , TIME : AM, PM , ON)

2 • DF WITHOUT / WITH WARNING SIGNS : SPECIFY _____

OR

• SEVERE DENGUE : PLASMA LEAKAGE / HAEMORRHAGE / ORGAN

Specify _____

• Please mention if there is SHOCK that responded to fluid resuscitation

3 • What PHASE is it ? FEBRILE / CRITICAL __ HOURS OF DEFEVERSCENCE / RECOVERY

4 • ANY COMPLICATIONS ? Specify _____

5 • Co-morbidities / risk factors

Question: do you know the patients groups a , b and c category ?

Which patient is in category a ?

Which patient is in category b ?

Which patient is in category c ?

MANAGEMENT PLAN FOR DENGUE PATIENT

Group A	Group B	Group C
• Send home	• Refer for in-hospital management	• Require emergency treatment and urgent referral

Dengue Clinical Management

World Health Organization

Western Pacific Region

GROUP A- OUTPATIENT MANAGEMENT

Patients who are able to
"drink enough to pee enough"

Group A – Send home if patient meets all of the following

- Intake: Getting adequate volume of oral fluids
- Output: Passing urine at least once every 4 to 6 hours
- Does not have any warning signs
- Has stable haematocrit and hemodynamic status
- Does not have co-existing conditions

1. Give anticipatory guidance before sending home

   (see patient handout)

1. Follow up daily
2. Do serial CBCs
3. Identify warning signs early

Dengue Clinical Management

World Health Organization
Western Pacific Region

CRITERIA OF PATIENTS THAT CAN BE TREATED AT HOME

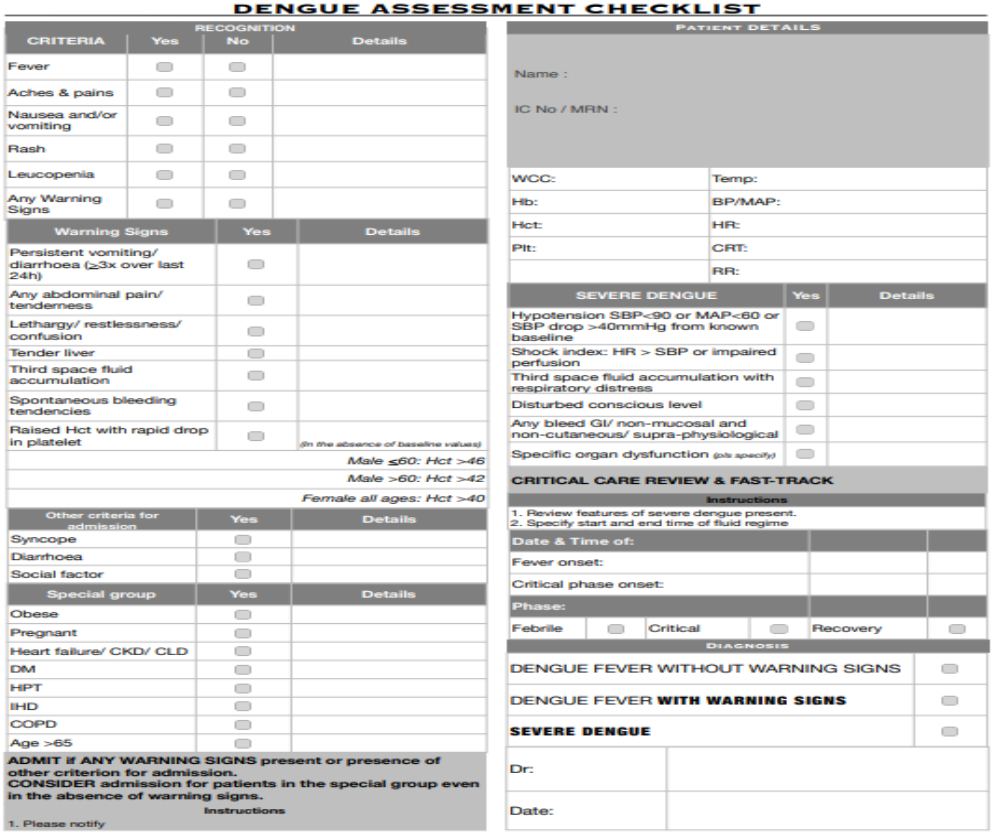
1. Able to tolerate orally well, good urine output and no history of bleeding

2. Absence of warning signs (refer to Table 3)

3. Physical examination:
   - Haemodynamically stable
   - No tachypnoea or acidotic breathing
   - No tender liver or abdominal tenderness
   - No bleeding manifestation
   - No sign of third space fluid accumulation
   - No alterations in mental state

4. Investigation:
   - Stable serial HCT

5. No other criteria for admission (i.e. co-morbidities, pregnancy, social factors)



DENGUE ASSESSMENT CHECKLIST

RECOGNITION			
CRITERIA	Yes	No	Details
Fever	☐	☐	
Aches & pains	☐	☐	
Nausea and/or vomiting	☐	☐	
Rash	☐	☐	
Leucopenia	☐	☐	
Any Warning Signs	☐	☐	

Warning Signs	Yes	Details
Persistent vomiting/ diarrhoea (≥3x over last 24h)	☐	
Any abdominal pain/ tenderness	☐	
Lethargy/ restlessness/ confusion	☐	
Tender liver	☐	
Third space fluid accumulation	☐	
Spontaneous bleeding tendencies	☐	
Raised Hct with rapid drop in platelet	☐	(In the absence of baseline values)
		Male ≤60: Hct >46
		Male >60: Hct >42
		Female all ages: Hct >40

Other criteria for admission	Yes	Details
Syncope	☐	
Diarrhoea	☐	
Social factor	☐	

Special group	Yes	Details
Obese	☐	
Pregnant	☐	
Heart failure/ CKD/ CLD	☐	
DM	☐	
HPT	☐	
IHD	☐	
COPD	☐	
Age >65	☐	

ADMIT if ANY WARNING SIGNS present or presence of other criterion for admission.
CONSIDER admission for patients in the special group even in the absence of warning signs.

Instructions

1. Please notify

PATIENT DETAILS

Name :

IC No / MRN :

WCC:	Temp:
Hb:	BP/MAP:
Hct:	HR:
Plt:	CRT:
	RR:

SEVERE DENGUE	Yes	Details
Hypotension SBP<90 or MAP<60 or SBP drop >40mmHg from known baseline	☐	
Shock index: HR > SBP or impaired perfusion	☐	
Third space fluid accumulation with respiratory distress	☐	
Disturbed conscious level	☐	
Any bleed GI/ non-mucosal and non-cutaneous/ supra-physiological	☐	
Specific organ dysfunction (pls specify)	☐	

CRITICAL CARE REVIEW & FAST-TRACK

Instructions

1. Review features of severe dengue present.
2. Specify start and end time of fluid regime

Date & Time of:					
Fever onset:					
Critical phase onset:					
Phase:					
Febrile	☐	Critical	☐	Recovery	☐

DIAGNOSIS

DENGUE FEVER WITHOUT WARNING SIGNS	☐
DENGUE FEVER **WITH WARNING SIGNS**	☐
SEVERE DENGUE	☐

Dr:	
Date:	

CPG Management of Dengue Infection In Adults (Third Edition)

OUTPATIENT DENGUE MONITORING RECORD

DENGUE MONITORING RECORD

Patient's name : ..... I/C No. / Passport : .....

Address : ..... Date of onset of fever : .....

.....

RAPID TEST result

Date	Day of fever	Temp (°C)	BP (mmHg)	PR (min)	Hb (g/dL)	Hct (%)	WCC (x10³/µl)	Platelet (x10³/µl)	Attending Clinic/Tel. No.	Next Appointment

CPG Management of Dengue Infection In Adults (Third Edition)

HOME CARE ADVICE LEAFLET

Front View

HOME CARE ADVICE FOR DENGUE PATIENTS

WHAT SHOULD BE DONE?

- Adequate bed rest
- Adequate fluid intake (more than 8 glasses or 2 litres for an average person).
  - Milk, fruit juice (caution with diabetes patient) and isotonic electrolyte solution (ORS) and barley water.
  - Plain water alone is not sufficient and may cause electrolyte imbalance.
- Take paracetamol (not more than 4 gram per day).
- Tepid sponging.
- If possible, use mosquito repellent or rest under a mosquito net even during day time to prevent mosquito bites.
- Look for mosquito breeding places in and around the home and eliminate them.

WHAT SHOULD BE AVOIDED?

- Do not take non steroidal anti-inflammatory (NSAIDS) eg. aspirin / mefenamic acid (ponstan) or steroids. If you are already taking these medications, please consult your doctor.
- Antibiotics are not required
- Do not take injection
- Do not do massage / cupping / quasa

Back View

THE DANGER SIGNS OF DENGUE INFECTION
(IF ANY OF THESE ARE OBSERVED, PLEASE GO IMMEDIATELY TO THE NEAREST HOSPITAL / EMERGENCY DEPARTMENT)

1. **Bleeding**
   for example :
   - Red spots or patches on the skin
   - Bleeding from nose or gums
   - Vomiting blood
   - Black coloured stools
   - Heavy menstruation / vaginal bleeding
2. **Frequent vomiting and/or diarrhoea**
3. **Abdominal pain / tenderness / diarrhoea**
4. **Drowsiness or irritability**
5. **Pale, cold or clammy skin**
6. **Difficulty in breathing**

Keys to good home care

1. Bed rest

2. Encourage oral intake

What is adequate oral intake?

6 to 8 glasses of fluid for adults and accordingly in children

What types of fluid?

Milk, coconut water, fruit juice (caution with diabetes patient), oral rehydration solution, barley water, rice water, clear soup

Water alone may cause electrolyte imbalance.

3. Manage fever

Give paracetamol if fever is higher than 38°C

- Adult - not more than 4 g per day
- Child - 10 mg/kg/dose, not more than 4 times a day

Tepid (lukewarm water) sponging

Do not give ibuprofen or aspirin (or other non-steroidal anti-inflammatory drugs)

Keys to good home care (cont.)

4. Reduce breeding habitats around the home and kill adult mosquitoes

5. Return to **hospital** **IMMEDIATELY** if no improvement or warning signs appear

Frequent vomiting, unable to drink or scanty urine

Severe abdominal pain

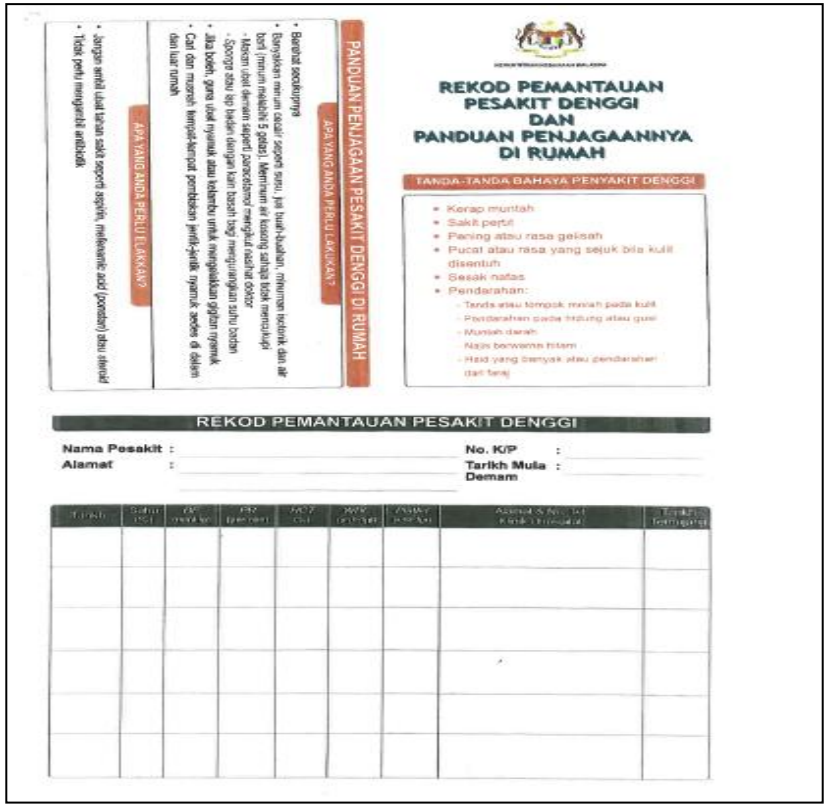
Severe tiredness, drowsiness, mental confusion or seizures

Bleeding:

- Red spots or patches on the skin
- Bleeding from nose or gums
- Vomiting blood
- Black coloured stools
- Heavy menstruation or vaginal bleeding

Pale, cold or clammy hands and feet

Breathing difficulty


REKOD PEMANTAUAN PESAKIT DENGGI DAN PANDUAN PENJAGAANNYA DI RUMAH

TANDA-TANDA BAHAYA PENYAKIT DENGGI

- Kerap muntah
- Sakit perut
- Pening atau rasa gelisah
- Pucat atau rasa yang sejuk bila kulit disentuh
- Sesak nafas
- Pendarahan:
  - Tanda atau tompok merah pada kulit
  - Pendarahan pada hidung atau gusi
  - Muntah darah
  - Najis berwarna hitam
  - Haid yang banyak atau pendarahan dari faraj

PANDUAN PENJAGAAN PESAKIT DENGGI DI RUMAH

APA YANG ANDA PERLU LAKUKAN?

- Berehat secukupnya
- Banyakkan minum cecair seperti susu, jus buah-buahan, minuman isotonik dan air biri (minum maksimal 5 gelas). Memburuk air kosong sahaja tidak mencukupi
- Ubat-ubat demam seperti paracetamol mengikut nasihat doktor
- Sponge atau lap badan dengan kain basah bagi menurunkan suhu badan
- Jika boleh, guna ubat nyamuk atau kelambu untuk mengelakkan gigitan nyamuk
- Cari dan musnah tempat-tempat pembiakan jentik-jentik nyamuk aedes di dalam dan luar rumah

APA YANG ANDA PERLU ELAKKAN?

- Jangan ambil ubat-ubat sakit seperti aspirin, mefenamic acid (ponstan) atau steroid
- Tidak perlu mengambil antibiotik

REKOD PEMANTAUAN PESAKIT DENGGI

Nama Pesakit :
Alamat :
No. K/P :
Tarikh Mula Demam :

OUTPATIENT MANAGEMENT

- Symptomatic and supportive
- **Daily** follow up especially D3 onwards **until afebrile at least 48 hours** without antipyretics
- Use dengue clerking sheet
- Provide outpatient dengue monitoring record and homecare advice leaflet for dengue patients
- Advice patient to return to hospital as soon as warning signs arise

FOLLOW UP VISITS

Ask the **3 golden questions**:

- How much oral fluid intake (in the last 12-24 hours)?
- How much urine output? Other fluid losses?
- What activities can the patient do?

Monitor disease progression:

- Fever or defervescence?
- Development of warning signs?

Assess hemodynamic state: **5-in-1 magic touch**

Conduct serial CBCs until patient is out of the critical phase:

- Decreasing WBC
- Rising HCT with concurrent rapid fall in platelet count

MANAGEMENT PLAN FOR DENGUE PATIENT

Group A	Group B	Group C
• Send home	• Refer for in-hospital management	• Require emergency treatment and urgent referral

Dengue Clinical Management

World Health Organization

Western Pacific Region

GROUP B- REFERRAL FOR ADMISSION

Group B (any of following)

- Has warning signs
- Has co-existing condition:
  - Diabetes mellitus
  - Renal failure
  - Pregnancy
  - Infant
  - Elderly
- Has social circumstances:
  - Living alone
  - Living far away without a reliable means of transport

1. Admit for inpatient care
2. Monitor hemodynamic status frequently
3. Use HCT to guide interventions
4. Use isotonic IV fluids judiciously
5. Correct metabolic acidosis, electrolytes as needed

Warning Signs	Yes	Details
Persistent vomiting/ diarrhoea (≥3x over last 24h)	☐	
Any abdominal pain/ tenderness	☐	
Lethargy/ restlessness/ confusion	☐	
Tender hepatomegaly	☐	
Third space fluid accumulation	☐	
Spontaneous bleeding tendencies	☐	
Raised Hct with rapid drop in platelet	☐	*(In the absence of baseline values)*
		Male ≤60: Hct >46
		Male >60: Hct >42
		Female all ages: Hct >40

Other criteria for admission	Yes	Details
Syncope	☐	
Diarrhoea	☐	
Social factor	☐	

Special group	Yes	Details
Obese	☐	
Pregnant	☐	
Heart failure/ CKD/ CLD	☐	
DM	☐	
HPT	☐	
IHD	☐	
COPD	☐	
Age >65	☐	

ADMIT if ANY WARNING SIGNS present or presence of other criterion for admission.
CONSIDER admission for patients in the special group even in the absence of warning signs.

Instructions

1. Please notify

GROUP C- EMERGENCY REFERRAL TO HOSPITAL

Group C (any of following)
Severe plasma leakage with shock and/or fluid accumulation with respiratory distress
Severe bleeding
Severe organ impairment:
AST or ALT ≥1000 and/or impaired consciousness

→ Requires emergency treatment and urgent referral

Dengue Clinical Management

World Health Organization

Western Pacific Region

SEVERE DENGUE	Yes	Details
Hypotension SBP<90 or MAP<60 or SBP drop >40mmHg from known baseline	☐	
Shock index: HR > SBP or impaired perfusion	☐	
Third space fluid accumulation with respiratory distress	☐	
Disturbed conscious level	☐	
Any bleed GI/ non-mucosal and non-cutaneous/ supra-physiological	☐	
Specific organ dysfunction *(pls specify)*	☐	

CRITICAL CARE REVIEW & FAST-TRACK

Instructions
1. Review features of severe dengue present. 2. Use colloid-incorporated regime early 3. Specify start and end time of regime

Date & Time of:					
Fever onset:					
Critical phase onset:					
Phase:					
Febrile	☐	Critical	☐	Recovery	☐

DIAGNOSIS	
DENGUE FEVER WITHOUT WARNING SIGNS	☐
DENGUE FEVER **WITH WARNING SIGNS**	☐
SEVERE DENGUE	☐

Dr:	
Date:	

PREREQUISITES FOR TRANSFER

- All efforts must be taken to optimise the patient's condition before and during transfer
- The ED, ICU and Medical Department of the receiving hospital must be informed prior to transfer
- Adequate and essential information must be sent together with the patient that includes fluid chart, monitoring chart and investigation results

SUMMARY MANAGEMENT OF DENGUE

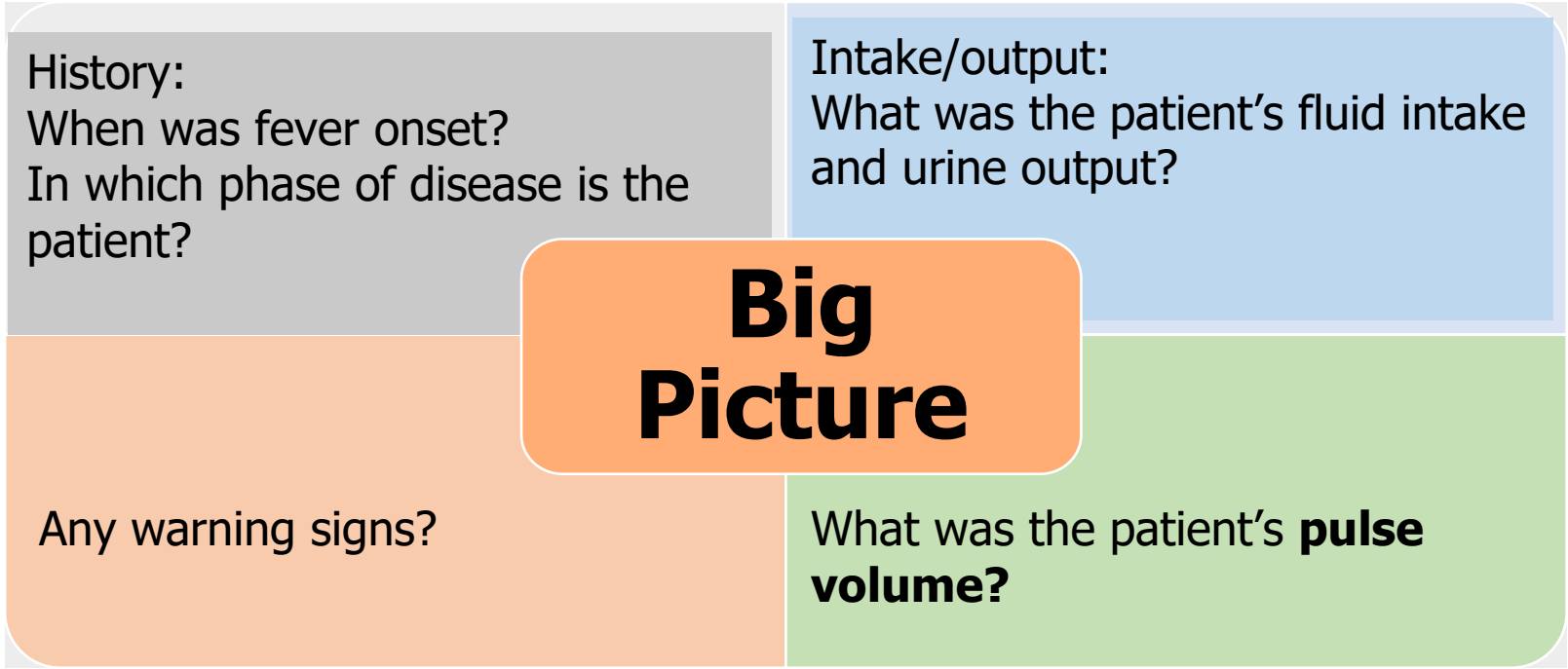
Dengue Clinical Management

World Health Organization
Western Pacific Region

Group A (all of following)	Group B (any of following)	Group C (any of following)
Getting adequate volume of oral fluids Passing urine at least once every 4 to 6 hours No warning signs Has stable haematocrit and haemodynamic status Does not have co-existing conditions	Has warning signs Has co-existing condition: Diabetes mellitus, renal failure, pregnant, infant or elderly Has social circumstances: Living alone or living far away without a reliable means of transport	Severe plasma leakage with shock and/or fluid accumulation with respiratory distress Severe bleeding Severe organ impairment: AST or ALT ≥1000 and/or impaired consciousness
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 hemodynamic status frequently 3. Use HCT to guide interventions 4. Use isotonic IV fluids judiciously 5. Correct metabolic acidosis, electrolytes as needed	Requires emergency treatment and urgent referral

Pitfalls in clinical examination of dengue patients

Always look at the **BIG picture** before "zooming in".



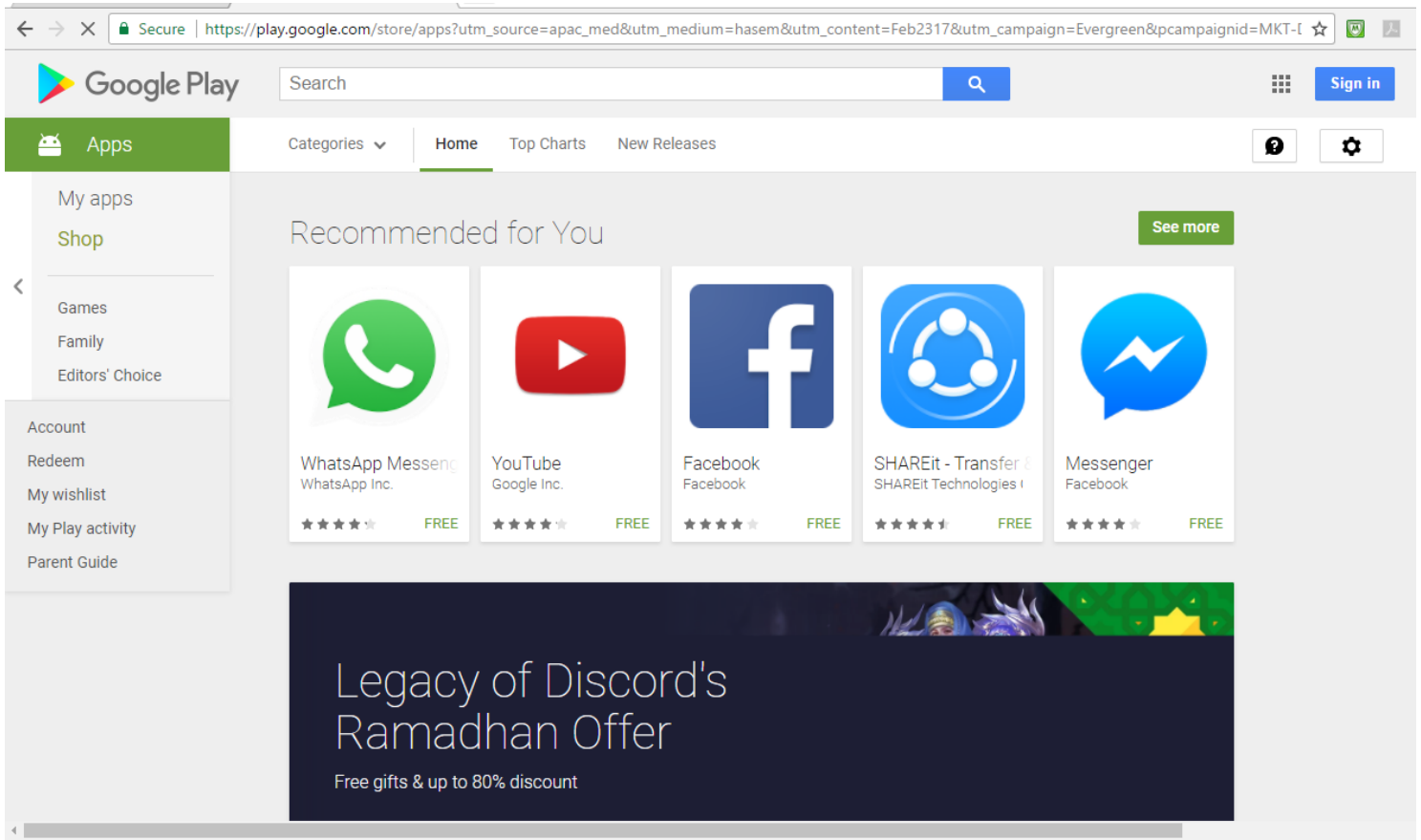
Remember:
Clinical features come as a "package", not in isolation.

TO MANAGE AN ADULT DENGUE INFECTION A PERSON SHOULD HAVE ……..

1. A SMART PHONE – TO DOWNLOAD CPG GUIDELINES
2. A SMART PHONE – THAT HAS A CALCULATOR
3. A SMAFT PHONE – TO DOWNLOAD APP TO CALCULATE BMI
4. PENS – BLACK OR BLUE INK
5. A RED INK PEN
6. A TORCHLIGHT

LAST AND MOST IMPORTANT ……..?

BRAIN AND WISDOM & KNOWLEDGE TO USE ALL THE ABOVE……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Sign in
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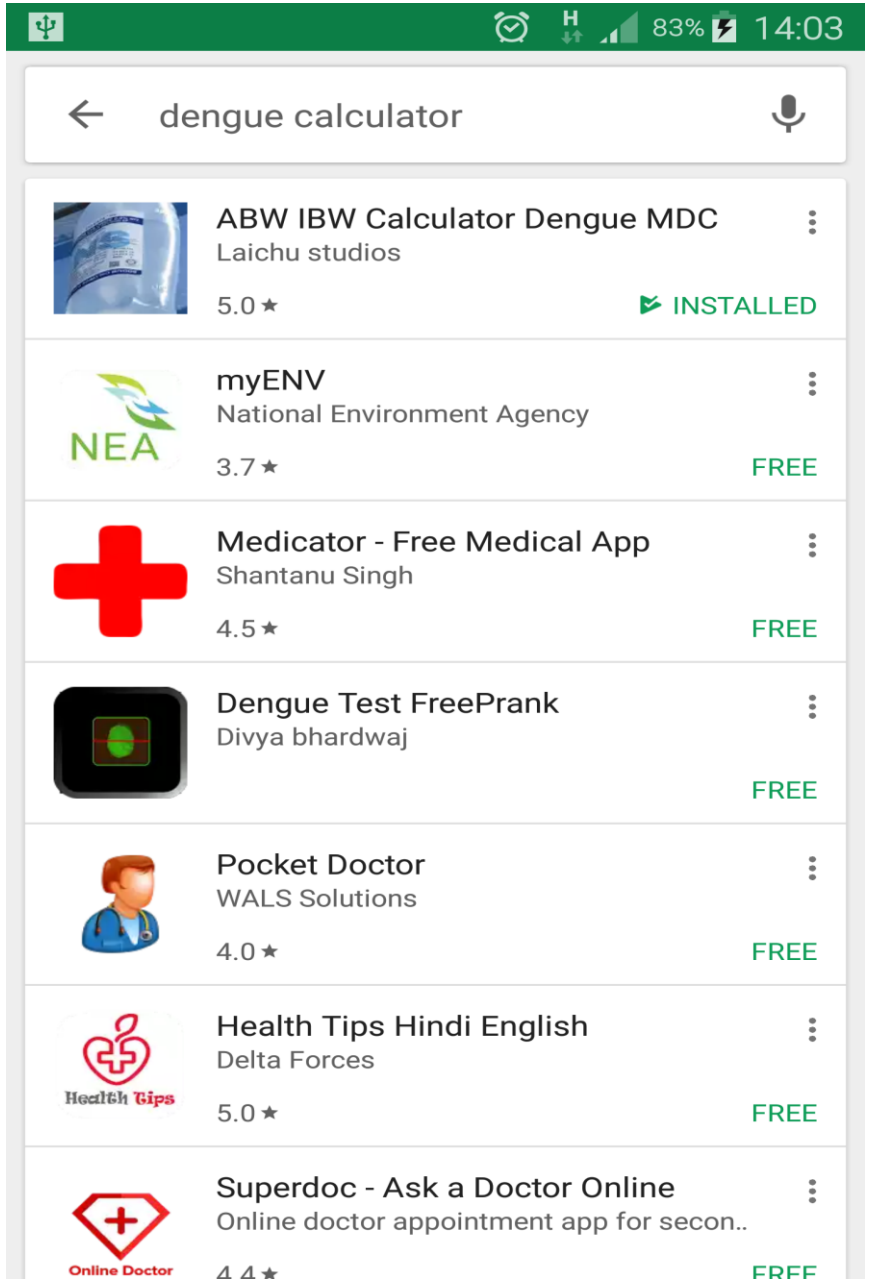
New Releases
My apps
Shop
Games
Family
Editors' Choice
Account
Redeem
My wishlist
My Play activity
Parent Guide
Recommended for You
See more
WhatsApp Messenc
WhatsApp Inc.
FREE
YouTube
Google Inc.
FREE
Facebook
Facebook
FREE
SHAREit - Transfer &
SHAREit Technologies
FREE
Messenger
Facebook
FREE
Legacy of Discord's
Ramadhan Offer
Free gifts & up to 80% discount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Dengue Test FreePrank
Divya bhardwaj
FREE
Pocket Doctor
WALS Solutions
4.0 ★
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Health Tips Hindi English
Delta Forces
Health Tips
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Superdoc - Ask a Doctor Online
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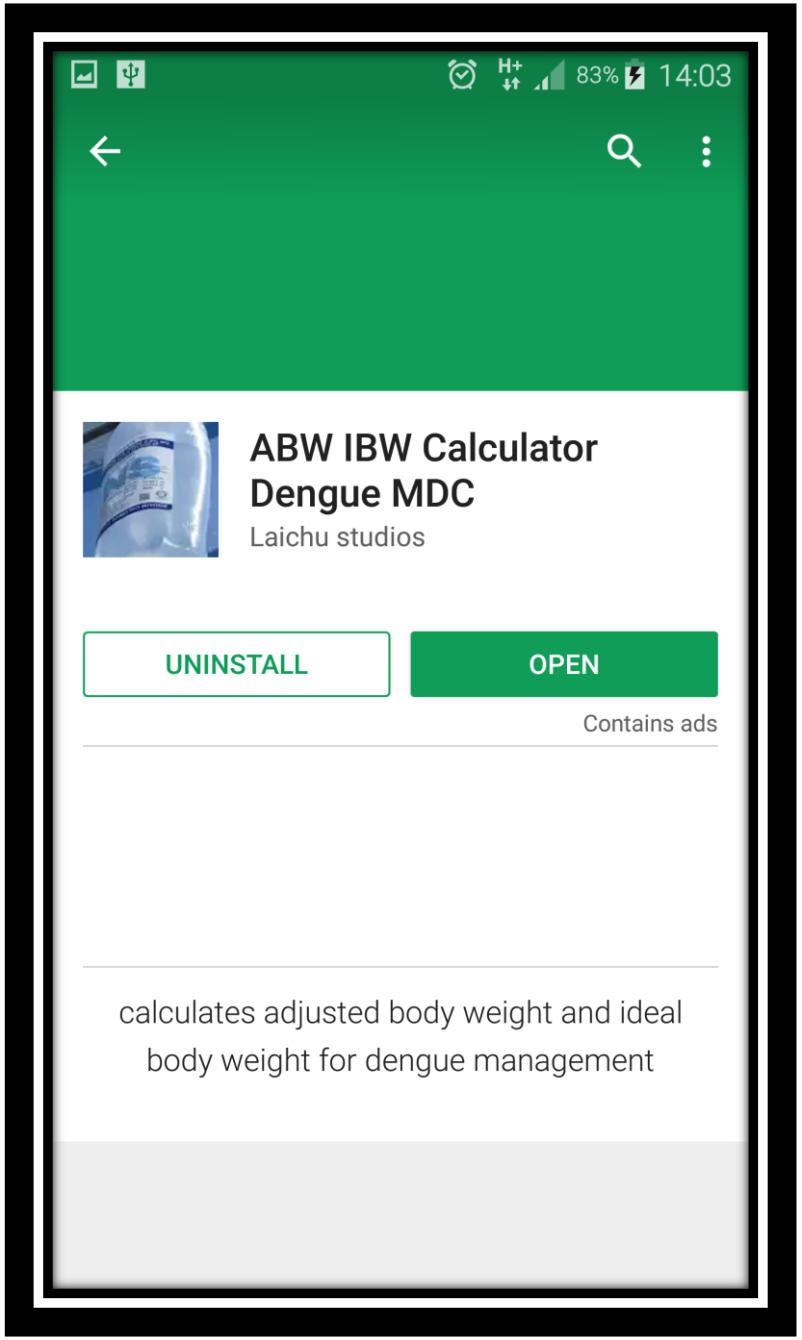
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ABW IBW Calculator Dengue MDC
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UNINSTALL
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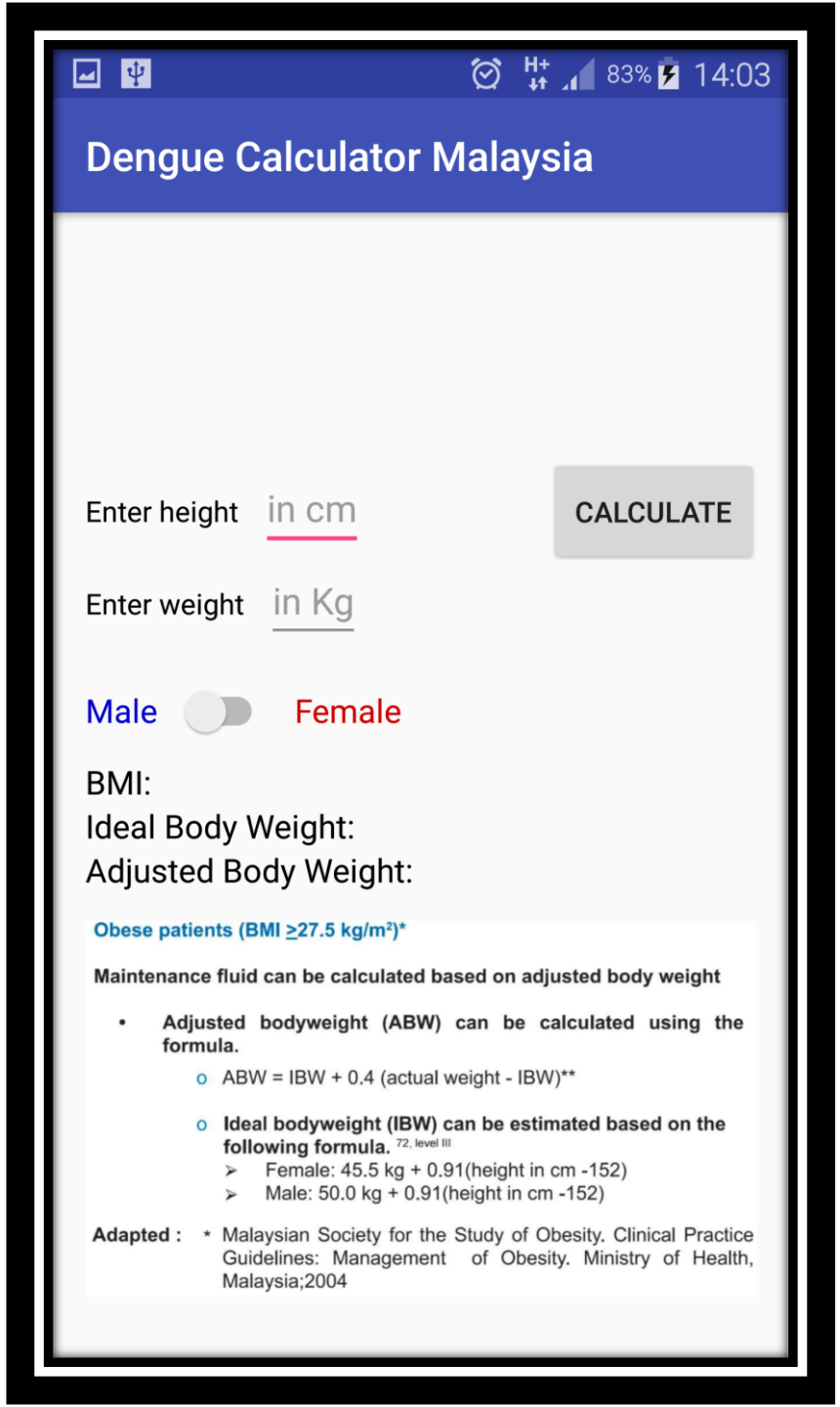
Contains ads
calculates adjusted body weight and ideal body weight for dengue management


83% 14:03
Dengue Calculator Malaysia
Enter height in cm
CALCULATE
Enter weight in Kg
Male
Female
BMI:
Ideal Body Weight:
Adjusted Body Weight:
Obese patients (BMI ≥27.5 kg/m²)*
Maintenance fluid can be calculated based on adjusted body weight
• Adjusted bodyweight (ABW) can be calculated using the formula.
o ABW = IBW + 0.4 (actual weight - IBW)**
o Ideal bodyweight (IBW) can be estimated based on the following formula. 72, level III
➢ Female: 45.5 kg + 0.91(height in cm -152)
➢ Male: 50.0 kg + 0.91(height in cm -152)
Adapted : * Malaysian Society for the Study of Obesity. Clinical Practice Guidelines: Management of Obesity. Ministry of Health, Malaysia;2004

- 22 years old, university student, male, day 2 of illness
- Presenting complaint:
  - Sudden onset fever- started yesterday, taken paracetamol 1g this morning at 6am, associated with headache, nausea, joint pain and muscle ache

What further history would you like to ask?

History

- No known medical illness
- Recent fogging at college
- No recent travelling or jungle tracking
- No URTI symptoms
- Able to take orally, taking 2 glasses of water since this morning with bread, passed urine once this morning, and he attended class yesterday

What is the clinical diagnosis?

CLINICAL DIAGNOSIS

- Probable Dengue
- Without warning sign
- Febrile phase
- Day 2 of illness

EXAMINATION

- Pink, alert, facial flushing, hydration status: normal
- Hand: pink, CRT<2 sec, warm periphery, good pulse volume and HR:94bpm
- BP: 118/70mmHg
- Temperature: 38.6°C
- Lung: clear, normal air entry
- CVS: S1S2 no added sound
- Abdomen: Soft, non tender, no palpable liver

What is the assessment of his hemodynamic status?

What is your further management?

Select 2 options

- Full blood count
- Renal profile
- Urine FEME
- Chest X-Ray
- Full blood picture
- Dengue Combo Test
- Blood C&S

Investigation Results

- FBC
  - Hb: 14.5g/dL
  - HCT: 43.3%
  - TWBC: 5.5
  - Platelet: 156
- Dengue Combo
  - NS1: positive
  - IgG: Negative
  - IgM: Negative

What is your final diagnosis?

FINAL DIAGNOSIS

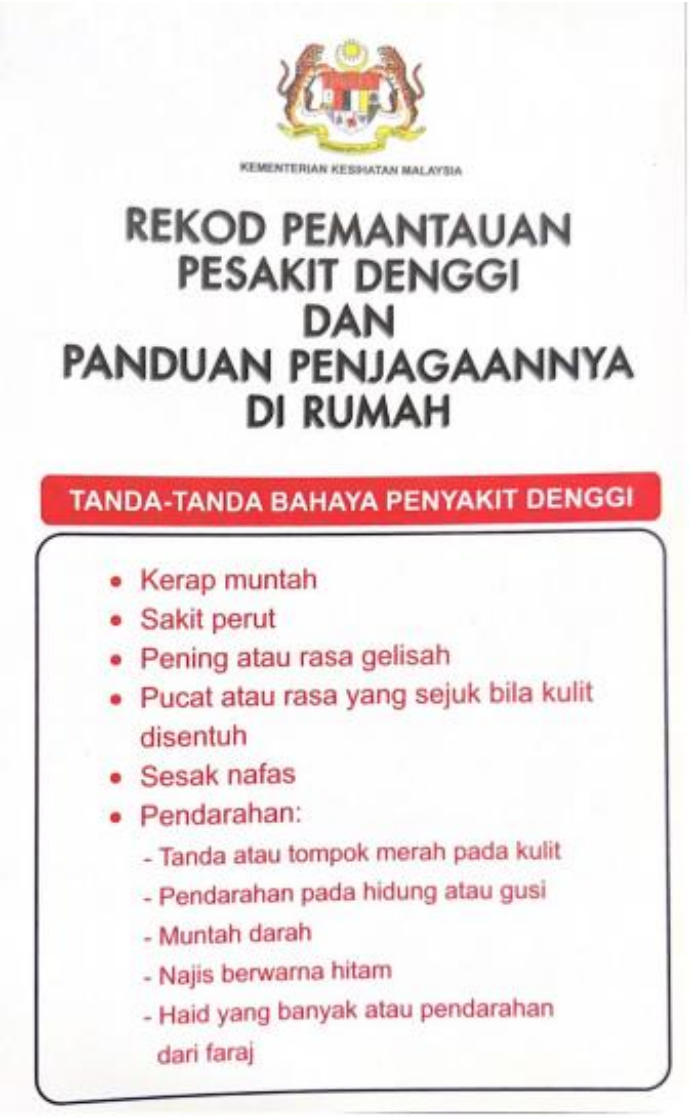
- Dengue Fever
- Without warning sign
- Febrile phase
- Day 2 of illness

What is your next action?

PLAN

- Notification
- Allow home
- Advice on elimination of mosquito breeding
- Dengue monitoring card (to bring cards to each clinic visit)
- PCM 1g PRN; No NSAIDs
- TCA hospital stat if warning sign
- Ensure good hydration
- Daily FBC / review

DENGUE MONITORING CARD



KEMENTERIAN KESIHATAN MALAYSIA

REKOD PEMANTAUAN PESAKIT DENGGI DAN PANDUAN PENJAGAANNYA DI RUMAH

TANDA-TANDA BAHAYA PENYAKIT DENGGI

- Kerap muntah
- Sakit perut
- Pening atau rasa gelisah
- Pucat atau rasa yang sejuk bila kulit disentuh
- Sesak nafas
- Pendarahan:
  - Tanda atau tompok merah pada kulit
  - Pendarahan pada hidung atau gusi
  - Muntah darah
  - Najis berwarna hitam
  - Haid yang banyak atau pendarahan dari faraj

PANDUAN PENJAGAAN PESAKIT DENGGI DI RUMAH

APA YANG ANDA PERLU LAKUKAN?

- Berehat secukupnya
- Banyakkan minum cecair seperti susu, jus buah-buahan dan air barli (minum melebihi 5 gelas). Meminum air kosong sahaja tidak mencukupi
  - Makan ubat demam seperti *paracetamol* mengikut nasihat doktor
  - *Sponge* atau lap badan dengan kain basah bagi mengurangkan suhu badan
- Jika boleh, guna ubat nyamuk atau kelambu untuk mengelakkan gigitan nyamuk
- Cari dan musnah tempat-tempat pembiakan jentik-jentik aedes di dalam dan luar rumah

APA YANG ANDA PERLU ELAKKAN?

- Jangan ambil ubat tahan sakit seperti *aspirin, mefenamic acid (ponstan)* atau *steroid*
- Tidak perlu mengambil antibiotik

DENGUE MONITORING RECORD

Patient's name : ..... I/C No. / Passport : .....

Address : ..... Date of onset of fever : .....

.....

Date	Day of fever	Temp (°C)	BP (mmHg)	PR (min)	Hb (g/dL)	Hct (%)	WCC ($x10^3$/µl)	Platelet ($x10^3$/µl)	Attending Clinic/Tel. No.	Next Appointment

PROGRESS

- On day 4 of illness, fever subsided since yesterday night
- Poor oral intake, mild epigastric discomfort, claimed maybe having gastric pain
- General condition: conscious and alert
- Hand: warm and good pulse volume, CRT <2 sec, pulse volume poor, HR:98, BP:120/74mmHg
- Urine output: slightly reduce

What is your current diagnosis?

DIAGNOSIS

- Dengue Fever
- With warning sign
- Critical phase
- Day 4 of illness

What is your next action?

Warning signs*

- Abdominal pain or tenderness
- Persistent vomiting (≥3 times per day)
- Persistent diarrhoea (≥3 times per day)
- Clinical fluid accumulation
- Mucosal bleed
- Lethargy, confusion, restlessness
- Tender liver
- Laboratory: increase in HCT concurrent with rapid decrease in platelet count

*(requiring strict observation & medical intervention)