

# Dengue risk assessment & mitigation



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# CASE 1

# At ED on 23.10.20 @ 9 pm

- 42 y.o/lady
- Presented to ED with fever x 3/7
- Had bloods done in nearby GP that day. Information on referral letter are as below:
  - WCC 3.6 / HCT 38.3 / Plt 90. NS 1+
  - Vital signs charted on card: BP 144/99, PR 90
  - Rx list:
    - MTF 1g BD
    - SC Actrapid 14 u TDS/ Insulatard 32u ON
    - Perindopril 4 mg OD
    - Amlodipine 10mg OD
    - Simvastatin 20mg ON

# 23/10/20 ED (fever center) : 9 pm

Fever onset 21/10/20 - D3

Vomited x 1

**Gum bleeding**

No abdominal pain/ no diarrhea

BP: 148/79mmHg

**PR 127 bpm**

**T : 40.4**

Warm peripheries, CRT<2s

Lungs: clear

P/A: soft

WBC : 3.3 / Hb 12 / HCT 33 / plt 89

IMP: DF D3 with **no warning signs, not in shock**

Plan:

Admit **observation ward**

IVD **3cc/kg/H**

T. PCM stat

Review FBC at **11pm**

## *Risk assessment:*

### **1. What is the cause of tachycardia?**

- In this case: pyrexia, hypovolemia due to dehydration
- Other causes in dengue: leaking, myocarditis, bleeding, superimposed sepsis

### **2. DXT/VBG/lactate not done at first encounter**

- Degree of hyperglycaemia was not identified

### **3. This case should not be nursed at the observation ward**

- Did not specify which phase of dengue is the patient in
- No warning signs?

## *Mitigation:*

- Needs to be triaged to yellow zone/red zone (GP should call ED to passover)
- Initiation of IVI insulin and fluid boluses if indicated
- Ideally should have a fast scan done bedside
- Should be referred to medical urgently

**DENGUE FEVER ASSESSMENT FORM (UMMC).**

Date and time today: \_\_\_\_\_ Date & time of onset of fever: \_\_\_\_\_

>72 hrs fever: Yes / No \_\_\_\_\_ Place of residence \_\_\_\_\_

Initial Triage:

Cold & clammy hands:	Yes / No	Pulse Volume:	Normal / weak
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Level of Triage: Green  Yellow  Red

Symptoms:

\_\_\_\_\_

\_\_\_\_\_

**RISK FACTORS:** (Tick the boxes if yes)

Infants (<1 yr old)	<input type="checkbox"/>	Hypertension	<input type="checkbox"/>	Obesity	<input type="checkbox"/>
Pregnancy	<input type="checkbox"/>	Heart Disease	<input type="checkbox"/>	Staying alone	<input type="checkbox"/>
Diabetes mellitus	<input type="checkbox"/>	Renal/Liver Failure	<input type="checkbox"/>	>60 years age	<input type="checkbox"/>
Other diseases, describe				NO risk factors	<input type="checkbox"/>

**5-in-1 Magic Touch (CCTVR):**

Colour of extremities		TPR:		
Capillary refill time	Sec.		Body Temp	
Temp of extremities			Blood Pressure	
Pulse Volume (most <u>impt</u> )			Respiratory rate	
Pulse Rate			SpO <sub>2</sub>	

**3 Golden Questions (for all fever patients):**

1. Could drink at least 3 to 4 glasses in the last 12 hours	No <input type="checkbox"/>	Yes <input type="checkbox"/>
2. Passed urine at least twice in the last 12 hours	No <input type="checkbox"/>	Yes <input type="checkbox"/>
3. Able to walk around in the last 6 hours	No <input type="checkbox"/>	Yes <input type="checkbox"/>

**Danger signs (for all fever patients):**

Severe abdominal pain	No <input type="checkbox"/>	Yes <input type="checkbox"/>	Full Blood Count		
Vomiting > 3X	No <input type="checkbox"/>	Yes <input type="checkbox"/>	Date/Time		
Weakness/ Lethargy/ Confusion	No <input type="checkbox"/>	Yes <input type="checkbox"/>	Hb		
Mucosal bleeding (including heavy menstruation)	No <input type="checkbox"/>	Yes <input type="checkbox"/>	HCT		
Cold hands and feet/Pale	No <input type="checkbox"/>	Yes <input type="checkbox"/>	WC		
Breathing difficulties/Chest Pain	No <input type="checkbox"/>	Yes <input type="checkbox"/>	Platelets		
Dizziness/Fainting	No <input type="checkbox"/>	Yes <input type="checkbox"/>			

**Management:**

Discharge for Follow-up  Observation ward  Refer for Admission

BK-MIS-1318-E01

**Dengue Fever Assessment Form – GUIDE  
UNIVERSITY MALAYA MEDICAL CENTER**

Date and time today: \_\_\_\_\_

Date & time of onset of fever: \_\_\_\_\_

>72 hrs fever: **Yes / No**

Place of residence \_\_\_\_\_

**Initial Triage:**

<b>Cold &amp; clammy hands:</b>	<b>Yes / No</b>	<b>Pulse Volume:</b>	<b>Normal / weak</b>
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Level of Triage: Green

Yellow

Red

**Who should be triaged to RED ZONE:**

- **Cold and clammy hands PLUS weak pulse volume**
- **Hypotension for age**

**Who should be triaged to YELLOW ZONE:**

- **>72 hours fever + risk factors + normal CCTVR**
- **>72 hours fever, not drinking enough fluids past 12-24 hours**
- **Tachycardia that cannot be explained by body temperature**

**The rest are GREEN ZONE**

5-in-1 Magic Touch (CCTVR):		TPR:	
Colour of extremities		Body Temp (thermometer)	
Capillary refill time	Sec.	Blood Pressure	
Temp of extremities		Respiratory rate	
Pulse <b>Volume</b> (most important)		SpO <sub>2</sub>	
Pulse <b>Rate</b>			
<p><i>The most important is the pulse volume. A weak pulse volume is a sign of shock. Extremities would be cold, pale and CRT prolonged in shock.</i></p> <p><i>If extremities are cold, pale with prolonged CRT BUT pulse volume is good, this could be due to a rising body temperature.</i></p>		<p><i>Always cross-check heart rate with body temperature: For every degree increase in temp above 37C, HR incr by 10-15 beats per min. If HR is too rapid for the body temp, think of shock.</i></p> <p><i>Beware the patient whose temp is normal or below normal, they may be in shock, esp if HR is rapid.</i></p> <p><i>RR is rapid in shock and febrile states. Systolic BP is normal but diastolic press is increased in early shock. BP falls only in late and severe shock.</i></p>	

### 3 Golden Questions (for all fever patients):

1. Could drink at least 3 to 4 glasses in the last 12 hours	No <input type="checkbox"/>	Yes <input type="checkbox"/>
2. Passed urine at least twice in the last 12 hours	No <input type="checkbox"/>	Yes <input type="checkbox"/>
3. Able to walk around in the last 6 hours	No <input type="checkbox"/>	Yes <input type="checkbox"/>



# 24/10/20 @ED (observation ward) : 1245 am

Less lethargic

No vomiting/ no abd pain

O/E:

Pink

Vitals stable

DXT @ 11pm: 21mmol/L

s/c Actrapid 10u stat

Repeated at 1am → 18mmol/L

Wbc : 3.0 / Hb 11.5 / Hct 33.4 / plt 71

VBG : ph: 7.357 / Hco3: 19 / lac 2.3

UFEME: glu 2+, prot 2+, ketone 1+

IMP:

1/ DF D3 with warning sign not in shock

2/ Impending DKA

Plan:

Refer medical

## *Risk assessment:*

1. The term *vitals stable* is unacceptable (in this case the compensated shock was missed)
2. S/C insulin is not recommended as it is **poorly absorbed** in shock
3. Lactic acidosis indicates tissue hypoperfusion

## *Mitigation:*

- IVI insulin is preferred
- Warrants aggressive hydration and sugar control to prevent osmotic diuresis leading to further dehydration

# 24/10/20 Medical RV at observation ward : 2 am

Further hx: skipped her insulin past 3 days

O/E:

Pink

Tongue coated

oral : 650cc

IVD : 1200cc (2130H- 0300H)

**Output : 1000cc** (+ve 850)

BP: 110/82mmHG

PR 106 bpm, good volume

T: 37.8

Dxt @1am: 18mmol/L

Lungs / abd : NAD

FBC: 2.44 / hb 11.4 / hct 34 / plt 53 (pre bolus)  
VBG : ph: 7.357 / Hco3: 19 / lac 2.3 (from 0045H)

IMP:

1/ DF D3, febrile, no warning sign, **not in shock**

2/ uncontrolled DM, impending DKA

PLAN:

Admit ward

**IVD 5cc/kg/h for 2h and repeat FBC/VBG at 5 am**

**4H DXT**

Trace RP/LFT/CE

## *Risk assessment:*

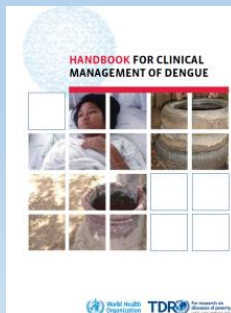
1. False interpretation of osmotic diuresis as good urine output, when patient is still under volume
2. A normal BP of 110/82 may be considered low for her as she has been on double anti-HPT agents.

## *Mitigation:*

1. IVI insulin should be initiated early
  - For rapid reduction of DXT
  - SC insulin is poorly absorbed in shock
2. Bedside scan to assess IVC and LV volume will be helpful in diabetic patients with DKA/HHS to assess volume status especially when urine output measurement may be inaccurate
3. ECG/CXR to assess heart size, to anticipate aggressive fluids administration

**Table 8. Challenges when managing dengue patients with pre-existing diabetes mellitus**

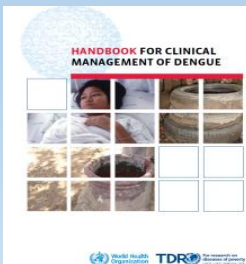
Hyperglycaemia	Just like other acute infections, dengue can precipitate diabetic ketoacidosis or hyperosmolar hyperglycaemia, the two major acute metabolic complications in diabetics
Osmotic diuresis:	Hyperglycaemia results in osmotic diuresis and worsens intravascular hypovolaemia. Not correcting the hyperglycaemic state exacerbates the shock state (see Section 2.2.3.4).
Increased risk of concomitant sepsis:	Hyperglycaemia also puts patients at risk of bacterial infection.
Diabetic ketoacidosis and hyperosmolar hyperglycaemia:	Clinical manifestations of diabetic ketoacidosis and hyperosmolar hyperglycaemia (nausea, vomiting and abdominal pain) are similar to the warning signs of severe dengue. It is not uncommon for dengue shock to be misdiagnosed as diabetic ketoacidosis.
Hypoglycaemia:	Hypoglycaemia may occur in those patients taking oral hypoglycaemic agents (e.g. long-acting sulphonylurea), but who had poor oral intake. Hypoglycaemia could be aggravated by severe hepatitis from dengue.
Oral hypoglycaemic agents:	Gastrointestinal absorption of oral hypoglycaemic agents is unreliable because of vomiting and diarrhoea during the dengue illness. Some hypoglycaemic agents such as metformin may aggravate lactic acidosis particularly in dengue shock. These agents should be avoided or discontinued during dengue shock and also in those with severe hepatitis.



## Management

Dengue patients with known diabetes mellitus should be admitted for closer monitoring of the diabetic as well as dengue states. If the patient has gastrointestinal disturbances, blood glucose should be controlled with intravenous short-acting insulin during the dengue illness.

A validated protocol for insulin dose adjustments to a target glucose level of  $< 150$  mg/dl (8.3 mmol/L) should be used. A source of glucose may be maintained once the target is achieved while receiving intravenous insulin. Blood glucose should be monitored every 1–2 hours until glucose values and insulin rates are stable and then every 4 hours thereafter.



# Hemodynamic Assessment – Monitoring urine output

Why is monitoring of urine output crucial in haemodynamic monitoring?

Reflects renal blood flow -- kidneys regulate intravascular volume.

In early shock state, kidneys conserve fluids by reducing urine volume.

In severe shock, no urine is produced.

What is considered adequate urine output?

In outpatient setting, the patient should drink enough fluids to pass urine about 4 to 6 times a day.

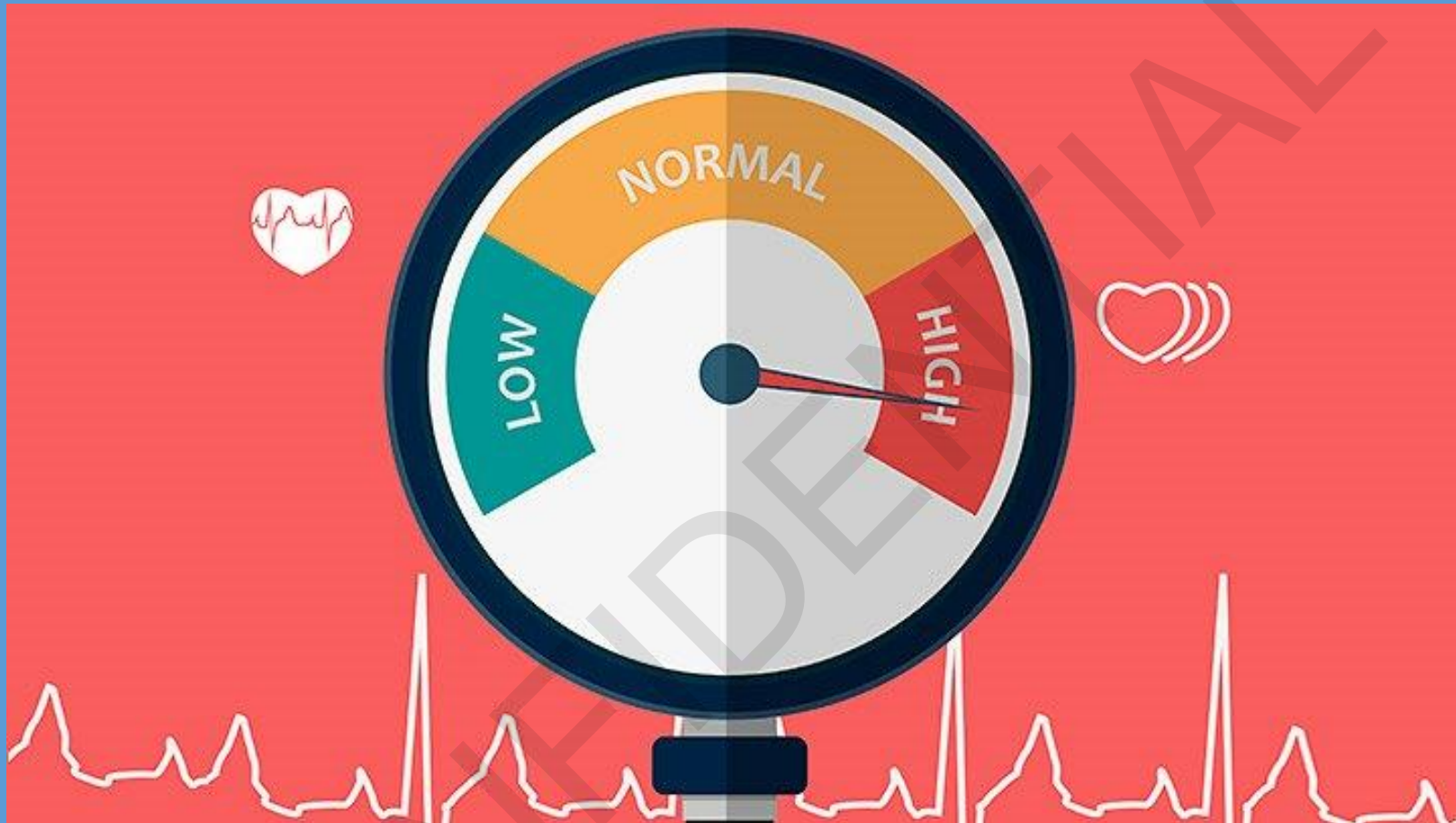
A patient with dengue shock should pass at least 0.5 ml/kg urine per hour.

An indwelling catheter will give an accurate measurement. If the urine volume exceeds this amount, consider reducing the IV fluid therapy.

## Pitfall?

In uncontrolled diabetes or hyperglycemia, inappropriately large quantities of urine is produced.

Shock becomes worse because of glycosuria.



## Case 2



# GP 21/1/20 @ 1pm

- 40 year old male
- **HPT on 3 anti-HPTs**, DM on OHA
- 4 days fever, vomiting 4x/day, **severe epigastric pain**
- **Reduced urine output** and LOA
- No diarrhoea
- Other systemic review: NAD
- No travel history

- T=37
- RR=20
- **Bp-101/73, PR 105**
- **Cool peripheries, prolonged CRT, poor pulse volume**
- Lungs: clear
- Abdomen: soft + epigastric tenderness

GP 21/1/20 @ 1.30 pm

Hb: 15.9 Hct: 48, Plt: 30 WCC: 3

DXT: 18.7 mmol/L

**Baseline HCT 2019: 47**

Impression:

TRO DF day 4 with warning signs, entering critical phase with uncontrolled DM in **compensated shock**

PLAN:

**Run NS 10cc/kg/hr 1 hr** while waiting to send to nearest ED

# Medical RV @ 2.30pm in ED

- No SOB
- Less abdominal pain
- No fever
- No more vomiting

O/E:

- Afebrile
- BP= 115/85
- PR= 120, low volume
- CRT 2 secs, coolish peripheries

- Lungs: clear
- IO : 1000/ 500 ml
- Rpt FBC post 10cc bolus:  
WCC 3.2, PLT 20, HCT: 45,  
Hb- 14.4
- Dxt: 16 mmol/L

## *Risk assessment:*

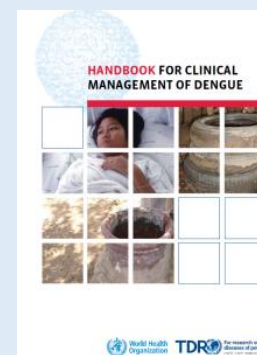
- Patient in decompensated shock rather than compensated shock
- BP 115/85 for a hypertensive patient on 3 anti-HPTs is considered **abnormally low**

## *Mitigation:*

1. Patients with chronic hypertension should be considered to be hypotensive when the MAP **declines by 40 mmHg from the baseline**, even if it still exceeds 60 mmHg
2. Look for other manifestations of shock

**Table 7. Challenges when managing dengue patients with pre-existing hypertension**

<p>Interpretation of BP</p>	<p>Hypotension is a late sign of shock. However, in patients with uncontrolled hypertension a BP reading that is considered normal for age may, in reality, be low for patients with uncontrolled hypertension. Similarly, what is considered as “mild” hypotension may in fact be profound. Patients with chronic hypertension should be considered to be hypotensive when the mean arterial pressure (MAP) declines by 40 mmHg from the baseline, even if it still exceeds 60 mmHg. (For example, if the baseline MAP is 110 mmHg, a MAP reading of 65 mmHg should be considered as significant hypotension.) Look for other manifestations of shock (see Section 2.2.3.1).</p>
<p>The heart rate response: Bradycardia:  Tachycardia:  The impact on hypotension:  End-organ damage from chronic hypertension:</p>	<p>It is essential to know the specific antihypertensive agent a patient is taking for the following reasons.</p> <p>β-blockers, a common antihypertensive medication, cause bradycardia and may block the tachycardic response in shock. The heart rate should not be used as an assessment of perfusion in patients on β-blockers.</p> <p>Antihypertensive agents such as calcium channel blockers may cause tachycardia. Tachycardia in these patients may not indicate hypovolemia. Knowing the baseline heart rate before the dengue illness is helpful in the haemodynamic assessment.</p> <p>The continuation of antihypertensive agents during the acute dengue illness should be evaluated carefully during the plasma leaking phase. The BP lowering effects of these agents and diuretic therapy may exacerbate the hypotension and hypoperfusion of intravascular volume depletion.</p> <p>Heart failure and renal failure are common complications of chronic uncontrolled hypertension. Clinicians should be aware if there is pre-existing or new onset of end-organ damage. Interpretation of urine output as a marker of renal perfusion has to be revoked in these situations.</p>



AAS

23 years old Malay Male

Smoker

Complaints:

- Fever x 3 days
- Cough + Runny nose
- Diarrhoea x 1 day: 3 – 4 times, loose
- Vomiting x 1 day: 3 – 4 times, tolerating orally

## 3<sup>rd</sup> CASE

## 1<sup>st</sup> ENCOUNTER

Further history:

- No rashes
- No myalgia/arthralgia
- No history of sick contact
- No history of living in dengue prone area
- History of taking outside food yesterday



## Examination:

- Pink, peripheral pulses good
- Hydration fair, tongue moist
- BP: 126/78
- HR: 88
- T 36.8C
  
- Throat – injected. Tonsil not enlarged



**FINAL DIAGNOSIS:**

1. URTI
2. Treat as AGE

Explained possibility of having other infection and advised patient to take FBC test in the nearby hospital but patient keen for medication first. Advice patient TCA stat to clinic or ED if symptoms not improving. Medical certificate for 2 days was given (12/06/2023 and 13/06/2023)

**TREATMENT:**

Augmentin 625mg BD x1/52, Paracetamol 1g QID, S. Benadryl 10ml TDS , Thymol gargle 10ml BD, Loratidine 10mg BD, Maxalon 1/1 TDS & Charcoal 1/1 TDS

AAS, 23 years old Malay male & smoker  
Supervisor at KTM railway

Presented the next day with:

- Fever x 5 days
- Cough + Runny nose + Sore throat
- Diarrhoea x 3 days: 4 – 5 times, loose
- No vomiting, tolerating orally

Further history:

- No myalgia/arthralgia/periorbital pain/headache
- Did not notice any fogging activity near housing area/unsure if from dengue prone area

## Examination:

- Looks comfortable, speak in full sentence
- BP 122/84 mmHg, PR 94/min, T 37° C
- CRT < 2 sec, warm peripheries, good pulse volume & tongue moist
- Throat – injected, tonsils not enlarged
- Lungs / CVS – normal
- Abdomen - soft, no epigastric tenderness

## 3<sup>rd</sup> CASE

## 2<sup>nd</sup> ENCOUNTER



### Investigation

#### FBC:

- Hb 17.3
- TWC 3.42
- HCT 48.7
- Platelet 81,000

#### Rapid test:

- NS1 – **Positive**
- Dengue IgM – Negative
- Dengue IgG – Negative



Diagnosis:

Dengue Fever Day 5 of illness in Defervescence Phase with Warning Signs - Diarrhoea and Haemoconcentration

CONFIDENTIAL

## Management:

- Patient was given drip 1 pint NS/1 hour
- **Discharged at 2352 hours** with:
  - T Paracetamol 1g qid
  - T Bromhexine 8mg tds
  - T Piriton 4mg tds
  - T Lomotil 1/1 tds
  - Syrup Benadryl 15mls tds
  - Thymol Gargle 15mls tds
  - ORS pur purge



Diagnosis of DF was explained to patient & advise given:

- To increase fluid intake
- To repeat FBC at nearest clinic cm
- TCA STAT if increasing diarrhoea / any bleeding / feeling lethargic
- Outpatient Dengue Monitoring Card was given to patient for a repeat FBC cm at nearest KK

Dengue notification was done



AAS

23 years old Malay Male

Smoker ½ pack per day

Complaints:

- Fever x 6 days – unsure last temp spike
- Diarrhoea x 4 days: 3 – 4 times, loose
- Vomiting x 4 days: 4 times/day

### Examination:

- Alert, GCS 15/15, orientated, pink, CRT < 2 secs
- Dry mucosa
- BP 110/73
- HR 93, good pulse volume
- T 36.6
- Spo2 100% on RA
- Others - NIL

## Investigation

### FBC:

- Hb 16.8
- TWC 2.9
- HCT 47.9
- Platelet 76,000

### Rapid test:

NS1 – **Positive**  
Dengue IgM – Negative  
Dengue IgG – Negative

## 3<sup>rd</sup> CASE

## 3<sup>rd</sup> ENCOUNTER



Diagnosis:

Dengue fever with warning signs in critical phase not in shock

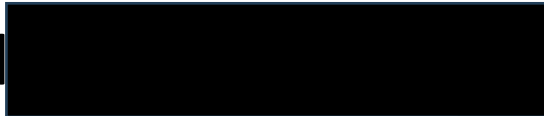
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## 3<sup>rd</sup> CASE

## 3<sup>rd</sup> ENCOUNTER



Management:

- Refer to Hospital 
- Dengue notification

CONFIDENTIAL

# SUMMARY - MORTALITY

AAS

23 years old Malay male

Single, lives at [REDACTED] in KL

Work as [REDACTED] supervisor

- Illness started on 9<sup>th</sup> June
- First diagnosis on 13<sup>th</sup> June: Day 5 of illness
- Referred to ED Hospital A on 14<sup>th</sup> June: Day 6 of illness
- Died on 3<sup>rd</sup> day of admission: 16<sup>th</sup> June
- Cause of death: Severe Dengue with Myocarditis

*SO FAR WHAT HAVE  
WE LEARNT?*

# RISK ASSESSMENT

1<sup>st</sup> encounter – Incorrectly diagnosed

2<sup>nd</sup> encounter – Correct diagnosis but inappropriately discharged

3<sup>rd</sup> encounter – Properly referred but without transportation



# MITIGATION

1. Febrile patient with diarrhoea and vomiting – need to rule out dengue!
2. Dengue cases in critical phase with warning signs & haemoconcentration, should be admitted! – this case was not even discussed with senior doctor/specialist

# STORY UNCOVERED

1. Patient was a resident at an active dengue outbreak locality. He was in fact the 27<sup>th</sup> dengue case out of total of 35 cases in a dengue hotspot – **with this information, delay in diagnosis is less likely.**
2. For the past 1 month prior to his illness, dengue controls by KKM & DBKL were actively carried out every week – search & destroy, fogging and announcements - **? unreliable history or ?ignorance.**
3. During the 2<sup>nd</sup> encounter & 3<sup>rd</sup> encounter, patient was not asked about the previous visit to clinic. Despite given MC, patient kept seeking treatment every day for the next 2 days - **looks like a red flag but this info was missing.**

## 4<sup>th</sup> CASE

## 1<sup>st</sup> ENCOUNTER

SAH

71 years old Chinese lady

No background history taken

Complaints:

- Fever x 1 day
- Left leg pain x 2 – 3 months
- No other symptoms

## Examination:

- Alert, hydration fair
- BP: 140/74
- HR: Not documented
- T 39.1 C
  
- Leg – no significant findings. ROM full
- Others – NAD

# 4<sup>th</sup> CASE

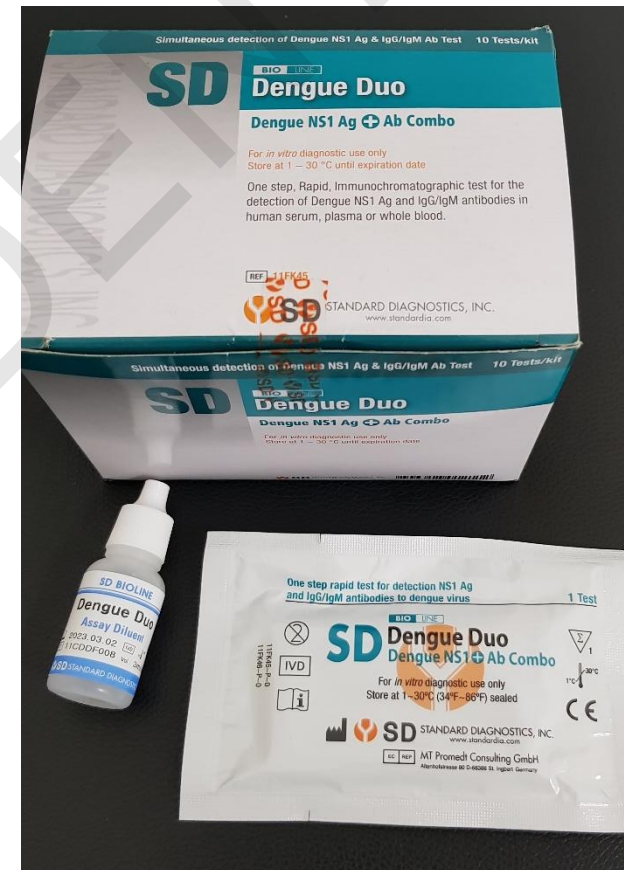
# 1<sup>st</sup> ENCOUNTER

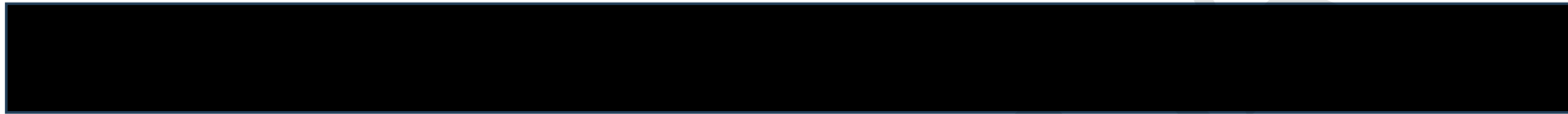
Investigation:

- Dengue NS1 – negative

No working diagnosis given

? Infection





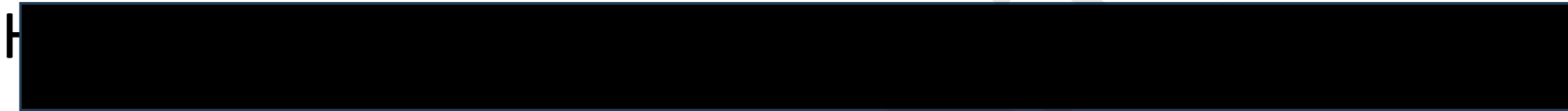
## Management:

- Paracetamol 1g TDS
- Cephalexin 500mg TDS
- **Meloxicam 1/1 BD**
- **IM Diclofenac stat given – not documented dose**
- Advised to increase oral fluid
- Advised to go clinic or hospital if fever persist

4<sup>th</sup> CASE

2<sup>nd</sup> ENCOUNTER

> 60 hours later:



SAH

71 years old Chinese lady

At triage:

GCS 15/15

BP 86/56

HR 89

T37.9



PUSHED TO RED ZONE

H [REDACTED]

SAH

71 years old Chinese lady

Underlying Hypertension & Diabetes on:

- T. Lodoz (Bisoprolol/HCTZ)
  - T. Exforge (Amlodipine/Valsartan)
  - T. Plavix
  - T. Forxiga (Dapagliflozin) 10mg
  - T. Glucophage 500mg od
- (Compliant to medication)





## Complaints:

- Fever x 4 days – on 8<sup>th</sup> March, regular PCM
- Calf pain
- Vomiting x 2 days – 1 time/day
- Diarrhoea x 2 days – 3 times/day
- Abdominal pain x 2 days
- Dizziness x 2 days

H [REDACTED]

## Examination:

- Alert, GCS 15/15, lethargic & dehydrated
- BP 100/70
- HR 86 – pulse volume fair
- SpO2 98% on RA
- T 37.9
- DXT: 15

Others NAD

H [REDACTED]

Impression:

1. To rule out DKA
  2. Acute Gastroenteritis
- Investigations: FBC, RP, LFT, Blood Ketone, VBG, CRP, Dengue NS1 Ag, Dengue Serology, Chest Xray & ECG
  - Management: IVD 1 liter over 1 hour, IVI Insulin 6U/hour, IV Controloc 40mg, IV Zofran 4mg, IV Buscopan 20mg & review blood

[REDACTED]

## Investigation

- FBC: Hb 11, TWC 2.9, **HCT 33** & PLT 33
  - RP: Urea 15, **Creat 153**, Na 135, K 5.2
  - LFT: **AST 2883**, **ALT 997**, Alb 31
  - VBG: pH 7.31, **HCO<sub>3</sub> 13.1**, **Lactate 2.8**
- Rapid test:  
**NS1 – Positive**  
Dengue IgM – Negative  
Dengue IgG – Negative

H [REDACTED]

Revised diagnosis:

1. Severe Dengue (Day 4 of illness) in febrile phase with warning signs
  2. Impending DKA due to (1)
- Management: IVD 5cc/kg/hour, IVI Insulin 6U/hour & for ICU admission
  - Referral to Govt Hosp upon family request – case referred to ED & physician on-call

## 4<sup>th</sup> CASE

## 3<sup>rd</sup> ENCOUNTER

Hospital

ambulance

Diagnosis:

Severe Dengue with transaminitis and possible occult bleeding

- Admitted in ICU for 13 days but succumbed on 23<sup>rd</sup> March at 1100 hours
- COD: Severe Dengue with Massive Intracranial Bleed and Multiple Organ Failure

*SO FAR WHAT HAVE  
WE LEARNT?*

# RISK ASSESSMENT & MITIGATION

1. False negative RTK result – sensitivity not 100% (93.9%)
  - High level of suspicion – ask to come back for review especially in high risk group (comorbidities, elderly)
2. Be very **selective** in prescribing NSAIDs, either oral or intramuscular injection - **patient was given both!**
  - Especially if patient's background medical history and medication not known (*in this case, was not obtained during 1<sup>st</sup> visit*).
  - Avoid NSAIDs if suspicious of dengue despite negative RTK result



# STORY UNCOVERED

1. Patient lives with her son, daughter in law and grandchild at Kepong in a terrace house.
2. Her grandchild was diagnosed with dengue on 25<sup>th</sup> Feb [REDACTED]
3. Deceased symptoms developed 10 days after that, on 7<sup>th</sup> March.
4. This part of history taking was missing from both health facilities despite this information was readily available.
5. Patient was the 4<sup>th</sup> out of 5 dengue cases in the neighborhood. There were 5 aedes breeding sites found nearby, all within 50 meters radius from deceased home.

# *Take home message...*

- Managing dengue with co-morbidities can be challenging
- They should be triaged appropriately and admitted early for close monitoring
- Avoid unnecessary fluid maintenance during febrile phase unless unable to tolerate orally
- Common pitfall in dengue patients with cardiac and renal disease : **fluid overload due to injudicious fluid administration**
- Common pitfall in diabetic patients: **failure to control sugar promptly and failure to recognise shock**
- Common pitfall in patients with pre-existing HPT: **failure to recognise that normal BP may be considered relatively low for hypertensive patients**

# *Take home message...*

- Appreciate the wide spectrum of dengue and severe dengue
- **Risk assessment and triage:** quick history of fluid intake and urine output, any co-morbid conditions?
- Quick examination with focus on perfusion and haemodynamics
- Identify the clinical problems, especially the *walking wounded*
- Commence fluid resuscitation, monitor, hand over **carefully**

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**Thank  
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