登革熱、茲卡暨屈公病教育訓練

登革熱臨床症狀與治療

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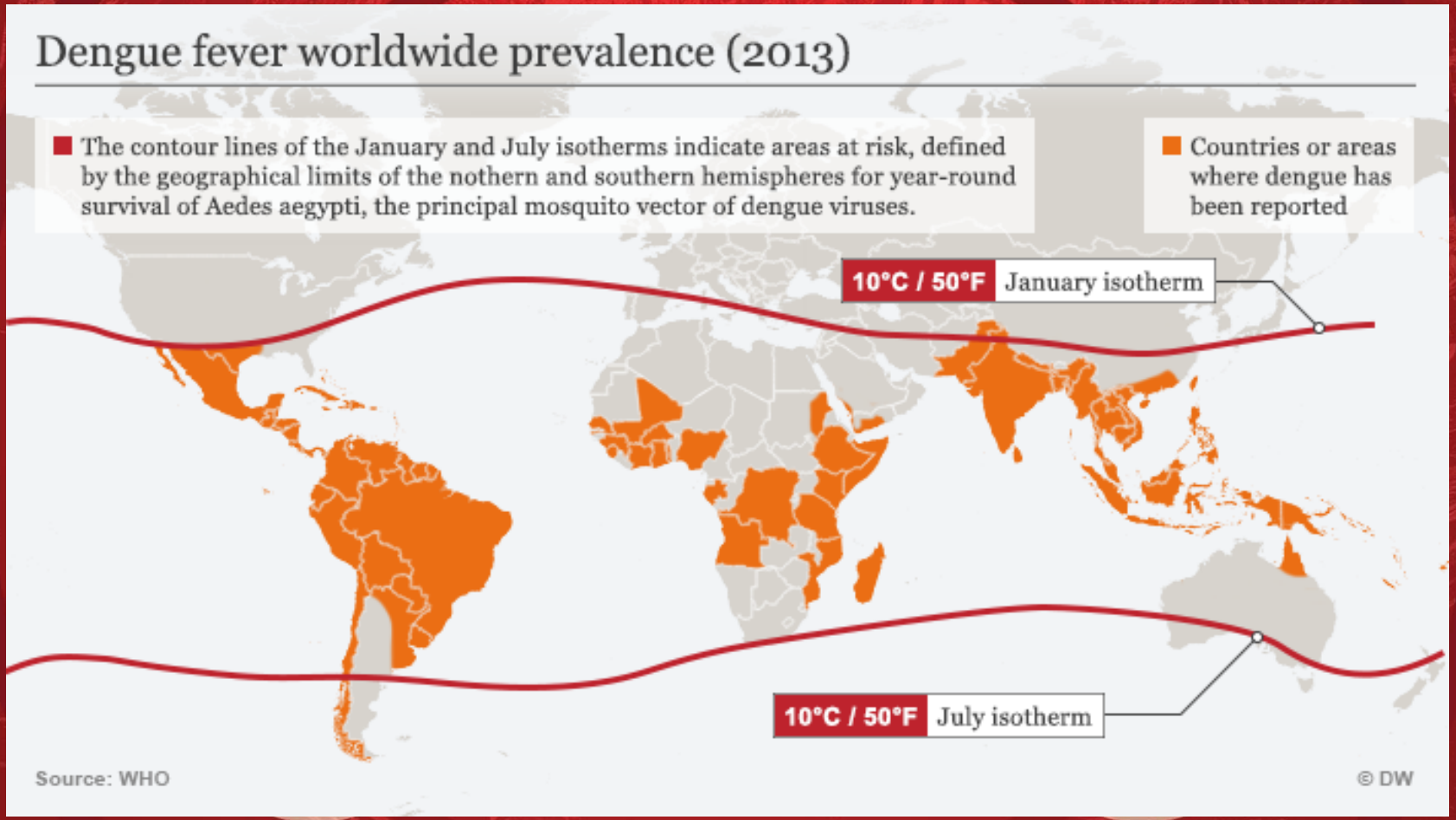
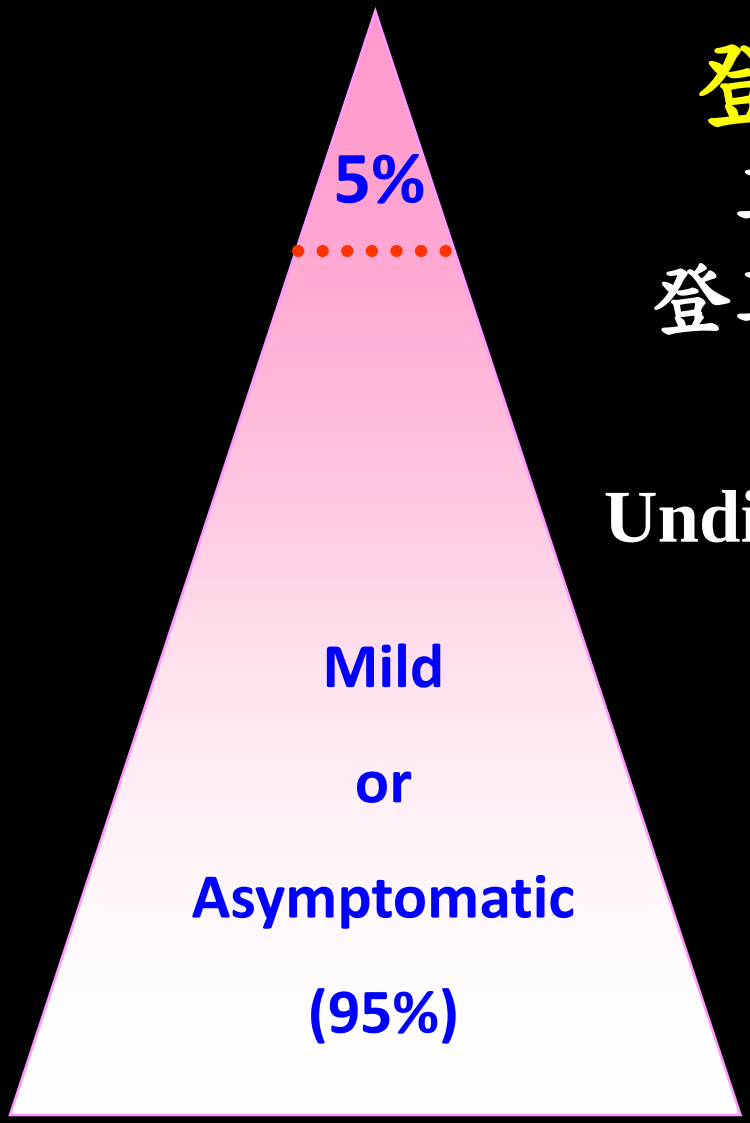
MOSQUITO-BORNE DISEASES



http://blog.healthgenie.in/types-of-mosquito-borne-diseases

Outline

- 登革熱臨床症狀
- 登革熱疫情對醫療院所衝擊及因應措施
- 登革熱病人分流
  - 世界衛生組織之逐步評估法
    - 病人處理決策
      - 分群照護
- 登革熱病人臨床處置



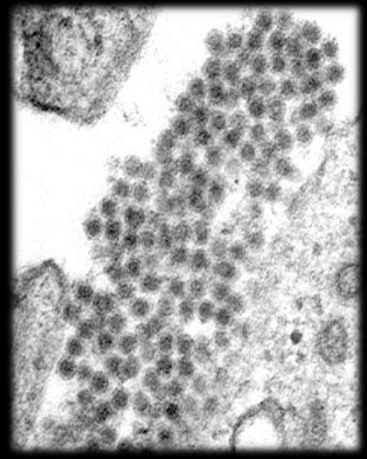
登革熱重症(high mortality:20-40%)

革休克症候群 (DSS)

登革出血熱 (DHF)

登革熱

Undifferentiated fever



* Dengue virus- 4 serotypes

(DEN-1, DEN-2, DEN-3, DEN-4)

劉清泉教授

登革熱 臨床症狀（一）

- 潛伏期：5-8 天

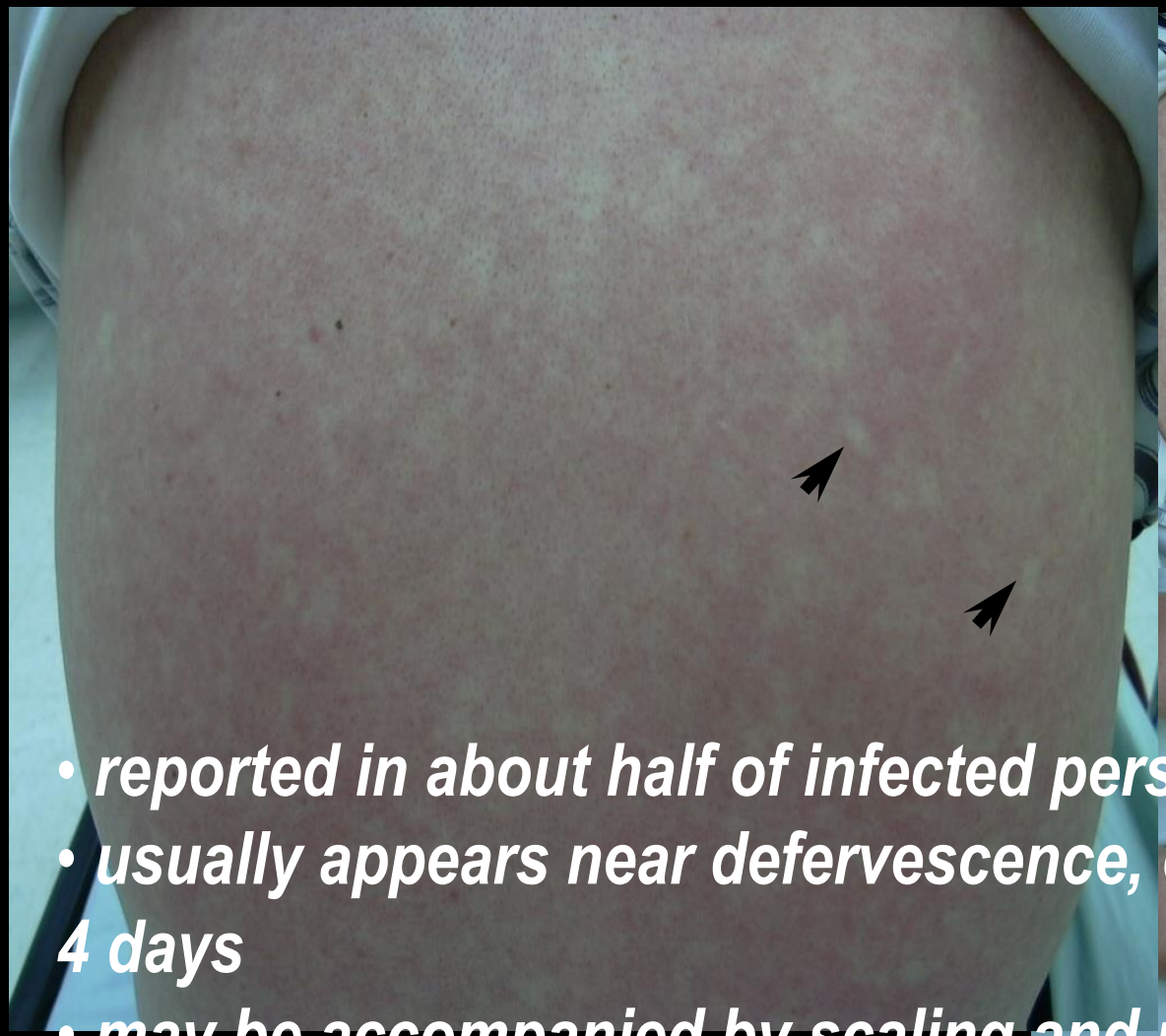
  症狀：發燒前數小時，頭痛，厭食，背痛，臉部潮紅

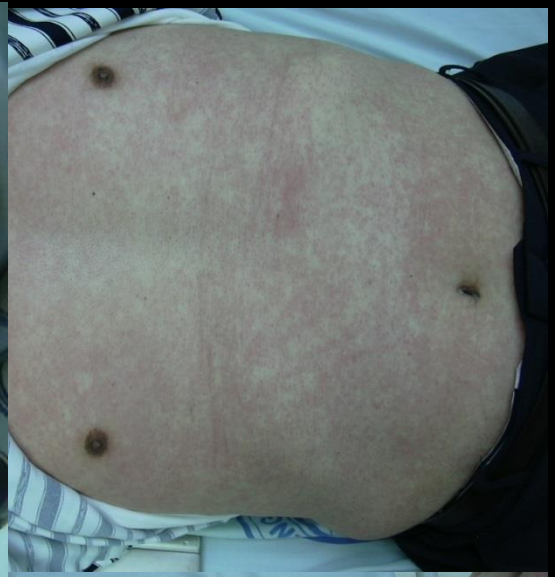
- 發燒併惡寒：持續五-六天或有雙峰型發燒

- 疼痛：頭，四肢，關節，肌肉，背部，眼窩 - 斷骨熱

- 紅疹： 第三-四日，胸部，軀體出現紅斑；或第六天，手腳掌變紅，手背，手臂，足背，小腿，有紅色癢疹，持續四-五天；
  - 皮疹常於退燒前幾天出現，有時伴隨著脫屑及搔癢
  - 最常有皮疹表現是第三血清型登革病毒感染，其次第一型、第二型和第四型

Dengue fever: White sands in red sea





- *reported in about half of infected persons*
- *usually appears near defervescence, often lasts for 1-4 days*
- *may be accompanied by scaling and pruritus*

登革熱 臨床症狀（二）

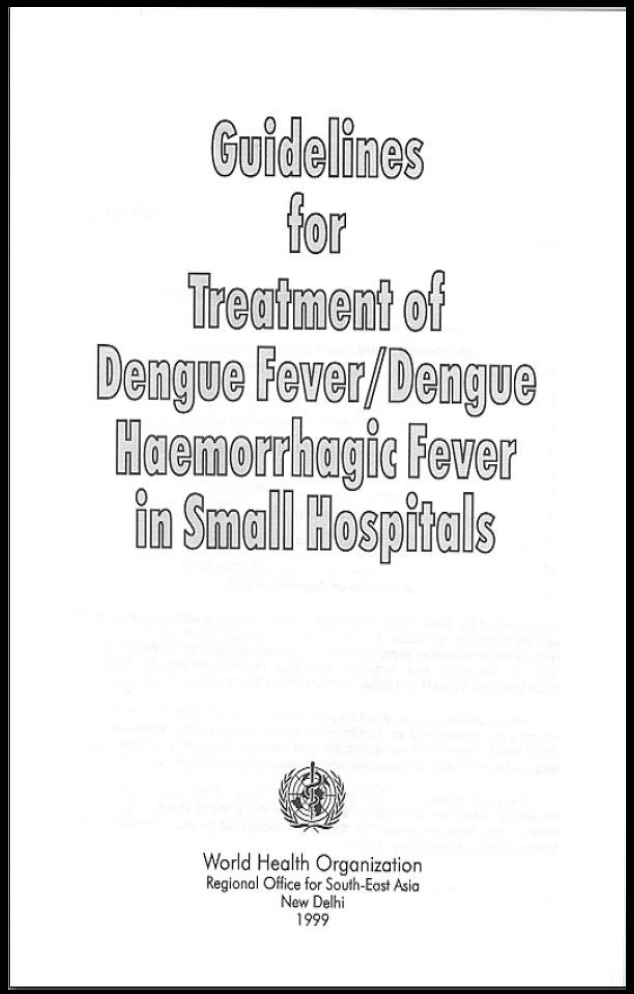
- 腸胃症狀：厭食，腹痛，嘔吐，腹瀉
- 肝臟腫大，淋巴腺腫大
- 心跳遲緩
- 瘀血點

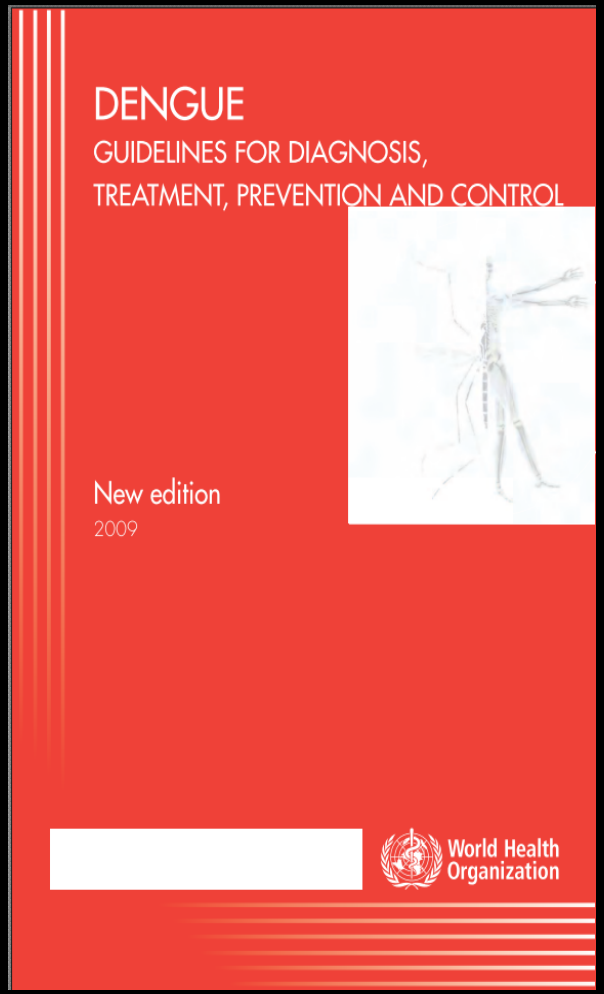
鑑別診斷

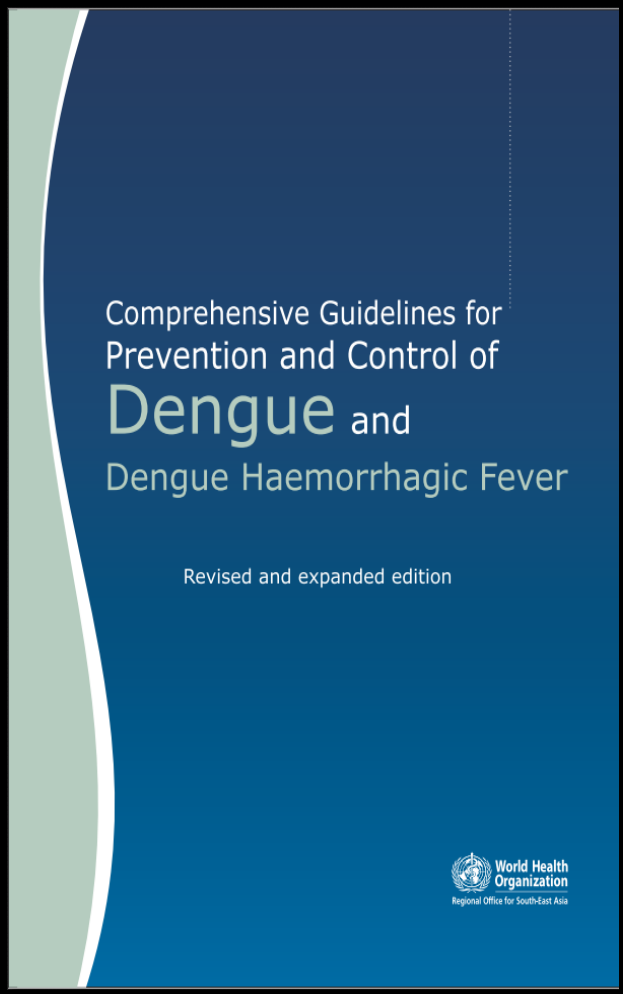
德國痲疹，腸病毒，瘧疾，鉤端螺旋菌感染，藥物過敏等

患者離開疫區二周以後才發病，或發燒已持續十天以上，登革熱幾不考慮

Dengue Fever Guidelines, WHO







Tourniquet Test

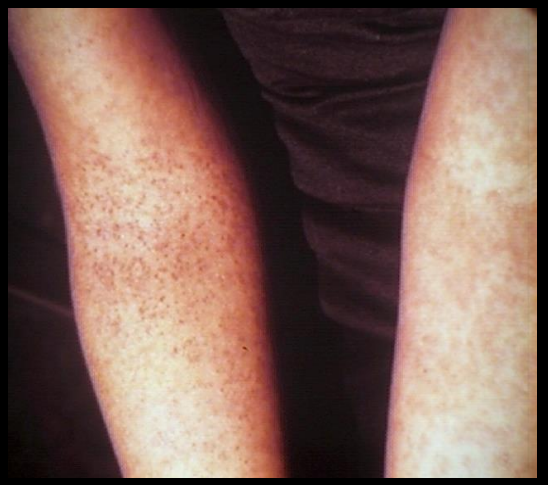
- Inflate blood pressure cuff to a point midway

- Positive test: 20 or more petechiae per 1 inch^2 (6.25

Pan American Health Organization: Dengue and Dengue Hemorrhagic Fever: Guidelines for Prevention and Control. PAHO: Washington, D.C., 1994: 12.

** A positive tourniquet test is incorporated in WHO clinical case definition of dengue hemorrhagic fever, but the definition differentiates poorly between dengue and dengue hemorrhagic fever and is not very specific.*

- N Engl J Med 2005;353:924-32



出血性登革熱/登革休克症候群

- 第一級：發燒，全身症狀 + 血壓帶試驗陽性
- 第二級：第一級 + 自發性出血

  - 出血性登革熱

- 第三級：第二級 + 循環衰竭：脈搏減弱，脈搏壓變窄，低血壓，皮膚溼冷，坐立不安
- 第四級：第三級 + 嚴重休克

  - 登革休克症候群

WHO Dengue Classification 1997

	DF	DHF
1. Fever 2-7 days	+	+
2. Bleeding tendency ▫ Positive tourniquet test or ▫ Spontaneous bleeding	+/-	+
3. Thrombocytopaenia ▫ ≤ 100,000/mm^3	+/-	+
4. Plasma leakage ▫ Pleural effusion /ascites /hypoproteinaemia ▫ ≥ 20% increase in HCT from baseline	-	+

DHF/DSS 好發因子

- 年齡小於十二歲
- 女性
- 高加索人（>黑人）
- 病毒型感染次序：一型後二型 > 四型後二型
- 單一病毒型：第二型
- 氣喘，糖尿病，鐮型血球貧血患者

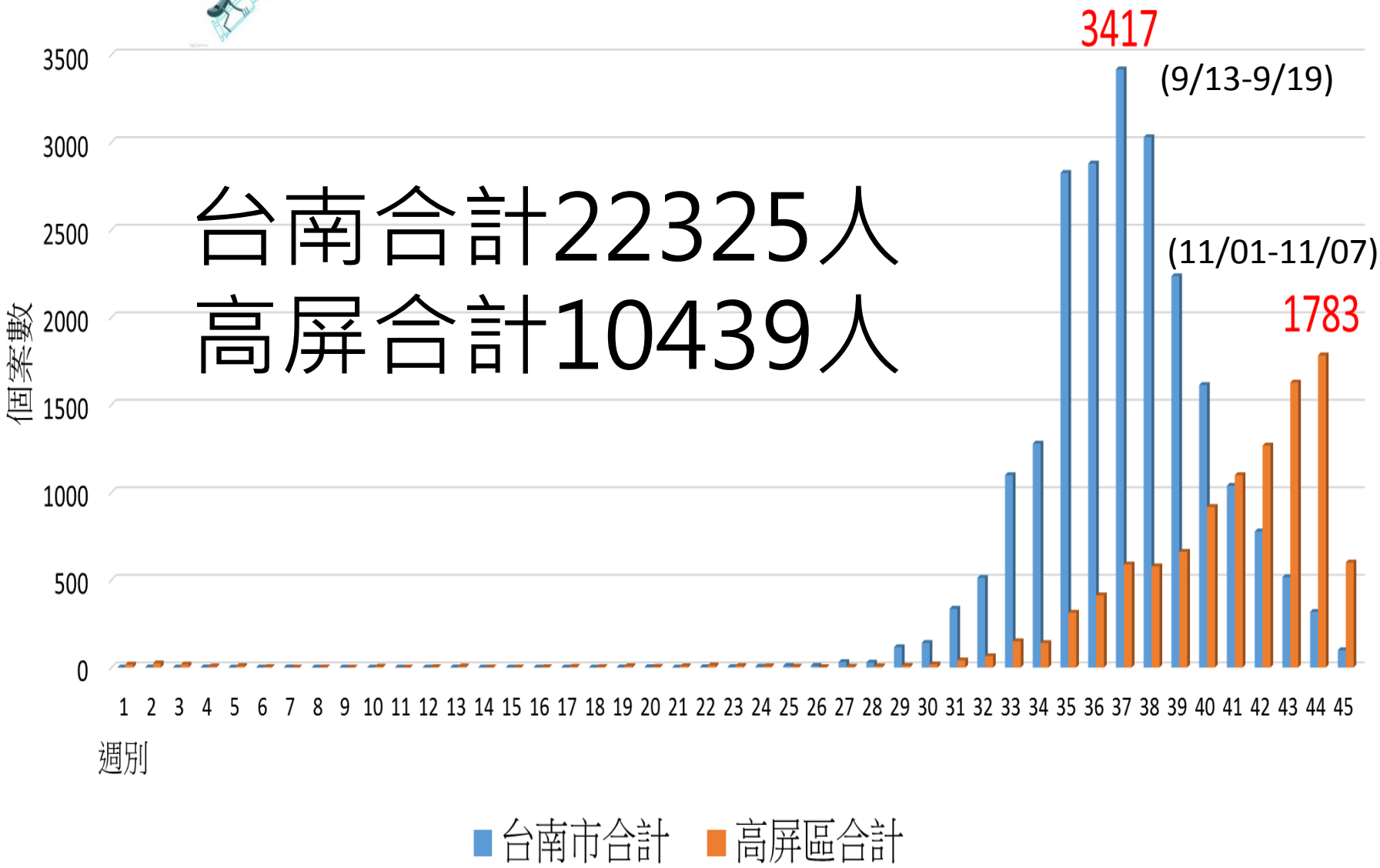
DF and DHF/DSS:
- **Brazil - predominantly reported among adults**
- **Other countries in Americas and Southeast Asia - children are the most affected subpopulation**

保護因子：營養不良

2015台南市及高屏區登革熱病例趨勢

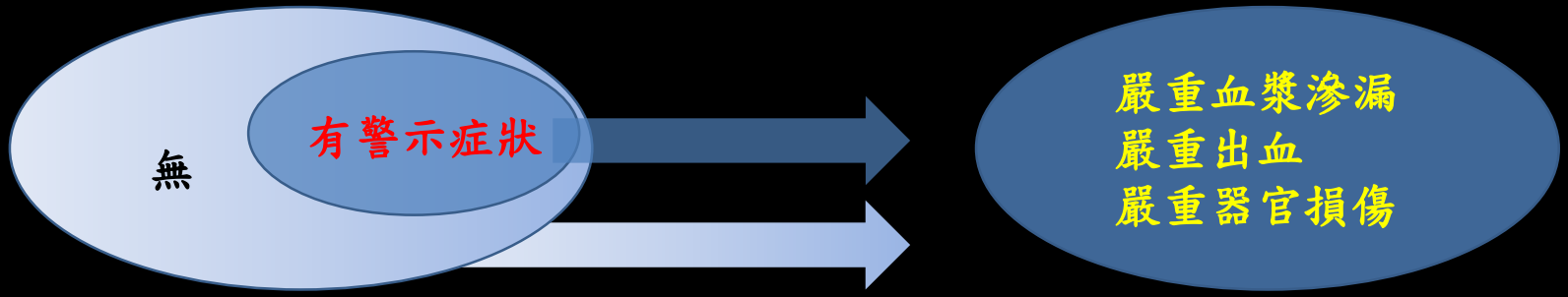
台南合計22325人

高屏合計10439人



資料來源:疾病管制署

登革診斷標準及嚴重度分類



可能為登革熱

居住於流行區或有相關旅遊史

發燒並有下列至少2項以上:

- 噁心、嘔吐
- 發疹
- 全身痠痛
- 止血帶試驗陽性
- 白血球過低
- 有右列任一警示症狀

實驗室確診為登革熱個案

警示症狀*

- 腹痛或壓痛
- 持續嘔吐
- 體液蓄積 (腹水/胸水...)
- 黏膜出血
- 嗜睡或躁動不安
- 肝腫大 > 2cm
- 實驗室檢驗: 血比容 (Hct) 升高同時合併血小板快速下降

* 需密切觀察與醫療處置(建議住院)

嚴重血漿滲漏

造成

- 休克 (登革休克症候群, DSS)
- 體液蓄積併呼吸窘迫

嚴重出血

依臨床醫師判定

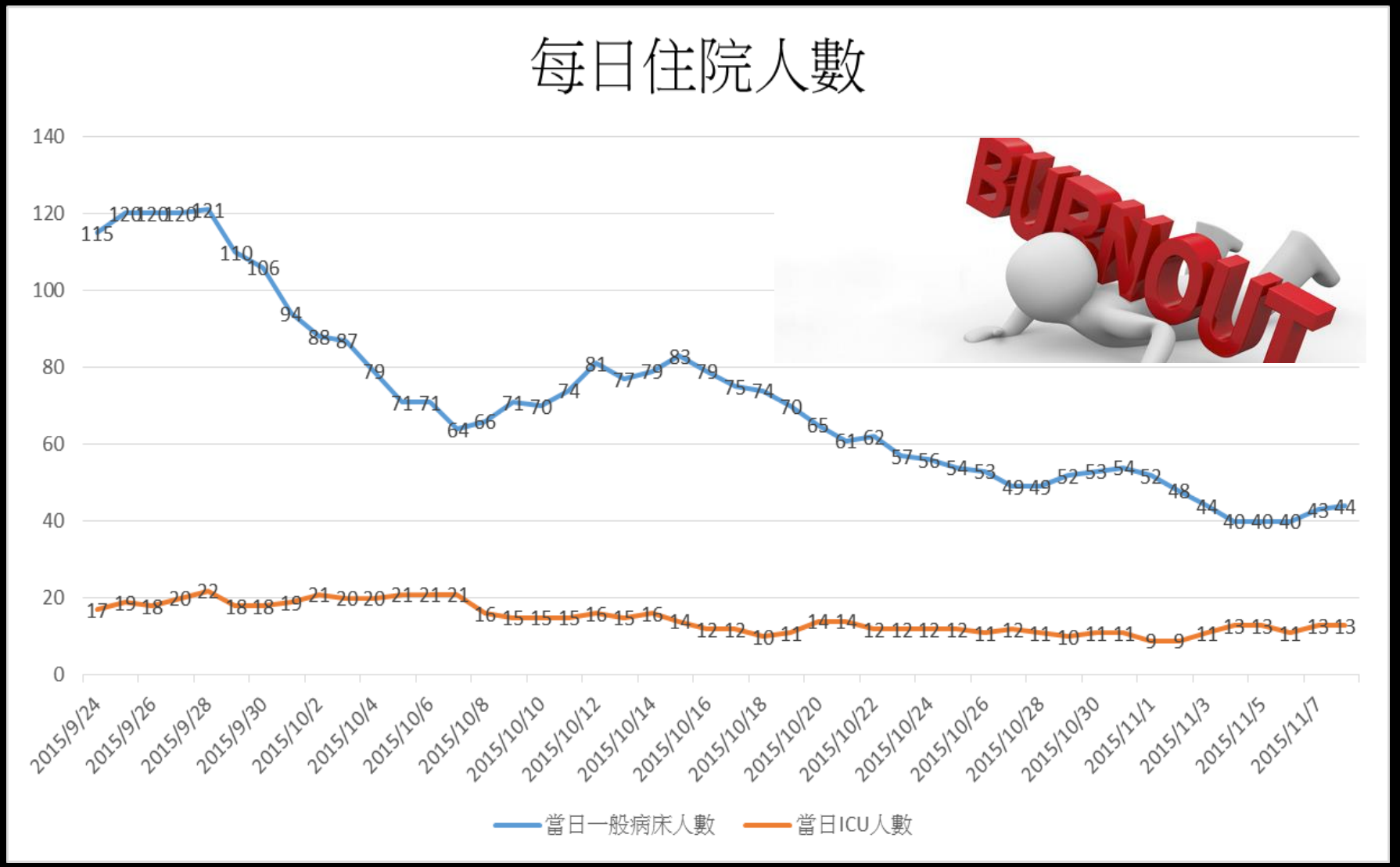
嚴重器官損傷

- 肝臟: AST (GOT) 或 ALT (GPT) >=1000 U/L
- 中樞神經系統
- 心臟及其他器官

Source: World Health Organization, 2009)

(台南市政府衛生局/國立成功大學傳染性疾病及訊息研究中心, 2011年11月製)

登革熱疫情對醫療院所衝擊



醫療院所因應措施

1. 登革熱相關教育

日期	時間	題目	講師
5/27	12:30-13:30	登革熱介紹	李明吉
8/17	13:30-15:50	登革熱研習會	何宗憲、張科
9/3	12:30-13:30	登革熱之診斷及最新臨床個案處理原則	劉清泉
9/10	12:00-13:00	登革熱的臨床照護	柯文謙
9/17	08:00-09:00	登革熱的臨床照護	張科
9/30	08:00-09:00	團體衛教行前會	

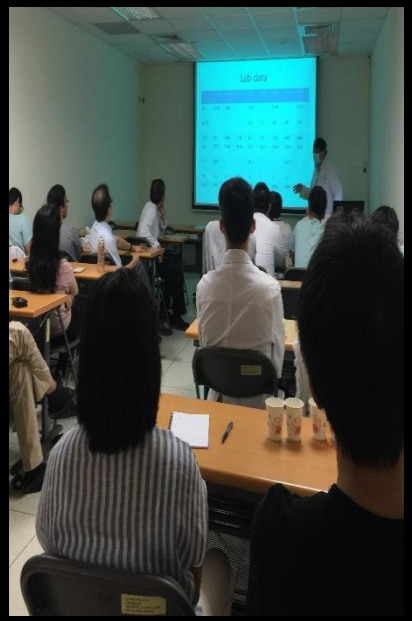
醫療院所因應措施

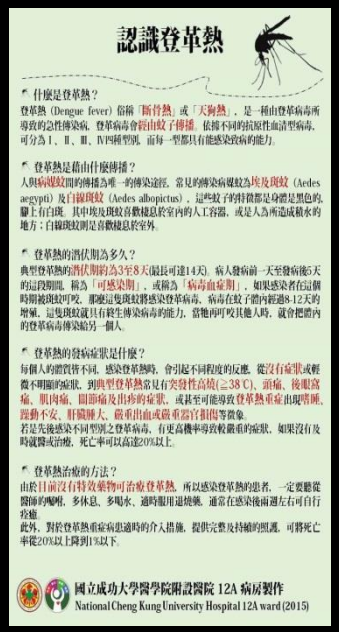
2. 登革熱加開特別門診(急診、內科、感染科、家醫科)
3. 登革熱防治與宣導影片播放:門診候診區、門診大廳
4. 登革熱病人團體衛教10/1-10/31 一天兩場
5. 電話關懷(門診轉介需密切追蹤者)




醫療院所因應措施

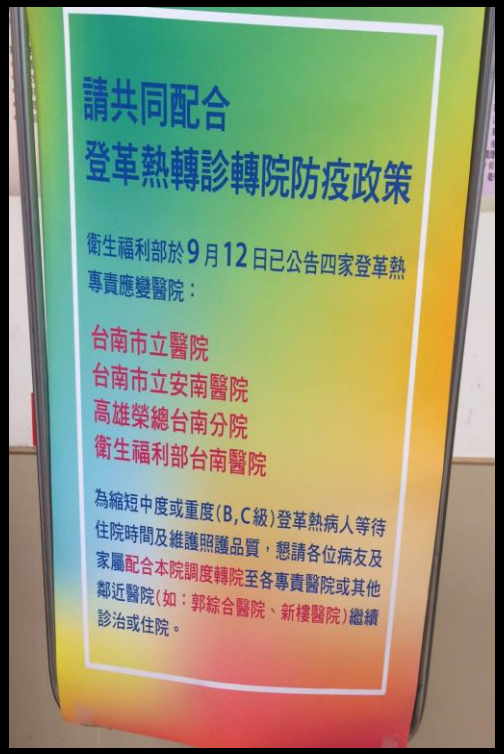
6. 院內應變協調會議
7. 衛教海報、衛教單張、護理指導單張
8. 登革熱死亡病例討論會

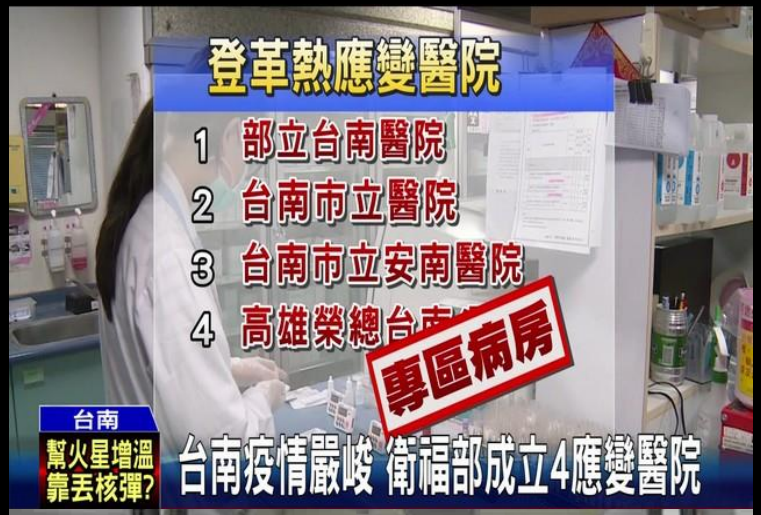




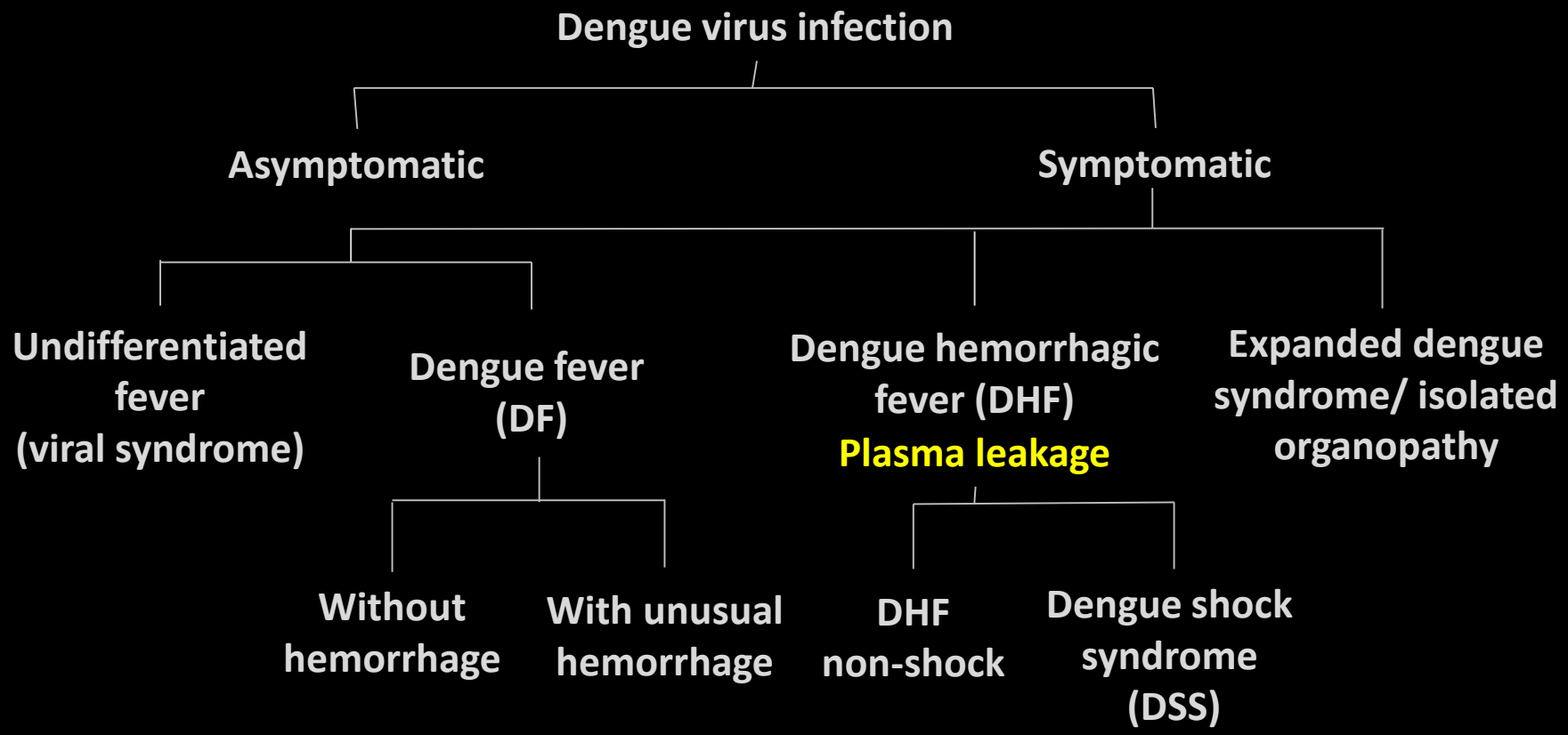
醫療院所因應措施

9. 門、急、住、他院分流
10. 急診專區照護





Traditional classification



Comprehensive Guidelines for Prevention and Control of Dengue and Dengue Haemorrhagic Fever, 2011

WHO CLASSIFICATIONS

1997

Dengue fever

Dengue hemorrhagic fever

Dengue shock syndrome

World Health Organization

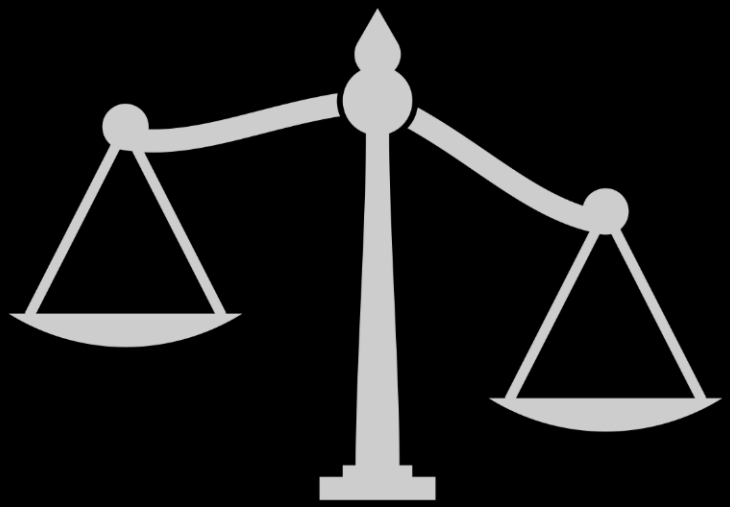
2009

Dengue fever

Dengue fever with **warning signs**

Severe dengue

Comparison of dengue classifications



Sensitivity
Financial burden

Distribution of severity		
Dengue fever	DF	53%
	Warning sings	45.4%
	Severe dengue	0.8%

ICU admission		
	Sensitivity	Specificity
DFS/DSS	39.0%	75.5%
Severe dengue	92.1%	78.5%

Lancet. 2015 Jan 31;385(9966):453-65
J Microbiol Immunol Infect. 2013 Aug;46(4):271-81
PLoS Negl Trop Dis.2011 Nov;5(11):e1397

世界衛生組織之逐步評估法

I.整體評估	
I.1 病史詢問	包括相關症狀，過去病史及家族史
I.2 身體檢查	包括完整的身體及神智評估
I.3 實驗室檢驗	包括常規檢驗及登革熱檢驗
II.診斷	評估疾病期及嚴重度
III.通報及處理	
III.1 法定傳染病通報	診斷後24小時內通報
III.2 處理之決策	依據臨床表現及其他狀況，安排病人處置： Group A（居家追蹤） Group B（安排住院） Group C（需緊急治療或轉院）

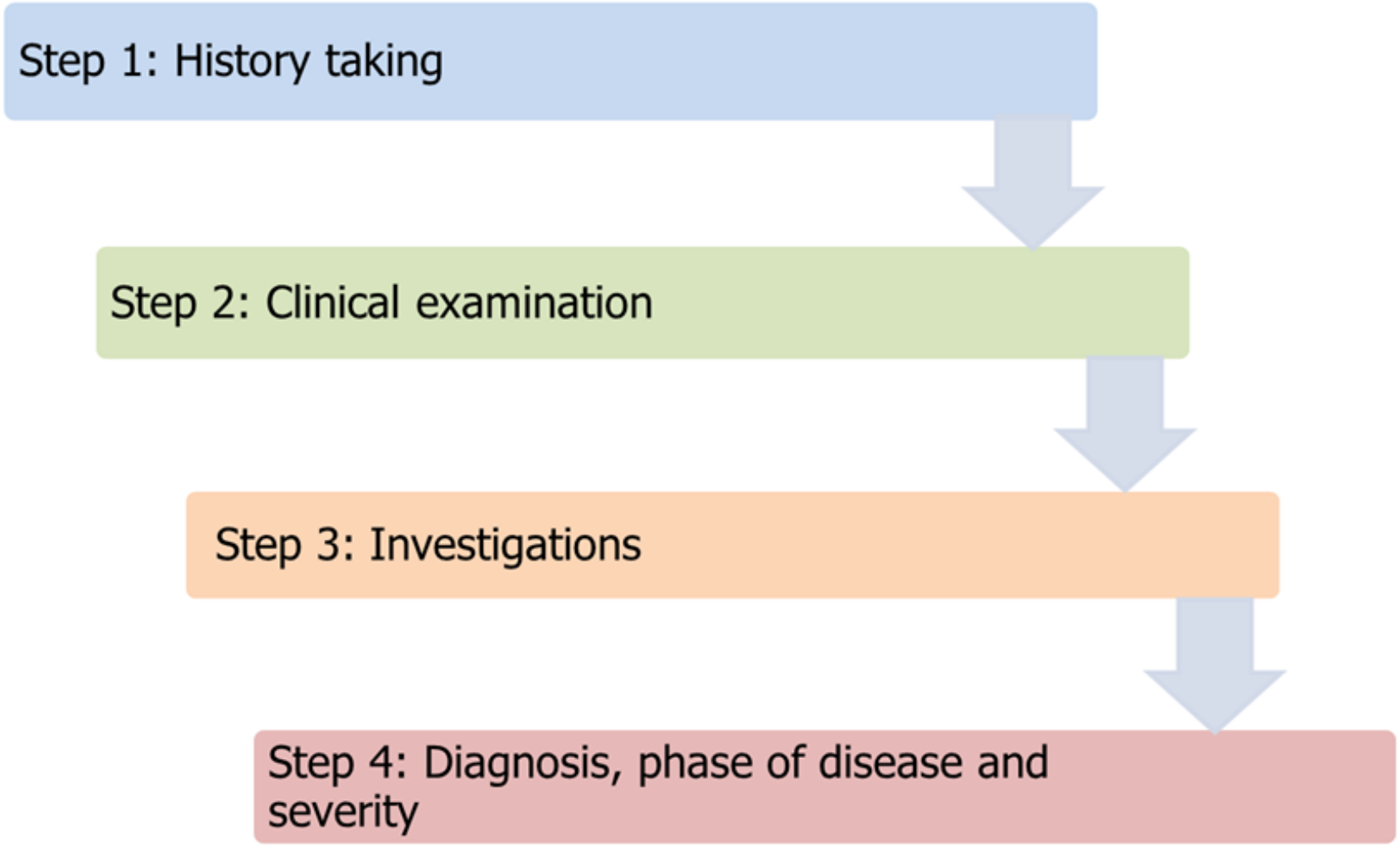
High-risk patients for dengue fever complications

- infants and the elderly
- obesity
- pregnant women
- peptic ulcer disease

*** Untreated, mortality can be 20%, appropriate case management and intravenous rehydration can reduce mortality to <1%!**

- women who have menstruation or abnormal vaginal bleeding
- haemolytic diseases, such as G-6PD deficiency, thalassemia and other haemoglobinopathies,
- congenital heart disease
- chronic diseases such as diabetes mellitus, hypertension, asthma, ischaemic heart disease, chronic renal failure, liver cirrhosis
- patients on steroid or NSAID treatment

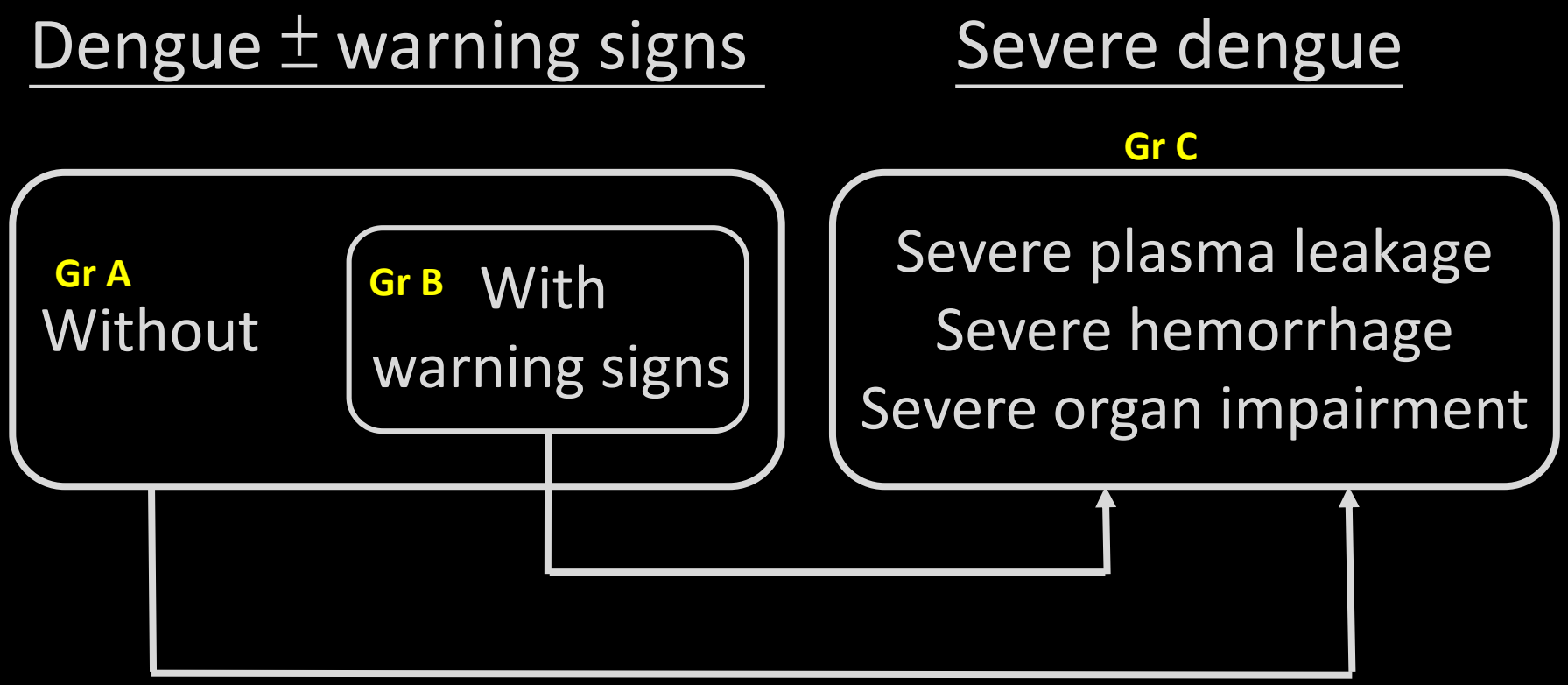
Patient assessment: four important steps



急、門診初級照護重點

- 從**發燒**就診之病人中，找出登革熱疑似病患。
- 發現登革熱疑似病患，儘速**通報**衛生單位，以早期進行防疫措施。
- 對發燒初期之患者進行處理。
- 即早辨識血漿滲漏或危險期症狀，開始輸液治療。
- 找出有「**警示徵象**」患者，轉診或住院以進行靜脈輸液治療。
- 儘早發現有嚴重血漿滲漏、**休克**、嚴重**出血**和嚴重**器官損傷**之患者，進行及時而充分的處理。

Revised WHO classification in 2009



WHO DENGUE GUIDELINES FOR DIAGNOSIS, TREATMENT, PREVENTION AND CONTROL. 2009

Warning signs

Abdominal pain or tenderness

Persistent vomiting

Clinical fluid accumulation

Mucosal bleed

Lethargy, restlessness

Liver enlargement >2 cm

Increase in Hct with rapid decrease in platelet count

WHO DENGUE GUIDELINES FOR DIAGNOSIS, TREATMENT, PREVENTION AND CONTROL. 2009

Severe dengue

Severe plasma leakage

- Shock (DSS)
- Fluid accumulation with respiratory distress

Severe bleeding

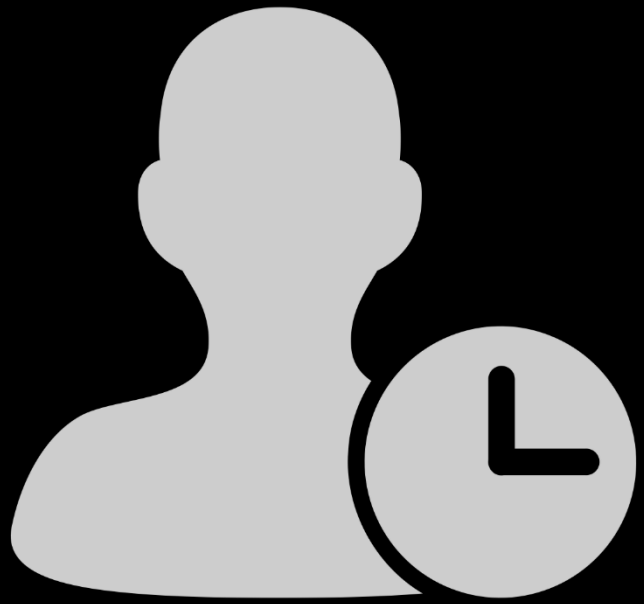
- As evaluated by clinician

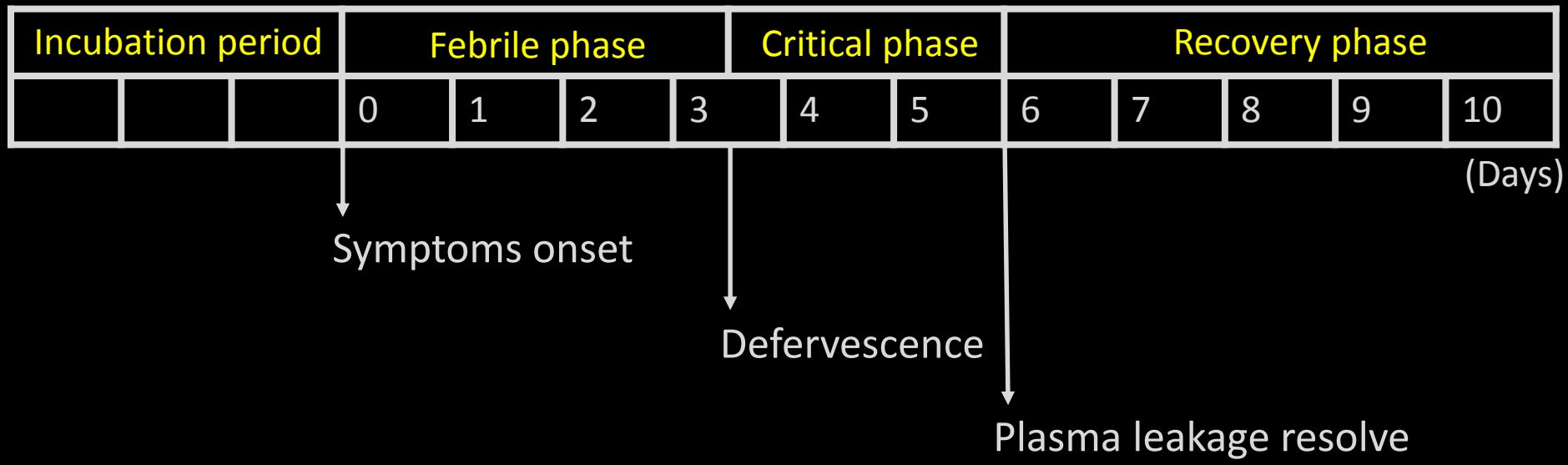
Severe organ involvement

- Liver: AST or ALT >=1000
- CNS: Impaired consciousness
- Heart and other organs

WHO DENGUE GUIDELINES FOR DIAGNOSIS, TREATMENT, PREVENTION AND CONTROL. 2009

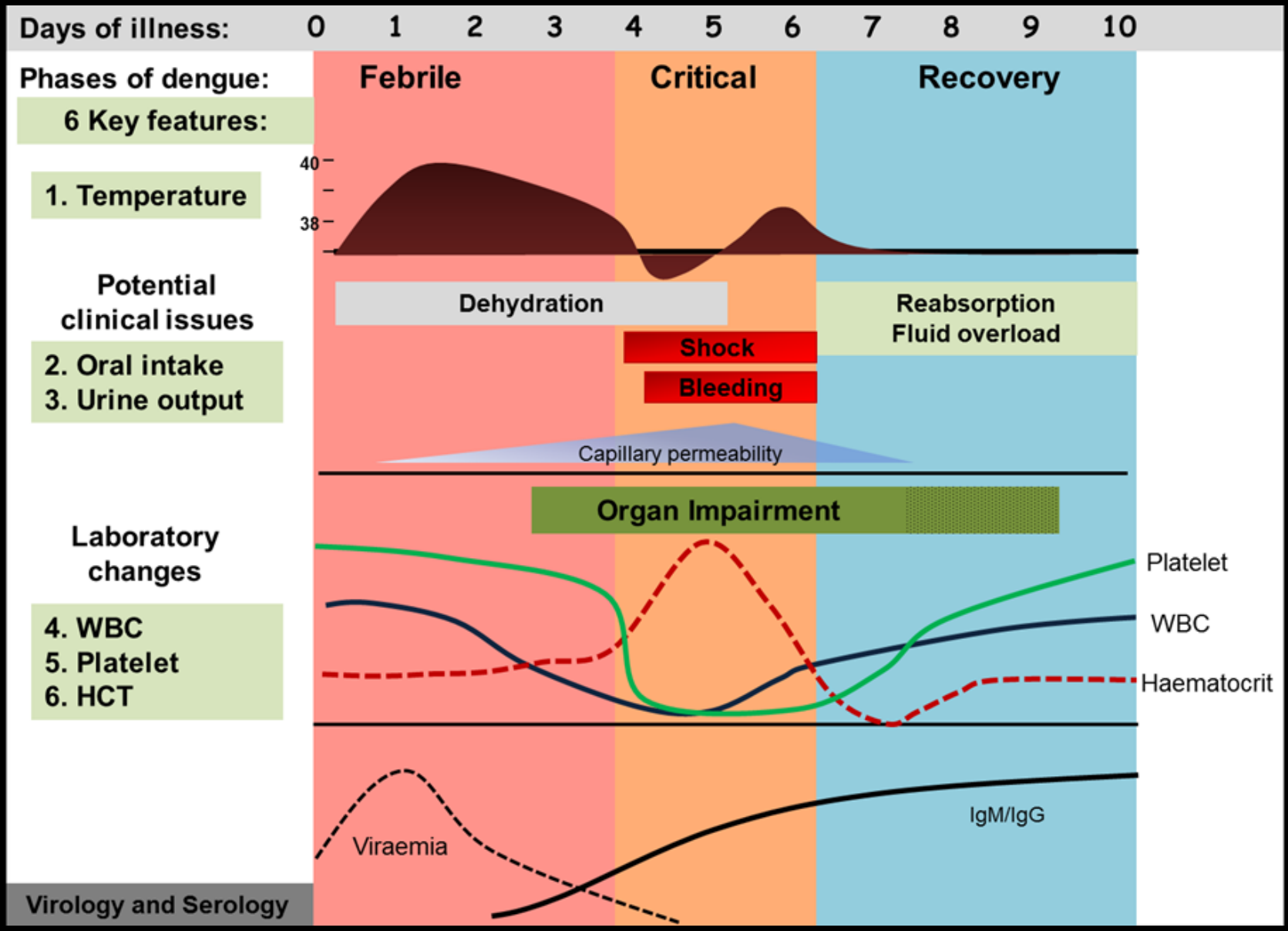
CLINICAL COURSE & LAB FINDING





WHO dengue clinical management 2013

Clinical Course of Dengue fever



WHO Clinical Dengue Management

Summary of clinical problems during each phase

Febrile Phase

Dehydration

Contributing factors:
1. Poor oral intake from anorexia and nausea
2. Insensible fluid loss from high fever

High fever → Neurological disturbances

1. Hallucination
2. Febrile seizures

Critical Phase

Plasma leakage → hypovolaemia and shock

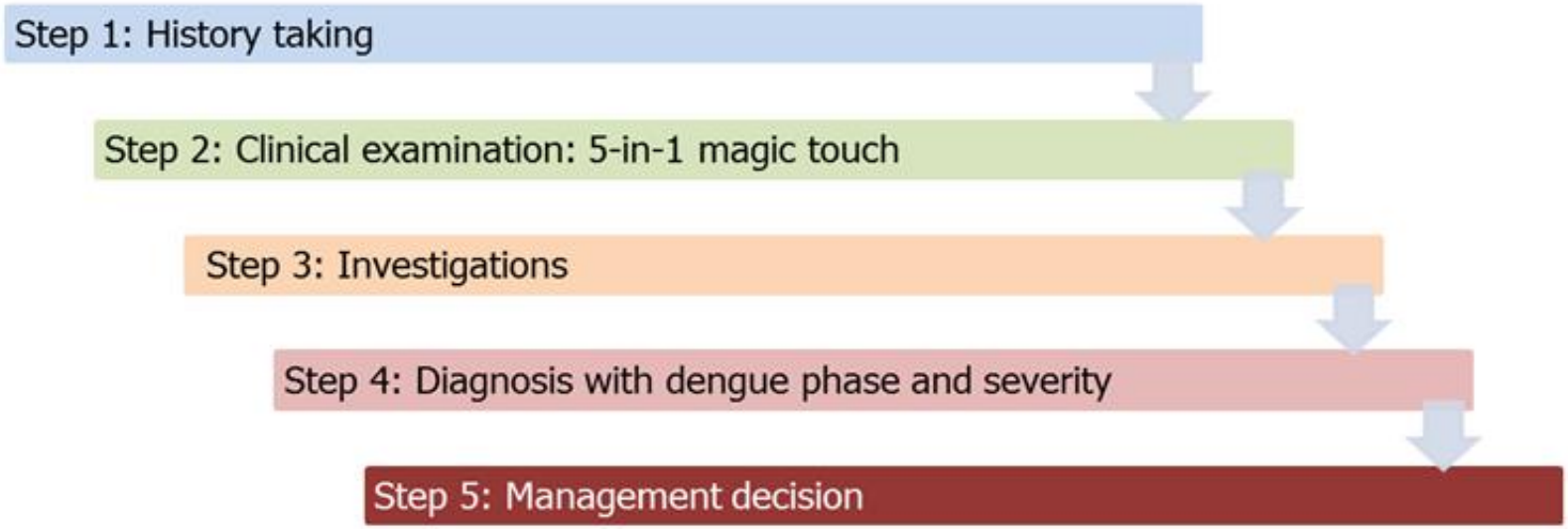
Severe haemorrhage

Organ impairment to liver, kidneys and other organs

Recovery Phase

Hypervolaemia with fluid overload because of inappropriate fluid management

Management of dengue



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

WHO Clinical Dengue Management

登革熱處置原則

- 依疾病分類有效分流照護
- 衛教及病程監測
- 支持性症狀治療
- 重症及併發症照護

WHO 2009 Classification

Dengue without warning signs **(Group A)**	Dengue with Warning signs **(Group B)**	Severe dengue **(Group C)**
No warning sings and Tolerate oral fluid Pass urine every 6 hours	Warning signs Pregnancy, infancy, old age, diabetes mellitus, renal failure Living, alone, far from hospital	Severe plasma leakage Severe bleeding Sever organ failure
Home care	In-hospital care	Emergent treatment

Risk factors of severe disease

Secondary infection

- Sequential infection
- Interval between infection

DENV-2

Elderly

Chronic disease

- Diabetes mellitus
- Hypertension
- Chronic kidney disease
- Hemolytic anemia

>50 year old

Persistent vomiting

>300 cells per µl of absolute atypical lymphocyte

Lactate level ≥ 2 mmol/L

BMC Infect Dis. 2015 Oct 14;15(1):420

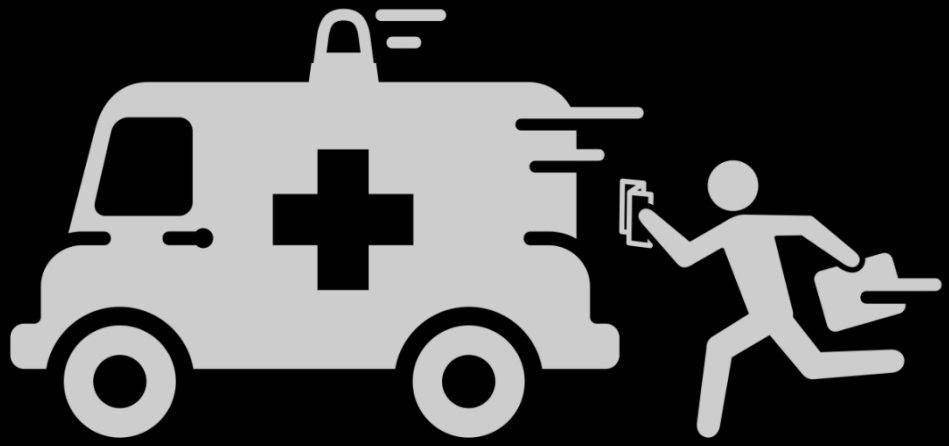
PLoS Negl Trop Dis. 2013 Sep 26;7(9):e2412

Handbook for clinical management of dengue, 2012 WHO

Group A

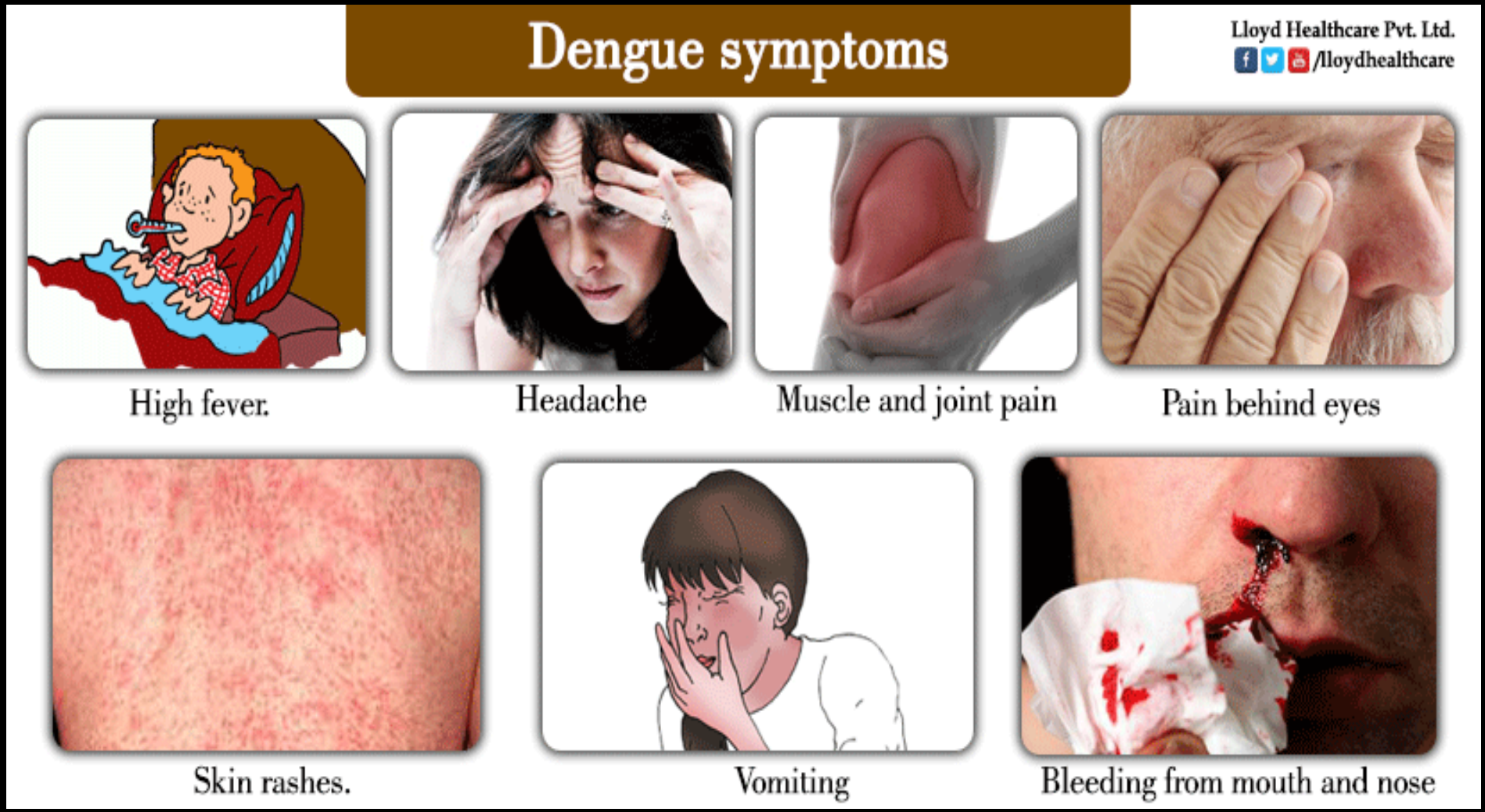
> 5 glasses

No clinical improvement
Warning signs



Handbook for clinical management of dengue, 2012 WHO

臨床症狀處置



It’s about recovery and being well!

Outpatient management: Group A

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

Group B

Rapid fluid replacement

Isotonic fluid

5-7ml/kg

↓ 1-2 hours

3-5 ml/kg

↓ 2-4 hours

2-3 ml/kg

↓ 2-4 hours

Reduce gradually

↓

Stop within 24-48 hours

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Closely monitor

Vital signs

Perfusion

Urine output

Hematocrit

Oral intake

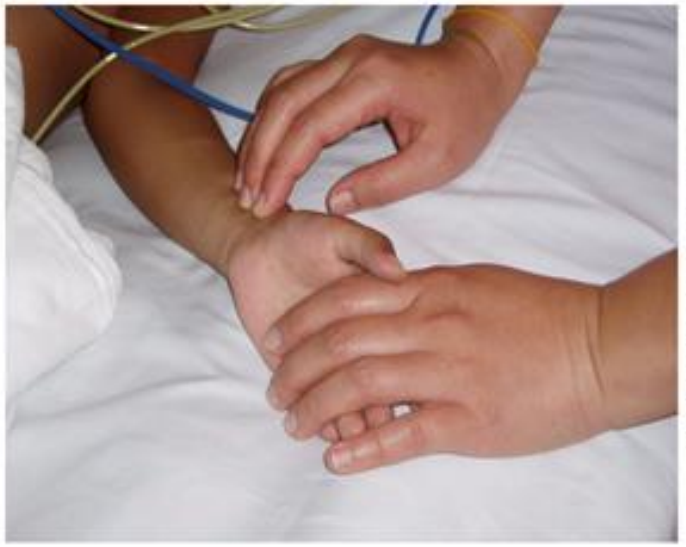
Pearls in clinical examination of dengue patients

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

Hold the patient's hand to evaluate peripheral perfusion.

Save life in 30 seconds by recognizing shock

1. **C**olour
2. **C**apillary refill
3. **T**emperature
4. Pulse **V**olume
5. Pulse **R**ate



Outpatient Management: Group B

Group B (any of following)

Has warning signs

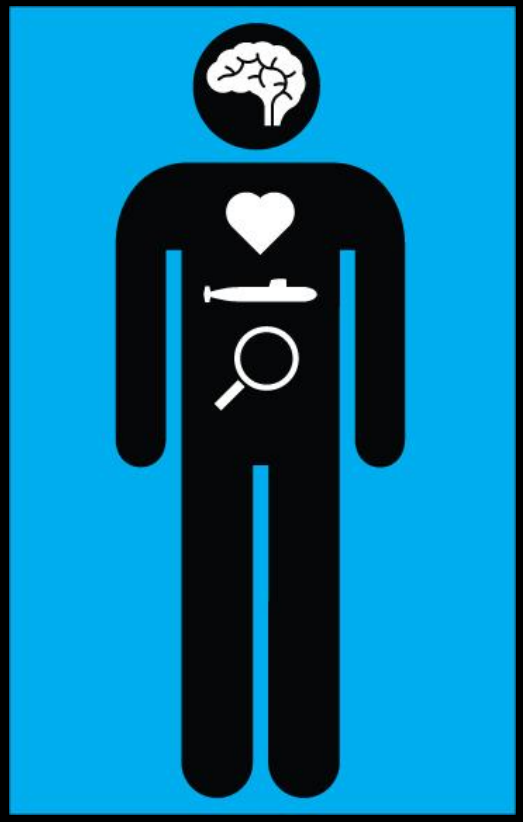
Has co-existing condition:
Diabetes mellitus
Renal failure
Pregnancy
Infant
Elderly

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

GROUP C

Severe plasma leakage
Severe hemorrhage
Severe organ impairment



Critical phase

Plasma leakage vs Hemorrhage

Warning signs	Severe dengue	Dengue shock	Collapse
Few hours	Few hours	**Few minutes**	

Rapid prompt fluid therapy
24-48 hours

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Group C

Fluid therapy

⇩

No improvement

⇩

Hct

⇩

Bleeding?

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Parameters to be monitored

- Conscious state
- Vital signs **(?)**
- Peripheral perfusion
- Urine output
- Arterial blood gas
- Lactate
- Organ function
  - Kidney
  - Liver
  - Coagulation

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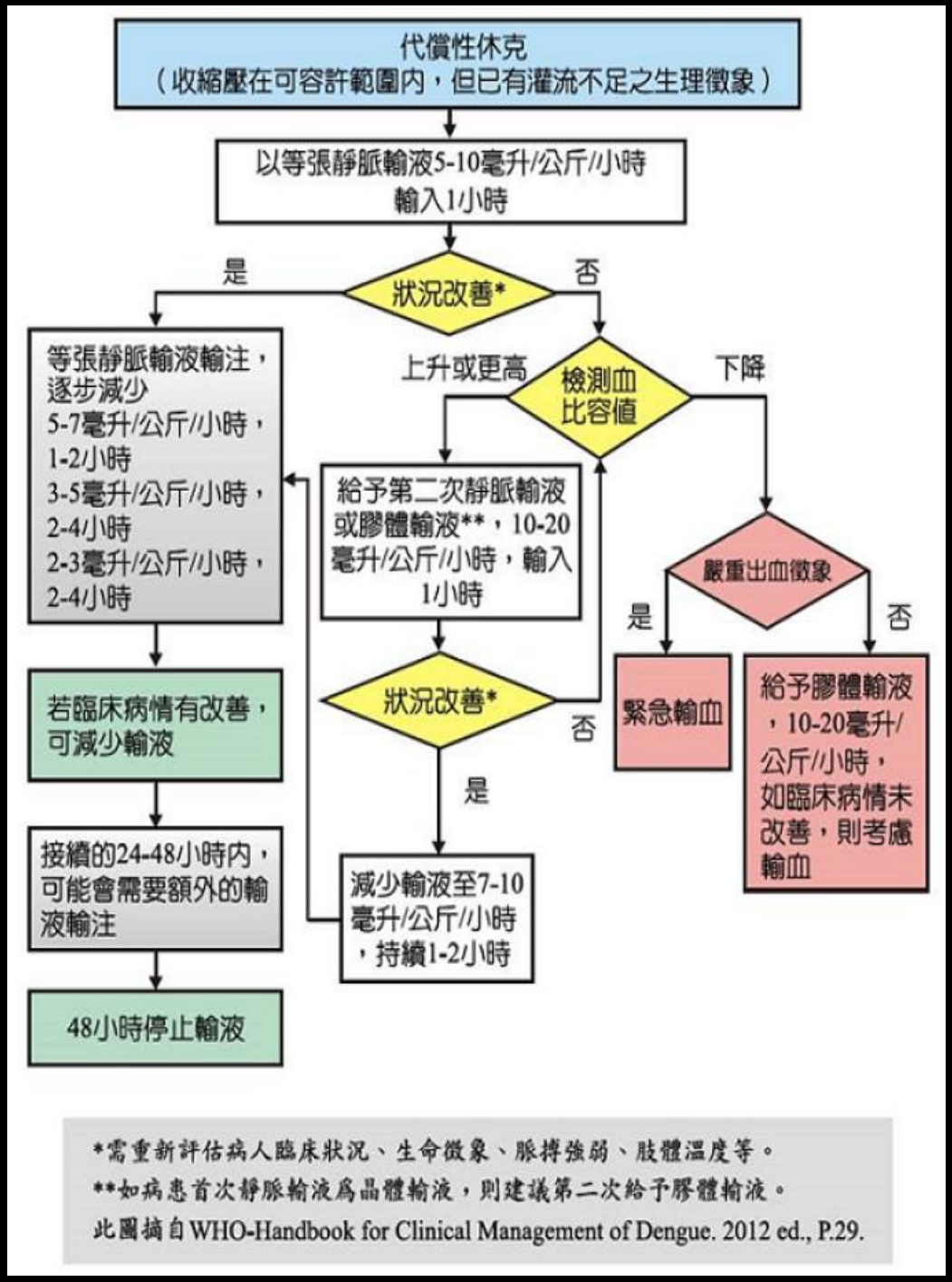
代償性休克處理流程

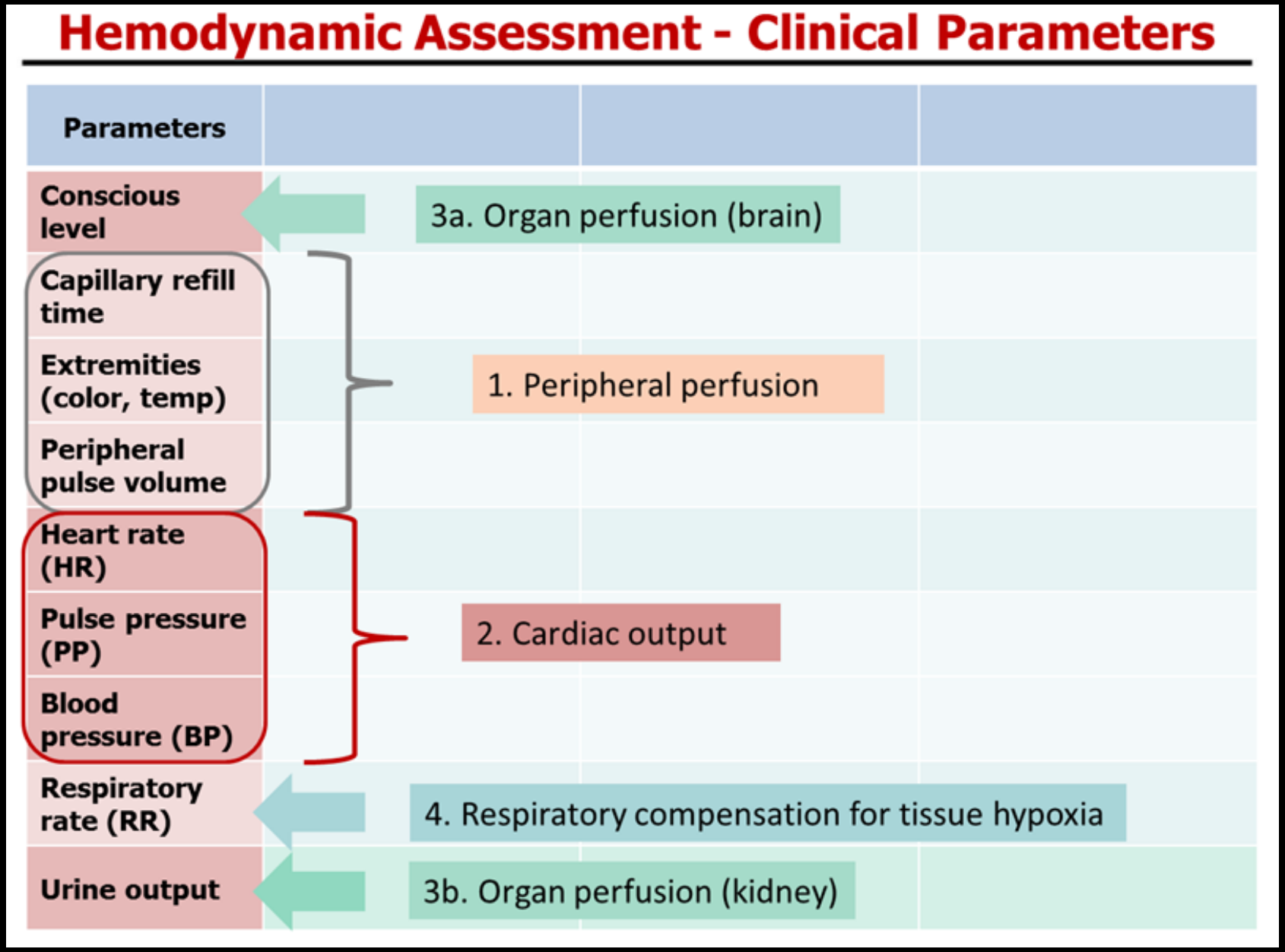


*需重新評估病人臨床狀況、生命徵象、脈搏強弱、肢體溫度等。

**如病患首次靜脈輸液爲晶體輸液，則建議第二次給予膠體輸液。

此圖摘自WHO-Handbook for Clinical Management of Dengue. 2012 ed., P.29.

Hemodynamic Assessment - Clinical Parameters



WHO Clinical Dengue Management

Hemodynamic Assessment

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

WHO Clinical Dengue Management

Summary of management of dengue

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

WHO Clinical Dengue Management

Timing to stop IV fluid therapy

Stable hemodynamics and perfusion

Symptoms resolve

Improving urine output

Low ΔIVC

24–48 hours

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About transfusion

Bleeding

Whole blood or PRBC

PLT

Obstetrical deliveries

Surgeries

Prophylactic PLT

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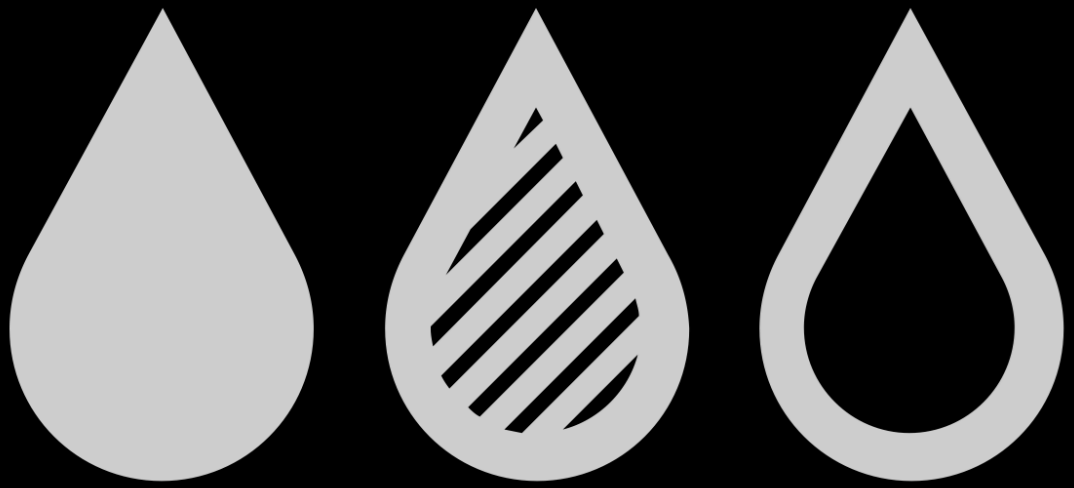
Blood products



Whole blood PRBC Platelet

Prophylactic PLT transfusion or not in patient with PLT<20000

Clinical outcome	PLT transfusion (n=188)	No PLT transfusion (n=68)	P value
Any bleeding	1 (0.5%)	2 (2.9%)	0.17
PLT increment the next day	7 (3.7%)	11 (16%)	0.26
Time to PLT >50000 (day)	3	3	0.59
Length of hospital days (day)	6	5	0.09
Death	1 (0.5%)	0	1.00

Clin Infect Dis. 2009 May 1;48(9):1262-5. doi: 10.1086/597773

TREATMENT OF HEMORRHAGIC COMPLICATIONS

Prophylactic PLT transfusion
Hemodynamically stable patients

No evidence!

Handbook for clinical management of dengue, 2012 WHO

Prophylactic transfusion of PLT

Anticipation of severe bleeding

- Obstetrical deliveries
- Surgeries

Transfusion in dengue fever

Bleeding

Do not wait for drop of Hematocrit

EGD endoscopy

Fresh PRBC 5-10ml/kg
Fresh whole blood 10-20ml/kg

Handbook for clinical management of dengue, 2012 WHO
Am J Trop Med Hyg. 2005 Aug;73(2):441-4

登革熱病患臨床處置需注意事項

登革熱病患臨床處置需注意事項

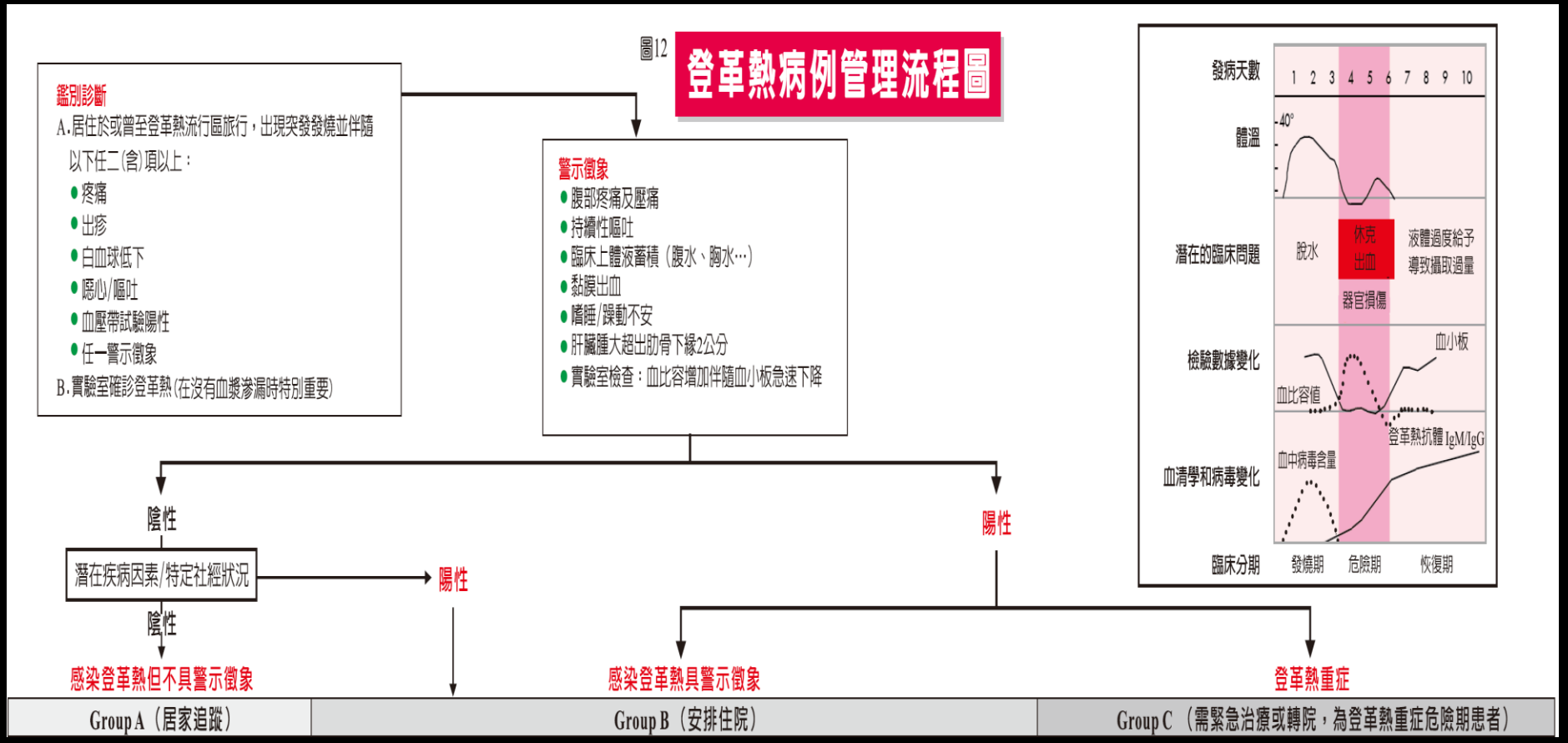
○適當處理	X 不當處理
評估並追蹤非登革熱重症之居家患者，並細心衛教病人注意「警示徵象」。	讓非登革熱重症患者回家，但未安排追蹤且未進行衛教。
高燒病人有不適時，給予普拿疼。	給予高燒病人阿斯匹靈或 ibuprofen。
在補充液體前及後，皆需檢查血比容值。	給予液體治療，但未檢查血比容值。
在補充液體前及後，臨床評估血流動力學狀態。	給予液體治療，但未進行臨床評估。
依據液體補充及血流動力評估結果，解釋血比容值變化。	未依臨床評估狀況，解釋血比容值變化。
患者反覆嘔吐或高血比容值或血比容值快速上升時，給予靜脈輸液補充。	任何登革熱患者，即使無嚴重症狀，皆給予靜脈輸液補充。
對登革熱重症患者補充等張靜脈溶液。	對登革熱重症患者補充低張靜脈溶液。
登革熱重症患者於血漿滲漏期，給予恰好足夠維持循環之靜脈輸液量。	登革熱重症患者給於過多或太長時間之靜脈輸液。
登革熱患者避免肌肉注射。	登革熱患者給予肌肉注射。
依患者狀況，調整靜脈輸液速率及監測血比容值之頻率。	登革熱重症患者住院期間，靜脈輸液速率固定，且未調整監測血比容值之頻率。
密切監測血糖。	不了解高血糖可能導致高滲透性利尿，而未監測血糖。
血流動力學穩定後，停止或減少輸液治療。	血流動力學穩定後，仍繼續輸液治療，未重新評估輸液治療是否需要。

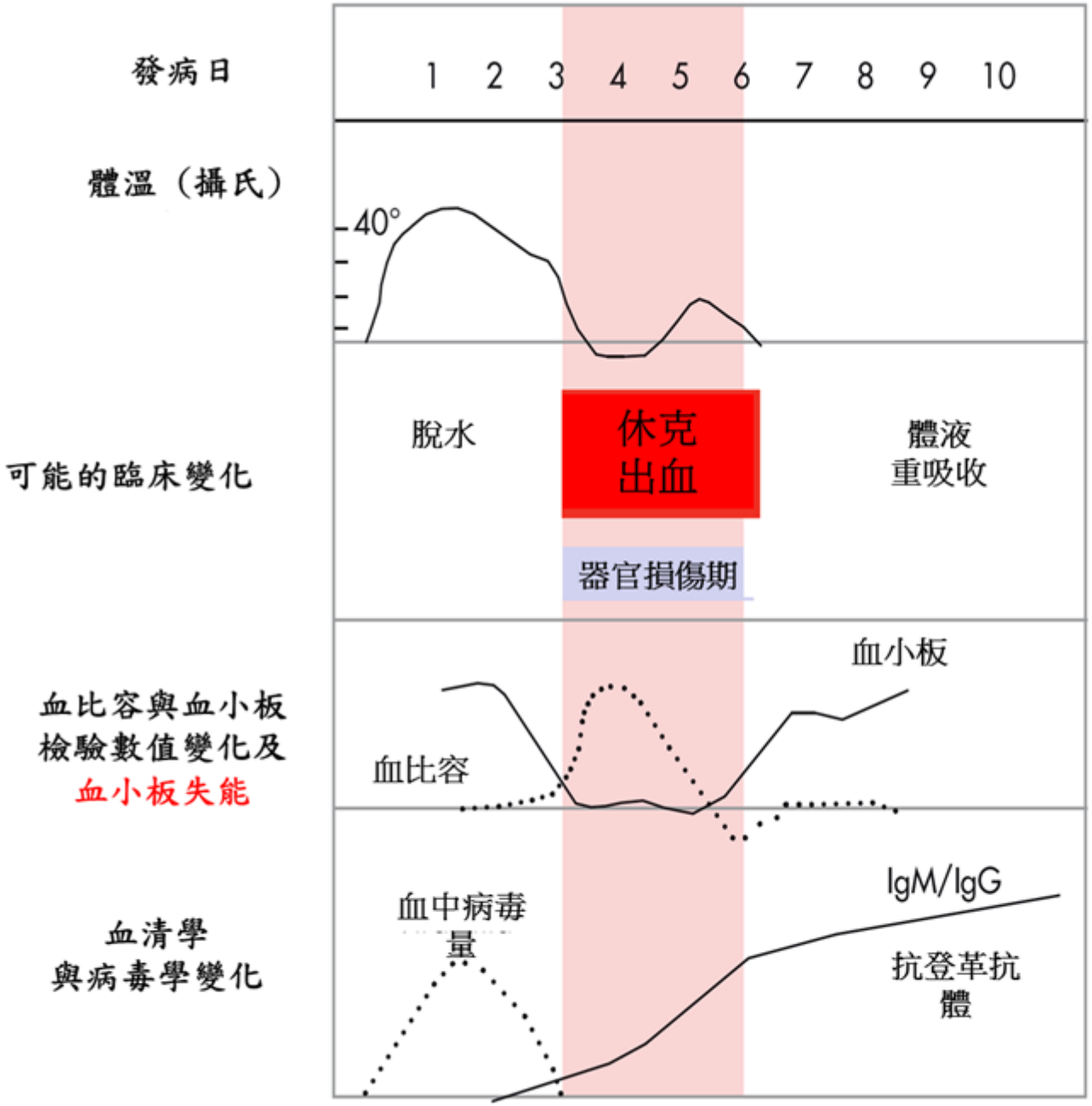
登革熱患者 出院條件

- 未給予解熱劑，燒退至少 24小時
- 無肋膜腔積水或腹水引起之呼吸困難
- 休克矯正後至少 72小時
- 血容比穩定
- 食慾正常
- 臨床症狀改善
- 血小板大於五萬

Take Home Message

有效分流、積極照護、改善預後





登革熱心法

發燒六天分兩波[1]
皮疹常在危險後[2]
血中病毒初五天[3]
疑有登革驗血球[4]
登革治療有撇步*
輸液限量不過多[5]
非到必要勿輸血[6]
體液自會重吸收[7]

註1: 登革熱可能會有燒退1-2天後再第二波發燒的情形。第一波退燒後出現血小板低下。

註2: 典型的登革熱皮疹往往在危險期(第3-6天)之後才出現，因此不是很好的早期診斷依據。

註3: 發燒滿五天後，病人血中病毒量已很低，經蚊子傳播的機會很低，故不一定要掛蚊帳。

註4: 在危險期初期症狀出現前，即可能驗到血小板下降與血比容上升，故所有疑似個案應通報並檢驗白血球與血小板數。

註5: 過量的輸液可能造成體液蓄積甚至肺水腫。

註6: 除非有持續急性出血，可輸全血，不建議輸血小板。

註7: 一般到恢復期蓄積的體液會自然吸收。

(Source: World Health Organization, 2009)

(台南市政府衛生局/國立成功大學傳染性疾病及訊息研究中心, 2011年11月製)

參考文獻

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- 登革熱 – 臨床症狀、診斷與治療, 衛生福利部疾病管制署, 2015年5月出版

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- 登革熱病友

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