

Sep 2026 JCM quiz

YCH AED

Tafu Yamamoto

Case 1

- 51/M
- PMH: ESRF on HD
- Patient scheduled for HD but did not show. Lives alone. Found patient collapsed at home. Apartment was noticed to be very hot
- PE:
 - 41.5C
 - GCS E4V1M4
 - PEARL
 - BP 171/105
 - SpO2 97% on RA



1a. List 4 DDx for the above presentation

DDx

- **Environmental**
 - Heat exhaustion/heat stroke
- **Toxicological**
 - Anticholinergic Sx, serotonin Sx, sympathomimetic use, withdrawal Sx
- **Infective**
 - Meningitis/encephalitis
- **Endocrine**
 - Thyroid storm, pheochromocytoma crisis
- **Others**
 - Malignant hyperthermia

1b. Difference between heat exhaustion and heat stroke?

Heat exhaustion v stroke

- **Heat exhaustion**

- Cooling mechanisms **not sufficient** to control ↑ body temp

- **Heat stroke**

- Cooling mechanisms **fail completely** and body temp ↑ unchecked
 - Additional features
 - Hyperpyrexia (>40.5C)
 - Neurological dysfunction
 - Hypotension
 - Dry hot skin from absent sweating

1c. Name 3 methods of cooling a patient in the ED

Cooling methods

- **Evaporation**
 - Cool mist with fan
- **Immersion**
 - Eg. Criticool
- **External**
 - Strategic ice packing
- **Internal/invasive**
 - Gastric/peritoneal lavage
 - Cooled IVF



Case 2

- 57/M
- PMH: HT, CKD, obesity, ischemic stroke
- Ambulance calls your hospital for pre-hospital stroke notification
- Last seen well @ 22:00 the night before
- Patient found unresponsive + drooling @ 04:30
- PE:
 - BP 220/110, P70
 - GCS E1V1M4, PEARL, unable to test limb power

2a. Name 3 examples of pre-hospital stroke identification tools. Which one is used in HK?

Pre-hospital stroke scales

- FAST = Face Arm Speech Time
- CPSS = Cincinnati Prehospital Stroke Scale
- LAPSS = Los Angeles Prehospital Stroke Screen

FAST-ED

- Field Assessment Stroke Triage for Emergency Destination
- Used in HK
- Developed to identify large vessel occlusion → enable rapid triage of patients to centers capable of rapid endovascular clot retrieval
- FAST-ED score ≥ 4
 - Specificity 89%
 - Sensitivity 61%

Pre-hospital Stroke Assessment and Triage

NLT DOR: (A) (B) (C) (D) (E) (F) (G) (H) (I) (J) (K) (L) (M) (N) (O) (P) (Q) (R) (S) (T) (U) (V) (W) (X) (Y) (Z)

甲部 - 懷疑急性中風病徵:

- 突發性的 / 單邊的肢體無力或語言障礙 ☒
- 病發或最後正常的時間於 4 小時內 ☒

如符合上述所有條件，繼續填寫乙部，否則無需繼續及無需交表。

乙部 - 病人是否符合以下通報條件:

- 18 歲或以上 ☒
- 並非長期臥床或輪椅使用者 ☒
- SBP > 100 mmHg 及 GCS ≥ 8 ☒
- 已排除血糖過低*所引起的症狀 (H'stix > 4.0 mmol/L) ☒

*應先處理血糖過低才進行中風評估

如符合上述所有條件，繼續填寫丙部，並進行通報/分流，否則無需繼續及無需交表。

如符合甲部及乙部，救護車主管應盡快進行 FAST-ED 評分，致電急症室報告下列資料及將病人送院，並於抵達醫院後提交表格。

救護車編號	A156		
身份證號碼			
發病時間或最後正常時間	1530		
病徵	左 / 右 + 肢體乏力 + 失語 / (雙眼斜視) / 半側忽略		
FAST-ED 分數	2		
是否分流個案 (屬區及分流醫院)	是 ()	屬區醫院	分流至
血壓及血糖	BP: 20/12	1 st H'stix: 7.4	2 nd H'stix: (如適用)
通報醫院時間	1543		
預計到院時間	1554		

丙部 - FAST-ED 評分:

(肢體乏力的一面: 左 / 右) (屬出適用者)

F: 面部對稱 (露齒微笑)

- 正常 (0)
- 單側嘴角下垂 (1)

A: 上肢活動能力 (抬高雙手, 維持 10 秒)

**兩邊的手都同樣無力, 請選 "X" **

- 兩邊能維持 10 秒以上或同時緩慢下降 (0)
- 能抬高手, 但一邊只能維持少於 10 秒 (1)
- 一邊完全不能抬高 (2)

S: 失語症

**神志不清或未能配合, 請選 "X" **

表達障礙 - 講出 3 樣動物

- 能正確講出 2 或 3 樣動物 (0)
- 只能講出 0 或 1 樣動物 (1)

接收障礙 - 能否跟從言語指令 (例如眨眼或緊握拳頭)

- 正常 (0)
- 不能正確跟從指令 (1)

E: 雙眼斜視 (先觀察病人在靜止時有沒有側重偏著一面, 然後指令病人分別望向左和右)

**如病人雙眼緊閉或不能睜開雙眼, 請選 "X" **

- 正常, 雙眼能左右移動 (0)
- 雙眼明顯偏重注視一面, 但在提示下仍能望向另一面 (1)
- 雙眼明顯偏重注視一面, 在提示下也不能望向另一面 (2)

D: 半側忽略症

**神志不清或未能配合或如兩側肢體力量相同, 請選 "X" **

半側否認 - 詢問患者: 「呢隻手係唔係無力?」

- 正常, 明確知道一邊手比較差 (0)
- 不認為一邊手比較差 (1)

半側忽略 - 拿起乏力的一邊手, 然後問: 「依隻手係唔係你嘅?」

- 正常, 知道那是自己的手 (0)
- 並不知道那隻手是屬於他的 (1)

FAST-ED 總分 (0-9 分): 2



Case progress

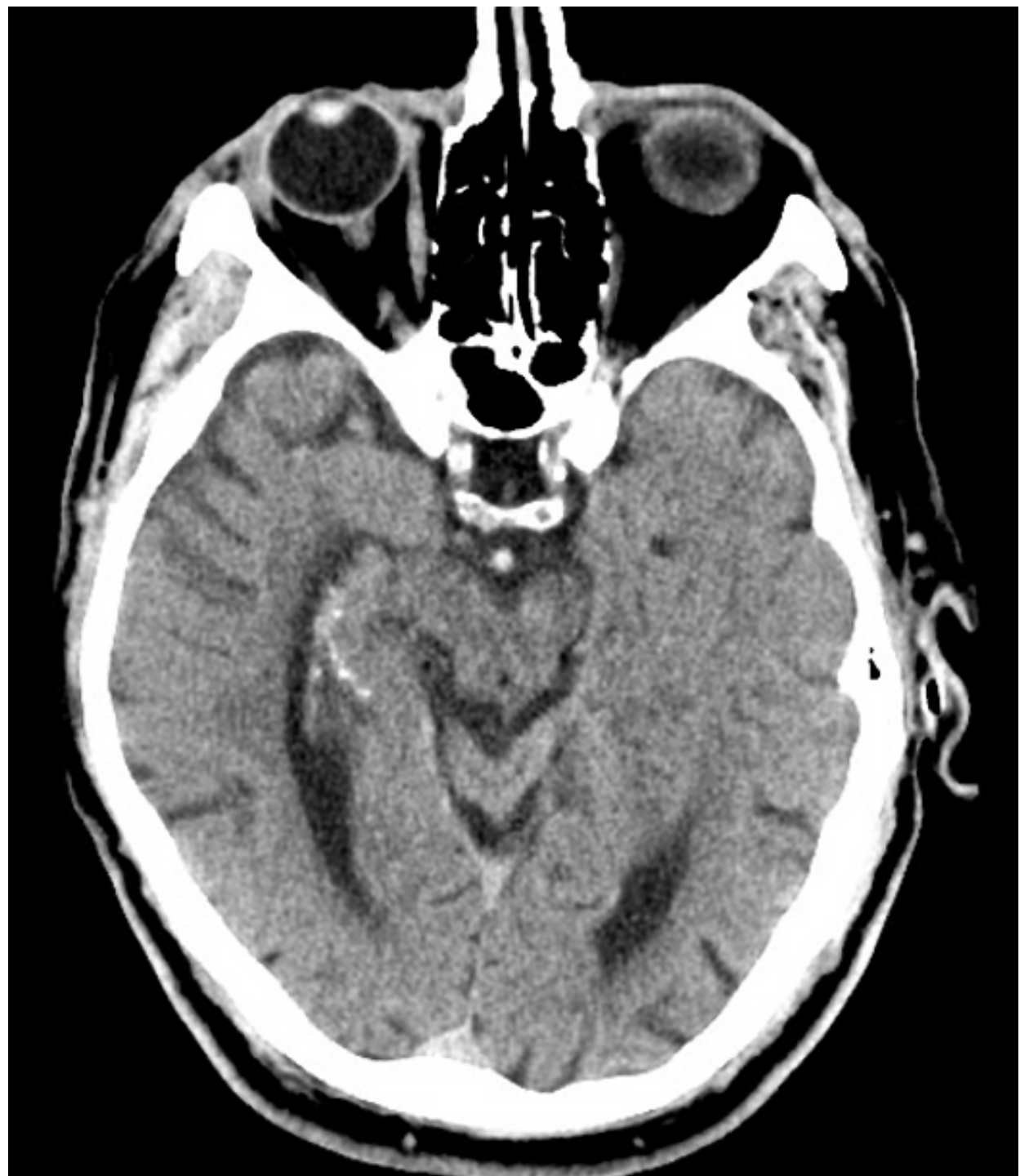
- The stroke nurse arrives at the R room, assesses the patient, then gives him a NIHSS score of 10
- 2b. How do you interpret a NIHSS score? List 1 advantage and 1 disadvantage of using NIHSS scoring.

NIHSS score

- Interpretation
 - 0-42 → higher score = larger infarct and worse prognoses
 - >16 = strong probability of death
 - <6 = strong probability of good recovery
- Advantages
 - Reliable
 - Predictive of long-term outcome
 - Can be assessed remotely and useful in telemedicine
- Limitations
 - Does not capture all stroke-related impairments (esp posterior circulation stroke)

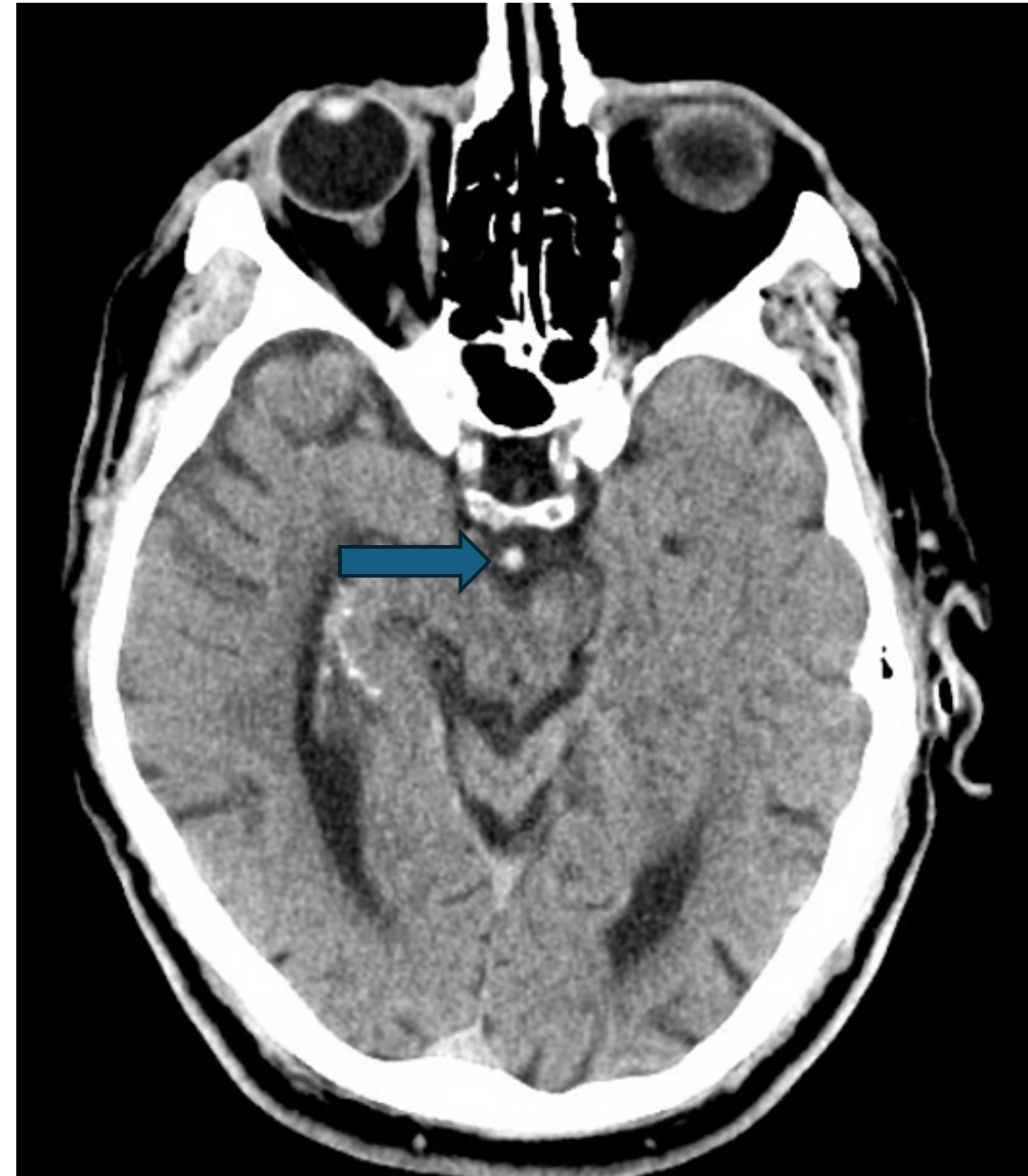
An urgent CTB was performed.

2c. Please describe the findings



Hyperdense basilar artery sign

- 2d. Name 3 causes of the above sign
- 2e. What is the sensitivity and specificity? How can you improve the sensitivity?



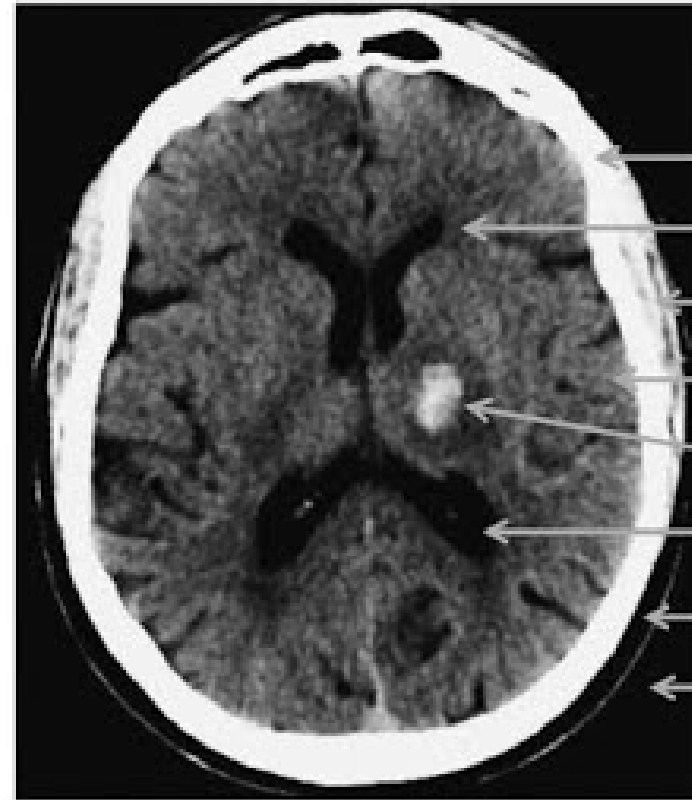
Hyperdense basilar artery sign

- Causes
 - Basilar artery occlusion
 - Atherosclerosis
 - High hematocrit levels
 - Streak artifacts due to proximity to bony structures
- Sensitivity ~80%
- Specificity ~90%



Hounsfield Unit

- Improve sensitivity by measuring Hounsfield Unit (HU)
- Use cut-off of ≥ 46.6 HU to achieve 94% sensitivity



CT Number Ranges in Hounsfield Units (HU)	
Bone	+1000
White matter	+20 to 30
Muscle	+20 to 40
Gray matter	+30 to 40
Hemorrhage	+65 to +95
CSF (water)	0
Fat	-30 to -70
Air	-1000

Case progress

- GCS E1V1M4 upon AED arrival
- Inability to tolerate oral secretions
- Intubated in R room
- CT angiogram + perfusion scan = R dominant VA + BA occlusion with posterior infarct involving bilateral occipital + cerebellum + brainstem

Posterior circulation stroke

- 40-50% of posterior circulation strokes present with dizziness and vertigo.
- 2f. Name 4 features of vertigo that are suggestive of a central cause

Central vertigo

- Deadly Ds = diplopia, dysarthria, dysmetria, dysphonia, dysphagia
- New headache or neck pain
- Focal neurological signs
- Vertical / multi-directional nystagmus
- New inability to walk unaided

Case 3

- 87/F
- PMH: HT, AF on warfarin
- Last seen well @ 19:30 when the patient entered the bathroom. Family members heard the patient banging the bathroom door @ 19:50. Patient found vomiting with decreased consciousness
- PE:
 - BP 217/99
 - GCS E4V2M6
 - R sided power 3/5
 - L sided power 1/5

ICP estimation

- From the clinical picture, you suspect $\uparrow$ ICP in this patient
- 3a. What is the role of POCUS in ICP estimation?

Role of POCUS in ICP estimation

- Evaluate $\uparrow$ ICP with ONSD
- Method
 - Use linear probe
 - Assure on-axis image with concurrent imaging of lens
 - Measure diameter 3mm posterior to where optic nerve attaches to retina
- $<5\text{mm}$ = normal
- $>6\text{mm}$ suggestive of $\uparrow$ ICP



3b. Please
comment
on the
CTB



3c. Describe 2 methods of lowering ICP in the A&E



How can you lower ICP in the A&E?

- Mechanical ventilation
 - Hyperventilation → increase RR or VT → aim PCO₂ kPa ~4
 - Low/no PEEP
- Non-pharmacological
 - Elevate head of bed to 30 deg
- Pharmacological
 - Hypertonic therapy
 - Sodium bicarbonate
 - Hypertonic saline
 - Mannitol

Reversal agents for warfarin

- The patient is on warfarin so you decide to proceed with reversal
- 3d. Name 3 options for warfarin reversal. What are the differences?

Reversal agents for warfarin

- Vitamin K
 - Reverses inhibition of factors II, VII, IX and X
 - Takes 24 hours or longer
- FFP
 - Contains all clotting factors in plasma
- PCC
 - Contains factors II, VII, IX and X in a more concentrated form than FFP
 - Reverses anticoagulation immediately

Name 1 reversal agent for each of these drugs

- Dabigatran
- Apixaban
- Heparin

Reversal agents

- Dabigatran
 - Idarucizumab
- Apixaban
 - Andexanet alfa
- Heparin
 - Protamine



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ORIGINAL ARTICLE



Andexanet for Factor Xa Inhibitor–Associated Acute Intracerebral Hemorrhage

Authors: Stuart J. Connolly, M.D. , Mukul Sharma, M.D., Alexander T. Cohen, M.D., Andrew M. Demchuk, M.D., Anna Czlonkowska, M.D., Arne G. Lindgren, M.D., Carlos A. Molina, M.D.,  ⁺³⁴, for the ANNEXA-I Investigators* [Author Info & Affiliations](#)

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Intubating a neurocritically ill patient

- You decide to proceed with RSI intubation in view of CTB findings + GCS 7/15
- However, intubating may lead to increased ICP from exaggerated sympathetic response with laryngoscopy.
- 3e. Name 2 methods to mitigate ICP rise from intubation

Intubating a neurocritically ill patient

- Non-pharmacological
 - Enlist most experienced intubator
 - Video laryngoscopy
 - ↑ Chance of first-pass success
 - ↓ Force on vallecula to achieve glottic exposure
- Pharmacological
 - Control BP with rapid and titratable agent (eg. IV nicardipine/labetalol)
 - Pre-medicate with IV fentanyl to blunt sympathetic response/pain

INTERACT-3

- INTERACT3 trial demonstrated improved functional outcomes and ↓mortality with protocol-driven ‘bundled care’ approach in Mx of atraumatic ICH.
- 3f. Name 3 physiological/biochemical targets of this bundle.(FEEM 2026 SAQ PP)

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The third Intensive Care Bundle with Blood Pressure Reduction in Acute Cerebral Haemorrhage Trial (INTERACT3): an international, stepped wedge cluster randomised controlled trial

[Prof Lu Ma, MD^{a,*}](#) · [Xin Hu, MD^{a,*}](#) · [Lili Song, PhD^{c,d,*}](#) · [Xiaoying Chen, PhD^{d,*}](#) · [Menglu Ouyang, PhD^{c,d}](#) ·

[Prof Laurent Billot, MRes^d](#) · et al. [Show more](#)

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INTERACT-3

- BP
 - SBP <140 within 1 hour
- Glucose control
 - Target 6.1-7.8 mmol/L (without DM), 7.8-10 mmol/L (with DM)
- Temperature
 - $\leq 37.5^{\circ}\text{C}$
- Coagulopathy
 - Reversal of warfarin with FFP/PCC
 - Target INR 1.5 within 1.5 hours

Case 4

- 70/M
- PMH: CKD, DM, HT
- c/o painful blisters over right torso x 2/7. Seen by a GP and prescribed acyclovir
- Visited by family members today and found dull-looking

Questions

- 4a. Name 4 S/S for acyclovir neurotoxicity
- 4b. Name 2 risk factors
- 4c. How do you differentiate acyclovir neurotoxicity from VZV encephalitis? Name 4 differences

Answers

- 4a. S/S for acyclovir neurotoxicity
 - Impaired consciousness
 - Dysarthria
 - Lethargy
 - Hallucinations
 - Coma
 - Convulsions

Answers

- 4b. Risk factors
 - Elderly
 - Pre-existing renal impairment
 - Dehydration

Differences between acyclovir neurotoxicity and VZV encephalitis

	Acyclovir neurotoxicity	VZV encephalitis
Supporting features	Renal impairment Rapid onset symptoms Normal CSF & CT/MRI High serum acyclovir level	Immunocompromised state CSF or CT/MRI features of viral encephalitis Fever Meningeal signs
Confirmatory test	None	CSF VZV culture or VZV PCR +ve
Management	Stop acyclovir +/- haemodialysis in severe cases	IV acyclovir
Potential Complications	Generally none with supportive management	Potentially fatal

Thank you! Questions?