

FEx Net 2022 Collated SAQs: Neurology + Neurosurgery Questions

- | | |
|---------------------------------|---------------------|
| 1. <u>Agitation</u> | 28. <u>SAH</u> |
| 2. <u>Agitation</u> | 29. <u>SAH</u> |
| 3. <u>Agitation</u> | 30. <u>SAH</u> |
| 4. <u>Agitation</u> | 31. <u>SAH</u> |
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| 6. <u>Collapse</u> | 33. <u>Seizure</u> |
| 7. <u>Collapse</u> | |
| 8. <u>Confusion</u> | 34. <u>Seizure</u> |
| 9. <u>CSF Analysis</u> | 35. <u>Seizure</u> |
| 10. <u>Diplopia</u> | 36. <u>Seizure</u> |
| 11. <u>Diplopia</u> | 37. <u>Seizure</u> |
| 12. <u>Dizzy</u> | 38. <u>Seizure</u> |
| 13. <u>Dizzy</u> | 39. <u>Seizure</u> |
| 14. <u>Dizzy</u> | 40. <u>Seizure</u> |
| 15. <u>Dizzy</u> | 41. <u>Stroke</u> |
| 16. <u>Facial Palsy</u> | 42. <u>Stroke</u> |
| 17. <u>GBS</u> | 43. <u>Stroke</u> |
| 18. <u>GBS</u> | 44. <u>Subdural</u> |
| 19. <u>GBS</u> | 45. <u>TIA</u> |
| 20. <u>Headache</u> | 46. <u>Vertigo</u> |
| 21. <u>Headache</u> | 47. <u>Vertigo</u> |
| 22. <u>Headache</u> | 48. <u>Vertigo</u> |
| 23. <u>Headache</u> | 49. <u>Vertigo</u> |
| 24. <u>Headache</u> | 50. <u>VP Shunt</u> |
| 25. <u>Headache</u> | 51. <u>VP Shunt</u> |
| 26. <u>Involuntary movement</u> | 52. <u>VP Shunt</u> |
| 27. <u>Leg Weakness</u> | |

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Question 1 (18 marks)

An 82 year old woman from a nursing home is sent in by ambulance with increasing confusion and agitation. She is combative and agitated.

1. List five (5) differential diagnostic categories. Give 2 examples of each.

Diagnostic category	Example

2. You decide that her agitation needs management. List two (2) drugs and doses for managing her agitation. List two (2) potential adverse effects for each drug.

Drug	Dose	Adverse effects

3. List three (3) features distinguishing delirium from dementia

Question 2 (15 marks)

The ambulance service has brought a 60 year old man to the ED with abnormal behaviour. They were called by motorists who reported him running amongst traffic.

1. List 6 features on your history that would suggest an organic cause for the patient's presentation. (6 marks)

Your initial assessment suggests an organic cause for the patient's abnormal behaviour.

2. List 3 investigations you would perform (with rationale) to investigate for possible organic precipitants. (3 marks)

Investigation	Rationale

The patient required manual restraint whilst attempting to leave. A member of nursing staff has been bitten on the finger, drawing blood.

3. State 6 key principles of the ED management of this incident. (6 marks)

Question 3 (13 marks)

A 65 year old woman has been brought to the ED with abnormal behaviour. She had been found wandering in the street yelling, "They are trying to get me!".

She is known to have schizophrenia.

She is unable to give any coherent history.

1. List 5 findings of your examination that would suggest delirium to be the cause of her presentation. (5 marks)

2. List 3 pieces of collateral history that would suggest psychosis to be the primary problem. (3marks)

While being assessed, the patient becomes very agitated and attempts to leave.

Assessment so far has suggested that the patient is incapable of making rational decisions.

3. List the management steps, in sequential order, that you would use to ensure the patient remains in the ED. Give brief details of each step. (5 marks)

Question 4 (12 marks)

A 70 year old man has been brought to the ED by his daughter. He has had increasing confusion for the last week. He lives alone and is unable to give any useful history.

His documented medical history includes hypertension, atrial fibrillation and ischaemic heart disease. His documented medications are: indapamide, Ramipril, atorvastatin, metoprolol and warfarin.

A CT scan of his head is provided below

1. State your diagnosis, with 4 supportive findings demonstrated in the image provided.
(5 marks)

Diagnosis

Supportive findings



2. List 5 further investigations you would perform on this man. Provide justification for each.
(5 marks)

Investigation	Justification

The patient's INR is 7.1.

3. State your management with regards to warfarin reversal. Include your end-point.

(2 points)

Question 5

You have been asked to develop a regional protocol for clot retrieval in ischaemic stroke.

You are working in the major referral centre of a health district with 3 other urban hospitals.

- 1. List 4 important stakeholders you would involve from outside your Emergency Department. (4 marks)**

- (1) _____
- (2) _____
- (3) _____
- (4) _____

- 2. List 2 information sources you would review to establish the current standard of care for patients with ischaemic stroke. (2 marks)**

- (1) _____
- (2) _____

You undertake to write a draft protocol.

- 3. List 5 accepted inclusion criteria for the use of intra-arterial clot retrieval you might list on your protocol. (5 marks)**

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

Question 6

An elderly female presents to the ED after being found on the floor of her bathroom. Her family found her lying on her left side.

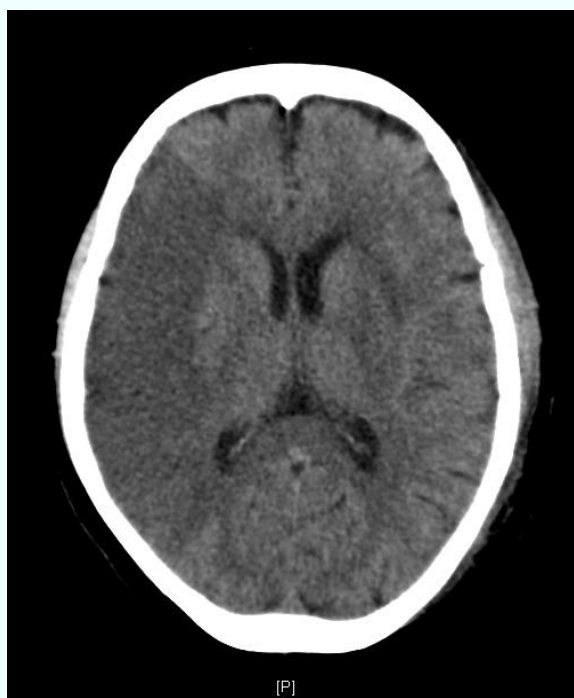
On arrival to ED:

GCS 10

HR 85

BP 140/90

Brain CT, axial images



1. Describe the brain CT findings (1 mark).

2. List **3** clinical signs that would be expected based on the CT brain findings (3 marks).

- i.

- ii.

- iii.

3. What would be your management priorities? (4 marks)

4. List **2** features on CT brain that are associated with a poor outcome from thrombolytic therapy (2 marks).

- i.

- ii.

Question 7 **(18 marks)**

An 81-year-old man is brought in by ambulance to your tertiary emergency department with a reduced level of consciousness. Neighbours broke into his home after not seeing him for 2 days to find him in bed, unresponsive and incontinent of urine.

On assessment his airway is patent, respiratory rate is 17 breaths/minute, saturations are 95% on 2L oxygen, heart rate is 93 bpm, BP is 117/85mmHg and temperature is 36.4 degrees Celsius. Neurological assessment reveals a Glasgow Coma Scale of 6 (E1 V2 M3); pupils are 2mm and sluggish, there is left-sided hemiplegia. His bedside glucose is 7.1

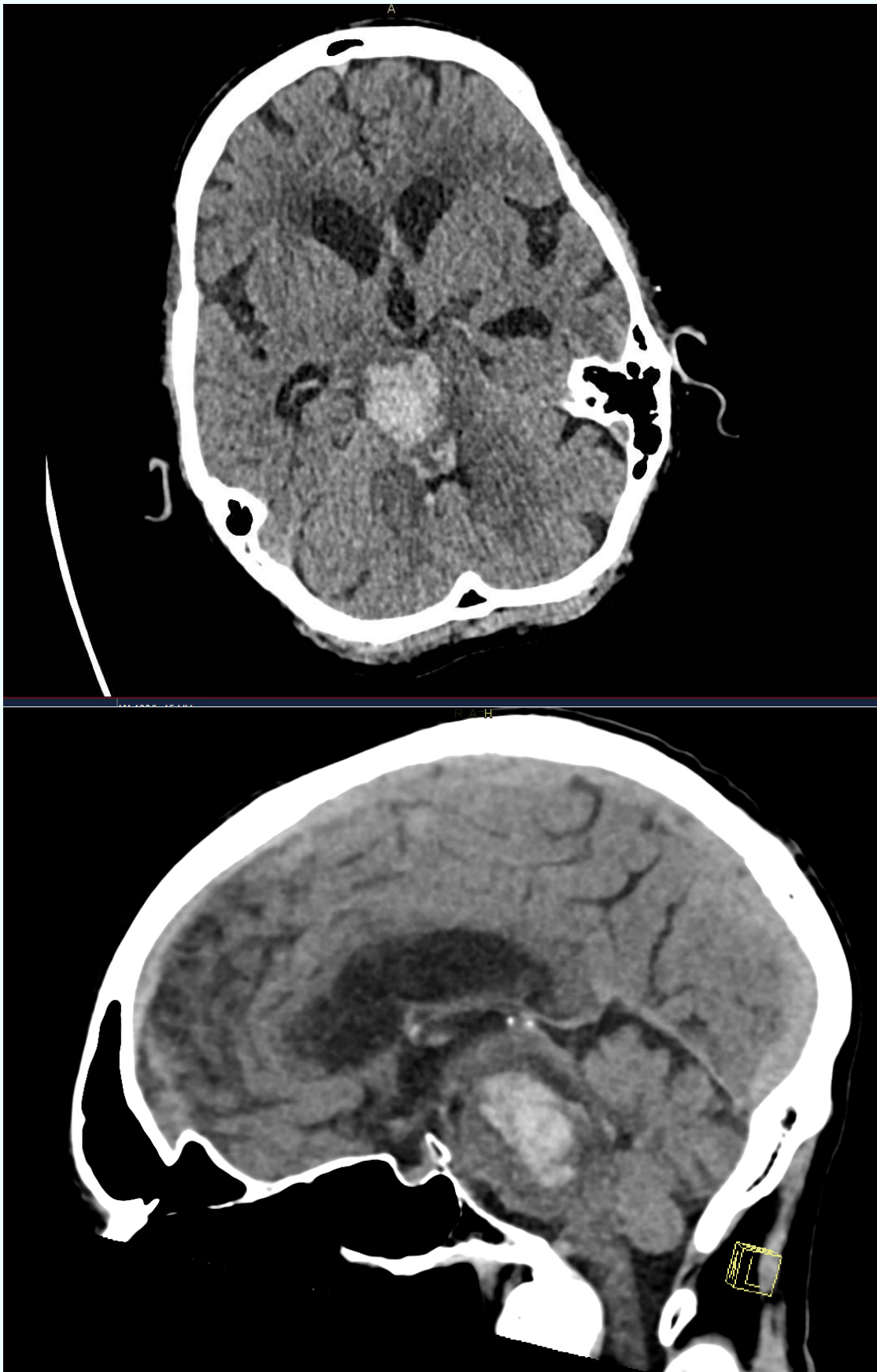
A non-contrast CT brain is performed. Two slices from CT are shown below (Figures 1a and 1b):

- a. List two positive and two negative findings on this single slice CT scan (4 marks)

- b. Provide a unifying diagnosis (1 mark)

You learn that he has no significant past medical history and takes no regular medications. He lives alone and up to now has been independent in his activities of daily living.

The patient's brother and sister arrive and would like to know what happened to him and what his prognosis is.



- c. List important information that should be included in your discussion with his relatives (5 marks)

Following your discussion, a decision is made to palliate the patient who seems to be comfortable and shows no signs of distress. He is accepted for admission under the palliative care team who ask you to complete his medication chart, including dose he may require on a 'as needed' (p.r.n.) basis.

- d. List the 'as needed' (p.r.n.) medications that should be charted for this patient with a indication for each and a dosing regimen. (8 marks)

Indication	Medication	Dosing regime

Question 8 **(12 marks)**

A 60-year-old woman presents to your Emergency Department complaining of a severe gradual onset headache, blurring of her vision and new onset confusion.

Her vital signs are:

GCS 13	(E3V4M6)
RR	20/min
SaO2	96% in room air
HR	60
BP	190/130mmHg
Temp	37.0C

You diagnose her with Hypertensive Encephalopathy.

- a) List 4 differential diagnoses, other than Hypertensive Encephalopathy, you would consider for this woman's presentation (4 marks)

- b) What is the definition of a Hypertensive Emergency? (1 mark)

- c) What is the definition of a Hypertensive Urgency? (1 mark)

- d) Complete the following table with 4 drugs you could use to treat this woman's hypertension including a pro and a con for each drug chosen (4 marks)

Drug	Pro	Con

- e) State your treatment goal for this woman's hypertension (2 marks)

Question 9

Appearance	clear, colourless		Reference range
Glucose	3.0	mmol/L	2.8 - 4.0
Protein	750	mg/L	150 - 500
WBC			
Polymorphs	20	$\times 10^6/\text{L}$	<5
Lymphocytes	111	$\times 10^6/\text{L}$	<5
Red cells	8	$\times 10^6/\text{L}$	<5
Organisms	no organisms seen		
Serum Glucose	5.0		

Question 9

A 30 year old woman presents to the ED complaining of fever, headache, arthralgia and photophobia. She has been unwell for 5 days. Her symptoms initially started like an upper respiratory tract infection, and have not improved despite oral antibiotics.

1. List five (5) contraindications for lumbar puncture.

A lumbar puncture is performed and the results are shown above

2. What are the two (2) most likely diagnoses?

3. List 3 features of the CSF that support your diagnoses

4. List two (2) pros and two (2) cons for the administration of intravenous antibiotics in this patient

Pros	Cons

Question 10 (16 marks)

A 35 year old woman presents diplopia. She has binocular double vision on both horizontal and vertical gaze. You suspect she has a third cranial nerve palsy.

- i. Describe the typical examination findings of a third nerve palsy (3 marks)

- ii. The location of the site of a third nerve lesion can be predicted by the presence of other symptoms and examination findings (6 marks)

Location of lesion	Associated symptoms/signs
Brainstem/midbrain (e.g. around oculomotor nuclei)	
Intra-cranial course (e.g. along lateral wall of cavernous sinus)	
Orbital (superior orbital fissure, orbital apex)	

- iii. In the setting of a 3rd nerve palsy, the presence or absence of ipsilateral pupil dilation helps to distinguish between a compressive aetiology (eg. expanding aneurysm) and a microvascular/ischaemic aetiology. Explain. (2 marks)

- iv. List 5 causes of anisocoria (other than 3rd nerve palsy) (5 marks)

Question 11 (14 marks)

A 36 year old female presents to your ED with diplopia of gradual onset. She also reports lethargy and weakness. She has been previously well other than hypothyroidism for which she is prescribed 100 micrograms of thyroxine daily.

(i) List four (4) neurological diagnoses to account for the presentation. For each condition listed state one (1) clinical examination finding (aside from diplopia) and one (1) investigation finding which would support each diagnosis (12 marks)

Diagnosis	Clinical Examination Finding	Investigation Finding
(1)		
(2)		
(3)		
(4)		

(ii) List two (2) important bedside measures of respiratory function that could be used in the assessment of this patient (2 marks)

i)

ii)

Question 12 (16 marks)

A 50 year old woman presents to the emergency department complaining of dizziness.

1. List your 4 most likely differential diagnoses.

2. The patient describes true vertigo. List six (6) key features on assessment that differentiate between a peripheral and central cause for her symptoms. Include three (3) historical and three (3) on physical examination.

3. List three (3) investigations that may be appropriate and justify when you would perform them.

Investigation	When performed

Question 13 (15 Marks)

One of the ED JMOs approaches you for advice about a 45-year-old female who presented with tinnitus and vertigo. You ask if she has any cerebellar signs but the JMO replies 'I forgot to check. What should I look for?'

- i. What are the components of the cerebellar examination? (4 marks)

- ii. The patient examines normally except for some decreased hearing in her left ear. What are the 'tuning fork hearing tests' and how do you interpret them? (8 marks)

Name of test	How do you perform it?	How do you interpret it?
Rinne's		
Weber's		

Your tests confirm that she has sensorineural deafness in the left ear. This patient denies any head injury or other trauma and she is otherwise well.

iii. Please list the atraumatic causes of this presentation (3 marks)

Question 14 (14 marks)

You are assessing an 84-year old female who has presented complaining of feeling dizzy. On examination she has nystagmus.

- a. Describe four (4) features of her nystagmus that suggest a central cause for her vertigo (4 marks).

- b. Complete the following table of expected findings for her if she has central a central cause for her vertigo (4 marks)

NON-nystagmus component of the HINTS exam (2 marks)	Findings in central vertigo (2 marks)

- c. List six (6) other findings on history or examination that are NOT part of the HINTS examination that suggest a central cause of vertigo (6 marks)

Question 15 (18 marks)

A 65 year old male with Type 2 diabetes and hypertension presents with dizziness which he describes as 'the room spinning'.

His blood pressure on arrival is 180/90.

All his other vitals are within normal limits. He has not been otherwise unwell recently.

Questions:

1- List three (3) peripheral and three (3) central causes for his symptoms:

(6 Marks)

Central cause	Peripheral cause

2- List 2 features on history and examination that would support a Central VS Peripheral causes.

(8 marks)

	History	Examination
Central cause		
Peripheral cause		

3- List two (2) key diagnostic investigations you could perform and their respective utility
(4 marks)

Investigation	Utility

Question 16 (14 marks)

- i. List the clinical features of an isolated 7th nerve palsy due to a peripheral lesion (3 marks)

- ii. List 5 potential causes of an isolated 7th nerve palsy due to a peripheral lesion (5 marks)

- iii. What treatment should be advised in idiopathic Bell's palsy (2 marks)

- iv. What is the prognosis for recovery from idiopathic Bell's Palsy (2 marks)

- v. What factors are associated with a poorer outcome (2 marks)

Question 17 (11 marks)

A 63 year old man presents to the ED with bilateral leg weakness. He has had a recent diarrhoeal illness and you suspect Guillain-Barre syndrome.

Please describe the differences in clinical features between GBS and spinal cord compression (8 marks)

	Guillain-Barre Syndrome	Spinal Cord Compression
History		
Exam Finding 1		
Exam Finding 2		
Diagnostic Investigation		

Describe the use of forced vital capacity (including threshold values) in the monitoring of a patient with GBS and suspected diaphragmatic weakness (3 marks)

FVC result	Management/Disposition

Question 18 (19 marks)

A 55 year old woman has been referred to the ED by her GP with a 2 day history of bilateral leg weakness. Her GP suspects Guillain-Barre syndrome.

1. List 6 differential diagnoses for this patient's weakness. (Do not include GBS) (6 marks)

2. List 3 cardinal features on examination you would expect to find that would be consistent with classical Guillain-Barre syndrome. (3 marks)

3. List 3 investigations that will be useful in supporting the diagnosis of GBS. Include the expected findings. (6 marks)

4. List 2 life-threatening complications of GBS. For each complication, mention how you will detect its presence or severity. (4 marks)

Question 19 (12 Marks)

A previously well 26 year old woman presents with a 10 hour history of gradual onset of tingling and weakness in her arms and legs. This is associated with low back ache. She has recently returned from a two week holiday in Spain, during which time she suffered a self limiting diarrhoeal illness that she attributed to the hotel food.

Her vital signs are:

HR	100	beats/min
BP	130/80	mmHg
RR	36	breaths/min
T	37.0	degrees C

On clinical examination you suspect a diagnosis of Guillian-Barre syndrome.

- i. List four (4) differential diagnoses for her presentation. (4 marks)

1. _____

2. _____

3. _____

4. _____

- ii. List four (4) further tests that are indicated in this case. For each test, provide a brief justification as to its use. (4 marks)

1. _____

Justification: _____

2. _____

Justification: _____

3. _____

Justification: _____

4. _____

Justification: _____

- iii. State four (4) features on clinical examination would suggest the need for intubation and ventilation in Guillian-Barre syndrome? (4 marks)

1. _____

2. _____

3. _____

4. _____

Question 20 (13 marks)

You are reviewing a patient with your intern who has presented with sudden onset headache 8 hours ago. Your intern is concerned about the possibility of subarachnoid haemorrhage and has performed a non-contrast CT brain that has been reported as normal.

What are the components of the Ottawa Subarachnoid Haemorrhage rule? How can it be used? (5 marks)

Given the patient presented >6 hours after the onset of the headache, name two options for the next investigation, along with a pro and con of each (4 marks)

Ix:	Ix:
Pro:	Pro:
Con:	Con:

Name 4 acute complications of subarachnoid haemorrhage (4 marks)

Question 21 (14 marks)

A 36 year old woman presents with a very sudden onset severe headache 5 hours ago. It is suspicious for subarachnoid haemorrhage (SAH).

(i) Apart from headache, list 4 other clinical features that may be present in SAH (4 marks)

(ii) Complete the table providing estimates where indicated (3 marks)

Situation	Estimate
Prevalence of confirmed SAH in a patient with a classic history of “thunderclap” headache	
Sensitivity of new generation CT scanning in detecting SAH in this setting	
Incidence of “traumatic tap” when performing a lumbar puncture (LP)	

(iii) The CT scan of this patient is reported as normal and a decision made to perform a lumbar puncture to look for xanthochromia. Name the two red cell breakdown products that can cause yellow discolouration of CSF (2 marks)

(iv) List 5 criteria that indicate that a CT scan should be carried out prior to lumbar puncture (5 marks)

Question 22 (10 marks)

A 48 year old female presents with GCS 15 complaining of rapid onset pain, initially in the back of the neck then escalating in intensity over 15 minutes and becoming bilateral and frontal. She is otherwise well.

1. Beyond a careful and thorough history and physical examination, list the **3** most efficient investigations indicated in this case (1.5 marks).

- i. _____
- ii. _____
- iii. _____

You are discussing lumbar puncture with the patient.

2. What **4** risks must be highlighted in the consent process? (4 marks).

- i. _____
- ii. _____
- iii. _____
- iv. _____

3. List **3** evidence based strategies to minimise post LP headache (1.5 marks).

- i. _____
- ii. _____
- iii. _____

4. Complete the table below with **3** options of different classes for analgesia in this case and include a pro and a con for each (3 marks).

Medication	Pros	Cons

Question 23 (12 Marks)

A 33 year old woman has presented to the ED with a severe headache.

1. List 4 features of your history that would support the diagnosis of migraine. (4 marks)

You have assessed the patient to be suffering from a migraine.

2. List 5 drugs, each from a different class, that can be used as first line treatment for migraine. Include doses. (5 marks)

—

3. List 3 drugs that can be used for prophylaxis in recurrent migraine. (3 marks)

Question 24 (12 marks)

A 45 year old woman has presented with a headache.

- 1. List 4 features of your history that would be consistent with the diagnosis of migraine. (4 marks)**

Your assessment is consistent with migraine as the cause of the patient's symptoms.

- 2. List 3 first line treatment options, each from different pharmacological classes. Include doses. (3 marks)**

Your first line management has been unsuccessful.

3. List 2 options for treating intractable migraine. Include doses. (2 marks)

After a period of observation, the patient has greatly improved. On further questioning, it has become evident that the patient has been suffering from frequent migraines. She has enquired about migraine prophylaxis.

4. List 3 drugs that can be used for migraine prophylaxis. (3 marks)

Question 25 (12 Marks)

A 55yo woman presents to the emergency department complaining of headache and visual abnormalities.

1. List three causes of headache that may be associated with visual symptoms.(3 marks)
2. For each of your differentials listed above, provide a differentiating feature, an investigation, and a treatment. (9 marks)

Cause	Differentiating features	Investigations	Treatment

Question 26 (17 Marks)

A 50-year old man presents with abrupt involuntary movements of his right arm and leg.

- a) Which two (2) descending pathways are responsible for voluntary skeletal muscle movement of the body and what does each pathway control? (4 marks)

Descending pathway	What does it control?

- b) Which part of the nervous system is responsible for **involuntary** control of movement? (1 mark)

1.

c) Complete the following table (12 marks)

	Hemiballismus	Chorea	Partial seizure
List two (2) causes	i. ii.	i. ii.	i. ii.
Area of the brain involved			
Typical features of the movements			

Question 27 (12 marks)

A 40 year old woman presents to ED complaining of weakness and difficulty walking. On initial assessment she is found to have loss of power in both legs, but normal upper limb and cranial nerve function.

1. List 3 key differential diagnoses you would consider for her presentation. For each differential, provide supportive historical and/or examination features. (9 marks)

Differential diagnosis	Supportive Historical and Examination Features

You decide to perform a lumbar puncture as part of your workup.

2. Outline the **key aspects of consent** as they apply in this situation. (3 marks)

Question 28 (11 Marks)

A 47 year old man presents with a sudden severe headache and confusion.

A single slice of his non contrast CT scan is shown.



1. Describe four (4) relevant findings on his CT scan.

2. What is the most likely diagnosis?

3. List four (4) important measures for neuroprotection in the emergency department.

4. His BP is 200/100 mmHg. What antihypertensive will you use, include dose and route.

5. What systolic BP range are you aiming for in mmHg?

Question 29 (13 marks)

A 38 year old male patient presents to your urban ED with sudden onset occipital headache and vomiting whilst lifting weights at the gym.

Vital signs GCS 14
 P 100 bpm
 BP 180/70
 mmHg Temp 36
 deg C

- i. Interpret the CT images (4 marks)

CT IMAGES ARE SHOWN BELOW

- ii. Outline 5 management priorities (5 marks)

- iii. List 4 strategies to minimize abnormalities in intracranial pressure if this patient was intubated (4 marks)



Question 30 (12 min)

A 40 year old woman has presented to the ED with a severe headache.

You are considering the diagnosis of sub-arachnoid haemorrhage.

She has a Glasgow coma score of 15 on your initial assessment.

1. List 4 risk factors for subarachnoid haemorrhage.

(4 marks)

- (1) _____
- (2) _____
- (3) _____
- (4) _____

CT scan of the brain has confirmed the diagnosis.

2. List the classification of severity for subarachnoid haemorrhage as per the World Federation of Neurosurgical Societies.

(5 marks)

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After 3 hours in the ED, the patient was noted to have suffered a decline in her level of consciousness.

3. List 5 likely potential causes of this problem.

(5 marks)

- (1) _____
- (2) _____
- (3) _____
- (4) _____
- (5) _____

On re-evaluation, her vital signs are:

GCS	8	E1 V2 M4
Pulse	90	/min
BP	220/120	mmHg
O2 saturation	99%	room air

4. List 5 clinical priorities in the assessment and management of this situation. State your justification for each priority. (10 marks)

Clinical priority	Justification

Question 31 (18 marks)

A 50 year old woman has been brought to the ED following a collapse at work. She had complained of a severe headache prior to her collapse.

A slice from the CT scan of her head is provided below:

1. List 5 abnormalities on the image provided. (5 marks)

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____

2. Give the most likely diagnosis. (1 mark)

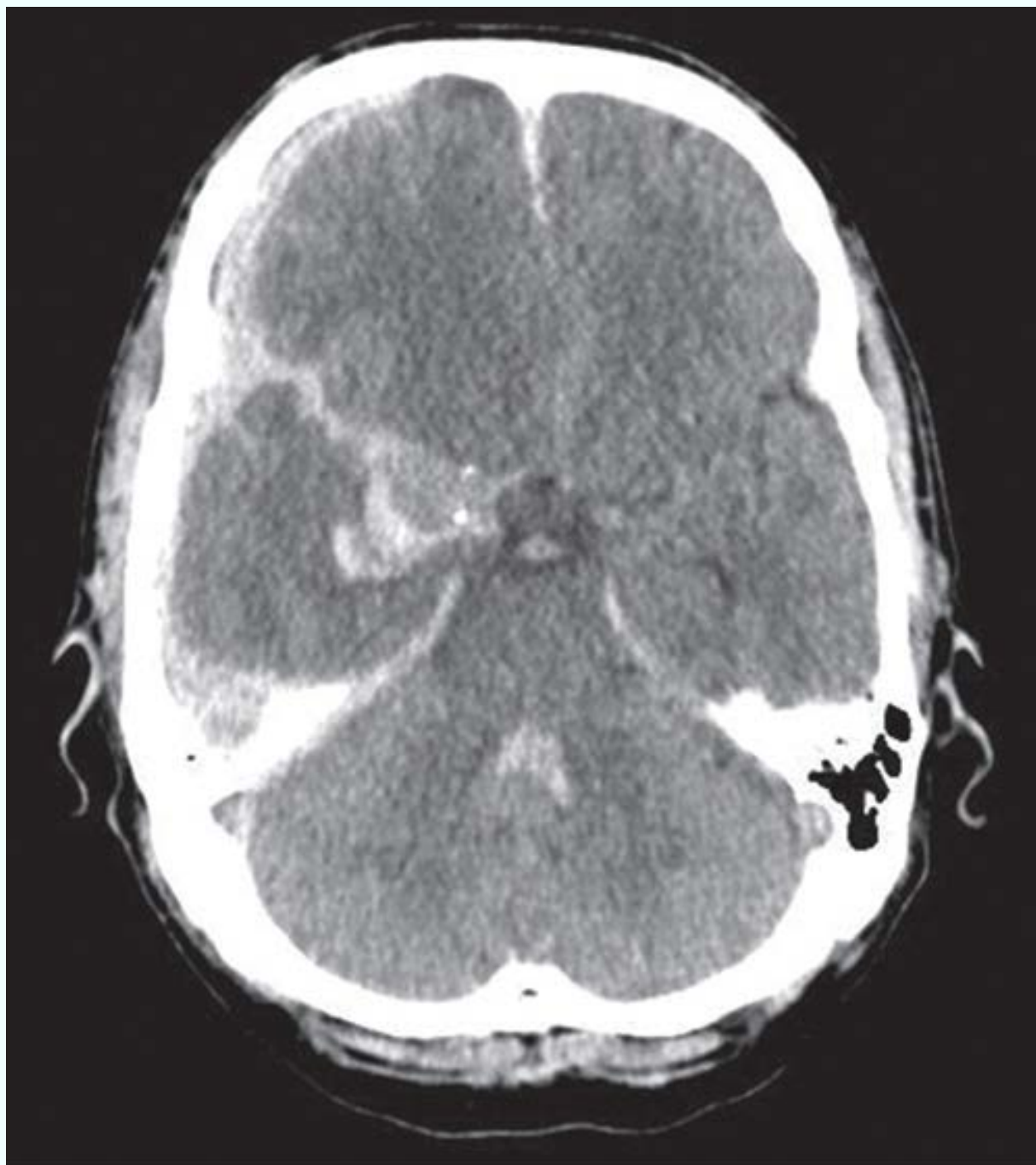
The patient has been intubated due to a reduced level of consciousness.

Her vital signs are:

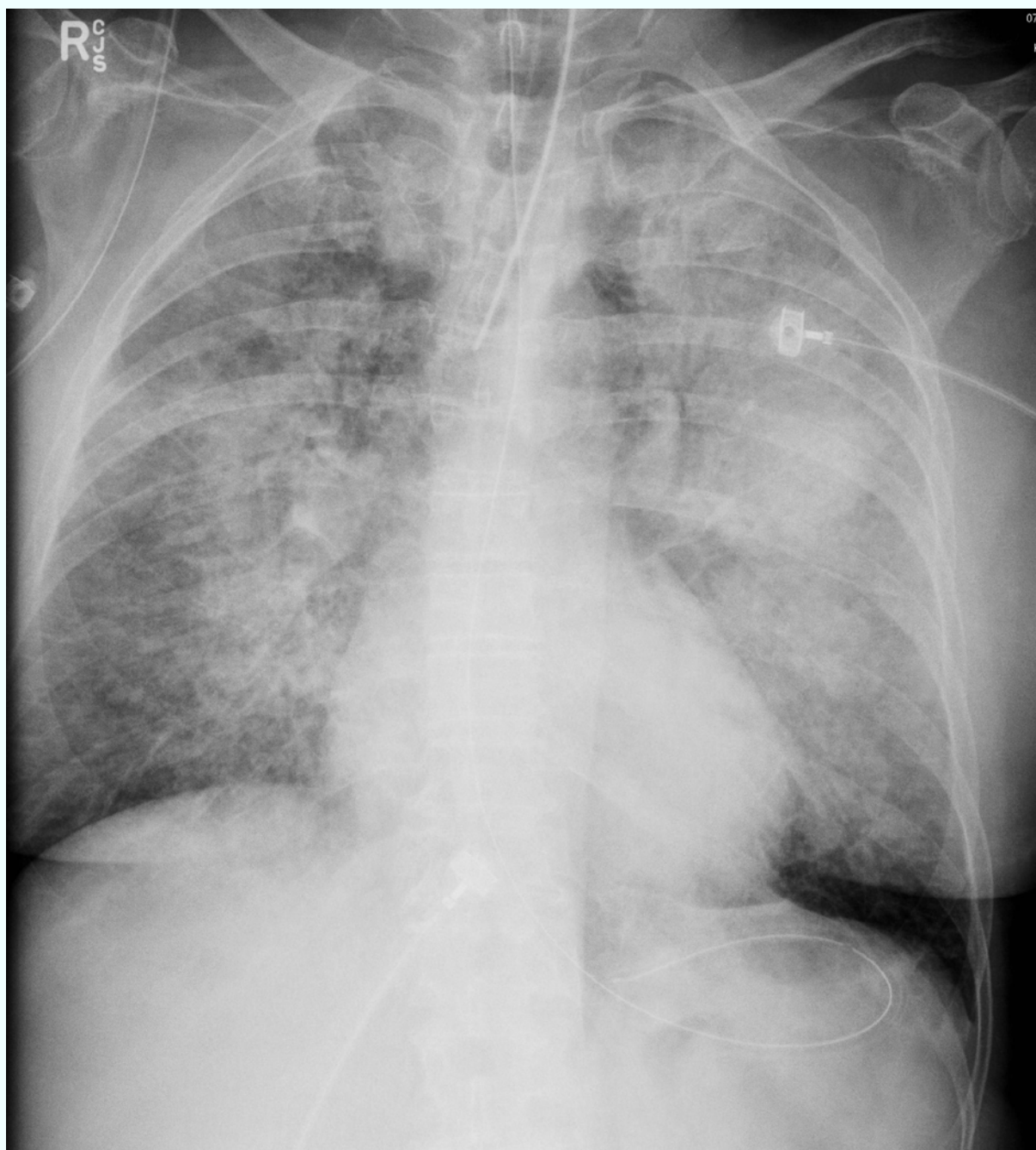
Pulse	115	/min
BP	200/110	mmHg
O2 saturation	90%	FiO2 0.8

A 50 year old woman has been brought to the ED following a collapse at work. She had complained of a severe headache prior to her collapse.

A slice from the CT scan of her head is provided **BELOW**.



A chest x-ray has been performed. It is provided **BELOW**.



A chest x-ray has been performed. It is provided above

- 3. State the pathology demonstrated. Give 3 supportive features from the chest x-ray. (4 marks)**

Pathology

Supportive features

1) _____

2) _____

3) _____

- 4. State 4 components of your management of this patient. (4 marks)**

1) _____

2) _____

3) _____

4) _____

5. List 4 other complications that might occur during this patient's admission. (4 marks)

1) _____

2) _____

3) _____

4) _____

Question 32 (18 Marks)

A 58 year old female is brought in to ED after being found by her husband collapsed in the shower.

Her vital signs on arrival are:

HR 80

BP 180/120

RR 20

GCS 8/15 (E2 V2 M4)

She is immediately intubated prior to CT scan, which has been reproduced below:



Questions:

1-List the radiological abnormalities on the above scan. (4 marks)

2- List your immediate management priorities in this patient: (10 marks)

3. What criteria would you use to estimate this patient's likely prognosis. (4 marks)

Question 33 (16 marks)

A 29 year old male is brought in by ambulance after a collapse at work. He is a machine operator at a nearby 24 hour factory. Colleagues report he collapsed to the ground whilst working. He was unresponsive and jerking all limbs for a brief period. His level of consciousness has improved on transport to ED.

Vital signs GCS 15
HR 90 bpm
BP 126/84 mmHg
Temp 37.5 deg C
SaO2 100% (6L/min Hudson)

- i. List four possible causes for his collapse (4 marks)

- ii. List four features on history and examination that may suggest that this is a seizure rather than another cause for collapse (4 marks)

iii. List four reasons why you would order an urgent CT brain (4 marks)

iv. Describe four considerations in determining that this man is fit for discharge home (4 marks)

Question 34 (19 marks)

A 23 year old man has been brought to your ED after having a seizure at a dance party. He has no known medical history.

On arrival, his vital signs are:

GCS	8	E 2 V 2 M 4
Pulse	120	/min
BP	110/70	mmHg
Temp	41.0	degrees
O2 sats	100%	6L O2 via mask

1. List 3 possible non-toxicological causes of this presentation. (3 marks)

2. List 3 possible toxicological causes of this presentation. For each, give 3 cardinal examination features that would suggest the diagnosis. (12 marks)

Cause	Cardinal examination findings

3. List 4 methods of cooling appropriate for this patient. (4 marks)

Question 35 (14 Marks)

A 35 year old woman has been brought to the ED with a prolonged generalised seizure.

Her medical history is unknown.

1. List **four specific pharmacological options** for termination of her seizure, including doses. (4 marks)

2. List five differential diagnoses for her prolonged seizure. (5 marks)

3. List five **serious complications** of status epilepticus.

(5 marks)

Question 36 (12 Marks)

A 27-year-old woman presents to your suburban emergency department following a seizure. This is a first seizure and is described as tonic-clonic. The seizure self-resolved after 5 minutes.

Observations:

HR 105bpm 99%

SpO2 RA 123/84

BP 12 (E3 V4 M5)

GCS

1. List eight (8) causes for a first seizure.(4 marks)

The patient has recurrent seizures whilst in the department.

The junior medical officer has given a loading dose of phenytoin as an IV bolus.

2. Describe the possible adverse effects of an IV bolus dose of IV phenytoin, and management of these effects(4 marks)
3. List two (2) IV anticonvulsants and their doses, other than phenytoin, that may be used in status epilepticus.(4 marks)

Question 37 (18 marks)

A 4 year old previously well girl, presents with a sudden onset generalised tonic-clonic seizure lasting 40 minutes, terminated with one dose of midazolam. Immediately afterwards she is GCS 3, and apnoeic.

- i. Briefly describe two methods for maintaining ventilation in this situation and the reason for your preferred method (4 marks)

- ii. List 5 possible causes of apnoea in this situation (5 marks)

The child improves to a GCS of 14 in 30 minutes. There are no focal neurological signs and no preceding illness or fever apart from the occasional headache. The child was born in Australia but spent 3 months in India returning 6 months ago. Her glucose and electrolytes are normal.

- iii. List 5 possible causes for the seizure (5 marks)

iv. Outline a pro and con of CT vs MRI of brain in this situation (4 marks)

	PRO	CON
MRI		
CT		

Question 38 (12 Marks)

An 18 year old man has been taken to the ED by an ambulance crew. He was found outside a music festival with altered behaviour, after having a seizure.

On arrival to the ED his vital signs are:

GCS	13	E4 V4 M5
Temperature	39.5	degrees
Pulse	120	/min
BP	135/70	mmHg
O2 saturation	99%	room air

Shortly after arrival, he has another self-limiting seizure. There is no evidence of trauma.

1. List 4 likely differential diagnoses for the cause of this presentation. For each, state the assessment findings (history/examination/investigation) that would confirm its presence and state the management you would institute in the ED. (12 marks)

Diagnosis _____

Assessment findings _____

Management _____

Diagnosis

Assessment findings

Management

Diagnosis

Assessment findings

Management

Diagnosis

Assessment findings

Management

Question 39(12 marks)

A 45 year old man (weighing 70kg) is brought into the ED by the ambulance service after he was witnessed to have a generalised seizure. A total of 5mg of intramuscular midazolam was given pre-hospital. It was suspected that he had taken an overdose of his prescription medication.

- a) List four (4) prescription medications under each of the following drug categories, which could cause a seizure as a result of an overdose **(4 marks)**

Drug class	Example of drug which could cause seizure
Analgesics	
Antimicrobials	
Psychiatric medications	
Other medications	

- b) List three (3) immediate bedside tests you would do to investigate the cause of his seizure, and for each, state your rationale **(6 marks)**

	Bedside test	Rationale
1		
2		
3		

- c) The patient proceeds to have two (2) more seizures in the ED despite intravenous midazolam. List two (2) “second-line” agents (with appropriate dose) which could be used to terminate seizures in this situation **(2 marks)**.

1.

2.

Question 40 (18Marks)

A 56-year-old female is brought in to your ED after a generalized tonic-clonic seizure. On your assessment, you note that there is right-sided weakness and history reveals frequent falls and headache in recent months.

She has no significant past medical history and as part of the ED assessment, you have performed a CT brain, which is included in the Props booklet.

The patient is now GCS 15 and complaining of a headache. Her vital signs are as follows:

Temp	37.5C
HR	65
BP	135 / 85
RR	15
O2 Sats	97%



Questions:

1. List 3 pertinent findings on this CT.

(3 Marks)

2. List 5 differential diagnoses for these radiological findings.

(5 Marks)

3. List your management priorities in the Emergency Department (5 Marks)

4. State 5 important aspects to breaking bad news to this patient. (5 marks)

Question 41 (12 Marks)

A 52 year old woman has been brought to the ED with right sided upper and lower limb weakness.

Your provisional diagnosis is a left middle cerebral artery territory ischaemic stroke.

1. List 5 differential diagnoses for this presentation. (5 marks)

2. List 3 relevant investigations you would do on this patient. Include the results for which you will be looking. (3 marks)

Test	Relevant Finding

Your assessment is consistent with the diagnosis of ischaemic stroke.

3. List 4 examination findings that would exclude this patient from being eligible for thrombolysis. (4 marks)

Question 42 (12 Marks)

A 65 year old man is brought to ED with a stroke. He is usually independent and well. He has treated hypertension and elevated lipids. He has right sided hemiplegia (worse on arm than leg), eyes deviated to the left, and global aphasia. You cannot assess sensation or visual fields due to the aphasia. He is awake.

Symptoms started 2hrs previously.

- 1) List risk factors for stroke (4 marks)

- 2) What is the likely cerebral territory involved? (2 marks)

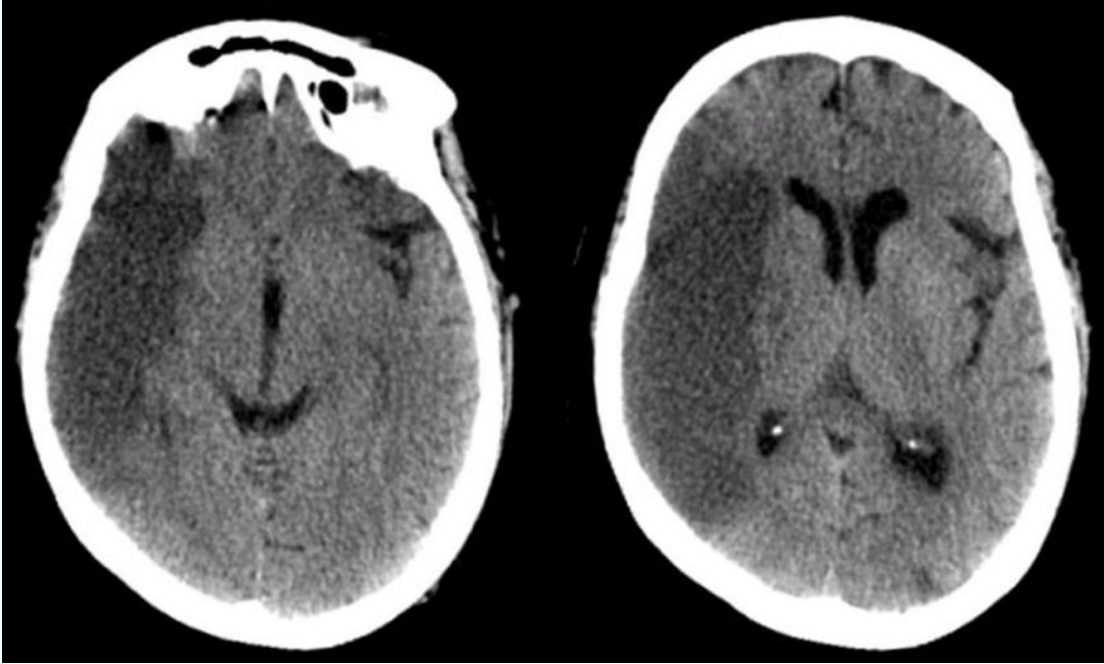
- 3) The decision is made to offer thrombolysis. What agent do you use? (2 marks)

- 4) Following CT imaging he is referred for interventional radiology. What are the indications for IR clot retrieval? (4 marks)

Question 43 (18 Marks)

A 72 year old man presents to ED with an acute onset of difficulty walking for 3 hours. He has a history of ischemic heart disease and hypertension. He is left handed.

2 Slices of his non---contrast CT Brain are reproduced:



Questions:

1. Describe the radiological abnormalities on the images. (2 marks) -

2. What is the likely diagnosis? (2 marks) --

3. What other clinical signs would you expect to elicit on neurological examination? (4 marks)

Your Director of the Emergency Department instructs you to write a guideline for managing these patients who present early to ED with this condition.

4. List the key components of this guideline, including details specific to this condition. (10 marks)

Question 44 (12 Marks)

A 85-year-old woman is transferred to your emergency department from her residential care facility. The staff reports that she has been complaining of a headache, is more confused than normal and is unsteady on her feet.

She has a past history of dementia, CRF, IHD and AF.

Her medications include digoxin, warfarin, atenolol, isosorbide mononitrate, lorazepam and aspirin.

Her vital signs are

BP 100/60 mmHg

HR 50bpm, irreg,

GCS 13 (V4,M5,E4)

A CT has been performed **(see image below)**.

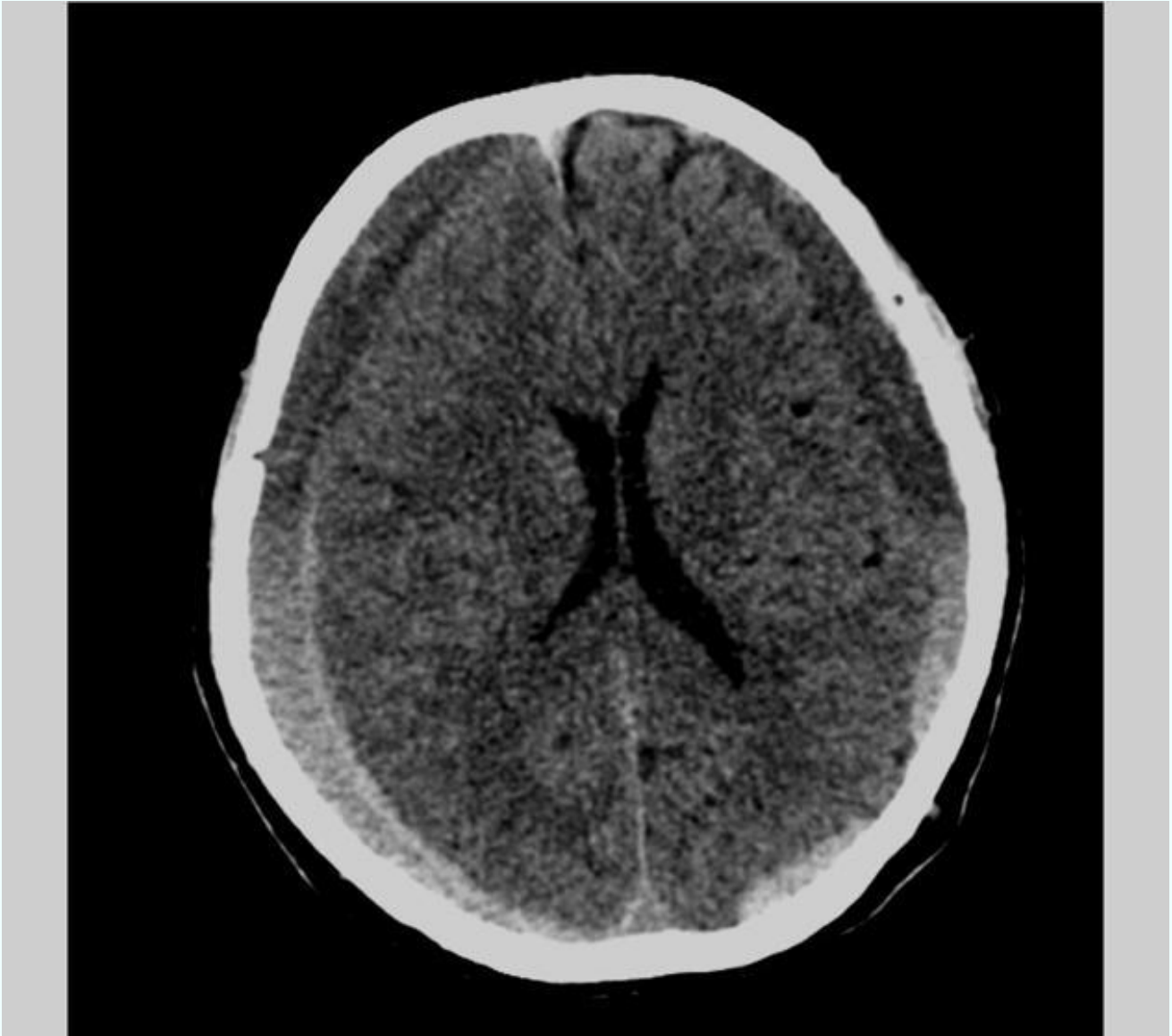
a) List four relevant (4) findings on the CT (4 marks)

1.

2.

3.

4.



b) List four (4) other investigations you would perform and explain why (4 marks)

Investigation	Justification

c) There is an advanced care directive that states she is not for CPR or intubation. Neurosurgery have advised non-operative management. List 4 OTHER management issues you will address. (4 marks).

1.

2.

3.

4.

Question 45 (16 Marks)

A 61 year old female has been brought into your Emergency Department after experiencing right arm and leg weakness which lasted for 1 hour. At the time of arrival to the ED, the above symptoms have completely resolved.

The patient has a background history of diet controlled Type 2 Diabetes Mellitus and is otherwise well with no regular medications and no allergies. She lives with her husband and works as a secretary. She is a non---smoker.

Your working diagnosis is a transient ischaemic attack (TIA).

1. Complete the following table in regards to risk stratification of TIA patients with the ABCD2 score. (7 marks)

Symptom or risk factor	Score weighting

Shortly after your assessment of the patient, the nurse approaches you and informs you that the patient has deteriorated. You return to the patient to find her with obvious right sided hemiplegia and expressive dysphasia.

All her haemodynamic parameters are within normal limits.

She is rushed to the CT scanner and attached below is a single slice of her CT brain. (See props booklet)



(Case courtesy of Dr Prashant Mudgal, Radiopaedia.org)

2. Name the finding seen on this CT image.

(1 mark)

3. List (6) absolute contraindications for thrombolytic therapy for acute stroke.

(6 marks)

- 4. In 2016 the Australasian College for Emergency Medicine commissioned an independent literature review by researchers from the University of Canberra Health Research Institute. What was the conclusion of this review?**

(2 marks)

Question 46 (14 Marks)

A 60 year old woman has presented with vertigo.

1. List 4 causes of vertigo consistent with a peripheral aetiology. (4 marks)

2. List 4 causes of vertigo consistent with a central aetiology. (4 marks)

—

3. List 6 examination findings that would be consistent with a central cause for this patient's vertigo. (6 marks)

QUESTION 47 (12 MARKS)

A 60-year-old lady presents with vertigo.

In column 1, list **4** important diagnoses to consider in any patient that presents with persistent vertigo.

In column 2, list the historical features that would suggest each diagnosis.

In column 3, list the findings on physical examination that would suggest each diagnosis.

Column 1: Diagnosis	Column 2: Historical Features	Column 3: Signs on Examination

Question 48 (19 Marks)

A 60 year old male presents to your ED with a 4 hour history of severe vertigo, which he describes as like the room is spinning. He has vomited multiple times and feels unsteady on his feet. His vital signs are within normal limits.

Questions:

1- List 4 peripheral & 4 central causes of vertigo. (8 marks)

Peripheral	Central

2- List 5 features on examination that would be suggestive of central vertigo. (5 marks)

3- List and justify 3 investigations that could be arranged from the ED to distinguish between central and peripheral causes for vertigo. (6 marks)

Investigation	Justification

Question 49 (18 marks)

A 56 year old female presents to your Emergency Department with acute onset dizziness. She has no significant past medical history and does not take any regular medications and has no allergies. Your assessment is consistent with vertigo.

1. list your differential diagnoses.

(8 marks)

	Differential Diagnoses
Central Vertigo	
Peripheral Vertigo	

2. Fill out the following table with regards to differentiating between central and peripheral vertigo.

(6 marks)

Symptoms	Peripheral Vertigo	Central Vertigo
Onset		
Severity		
Pattern		
Nystagmus		
Aggravation by positioning		
Fatigue of Symptoms / Signs		

3. What are the components of the HINTS exam and its clinical significance of the findings?
(6 marks)

Component of exam	Clinical significance of examination finding

Question 50 (25 marks) _ DOUBLE QUESTION

An 18 year old male is brought to your small rural ED by his parents. He had a VP shunt inserted for hydrocephalus at age 10, with the last revision 3 years ago. He has had increasing headache and vomiting for the last two days and is now confused.

Vital signs are:

T 37.3 degrees (per axilla)

P 114 regular

BP 140/70

GCS 14

- i. List 5 potential causes for this presentation (5 marks)

- ii. List the initial laboratory investigations you would perform including your rationale (10 marks)

Investigation	Rationale

- iii. A CT brain shows marked hydrocephalus. The patient becomes drowsy and has a tonic clonic seizure. Outline your initial five treatment steps (5 marks)

- iv. Despite your treatment, his seizures persist for the next 30 minutes. What five further steps would you take (5 marks)

Question 51 (10 Marks)

A 24 year old man has presented to the ED with a severe headache.

He underwent revision of a ventriculo-peritoneal (VP) shunt 5 days ago in your hospital.

1. List 4 differential diagnoses that you would consider related to his VP shunt.

(4 marks)

2. List 3 investigations you could use to determine the presence of the above diagnoses.
For each investigation, give the abnormality for which you would be looking.
(6 marks)

Investigation	Abnormality

Question 52 (9 MARKS)

A 24-year-old man with a history of hydrocephalus presents with headache, malaise and fever. He has a ventriculoperitoneal shunt.

1. Aside from the peritoneal cavity, list **2** other potential sites for the drainage limb of a ventricular shunt (2 marks).

(1) _____

(2) _____

2. Apart from infection, list **3** causes of shunt obstruction. (3 marks)

(1) _____

(2) _____

(3) _____

3. What is the most commonly cultured micro-organism in CSF shunt infections? (1 mark)

4. What is the role of lumbar puncture in a patient with a ventriculoperitoneal shunt? (1 mark)

His CT is shown below:

5. What is the diagnosis? (2 marks)

