

SAQ 16 (12 marks)

A 78 year old gentleman presents to your major metropolitan Emergency Department after slipping over whilst putting out the bins. X-Rays reveal a left sided sub-capital fractured neck of femur, however, fortunately there are no other injuries.

Your registrar decides to use an ultrasound guided femoral nerve block to help manage the patient's pain and asks for your help supervising.

- a. Using the US image obtained (**see prop booklet**) name the numbered structures in the table below (3 marks)

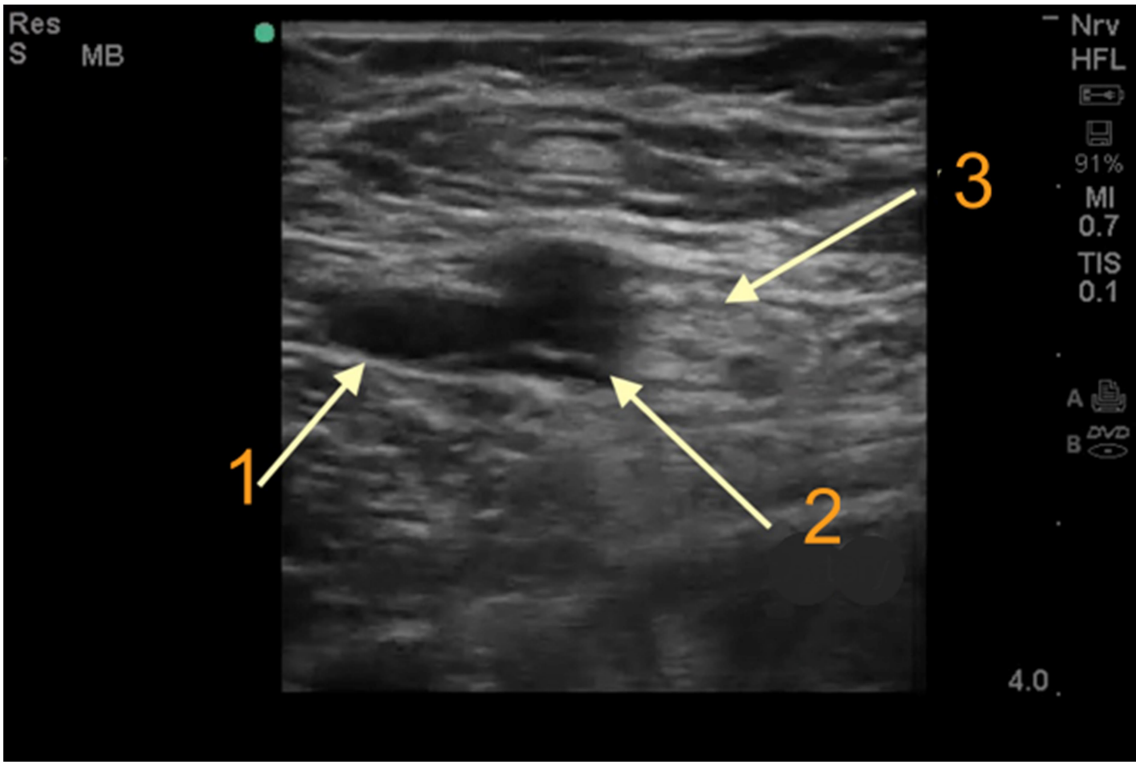
Structure 1	
Structure 2	
Structure 3	

- b. Which structure is most lateral? (1 mark)
-

Candidate number _____

- c. List the steps involved in performing an ultrasound guided femoral nerve block (8 marks)

SAQ 16



QUESTION 2 (15 marks)

A 65 year old male presents with severe sudden onset left flank pain. He is pale, sweaty and agitated.

Vital signs: GCS 14
 Automated BP 160/145mmHg, palpable brachial pulse (but not radial)
 P 130 bpm
 RR 27 bpm
 Central CR 5 sec

- i. List 4 differential diagnoses (4 marks)

- ii. Why is there discrepancy between palpable pulses and automated BP and what is your action (3 marks)

- iii. You suspect a ruptured abdominal aortic aneurysm. List 2 pros and 2 cons for ultrasound and CT imaging (8 marks)

SAQ 1 (9 Minutes)
(Total 18 marks)

Candidate name:

A 28 yr old female is brought to your emergency department following a collapse in the street. She is pale, diaphoretic and complaining of abdominal pain.

1. List the top three differentials for her presentation. (3 Marks)

2. On review her vital signs are:

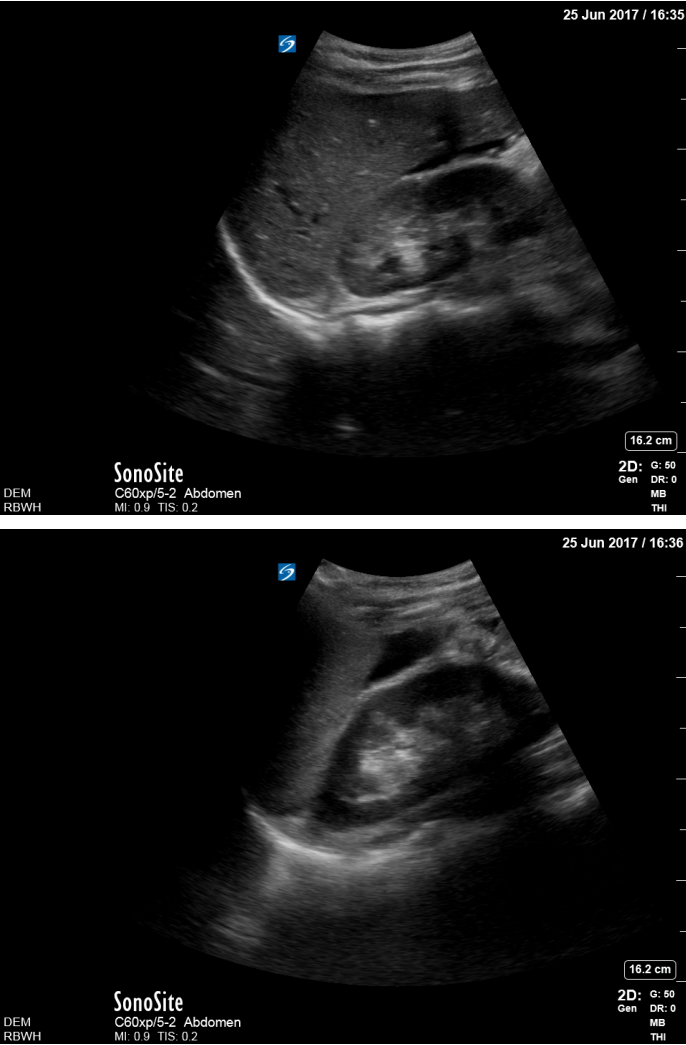
GCS 15/15
HR 110
BP 90/60
sats 100% RA
RR 22

She is tender in her left iliac fossa with peritonism.

List the investigations that should be performed immediately: (3 Marks)

3. You perform a bedside USS. List and interpret the main findings shown. (3 Marks)

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1-

2-

Interpretation:

4. Outline 4 management priorities:

(4 Marks)

5. You have been tasked by your director to outline a local guideline for the use of bedside ultrasound in early pregnancy. What inclusion/exclusion criteria will be included.

(3 Marks, 0.5 for each box)

Inclusion	Exclusion

6. Outline the preferred technique for fetal wellbeing assessment using POCUS in the <14/40 population:

(2 Mark)

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Question 9

A 6 year old Indigenous girl is transferred to your hospital from a rural facility with a right lower lobe pneumonia that is not improving despite 4 days of intravenous benzylpenicillin. On day 4 of admission she has had a repeat chest X ray showing development of a parapneumonic effusion.

Her vital signs are:

T 39.2

P 152

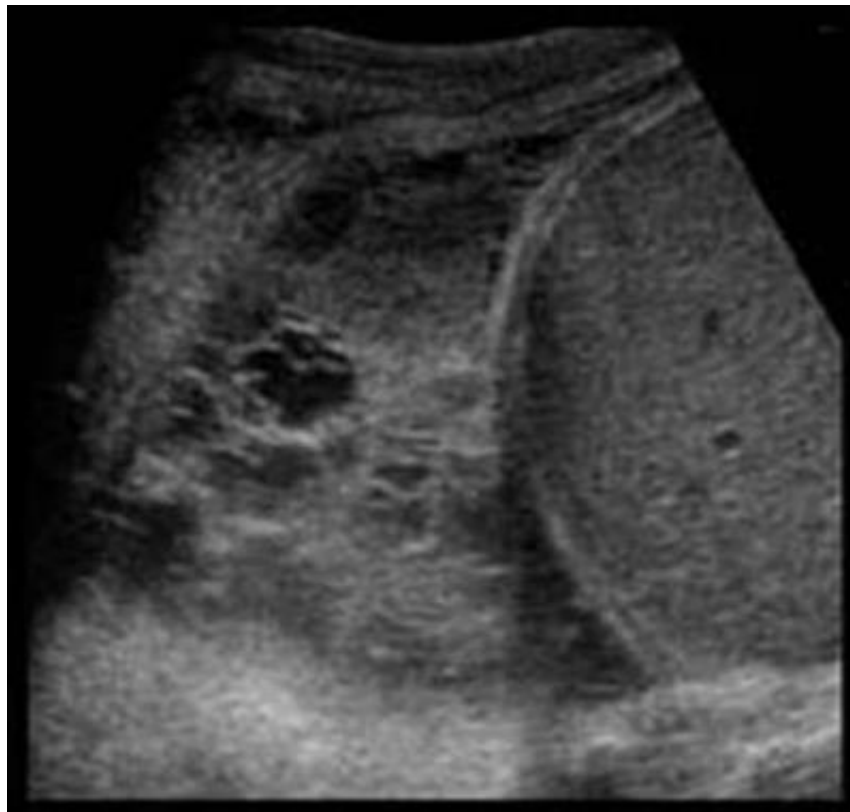
Central cap refill 2.5sec

RR 42

SaO₂ 93% on 3L/min via nasal prongs

What are the biochemical features of a pleural effusion that suggest empyema? (3 marks)

You perform a bedside lung ultrasound and in the right lower zone, you obtain the image below



Candidate Name: _____

Describe 2 important features of this ultrasound (2 marks)

What is the likely diagnosis? (1 mark)

Outline the medical and surgical management for this condition (5 marks)

END OF BOOKLET

Candidate Name: _____

QUESTION 11 (16 marks)

- i. In the pre-hospital setting, list 3 advantages and 3 disadvantages of ultrasound in confirming pneumothorax (6 marks)

- ii. Write brief notes on the pros and cons of needle decompression vs finger thoracostomy (6 marks)

- iii. List 4 clinical signs or symptoms of a tension pneumothorax (4 marks)

Question 17 (15 marks)

You have been tasked with providing an update to the other ED staff on the use of point of care ultrasound (POCUS).

You have been asked to prepare a brief tutorial in the use of ultrasound in cardiac arrest.

(i) List three (3) recognised general uses of POCUS in the assessment of an adult patient in cardiac arrest (3 marks)

i)

ii)

iii)

(ii) In the following table list eight (8) reversible causes of cardiac arrest (8 marks)

(1)	(2)	(3)	(4)
(5)	(6)	(7)	(8)

(iii) For two (2) of the causes listed in Question (ii), list two (2) actual sonographic findings you would look for on your POCUS (4 marks)

Cause of Cardiac Arrest	SPECIFIC Sonographic Finding on POCUS exam

QUESTION 21 (11 marks)

Ambulance officers bring a 68 year old man with severe back pain to your ED. He is shocked (BP 80/50mm Hg). Your trainee has performed a bedside ultrasound and obtained this image.

A CLINICAL IMAGE IS SHOWN IN THE PROPS BOOKLET, PAGE 12

- i. Describe the image (2 marks)

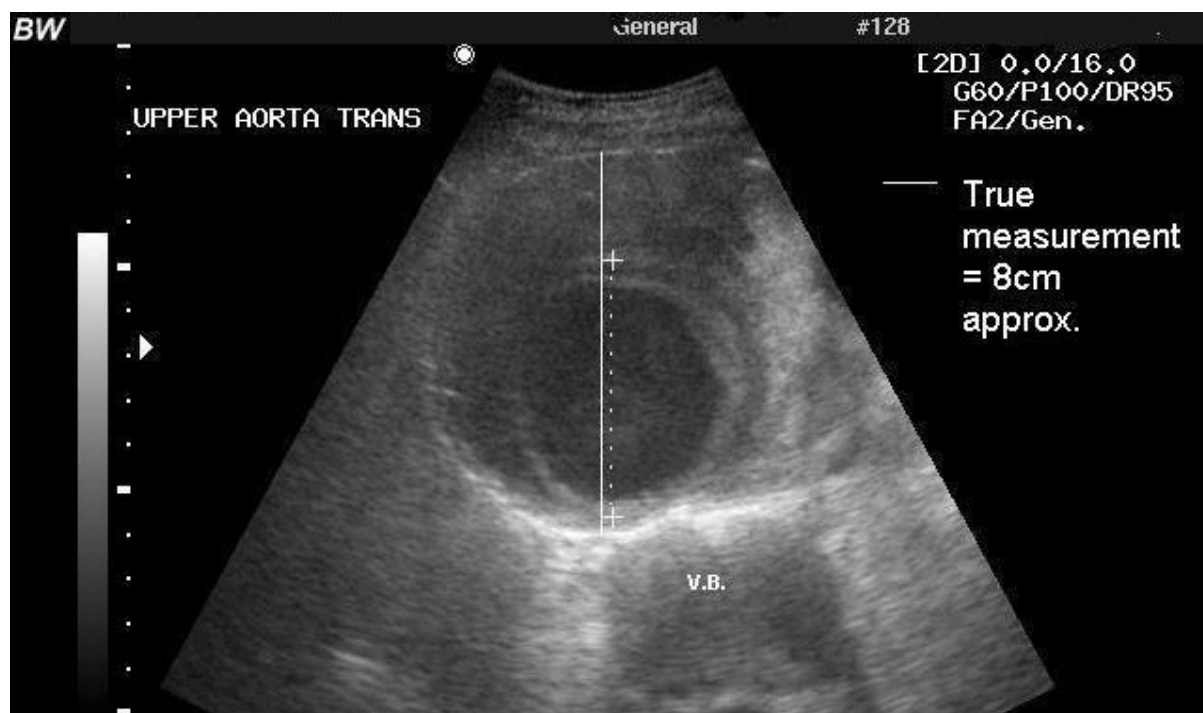
- ii. List the most likely diagnosis and one differential diagnosis (2 marks)

The on-call vascular surgical registrar has asked you to continue to resuscitate the patient and get an urgent CT while he organises theatres.

- iii. What is the role of CT scanning in this setting? (2 marks)

- iv. List the key steps in your ongoing resuscitation and preparation for theatres (5 marks)

QUESTION 21



QUESTION 7 (15 marks)

A 62 year old male is brought to ED by ambulance after falling 4 metres from a ladder, sustaining a head injury. Primary survey is unremarkable apart from a significant head injury. There is an obvious swelling to the left side of his face and it is difficult to open his left eye.

Observations are:

HR 100, BP 100/60, SaO₂ 99% RA, RR 16, GCS 6

- i. You elect to undertake an RSI to secure his airway prior to imaging. Complete the tables below:
- a) List 2 possible sedative drugs and doses you could use to facilitate RSI (4 marks)
- b) List one potential positive and one potential negative aspect of each drug's pharmacodynamics in this patient (4 marks)

Drug		
Dose		
Positive pharmacodynamics specific to head injured patient		
Negative pharmacodynamics specific to head injured patient		

- ii. List 4 positive findings from the 2 axial CT images (4 marks)

2 AXIAL IMAGES OF A CT BRAIN ARE SHOWN IN THE PROPS BOOKLET, PAGE 5 & 6

- iii. Neurosurgery review the patient and are keen to take the patient to theatre urgently. A lateral canthotomy is also suggested. List 3 signs in an unconscious patient that would suggest a need for urgent lateral canthotomy (3 marks)

QUESTION 7



QUESTION 7



SAQ 19: (9 Minutes)
Total 18 Marks

Candidate Name:

A 75yo man presents to your ED with a 2 day history of lower abdominal pain, fevers and malaise. You are unable to obtain more information.

Vital signs:

HR 110
RR 24
Temp 38.2
BP 95/55
GCS E3V4M6 13

A Venous Blood Gas and basic bloods are performed:

pH 7.12
pCO₂ 34
HCO₃ 13
Hb 124
Na 138
K 6.2
Cl 110
Creat 443

FBC:

Hb 121
WCC 15
Plt 4

Chemistry:

Urea 20
Creat 465
ALP 174
GGT 86
ALT 97
AST 372
LDH 1180

His previous liver and renal function tests have all been normal

Questions:

1. For the venous blood gas, calculate, showing your workings, the anion gap (2 marks)

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2. List 3 likely causes of the metabolic derangement in this patient (3 marks)

3. What is the MOST likely unifying diagnosis in this patient, and what are the supporting features? (4 marks)

Diagnosis:
Supportive features:

4. A single slice of the patient's CT scan is shown. List 1 positive and 2 negative features, relevant to this patient's presentation (3 marks)



Positive feature:

Negative Features:

1-

2-

5. List your 3 main management priorities, with justification, for this patient (6 marks)

Management priorities	Justification

SAQ 9: (9 Minutes)
(Total 18 marks)

Candidate Name

A 60 year old lady presents to ED with generalised abdominal pain. She was about to have dinner when she noticed onset of constant severe pain. This is associated with nausea without vomiting.

She denies any change in bowel motions or complaints of melaena. She has been well of late with no fevers, chills, rigors or sweats. She has no complaints of urinary symptoms. She has a past medical history of paroxysmal atrial fibrillation, insulin dependent diabetes mellitus and chronic obstructive airway disease. On clinical examination, she is generally tender with no evidence of peritonism. Bowel sounds were present and normal.

Her regular medications include:

- Aspirin 100mg PO OD
- Lantus 30 units SC NOCTE
- Novorapid 10 - 15 units SC TDS
- Salbutamol INH PRN
- Salmeterol/Fluticasone INH BD

Her observations are;

Temp	37.3 degrees
BP	160/80 mmHg
Pulse	110 bpm
O2 Sats.	92% RA
RR	22 breaths/min
GCS	15/15

I. **Based on the assessment above, what is the MOST LIKELY diagnosis?**

(1 mark)

An initial abdominal XRAY was performed. Refer to prop booklet. (Image A)



II. Based on this XRAY, list 2 relevant positive and negatives. (2 marks)

Relevant positives (0.5 each)	Relevant negatives(0.5 each)

III. List three (3) other differential diagnoses that should be considered? (3 marks)

IV. List five (5) important aspects to the management of this patient. (5 marks)

A CT abdomen has been performed. Refer to prop booklet (Image B)

V. On this axial image, what does the arrow indicate? (1 mark)

VI. List 3 other causes of this CT finding. (3 marks)

VII. Apart from the above CT finding, list 3 other findings on assessment which would indicate poor prognosis. (3 marks)

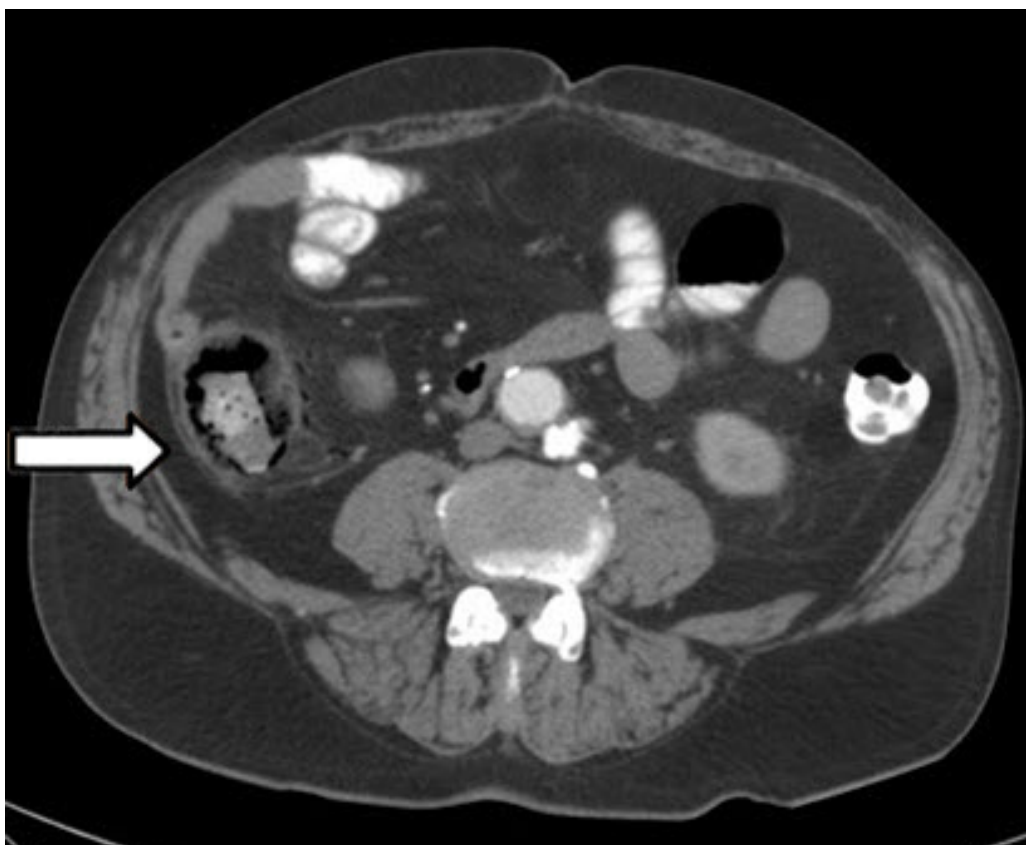


Image B

SAQ 24: (13 marks)

Candidate name:

A 58 year old man riding a pushbike was hit by a car at high speed and is brought into your emergency department.

Upon arrival he undergoes a rapid primary and secondary survey, which shows a tender abdomen and significant lower back pain.

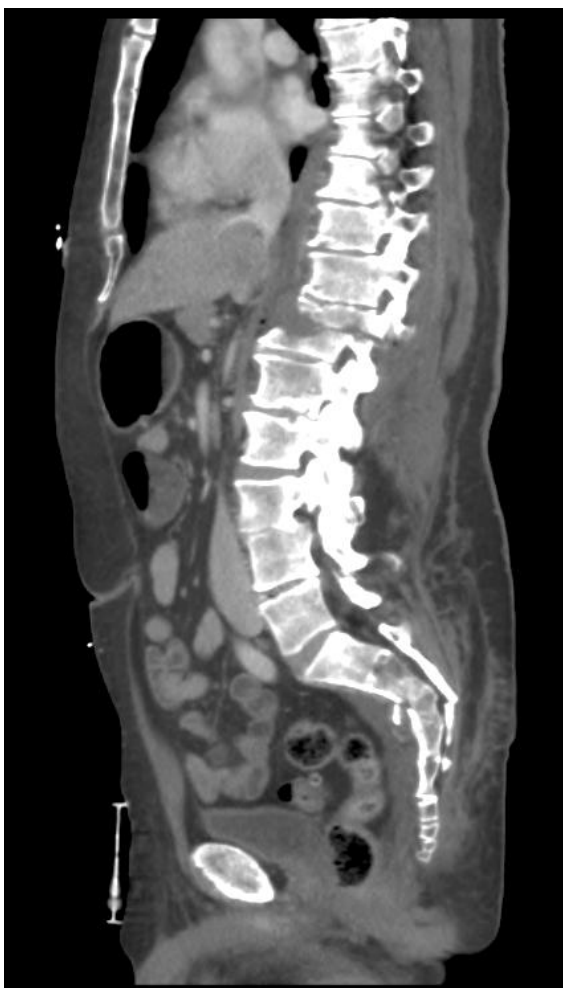
His vital signs are:

GCS 14/15
SBP 75mmHg
HR 80 / min
RR 25
O2 Sat 88% on 15L via NRBM

He has a negative eFAST scan.

The patient has no significant background medical history, is not on any regular medications and has no known allergies.

Below is a single slice CT scan of this patient. **(See props booklet)**



- 1. Name the significant finding on this CT image and any relevant associated features. (4 marks)**

- 2. List (4) clinical features you would expect to find in neurogenic shock. (4 marks)**

- 3. List your management priorities for neurogenic shock (5 marks)**

SAQ 25: (16 Marks)

Candidate name:

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)

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- 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)**

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QUESTION 2 (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 IN THE PROPS BOOKLET, PAGE 3

- ii. Outline 5 management priorities (5 marks)

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

SAQ 2

QUESTION 20 (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)

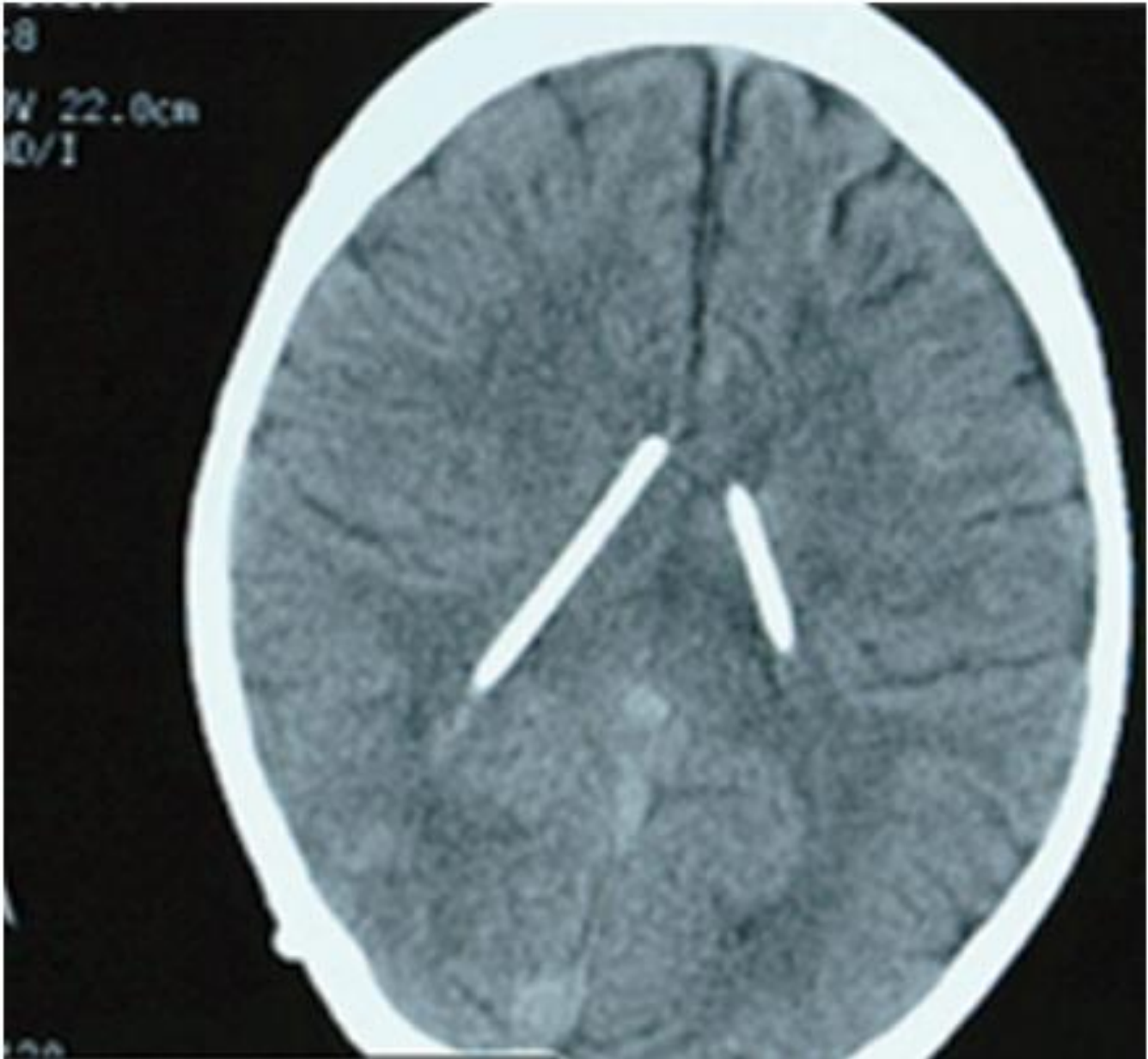
4. What is the role of lumbar puncture in a patient with a ventriculoperitoneal shunt? (1 mark)

See CT on page 25 in separate book

5. What is the diagnosis? (2 marks)

QUESTION 20

Image 1 of 1



SAQ 27: (9 Minutes)
(Total 18 marks)

Candidate name:

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)

Good luck
Oh forgot, you still have the SCQ in the afternoon 😊

Candidate initials: _____

Q22

A 45 year old man has presented to the ED with left sided abdominal pain.

Two images from his abdominal CT scan are provided in the **PROPS BOOKLET**.

1. State your diagnosis.

(2 marks)

2. List 3 supportive radiological findings on the CT images.

(3 marks)

(1) _____

(2) _____

(3) _____

Candidate initials: _____

3. Complete the table by listing your 2 most relevant other investigations with justification for their use. (4 marks)

Investigation	Justification

4. List 4 criteria that would need to be met for discharge of this patient. (4 marks)

- (1) _____

- (2) _____

- (3) _____

- (4) _____

SAQ 7: (15 marks)

Candidate name:

A 60 year old male patient presents to your emergency department with chest pain.
A CT of his chest is performed and a slice has been reproduced below.

His CT is attached below: **(See props booklet)**



1. What is the diagnosis ?

(1 mark)

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2. List 5 risk factors for this condition.

(5 marks)

3. List 5 radiological features on a plain CXR that may be seen with this diagnosis. (5 marks)

4. List 4 immediate management priorities for this condition. (4 marks)

SAQ 13 (12 marks)

A 34-year old woman presents to the ED. She is complaining of sudden onset of shortness of breath. She is 32 weeks pregnant and G3P2. There are no other reported symptoms.

She is placed in a cubicle with cardiac monitoring.

Her vital signs are:

HR	120	bpm
BP	145/95	mmHg
RR	28	/min
SpO2	93%	on room air
Temp	37.6	°C

- a. A 12-lead ECG is performed (**see prop booklet**). List two (2) abnormal findings from this ECG (2 marks)

Candidate number _____

- b. Your provisional diagnosis is pulmonary embolus. Please list one (1) “pro” AND one (1) “con” for each of the following tests (8 marks)

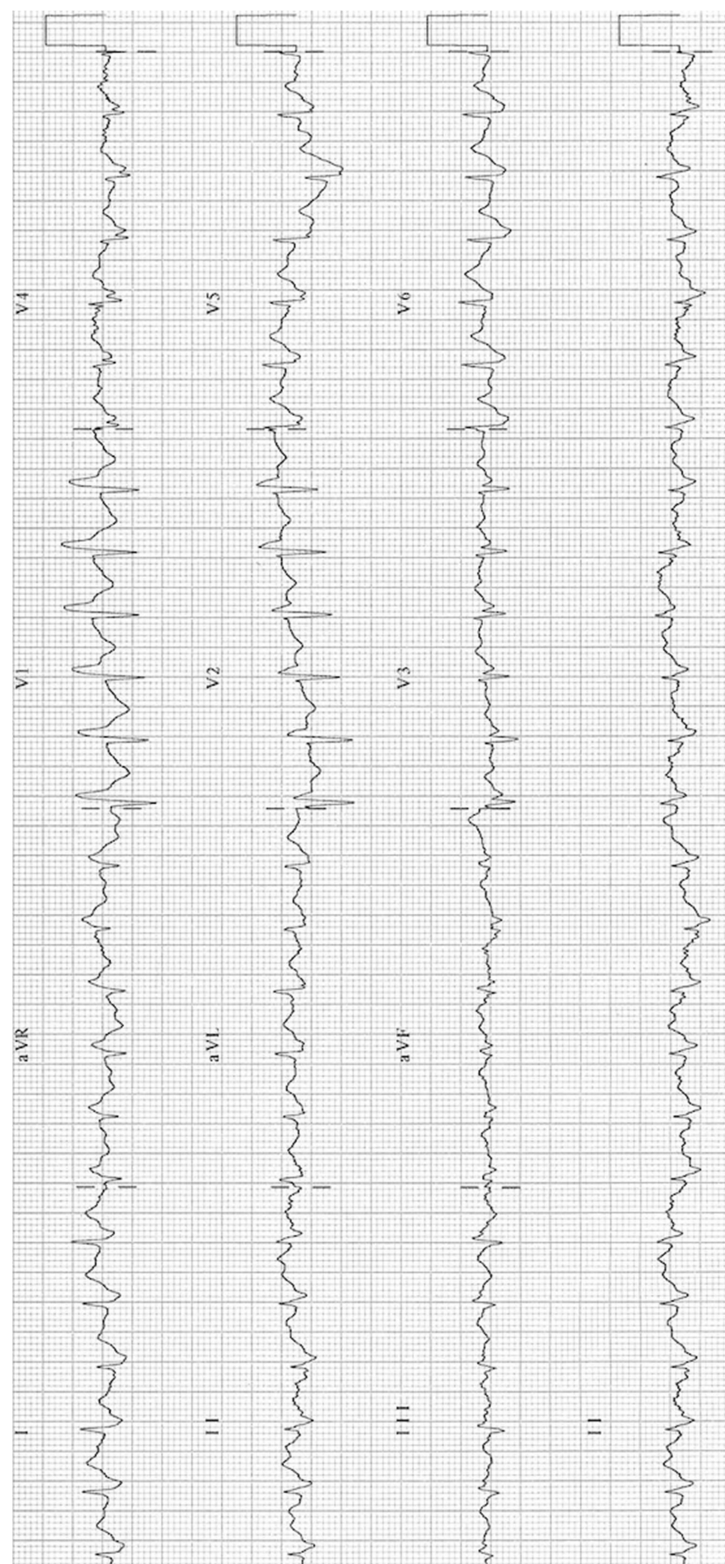
Test	Pros	Cons
D dimer		
Lower Limb Doppler US		
VQ scan		
CT pulmonary angiogram		

- c. A CTPA is performed. Review the two axial slices from the scan (**see prop booklet**) and list one (1) abnormal finding from each image (2 marks)

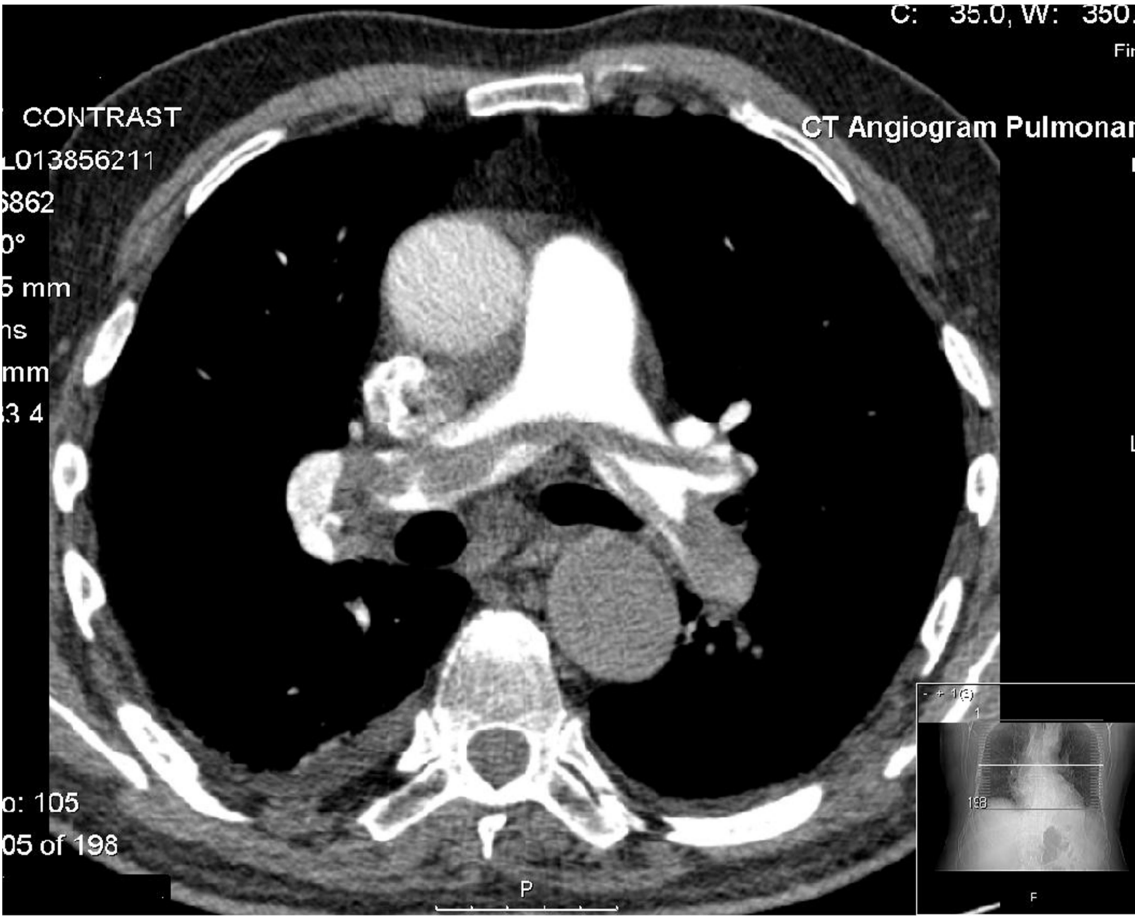
	Abnormal finding
Axial slice 1	
Axial slice 2	

SAQ 13

ECG



CTPA axial slice 1 of 2



CTPA axial slice 2 of 2

