

SAQ 1

An 84 year old man is brought to your emergency department following a high speed car accident. He has signs of multiple left rib fractures. Two hours after arriving in the emergency department he becomes more breathless and distressed.

His observations are:

- GCS 14
- HR 75 bpm
- BP 100/60
- RR 24

His arterial blood gas on room air : results are below

			Reference Range
pH	7.14		(7.35-7.45)
pCO ₂	60	mmHg	(35-45)
pO ₂	114		
HCO ₃ ⁻	17	mmol/L	(21-28)
Lactate	1.4	mmol/L	(< 2.0)
FiO ₂	50	%	
Na ⁺	139	mmol/L	(135-145)
K ⁺	4.8	mmol/L	(3.2-4.3)
Cl ⁻	116	mmol/L	(99-109)
Glucose	11.3	mmol/L	(3.0-6.0)

a. List 4 key abnormalities on the above blood gas (2 Marks)

b. Calculate the patient's expected pCO₂ and show the formula used (2 Marks)

c. Calculate the patient's A-a gradient and show the formula's used (2 Marks)

d. List 8 potential causes for the patient's clinical picture and ABG result (4 Marks)

SAQ 2

An 18 year old man presents with increasing left hand pain 36 hours after an injury. He is unable to recall the details of how the injury occurred. A clinical image of the patient's left hand is shown on the next page.

a. Describe the clinical image (3 Marks)

b. What is your assessment? (3 Marks)

c. Outline your management (5 Marks)



SAQ 3

A 40 yr old female is brought to your Emergency Department following a 2.5g propranolol overdose taken 3 hours ago.

Vital signs:

Pulse 45
BP 82/45
RR 16
Temp 36.8 °C
GCS 13 (E=3, V=4, M=6)
BSL 6.7 mmol/L

a. Outline a step-wise approach to the patient's bradycardia & hypotension? (4 Marks)

b. Clinical toxicology have been consulted and advised you to commence High Dose Insulin (HDI) therapy.

How is HDI administered? (4 Marks)

c. What are the potential complications associated with HDI therapy? (2 Marks)

SAQ 4

A 72 year old diabetic female is brought to your Emergency Department by ambulance. She complains of feeling generally unwell for the last 2 days with abdominal pain, cough and fevers.

Vitals signs:	Pulse	121
	BP	89/58
	RR	28
	Sats	89% Room Air
	Temp	39.8 °C

a. List the key steps in this patient's management? (3 Marks)

b. List your resuscitation goals for the first 6 hours? (4 Marks)

c. The patient requires inotropic haemodynamic support. Which inotrope should be used? (1 Mark)

d. The patient is intubated for respiratory failure. List the four key components of your ventilation strategy for this patient ? (2 Marks)

SAQ 5

A 30 year old man undergoes a lumbar puncture in the emergency department for investigation of fever, headache and vomiting. His cerebrospinal fluid and serum glucose results are as follows:

			Reference Range
Opening pressure	220	mm H ₂ O (supine)	(50-200)
Colour:	mildly turbid		
WCC	400	/ml (predominance of lymphocytes)	(0-2)
RBC	10	/ml	(0)
Protein:	1.2	g/L	(0.2-0.5)
CSF glucose	2.2	mmol/L	
Gram stain	No organisms seen		
Serum glucose	6.2	mmol/L	(3.0-8.0)

a. List 4 key features of the patients CSF sample results (4 Marks)

b. List 6 potential complications associated with lumbar punctures (6 Marks)

c. List 5 potential causes from this patient's CSF result (5 Marks)

SAQ 6

A 35 yr old male has been brought to your Emergency Department complaining of auditory hallucinations. He has been seen directly by the Psychiatry team who wish to admit him as an involuntary patient.

a. What are the essential features of mental illness? (2 Mark)

b. What are the criteria for admission and detention as an involuntary patient under a Mental Health Act? (4 Marks)

c. Following referral to hospital under Form 1 under what time frame must a patient be seen by psychiatrist before they are free to leave the hospital. (1 Mark)

d. You have been asked by the Psychiatry registrar to medically clear the patient prior to their admission to the Mental Health Unit. What are the goals of medical clearance? (2 Marks)

SAQ 7

A 19 yr old female presents to your Emergency Department complaining of gradual onset of Right Iliac Fossa pain.

Vital signs:

HR 80

BP 128 / 62

RR 16

Sats 99% (Room air)

Temp 36.5 °C

a. List six potential gynaecological causes for the patient's pain. (6 Marks)

b. An intern is about to review the patient. List four key topics that should be covered in the clinical history (4 Marks)

c. Following clinical review you make a diagnosis of ovulatory pain (Mittelschmerz). List your management options. (1 Mark)

d. Prior to discharge the intern tells you the patient's mother has arrived and is unhappy with the diagnosis and management plan. Outline how you would deal with this situation (4 Marks)

SAQ 8

A 60 yr old female presents to your Emergency Department with a one-day history of fever and right arm discomfort. She is currently undergoing chemotherapy.

Her vital signs are:

HR 95 bpm
BP 120 / 75
Temp 38.5 °C

a. Describe the clinical image (4 Marks)

b. List the differentials for this patient's presentation (5 Marks)

SAQ 9

A 65yr old female with a history of depression and osteoporosis presents with two weeks of increasing confusion and malaise.

Vital signs on arrival:

GCS 13
HR 100 bpm
BP 130/85
Temp 36°C

Her blood results are below:

			Reference Range
Na ⁺	144	mmol/L	134-146
K ⁺	4.2	mmol/L	3.4-5
Cl ⁻	98	mmol/L	98 - 106
HCO ₃ ⁻	38	mmol/L	22-32
Urea	17.2	mmol/L	3-8
Creatinine	258	micromol/L	45-90
Glucose	5.4	mmol/L	3.5-5.5
Calcium	4.47	mmol/L	2.1 – 2.5
Phosphate	0.92	mmol/L	0.75 – 1.4
Albumin	40	g/L	35 - 50

a. List 3 key abnormalities on this patient's blood results (3 Marks)

b. List 3 potential causes of the patient's main problem (3 Marks)

c. Outline key steps in the management of her hypercalcaemia (4 Marks)

SAQ 10

A 23 year old male with a decreased level of consciousness is being assessed in your ED. His arterial blood gas results with reference ranges are:

			Reference Range
FIO ₂	0.3		
pH	6.9		(7.35-7.45)
pCO ₂	10	mmHg	(37-45)
pO ₂	147	mmHg	(80-95)
Bicarbonate	2	mmol/L	(22-28)
Base excess	-30		(-3 - +3)
O ₂ saturation	98	%	(> 95)
Lactate	7.1	mmol/L	(< 1.3)
Na ⁺	140	mmol/L	(134-146)
K ⁺	6.0	mmol/L	(3.4-5.0)
Cl ⁻	105	mmol/L	(98-106)
Creatinine	0.1	mmol/L	(0.06-0.12)
Urea	4.8	mmol/L	(3.0-8.0)
Glucose	5.2	mmol/L	(3.5-5.5)
Osmolality	360	mOsm/L	(275-295)

a. List 4 key abnormalities on this patient's gas (4 Marks)

b. Calculate the patient's anion gap and write the formula used (2 Marks)

c. Calculate the patient's osmolar gap and write the formulas used (3 Marks)

d. List 6 causes for a raised osmolar gap (6 Marks)
