

Fex Net Collated Questions:

Endocrinology

1. DKA
2. DKA
3. DKA
4. DKA/HHS
5. Thyroid
6. Thyroid
7. Thyroid
8. Confusion
9. Confusion
10. Neck Mass
11. Thyroid
12. Collapse

Question 1

A 5 year old boy has been brought to your ED with a 2 day history of fever, cough and lethargy.

He has the following vital signs:

Temp	38.8	degrees
Pulse	145	/min
BP	90/40	mmHg
RR	40	/min
O2 sats	91%	room air

Examination of his chest reveals decreased breath sounds and crackles in the right lung base.

He has had a venous blood gas taken:

pH	7.18		(7.35 – 7.45)
pCO2	21	mmHg	(35 – 45)
pO2	25	mmHg	(80 – 100)
HCO3-	8	mmol/L	(22 - 32)
BE	-18.5	mmol/L	(-3 - +3)
Na	140	mmol/L	(135 – 145)
K	5.7	mmol/L	(3.5 – 5.0)
Cl	98	mmol/L	(100 – 110)
Glucose	38	mmol/L	(3.0 – 7.8)

1. In point form, provide explanation for all the abnormalities shown on the VBG.

(8 marks)

2. What is your diagnosis, based on all the clinical information?

(2 marks)

3. List your 5 main treatment steps, with drugs and doses where appropriate.

(5 marks)

Question 2

A 28 year old man with type 1 diabetes has presented to the ED with vomiting for 2 days.

His venous blood gas is given below.

Venous blood gas

pH	7.41		(7.35 – 7.45)
pCO ₂	36	mmHg	(35 – 45)
HCO ₃	22	mmol/L	(18 – 26)
BE	2.2	mmol/L	(-3 - +3)
Na	132	mmol/L	(135 – 145)
K	5.1	mmol/L	(3.5 – 4.5)
Cl	82	mmol/L	(100 – 110)
Glucose	42	mmol/L	(3.0 – 7.8)
Lactate	3.0	mmol/L	(0.5 – 2.2)
Creatinine	367	umol/L	(73 – 108)

1. Give the abnormalities on the blood gas, including likely causes of each abnormality identified. (8 marks)

The patient's vital signs are:

GCS	15	
Pulse	120	/min
BP	100/70	mmHg
RR	22	/min
O2 sats	99%	room air

2. List your management steps. Include doses and end-points where appropriate.
(8 marks)

QUESTION 3 (10 marks)

A 20 year old male presents with a 3 day history of lethargy and generalised malaise. He is confused and looks unwell. The following venous blood tests are obtained.

pH	7.08		
pCO ₂	20	mmHg	(35-45)
HCO ₃	16	mmol/L	(22-28)
BE	-22	mmol/L	(-3-3)
Lactate	9	mmol/L	(<2.2)
Glucose	44	mmol/L	(3.9-5.8)
K	2.7	mmol/L	(3.5-4.2)
Na	160	mmol/L	(135-145)
Cl	124	mmol/L	(95-110)
Creatinine	70	micromol/L	(60-110)
Urea	5.3	mmol/L	(3-8)

- i. Interpret the above results, and show any relevant calculations (5 marks)

- ii. Outline your immediate management priorities (5 marks)

Question 4

A 78 year old woman has presented to the ED after a 3 day history of lethargy. She has been febrile and has complained of dysuria and right flank pain.

Her past medical history includes type 2 diabetes mellitus, congestive cardiac failure and hypertension.

Her blood results are given below.

			Ref Range
Na	119	mmol/L	(135-145)
K	8.4	mmol/L	(3.5-4.5)
Cl	82	mmol/L	(100-110)
HCO ₃	6	mmol/L	(22-32)
Glucose	66.6	mmol/L	(3.0-7.8)
Urea	15.7	mmol/L	(3.1-7.1)
Creatinine	298	umol/L	(70-120)

Question 4 (9 min)

A 78 year old woman has presented to the ED after a 3 day history of lethargy. She has been febrile and has complained of dysuria and right flank pain.

Her past medical history includes type 2 diabetes mellitus, congestive cardiac failure and hypertension.

Her blood results are given in the **PROPS BOOKLET**.

1. Give explanations for the following abnormalities. Include formulae where asked:

HCO₃ 6 (3 marks)

Formula: _____

Glucose 66.6 (1 mark)

Candidate initials: _____

Na 119 (2 marks)

Formula: _____

K 8.4 (1 mark)

Urea 15.7 and creatinine 298 (2 marks)

Formula: _____

On examination, the patient has the following vital signs:

GCS	13	E3 V4 M6
Pulse	120	/min
BP	95/55	mmHg
Temp	38.9	degrees
RR	20	/min
O2 sats	99%	room air

Her abdomen is soft with right renal angle tenderness.

ECG shows sinus tachycardia with tall peaked T waves and broad QRS complexes.

2. State 6 steps in your management of this patient. (6 marks)

- 1) _____

- 2) _____

- 3) _____

- 4) _____

- 5) _____

- 6) _____

Question 5

A 45 year old woman has been referred to the ED with hyperthyroidism, based on abnormal thyroid function tests (TFTs) performed in the community.

1. List 4 features of your examination that would be consistent with thyrotoxicosis.

(4 marks)

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

2. Complete the table by indicating the expected TFT results in primary and secondary hyperthyroidism. (2 marks)

	T4	TSH
Primary hyperthyroidism		
Secondary hyperthyroidism		

3. List 3 different causes of primary hyperthyroidism. For each, give a discriminatory examination finding that would suggest its presence. (6 marks)

Cause	Examination finding

Question 6 (11 marks)

A 32 year old female has been brought in to your tertiary ED with a 2 days history of increased drowsiness, confusion and hypothermic at 33C. Her mother has attended with her and reports she has not been taking any of her medications for the last 1 month.

Medications listed are;

Sodium Valproate 500mg BD

Thyroxine 100mcg OD

Methadone 100mg OD

GCS 14

Temp 33C

HR 66 BP 92/62

RR 16 Sats 95% on 1L NP

Her VBG is below

pH 7.387

PO2 15.3 mmHg

PO2 35.8 mmHg

HCO3 21.1 mmol/L

Hb 129 g/L

Cr 73 micromol/L

Na 130 mmol/L

K 4.0 mmol/L

Cl 105 mmol/l

iCa 0.66 mmol/L*

Glucose 10.4 mmol/L

Lactate 2.5mmol/

You suspect a myxoedema coma.

Provide 4 differential diagnoses for this patient apart from Myxoedema coma (4 marks)

Her Thyroid function tests are below;

TSH 25.0 Miu/L (H)

Thyroxine free <3pmol/L (L)

Triiodothyronine Free <1.5pmol/L (L)

Candidate Name: _____

Excluding medication non-compliance, list 4 possible triggers for this presentation (2 marks)

No other trigger or cause for the patient's presentation has been found and you are confident it is due to omitted medication causing a myxoedema coma.

Outline your treatment of this patient in the ED (5 marks)

QUESTION 7 (14 marks)

A 42-year-old man is brought to your ED by ambulance with acute confusion. His health has been deteriorating for three months, with tiredness & 10kg weight loss despite an enormous appetite. He is on no medications.

Observations on arrival are:

HR 140

BP 180/100

RR 40

SaO₂ 100%

GCS 13

Temp 38.5

BSL 10

- i. List the most likely diagnosis (1 mark)

- ii. List 4 differential diagnoses (4 marks)

iii. List 4 problems that may precipitate the most likely diagnosis (4 marks)

iv. List 5 treatment priorities in ED (5 marks)

QUESTION 8 (16 marks)

A 32 year old man is brought to your ED by ambulance with acute confusion, recent tiredness, 10 kg weight loss and heat intolerance. He appears to have bulging eyes. Vital signs are:

HR 146 bpm
BP 180/110 mmHg
RR 40 bpm
SaO₂ 100 % RA
GCS 13
Temp 38.5 deg C

- i. State the most likely diagnosis and give 4 differential diagnoses for this presentation (5 marks)

- ii. Provide details of 3 specific pharmacological treatments for this condition and the role of each treatment (6 marks)

iii. List 5 other management and disposition priorities (5 marks)

Question 9 (12 marks)

A 36-year-old lady is brought in by her husband who is concerned that she is 'not herself'. Her GP has been investigating her for irritability, weight loss, palpitations and fatigue. The following tests are available:

TSH 0.2mIU/L (0.4-5mIU/L)
T4 20mcg/dL (5-11mcg/dL)

a). Provide a diagnosis and list four (4) possible aetiologies . (5 marks)

On assessment she appears restless and anxious. A set of vital signs are performed; her heart rate is 160 bpm, BP 91/57 mmHg, temperature 38 degrees Celsius.

b). List six (6) differential diagnoses that must be considered. (3 marks)

You conclude that her current symptomatology is caused by her thyroid disorder.

c). List and prioritise the medical treatments required, with a justification (4 marks)

Treatment	Justification

Question 10 (12 Marks)

A 30 year old male is referred by his GP for an enlarging anterior neck mass suggestive of a goitre. He is tremulous and tachycardic.

1. What is Pemberton's sign?

(2 marks)

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2. List 5 possible precipitants of thyroid storm

(5 marks)

3. What are the 5 main aims of thyroid storm treatment? Give an example for each
(5 marks)

Aims	Example

QUESTION 11

A 48 year old woman with a history of thyrotoxicosis presents with fever and confusion.

You are concerned she may have thyroid storm.

1. What are **3** diagnostic criteria for thyroid storm? (3 marks).

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

2. What factors may have precipitated this episode? Give **6** examples (3 marks).

- i. _____
- ii. _____
- iii. _____
- iv. _____
- v. _____
- vi. _____

3. Describe **4** specific treatments for thyroid storm and their mechanism of action (4 marks)

- i. _____

- ii. _____

- iii. _____

- iv. _____

Question 12

A 28 year old office worker presents by ambulance following a conscious collapse at work. She had been unwell at work that day.

On arrival, her vital signs are:

HR 160 -190

BP 190/110

Temp 39.5

RR 30

Sats 92% on RA

GCS 14/15

BSL 11.6

She is confused, tremulous and anxious.

There is mild pitting oedema

I. List five (5) differential diagnoses other than Thyroid storm?

(2.5 Marks)

II. The husband arrives and reports a recent history of a neck lump which is due to be investigated. Closer examination reveals a diffuse multi-nodular goitre. What five (5) underlying conditions can cause thyrotoxicosis?

(2.5 Marks)

III. What are three (3) clinical findings with thyrotoxicosis? (3 Marks)

IV. List four (4) immediate treatment priorities with drug names and doses? (4 Marks)
