

Monash Practice Exam - Environmental medicine (Based on SCE 2012.2)

A 22 year old marathon runner is brought in to your Emergency Department. He has collapsed and has only had basic first aid.

On arrival is observations are as follows:

GCS	11	(E3, V4, M4)
Temp	41.5	°C
HR	140	bpm
BP	85/40	mmHg
SaO2	98%	on room air

Question 1 List 6 differential diagnoses. (3marks)

Env - **heat stroke**, heat exhaustion (low GCS suggests heat stroke)

Metab - dehydration (likely), hypoglyc, thyroid storm, hyponatraemia

Inf - serious bacterial infection including CNS

Neuro - seizure, ICH

Trauma - CNS

Drug ingestion/withdrawal - amphet, anticholinergics, thyroxine, NMSyndrome

No marks : haemorrhagic shock/snake envenomation/PE/syncope/anaphylaxis!

Must have heat stroke to pass, 2/3 FACEM required answer

Question 2 Outline your 4 initial treatment aims (4 marks)

1. **Rehydration** - cool IV fluids 20ml/kg, rapid infusion (monitor for pulmonary oedema). Ensure adequate circulating blood volume.

2. **Cooling** - needs urgent cooling. Describe suitable method of cooling AND target core temp

Exposure, external cooling

3. Support airway/breathing, Consider ETT - modified induction with drugs/doses

4. Monitoring - continuous core temp, ECG, Urine output, Electrolytes, BSL

5. Seek and treat alternative causes - look for : source of sepsis, trauma/drugs

Must have Rehydration and cooling. 3/4 FACEM required answer

Some blood tests are performed and results given below:

Hb	180	g/L	(115 - 165)
WCC	23	$\times 10^9/L$	(3.5 - 11)
Plt	45	$\times 10^9/L$	(150 - 450)
Na	145	mmol/L	(135 - 145)
K	5.6	mmol/L	(3.5 - 5)
Urea	20	mmol/L	(2 - 7)
Creatinine	400	umol/L	(60 - 110)
CK	26,000 IU/L		(60 - 220)

Question 3. List three (3) abnormalities and explain their significance. (3 marks)

High Ur/Creatinine acute renal impairment

High CK rhabdo

High K+ ARF/

Elevated Hb Dehydrated

Elevated WBC Dehydrated/infection

Low plt tcp/DIC/coagulopathy

Must have 2 BOLD to pass. 3/3 FACEM required answer.

Failure to note ARF AND Rhabdo = 1.5/3 maximum mark.

Question 4. Describe your next three (3) management steps? (3 marks)

IV fluid – continue cold N/S, monitor volume status

IDC : urine output (1-2ml/kg/hr), urinary alkalinisation with bicarb, monitor pH

ICU admission and Dialysis if not improving

Correct coagulopathy/blood products, monitor U+E

Continue active cooling

Airway support/ETT – modified RSI with appropriate drugs and doses

Empiric IV antibiotics

Must have 2/3 bold to pass. 2/3 FACEM required answer.

Summary

Overall Pass required 10/13 - consultant level answer. PASS rate = 14/45

Don't list 3 different drugs as separate causes. Heroin OD pre marathon.....!!! Methamphetamine more likely.

Modifiers - RSI in this patient needs modification/qualification - consultant level answer. RSI is a dangerous thing to write without modifiers.

What fluid, how much, what urine output,

How would you cool - not just "cool patient". Listing 3 different cooling methods = 1 mark not 3. Ice bath not practical for hypotensive alt consc state pt, pleural/bladder lavage with no mention of icepacks or cold fluids not consultant level answer.

List in order of priority/likelihood. If this patient has ARF and Rhabdo and all you mention is their Hb/WBC/Plt you have missed the point!

Filling in 3 abnormalities in each box (for the bld test question) - only looked at the first abnormality in each box.

Marks

5/13	1
6/13	1
6.5/13	3
7/13	2
7.5/13	3
8.5/13	4
8.5/13	5
9/15	8
9.5/13	4
10/13	6
10.5/13	3
11/13	2
11.5/13	2
12/13	1