

Monash 2020.2 SAQ - Feedback

Question 9 (18 marks)

A 78 year old man was brought to the Emergency Department with confusion and lethargy. His initial point of care testing (POCT) results is shown below:

POCT:	Na ⁺	118	(mmol/L)
	K ⁺	4.9	(mmol/L)
	iCa	1.21	(mmol/L)
	Hct	40	(%PCV)
	Hb	10.1	(g/dL)

- i) List six (6) other laboratory investigations that would help to identify the cause for the most significant abnormality (6 marks)

1. Glucose (MANDATORY)
2. Urine Na⁺
3. Urine Osmolality
4. Serum Na⁺
5. Serum Osmolality
6. Most recent serum Na⁺ (for chronicity)
7. Thyroid Function
8. Cortisol Levels

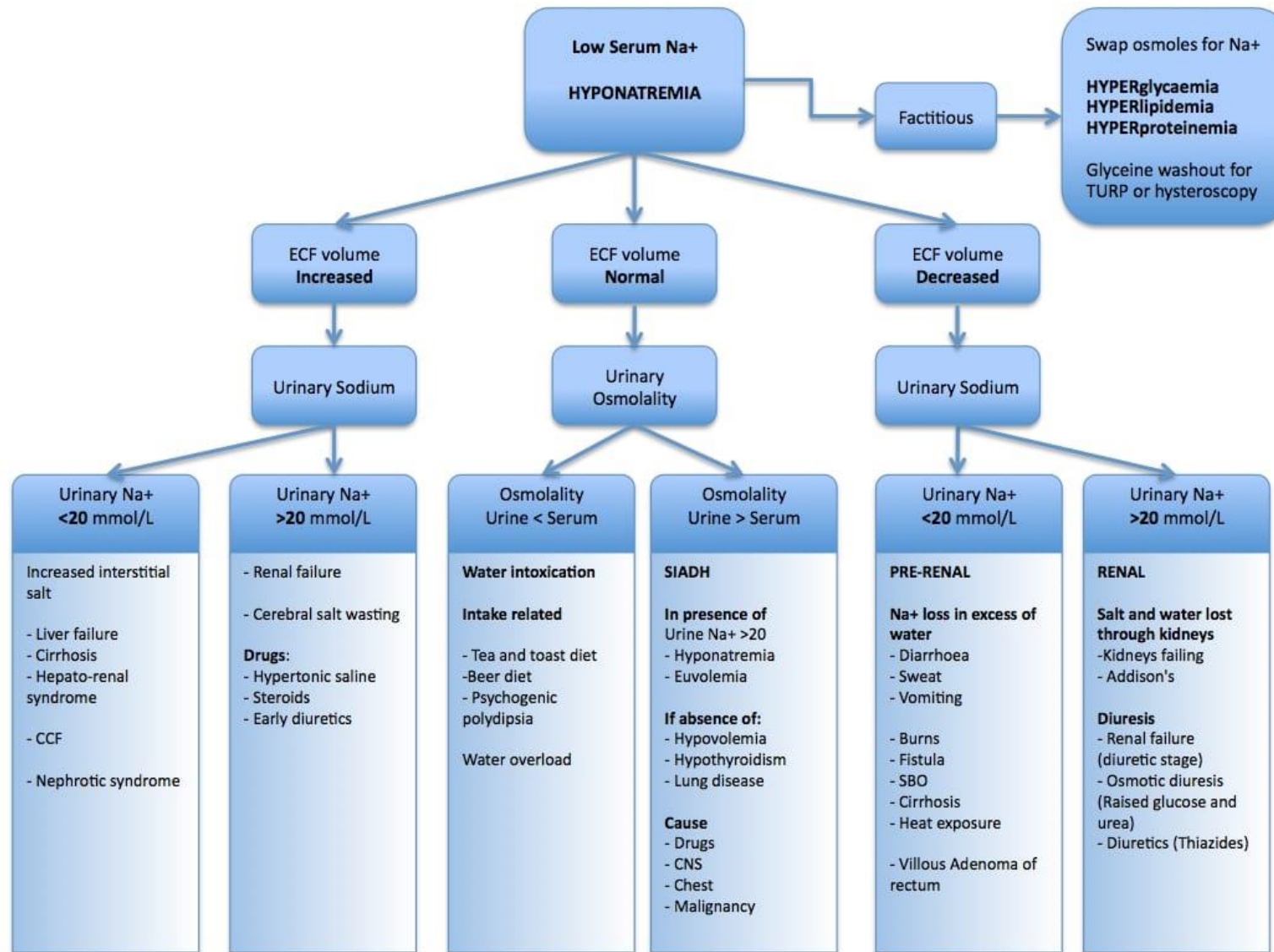
- To get full marks, Glucose had to be mentioned. That is, if 6 other correct answers were listed but glucose was not mentioned, the maximum mark that could be allocated was 5 marks.
- Please only write one answer per line. Some candidates wrote 2 responses on the one line. This meant that other answers written on the 6th line were ignored, even if they were correct.
- Renal function was not accepted as a correct answer. However, 'U&Es' was. The reason being that renal function refers to creatinine, urea and eGFR. It does not refer to the electrolytes.

Question 9 (continued)

- ii) Complete the table below listing a laboratory investigation that would help distinguish the cause for this patient's abnormal result depending on the patient's clinical volume status. For each laboratory investigation, list two (2) causes for an elevated and reduced result. (9 marks)

Volume Status	Hypovolaemia	Euvolaemia	Hypervolaemia
Laboratory Investigation (1 mark for each test)	1. Urinary Na ⁺	1. Serum Osmolality	1. Urinary Na ⁺
Elevated Laboratory Result (0.5 mark for each cause)	<ul style="list-style-type: none"> • Diuretics • Mineralocorticoid deficiency • Na Losing Nephropathy 	<ul style="list-style-type: none"> • Hyperlipidaemia • Hyperproteinaemia • Hyperglycaemia 	<ul style="list-style-type: none"> • Acute oliguric renal failure • Chronic Renal Failure
Reduced Laboratory Result (0.5 mark for each cause)	<ul style="list-style-type: none"> • GIT losses • Skin losses • 3rd Space Losses (pancreatitis, peritonitis) 	<ul style="list-style-type: none"> • SIADH • Psychogenic Polydipsia • Severe Hypothyroidism • Drugs • Glucocorticoid Deficiency 	<ul style="list-style-type: none"> • Nephrotic syndrome • CCF • Liver Failure

- This sub-question was answered very poorly
- I am not sure that in the real exam that you will have a question that will set up a second question that relies on the answer to the first question. That is if you wrote, the wrong test for a volume status, you were given no marks even if the causes were correct for the wrong test that would differentiate the causes. i.e. no marks were awarded for consequential errors.
- The diagram below is copied from Life in the Fast Lane. Please note that this flow chart uses urine osmolality rather than serum osmolality for euvolaemic states.



Question 9 (continued)

iii) The patient has deteriorated and begun to convulse. Other than routine seizure management, what specific treatment should be instigated and how should it be administered? (2 marks)

1. Hypertonic (3%) Saline (1 mark)
2. 100ml IV over 10 min and repeat as needed up to a max of 3 infusions.

(Volume = 0.5 Mark and Rate = 0.5 mark)

- Please give the volume that you will give this patient. Do not give ml/kg doses for adults unless it is imperative e.g. Gentamicin doses.

Tintinalli (8th edition) P97, clearly states 100 mls.

iv) What is the endpoint aim of this treatment? (1 mark)

1. Aim for Na⁺ 120-125 mmol/L
2. Rate of correction should not be > 10 mmol/L in first 24 hours

(1 mark for either)

- Many candidates wrote "seizure cessation". This is not consultant level knowledge and did not score any marks. Any health care worker should be able to specify this end point. This question is asking for consultant level knowledge. i.e. what Na⁺ level are you aiming for with your acute treatment?