Electrolyte replacement 2022-2023 – Answers

Background	
1. List the 5 most common electrolytes in the body (2.5)	• Potassium • Sodium • Magnesium • Calcium • Phosphate
2. Potassium is mainly intracellular (1)	True

3. List 3 prescribing principles to be considered in electrolyte replacement (1.5)	• What is the current deficit / excess?
	• What is the cause of the imbalance?
	• Is there ongoing loss / retention?
	• (In cases of deficit)
	• Route of administration
	  ○ Is oral absorption sufficient?
	  ○ Or is IV required?
	• Any other immediate action required?

4. Sodium is mainly extracellular (1)	True
5. List 3 electrolytes commonly found in bones (1.5)	• calcium • phosphate • magnesium
Potassium	
6. What is the normal range of potassium in the blood (1)	3.5-5.3 mmol/l
7. What treatment do you give in hyperkalaemia to protect the heart (1)	Calcium Gluconate 10%
8. What are the 5 main hyperkalaemia treatment strategies (2.5)	• Protect the heart • Shift potassium into the cells • Remove potassium from the body • Monitor potassium and glucose • Prevent recurrence
9. ACEIs can cause hyperkalaemia (1)	True
10. Thiazide diuretics can cause hypokalaemia (1)	True
Sodium	
11. What is the normal range of Sodium in the blood (1)	135-145mmol/L
12. List 3 main functions of Sodium in the body (1.5)	• Fluid retention • Acid-base balance • Nerve stimulation and action potential
13. List 3 symptoms of hypernatremia (1.5)	• Muscle weakness • Confusion and headache • Dehydration and feeling thirsty • Polydipsia (excessive thirst) • Polyuria (excessive urination) can be drug induced
14. Fluid restriction is a treatment option in hypernatremia (1)	False (Rehydrate with Oral water or IV 5% glucose in mild hyponatraemia)

Electrolyte replacement 2022-2023 – Answers

Calcium	
15. What is the normal range of adjusted Calcium in the blood (1)	Adjusted/ Corrected Ca^{2+} 2.1-2.6mmol/L
16. List 3 functions of Calcium in the body (1.5)	• Intra/extra cellular metabolism • Nerve conduction • Muscle contractions • Bone formation • Coagulation pathway • Enzyme regulation
17. First line treatment for hypercalcemia is IV 0.9% sodium chloride (1)	True – Typically, 1L over 4 hours, but might be faster in severe dehydration
18. Calcitonin is not a treatment for hypercalcemia (1)	False – Calcitonin may be considered in malignancy for treatment of hypercalcemia
19. calcium gluconate 10% is used to treat hypocalcaemia (1)	True calcium gluconate 10% 10-20 ml (2.2 mmol calcium) over at least 10 mins with cardiac monitoring
Phosphate	
20. What is the normal range of Phosphate in the blood (1)	PO_4^{2-} (0.8-1.4 mmol/L)
21. List 2 functions of Phosphate in the body (1)	• Energy production ATP • Growth and repair of cells (protein synthesis) • pH maintenance • Enzyme function and hormone production • Bone mineralisation
22. List 3 electrolytes depleted in "Refeeding syndrome" (1.5)	• Phosphate • magnesium • potassium
Magnesium	
23. What is the normal range of Magnesium in the blood (1)	Mg^{2+} (0.7-1.0 mmol/L)
24. 1g of magnesium sulphate = 1mmol magnesium (1)	False 1g of magnesium sulphate =4 mmol magnesium