

IACC 2023 Case-based discussion (CBD) scenario

Specialty:	Clinical Biochemistry
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CBD Scenario

CBD Scenario Title	Interpretation of Blood Gas Results									
CBD Scenario Aim	To determine the ability of the trainee to interpret the results of a blood gas analysis and, in the context of clinical details, suggest an appropriate testing strategy to identify the possible cause.									
CBD Focus (please provide the codes of the module(s) this scenario addresses)	SLS121				SLS126					
GSP Domains covered (enter X to indicate all that apply)	GSP 1	X	GSP 2	X	GSP 3	X	GSP 4		GSP 5	
CBD Scenario description	<p>A 16 year old male is admitted unconscious to A&E. His mother says he has been unwell, losing weight and drinking lots of water, for the last couple of weeks.</p> <ol style="list-style-type: none"> How would you interpret the following blood gas results? pH 7.18 (7.35-7.45) pCO₂ 2.5 kPa (4.7-6.0) pO₂ 11.5 kPa (>10.6) Considering the clinical details and the blood gas results what is the possible cause and which tests could you do to verify this? Further investigations showed the following results. How would you explain these results? Na 125 mmol/L (135-145) K 6.3 mmol/L (3.5-5.3) 									

	<p>HCO₃ 7.0 mmol/L (18-28) Glucose 36 mmol/L (4.0-5.7)</p>
<p>CBD Scenario model answer/ assessor guidance</p> <p>Detailed guidance that will be available for the assessors. Include guidance on what kinds of behaviours, actions, comments should secure a pass. What should the assessor expect to see? Assessors will be asked to plan questions in advance including links to trainee's IACC submission.</p>	<p>1. How would you interpret the following blood gas results? pH 7.18 (7.35-7.45) pCO₂ 2.5 kPa (4.7-6.0) pO₂ 11.5 kPa (>10.6)</p> <p>The blood gases describe a Metabolic acidosis. Clinical details suggest thirst and weight loss in a young patient. There should be a suspicion of this being a Diabetic Ketoacidosis.</p> <p>2. What test could you do to indicate the possible cause of the abnormality?</p> <p>Clinical details suggest thirst and weight loss in a young patient. There should be a suspicion to rule out Diabetes Mellitus and this being a Diabetic Ketoacidosis – therefore you could do a Blood glucose to see if the patient has hyperglycaemia as an indicator of Diabetic Acidosis.</p> <p>3. Further investigations showed the following results. How would you explain these results? Na 125 mmol/L (135-145) K 6.3 mmol/L (3.5-5.3) HCO₃ 7.0 mmol/L (18-28) Glucose 36 mmol/L (4.0-5.7)</p> <p>Hyperglycaemia likely due to new onset of type 1 diabetes mellitus (1), likely pseudo-hyponatraemia (due to osmotic effects of hyperglycaemia) (2), hyperkalaemia (dehydration and lack of insulin) (3), low bicarbonate (acidosis/DKA).</p> <p>Fail: No correct answers pro Pass: 2 of the 3 correct answers.</p>
<p>Trainee instructions</p> <p>Please include any specific information to be provided to the trainee as part of the CBD scenario</p>	<p>No additional instructions</p>

Criteria being assessed by this CBD scenario

Aspect	Please indicate if this criterion is being assessed
1. Understands the clinical context of the scenario, including priority setting and testing strategies	X
2. Understands scientific principles of scenario	
3. Can discuss the relevant procedures involved in the scenario and associated health and safety issues	
4. Understands and applies the appropriate test validation, IQC, EQA, relevant professional/clinical guidelines	
5. Understands and applies associated IT/bioinformatics and other appropriate resources	
6. Is able to interpret and report patient results and provide appropriate clinical advice	X
7. Can discuss the significance of patient results within the clinical context of the referral	X
8. Understands the ethical, legal and social implications of the scenario	
9. Is aware of the importance of audit and can use this tool effectively	
10. Output meets accepted laboratory/professional standards	X
11. Demonstrates awareness of the limits of responsibility and when to seek advice	
12. Consideration of patient/professionalism	
13. Overall ability to perform	X