



Cabrinini Practice OSCE 9

Candidate Information:

You are the Consultant in charge of a tertiary urban ED. Your resident has come to you with a venous blood gas for interpretation.

His patient is a 70 year old man with drowsiness. He has a history of type II diabetes. He is currently being fed by nasogastric tube after radiotherapy for an oesophageal neoplasm.

You have been provided with his Venous Blood Gas.

His weight is 50kg.

Your Tasks:

1. Interpret the blood gas with the resident including your differential diagnoses
2. Outline your management priorities

Domains assessed:

Medical expertise -Investigation	40%
-Management	30%
Scholarship and teaching	30%

Venous Blood Gas

pH	7.38	(7.35 - 7.45)
pCO ₂	49	(41 - 51)
pO ₂	31	(20 - 40)
Bicarb	28	(21 - 30)

Na	151	(135 - 145)
K	5.1	(3.5 - 5.0)
Cl	110	(95 - 107)
Lactate	1.9	(0.5 - 2.0)
Glucose	49.6	(3.0 - 10.0)

Urea	15	(3.5-10.0)
Creatinine	130	(60-115)



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Resident Role Player

You are an Emergency Resident and have just started seeing a 70 year old man with a history of type II diabetes who came in drowsy. He is being fed by PEG (Percutaneous Endoscopic Gastrostomy) tube after radiotherapy for an oesophageal neoplasm.

The patient is drowsy but rousable and confused. His vital signs are normal. You have not taken a history or examined the patient yet.

The Nurse has just brought the venous gas and you think there are some abnormalities. You are not confident with your ability to interpret blood gases.

Some questions to ask (if not addresses by the candidate)

“What would be causing the hypernatraemia?”

“How do you correct Na for high glucose?”

“How do I calculate the osmolality, and what does it mean anyway? Is It high?”

At 4 minutes: How should we manage this patient?



Examiner Marking Sheet

COMPONENT ASSESSMENT

For each Domain below, select the ONE best option that best represents the candidate's level of performance. The option "**minimum level of competency displayed**" represents the level of safe independent practice as a **junior FACEM** in Australasia

Very poor level of competency displayed	Well below minimum level of competency displayed	Below minimum level of competency displayed	Minimum level of competency displayed	Above minimum level of competency displayed	High level of competency displayed	Very high level of competency displayed
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Please rate ALL the following domains:

Medical Expertise - Investigation	☐	☐	☐	☐	☐	☐	☐
Medical Expertise - Management	☐	☐	☐	☐	☐	☐	☐
Scholarship & Teaching	☐	☐	☐	☐	☐	☐	☐

[Detailed assessment criteria](#)

Please use the following criteria to inform your ratings above (mandatory items in **bold italics**)

Medical Expertise

Investigation:

Correct VBG interpretation

Hyperosmolar Hyperglycaemic Syndrome

Diagnostic Criteria

- serum osmolality > 320mosmol/L,
- serum glucose > 33mmol/L,
- profound dehydration (elevated urea:creatinine ratio)
- no ketoacidosis

Identification of severely raised glucose and Na

Correction of Na $151 + (49/3) = 167$ for glucose

Calculation of osmolality $= 2 \times \text{Na} + \text{Urea} + \text{Gluc} = 2 \times 151 + 15 + 49 = 366$

Identify dehydration and NG feeds as likely source of

Hypernatraemia and HHS DDx sepsis/AMI/surgery/medications/vomiting/diarrhoea

Calculate Total body water deficit = (measured Na-normal Na)/normal Na x total body water (2/3 x weight)

$= (167-140)/140 \times 2/3 \times 50\text{kg} = 6.4\text{L}$

Management:

Fluid: N/saline/Hartmanns, correct fluid deficit over 48-72 hrs

Insulin infusion insulin at 0.05 U/kg/hr



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Thromboprophylaxis (SCD's, clexane, TEDS) -> high risk of VTE

Diagnose cause and treat: infection, compliance, MI, CVA

Consultation- Gen med/Endo/ICU/HDU

Monitor for complications:

- delirium -> coma
- cerebral oedema monitor Na⁺ should not change more than 10mmol in 24 hours (prevent by resuscitation with isotonic fluid and slow correction of glucose) drowsy. Headache, confusion, cerebella signs Rx with Mannitol, CT, stop IVF
- seizures (focal and generalized)
- severe dehydration and shock
- renal failure
- thrombotic complications: VTE, stroke, AMI
- intercurrent events: sepsis, MI, aspiration
- occlusive events: focal CNS signs, chorea, DIC, leg ischaemia, rhabdomyolysis
- fluid overload and congestive heart failure
- metabolic derangement: hypokalaemia, hypophosphataemia, hypomagnesaemia, hypoglycaemia, hyperchloraemia with NAGMA

Disposition to HDU

Scholarship and teaching

Checks trainees' prior knowledge

Teaches trainee appropriately-clearly explains Investigation interpretation and Management plan

Checks understanding of information

Arranges follow-up teaching session

Station Summary: Interpretation of VBG and explanation to resident, management of Hyperosmolar Hyperglycemia State

GLOBAL RATING FOR STANDARD SETTING:

This scale is used in the standard setting process for the OSCE. Please rate the candidate's OVERALL performance in this OSCE. The rating should take into account the entirety of the OSCE, rather than just a sum average of the individual domain scores. This element MUST be completed for the standard of the examination to be set.

	Well Below Standard	Below Standard	Just at Standard	Above Standard	Well Above Standard
In terms of a safely practising junior emergency physician , select the ONE option that best reflects the candidate's performance in this station:	☐	☐	☐	☐	☐

EXAMINER SIGNATURE: