

# Kaplan USMLE Step 2 prep: What do these lab studies reveal?

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Staff News Writer

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If you're preparing for the United States Medical Licensing Examination<sup>®</sup> (USMLE<sup>®</sup>) Step 2 exam, you might want to know which questions are most often missed by test-prep takers. Check out this example from Kaplan Medical, and read an expert explanation of the answer. Also check out all posts in this series.

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## This month's stumper

An 81-year-old man is brought to the hospital after being found on his living room floor. He had last been in contact with his family three days ago. While he is obtunded, he is breathing on his own and is hemodynamically stable. His physical examination is significant for a temperature of 38.0°C (100.7°F) and a tender, tense right calf, thigh and buttock. His laboratory studies show:

- Potassium – 5.9 mEq/L.
- Serum Creatinine – 3.5 mg/dL.
- Lactic Acid – 2.6 mmol/L.
- Serum Creatine Kinase – 7,200 U/L.
- White Blood Cells – 17,000/mcL.
- BUN – 88 mg/dL.

Which of the following is the most appropriate management of this patient's condition?

- A. Emergency fasciotomy.
- B. IV mannitol.

- C. IV sodium bicarbonate.
- D. Oral Kayexalate.
- E. Urgent hemodialysis.
- F. Vascular surgical consult for creation of an arteriovenous fistula.

**The correct answer is E.**

## **Kaplan Medical explains why**

This patient presents with elevated levels of the skeletal muscle isoenzyme serum creatinine phosphokinase and myoglobin, which is suggestive of muscle injury and rhabdomyolysis. Skeletal muscle injury causes the release of muscle contents into the serum including potassium and myoglobin that can result in acute kidney injury. The most appropriate management of this patient's condition is urgent hemodialysis to protect the kidney and reduce the risks of hyperkalemia-induced complications.

## Why the other answers are wrong

**Choice A:** Emergent fasciotomy is designed to release pressure and prevent damage to tissues caused by the swelling of the necrotic muscle. Although this may be necessary, correction of his hyperkalemia is more important at this point.

**Choices B and C:** IV mannitol and IV bicarbonate have been advocated by some to induce diuresis and alkalinize the urine to prevent crystallization of the myoglobin in the renal tubules, respectively. Although there are theoretical benefits, these therapies have not been shown to be superior to simple hydration with saline. Moreover, they will not appropriately treat this patient's severe hyperkalemia.

**Choice D:** This patient's hyperkalemia is unlikely to resolve with oral Kayexalate because oral kayexalate is slow acting. Moreover, the patient has ongoing tissue damage that is leaking further potassium along with myoglobin into the blood. In this otherwise hemodynamically stable patient, the priority is to protect the kidney by urgent hemodialysis rather than by chelating the potassium alone.

**Choice F:** Although this patient needs dialysis, a vascular surgical consult for creation of an arteriovenous fistula is incorrect, as fistulae take time to mature in preparation for dialysis and will not help this patient in the acute setting. With proper management, his acute renal failure may be reversed, and he may not need chronic dialysis. A temporary IV double-lumen catheter would be more appropriate for dialysis access in this patient.

## Tips to remember

- | Acute renal failure with severe acidosis, hyperkalemia, volume overload or symptomatic uremia are indications for urgent dialysis.
- | Temporary access can be obtained via a central venous catheter.

For more prep questions on USMLE Steps 1, 2 and 3, view other posts in this series.