

# Kaplan USMLE Step 1 prep: Which test confirms suspected relapse?

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If you're preparing for the United States Medical Licensing Examination<sup>®</sup> (USMLE<sup>®</sup>) Step 1 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

A 56-year-old man with a history of alcohol-use disorder comes to the physician because of depression. He says that he has been sober for a month and is enrolled in a 12-step program, but he is unable to go back to work. The physician strongly suspects that the man relapsed and was fired from his job.

Which of the following laboratory tests will most likely confirm the suspected relapse?

- A. Aminotransferases.
- B. Blood urea nitrogen.
- C. Mean corpuscular volume.
- D. Serum amylase.
- E. Serum gamma glutamyl transferase.

F. Serum triglycerides.

G. Urine toxicology screen.

The correct answer is E.

## Kaplan Medical explains why

Serum gamma glutamyl transferase (GGT)—also called gamma glutamyl transpeptidase—is a very sensitive indicator of recent alcohol use. It is elevated in about 80% of alcohol-related disorders and is usually the first index to react; therefore, it can be used for the above purposes. Other drugs (e.g., barbiturates, phenytoin) can also increase serum GGT levels. It should also be noted that in DSM-5, patients are diagnosed with alcohol use disorder, alcohol intoxication, or alcohol withdrawal.

Ethyl glucuronide (EtG) is also a commonly used biomarker to detect recent alcohol ingestion. EtG is a water-soluble, direct metabolite of ethanol that is formed when ethanol conjugates with activated glucuronic acid. Almost immediately after ethanol intake, EtG becomes positive in a urine screening test. Furthermore, after complete cessation of alcohol intake, the EtG can be detected in urine for up to five days.

## Why the other answers are wrong

**Choice A:** Aminotransferases or transaminases are a group of hepatic enzymes that catalyze the interconversion of amino acids and oxoacids by transfer of amino groups. Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) are the two aminotransferases of most clinical significance.

The main clinical application of serum AST and ALT measurement is the detection and diagnosis of various hepatic disease. For example, patients with alcoholic hepatitis would be expected to see an AST more than ALT. Although AST and ALT can help diagnosis alcohol-related diseases, the serum GGT is a true biologic marker of alcohol consumption over a period of time.

**Choice B:** Blood urea nitrogen is not an indicator of acute alcoholic relapse (alcohol intoxication). It is increased in alcoholics if they are dehydrated or if there are other associated medical problems.

**Choice C:** Mean corpuscular volume is elevated in about 60% of chronic alcoholics, more so in women. It is not a very sensitive indicator in acute relapse.

**Choice D:** The amylase level is usually increased in alcoholics with associated pancreatitis. It is not a sensitive indicator of acute relapse, unless associated with pancreatic disease.

**Choice F:** Triglycerides are usually increased in chronic alcoholics secondary to the dysregulation of lipoprotein and triglyceride metabolism. This is a result of chronic abuse and therefore a long-term effect. In an acute relapse, this would not be a very sensitive indicator.

**Choice G:** Urine toxicology screen is typically used to identify levels of various drugs, including barbiturates, benzodiazepines, amphetamines, analgesics, antidepressants, narcotics, phenothiazines, and blood alcohol. However, the alcohol level determines acute intoxication, whereas the serum gamma-glutamyl transpeptidase is a true biologic marker of alcohol consumption over a period of time.

## Tips to remember

- Serum GGT is a biologic marker of alcohol consumption.
- GGT is elevated before liver function tests (ALT, AST, and alkaline phosphatase concentrations) are significantly altered.
- GGT is useful as a screening test for previous alcohol intoxication.

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