Simple blood test identifies critically ill patients who misuse alcohol, study finds

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A simple blood test for a compound called PEth can accurately identify critically ill hospital patients who misuse alcohol, a study has found.

The finding is important because patients who misuse alcohol tend to have worse outcomes. If validated in further studies, the PEth test could help doctors anticipate and perhaps ward off alcohol-related complications such as organ failure and impaired healing of wounds and bones.

The study, published in *Alcoholism: Clinical & Experimental Research*, included researchers from Loyola University Chicago Stritch School of Medicine, Loyola University Medical Center and the University of Colorado and was led by Loyola Medicine pulmonologist Majid Afshar, MD.

Patients who misuse alcohol and subsequently arrive at the hospital in critical condition develop more complications, have longer recovery times, develop organ dysfunction more frequently and are at greater risk of dying, according to earlier studies by Dr. Afshar and other researchers. Alcohol misuse is defined as heavy drinking (one or more drinks per day for women and two or more drinks per day for men) and/or binge drinking (four or more drinks per occasion for women and five or more drinks for men).

Current methods to identify alcohol misuse are problematic. For example, many critically ill patients in intensive care lack the capacity to

answer questions about alcohol use. And testing blood alcohol concentration does not distinguish among different types of alcohol use, such as heavy daily use or occasional binge drinking.

An alternative test measures phosphatidylethanol (PEth), a compound in the blood that is a biomarker of alcohol use. With a half-life of four to 12 days, PEth lasts much longer in the body than blood alcohol concentration. (Half-life is the time it takes for PEth to fall to half its original level.) PEth remains detectable for up to three weeks.

The study enrolled 122 adults at Loyola University Medical Center and the University of Colorado Denver: 33 were critically ill patients treated in intensive care and burn units; 51 were treated in an alcohol detoxification unit; and 38 served as healthy controls. Alcohol misuse was determined by giving participants the Alcohol Use Disorders Identification Test, which asks questions such as how often a participant binge drinks, is unable to stop drinking or feels remorseful about drinking.

The study found that a PEth level of at least 250 nanograms per milliliter (ng/ml) was 88.7 percent accurate in identifying participants who display alcohol misuse and a level higher than 400 ng/ml was 83 percent accurate in identifying those who showed severe alcohol misuse.

The study is the first to examine the role PEth could play in critically ill patients. The findings "demonstrate good diagnostic accuracy for PEth in discriminating alcohol misuse, with useful cut-points to risk-stratify patients," Dr. Afshar and colleagues concluded. "Further validation in a more representative sample of critically ill patients is needed prior to clinical and research application."

The study is titled, "Cut-point levels of phosphatidylethanol to identify alcohol misuse in a mixed cohort including critically ill patients."

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