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Title: Use of Phosphatidylethanol (PEth) in Prediction of Risk of Development of Alcohol Withdrawal Syndrome in Trauma Patients

Background: Alcohol withdrawal syndromes (AWS) are a common cause of morbidity and mortality, especially in the trauma population. A prospective tool to predict those individuals at risk of developing AWS may aid in identification of those with heavy ethanol use histories, of whom some may progress to severe ethanol withdrawal. Currently, interview tools, such as the AUDIT-C, have been validated for screening for alcohol use disorders. Unfortunately, in the trauma population, an adequate history may not be available due to several factors, including injury severity and intoxication. A novel biomarker, phosphatidylethanol (PEth) is a serum lipid that is found at elevated levels in individuals who have been regularly exposed to ethanol in the preceding weeks, akin to hemoglobin A1c in diabetes.

Aims: We aim to compare the ability of the alcohol use disorder screening tools with PEth to screen for heavy ethanol use in the trauma population to identify individuals at risk of developing alcohol withdrawal.

Methods: We aim to enroll 300 consecutive trauma patients with a high risk of ethanol use disorder and ethanol withdrawal. Inclusion criteria include: admission to trauma surgery service, age over 40 years old, ethanol level on presentation >200, and ability to both provide informed consent and participate in the screening evaluation. A standardized interview will be performed to screen for ethanol use disorder. After admission, we will draw a phosphatidylethanol level and ethanol level, either within 24 hours or when serum ethanol would be expected to be <100mg/dL. Additional data collected at the time of admission will include other laboratory information, including mean corpuscular volume (MCV), alanine and aspartate aminotransferases (AST and ALT), and ethanol level on admission.

Major Limitations/Questions: The PEth test is an experimental surrogate for historical ethanol use and will not be able to actually predict ethanol withdrawal, just those at risk. Additionally, the the presence of high concentration of serum ethanol in the sample may interfere with the assay, necessitating delayed serum acquisition, which may provide logistical challenges. Furthermore, the commonly available alcohol use disorder screening tools, thought to be the gold standard, are largely subjective and may be difficult to administer to this population.