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Model predicts death due to acetaminophen overdose

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Model for Acetaminophen-induced Liver Damage, a mathematical model that utilizes commonly obtained laboratory values, including overdose amount and time elapsed since overdose, is effective for predicting outcomes in patients with acute liver failure due to acetaminophen overdose, according to research published online Feb. 13 in *Hepatology*.

(HealthDay) -- Model for Acetaminophen-induced Liver Damage (MALD), a mathematical model that utilizes commonly obtained laboratory values, including overdose amount and time elapsed since overdose, is effective for predicting outcomes in patients with acute liver failure due to acetaminophen overdose, according to research published online Feb. 13 in *Hepatology*.

Christopher H. Remien, of the University of Utah in Salt Lake City, and colleagues developed MALD to describe acute liver injury due to an overdose of acetaminophen. The model utilizes laboratory values that are commonly obtained on admission, specifically aspartate

aminotransferase (AST), alanine aminotransferase (ALT), and international normalized ratio (INR), to estimate the overdose amount, time elapsed, and outcome. The model was tested on 53 patients.

The researchers found that, using only initial ALT, AST, and INR measurements, the model was able to accurately predict follow-up laboratory values for most patients. With the addition of serum creatinine, the researchers were able to predict eventual death due to acetaminophen overdose with 100 percent sensitivity, 91 percent specificity, 67 percent positive predictive value, and 100 percent negative predictive value.

"Our dynamic model yields a prediction of outcome by estimating the time since overdose and overdose amount from commonly obtained laboratory data on admission," the authors write. "Our initial analysis suggests that MALD compares favorably to statistical methods, and should be validated in multicentric retrospective and prospective evaluation."

More information: Abstract
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