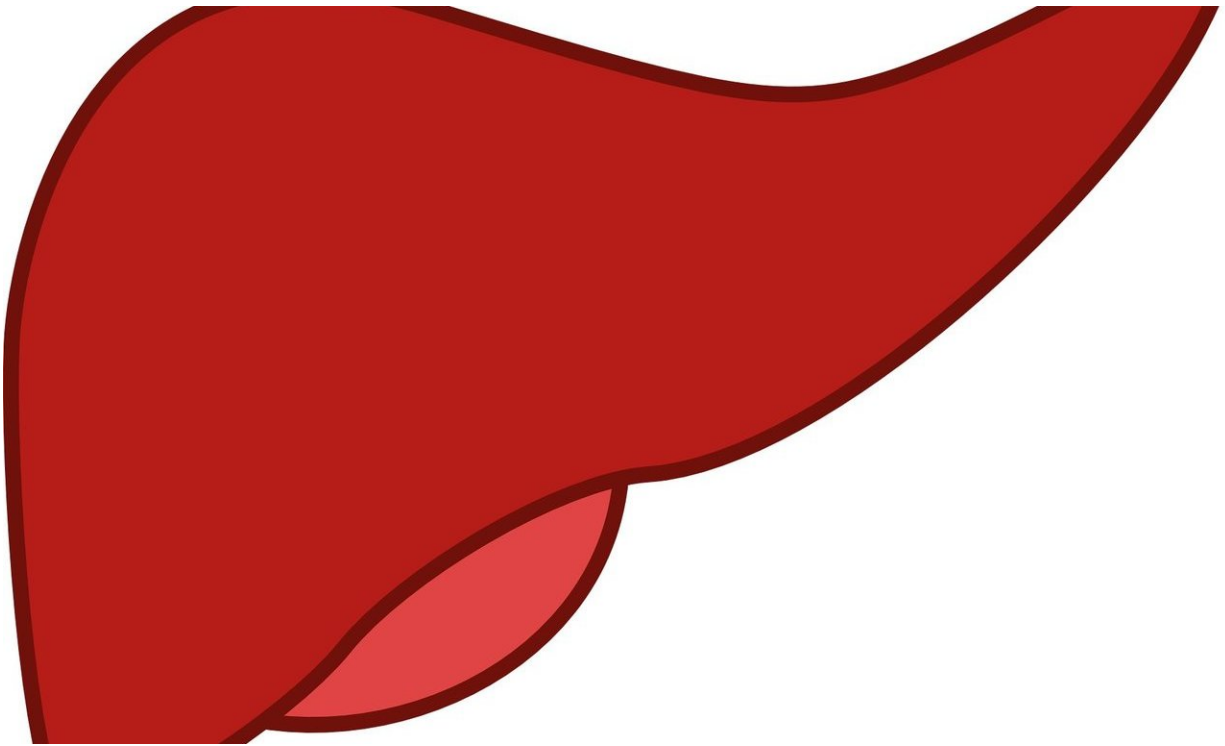


Why liver transplant waitlists might misclassify high-risk patients

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A new study has uncovered that the standard method for ranking patients on the waitlist for lifesaving liver transplantation may not prioritize some of the sickest candidates for the top of the list.

"Ultimately, we hope this information will help clinicians recognize that

certain patients with a high risk of mortality may not be captured by our current organ-allocation policy," said Vinay Sundaram, MD, director of Hepatology Outcomes Research at the Cedars-Sinai Comprehensive Transplant Center. He is the co-first author of the multicenter study published recently in the peer-reviewed medical journal *Gastroenterology*, the most frequently cited journal in its field.

Liver transplants are performed as a last resort for [liver failure](#), when the vital organ is too damaged to sustain life. The most common damage is caused by cirrhosis—severe scarring that can result from various conditions, including injuries, the hepatitis C virus, metabolic disease and long-term alcohol abuse. While more than 8,000 [liver transplants](#) were performed in the U.S. last year, the need exceeds availability of viable organs. According to the United Network for Organ Sharing (UNOS), the nonprofit that manages the U.S. organ [transplant](#) system, more than 13,000 patients were on its liver-transplant waitlist as of Jan. 18.

To decide which patients should be first in line for liver transplants, [medical professionals](#) rely on a standardized assessment of liver and kidney function known as the MELD (Model for End-Stage Liver Disease) score. The goal is to determine who among the many patients needing transplants are the sickest and yet also able to withstand surgery and to recover and thrive. A lower score indicates less urgency for a transplant; a higher score indicates greater urgency.

The study found that the MELD score does not fully identify patients with a life-threatening syndrome known as ACLF-3, or acute on chronic liver failure grade-3. This syndrome involves a sudden worsening of chronic liver failure accompanied by multiple organ-system failures, such as circulatory, respiratory or neurologic failures.

"ACLF-3 patients, even with relatively low MELD scores, have the

highest risks of being removed from the waitlist due to being too sick for a transplant or of dying while waiting for a liver transplant," Sundaram said. "We sought to understand how this happens and how the standardized system of prioritization can unintentionally disadvantage these patients."

The team analyzed UNOS data from 100,594 patients on liver-transplant waitlists from 2005 through 2016.

"Our study goals were twofold," Sundaram said. "First, we set out to determine the mortality rate of patients with ACLF-3 awaiting liver transplantation, and second to analyze how patients with ACLF-3 fared when they did receive liver transplants."

Sundaram said the team discovered that ACLF-3 patients are sicker than the MELD scores would indicate because that assessment takes into account only liver and [kidney function](#), whereas ACLF-3 patients have other organ-system failures as well. They found that nearly 44 percent of ACLF-3 patients in a certain category died or were removed from the transplant waitlists within 28 days of listing.

The team also found that when transplants were performed within 30 days of ACLF-3 patients being placed on the waitlists, their one-year post-transplant survival rate was more than 80 percent—equivalent to patients without this syndrome.

They concluded that ACLF-3 classification may help identify candidates on the list who are at high risk for short-term mortality. "Time is of the essence because it is clear that survival declines with increased waiting time for these [patients](#)," Sundaram said.

Rajiv Jalan, MD, Ph.D., of UCL Medical School, London, is co-first author of the study, along with Sundaram. Robert J. Wong, MD, from

the Alameda Health System, Highland Hospital, in Oakland, Calif., is the senior author. The study also involved Loma Linda University in Loma Linda, Calif., and Baylor University Medical Center in Dallas.

"This study makes a major step toward improving the clinical relevance of waitlists for [liver](#) transplant candidates," said Andrew S. Klein, MD, the Esther and Mark Schumann Chair in Surgery and Transplantation Medicine, director of the Cedars-Sinai Comprehensive Transplant Center, professor of Surgery and a co-author of the study.

"If further research expands and confirms these findings, they can lead to better transplant outcomes."

More information: Vinay Sundaram et al, Factors Associated with Survival of Patients With Severe Acute on Chronic Liver Failure Before and After Liver Transplantation, *Gastroenterology* (2018). [DOI: 10.1053/j.gastro.2018.12.007](#)

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