



Tool Developed to Identify Long-Term Prognoses for Cirrhosis Patients

University of Miami Miller School of Medicine researchers have developed and validated a risk score tool to predict long-term survival probabilities for patients with cirrhosis.



David Goldberg, M.D.

“Patients with cirrhosis face complex treatment choices due to risks of morbidity and mortality,” said David Goldberg, M.D., associate professor of medicine in the Division of Digestive Health and Liver Diseases. “Tools that help physicians predict these patients’ longer-term liver-related survival help us to provide optimal counseling and treatment.”

Dr. Goldberg said the new model, developed by applying machine learning methods to 10 years of data, is designed to help gastroenterologists and other physicians considering referrals



for liver transplants or other treatment options for their patients. Predictive factors for one-, three-, five- and 10-year survival rates include the patient's age, kidney function, diabetes, liver function, and other complications of liver disease.

"Because cirrhosis patients face complex medical decisions that may be influenced by their cirrhosis-related morbidity and mortality, it is important to put long-term risk in the appropriate context," said Dr. Goldberg. For instance, aggressive lung cancer therapy may be advisable for a patient with a 10% chance of death from cirrhosis in five years, but not for a patient with an 80 percent probability of death within that time frame.

Dr. Goldberg was the lead author of the Miller School-led study, "Accurate Long-Term Prediction of Survival for Patients with Cirrhosis," published in March 2022 in the journal *Hepatology*. Ezekiel Emanuel, M.D., Ph.D., vice provost for global initiatives and chair of the Department of Medical Ethics and Health Policy at the University of Pennsylvania, was a coauthor of the study, which was funded by the National Institutes of Health (NIH).

Miller School co-authors were Alejandro Kaplan Mantero, Ph.D., senior researcher; Cindy Delgado, project manager, research support; Binu V. John, M.D., M.P.H., associate professor of gastroenterology, VA Medical Center Miami; and Nadine Nuchovich, B.A.

For the study, the research team excluded cirrhosis patients with other life-limiting conditions to focus primarily on mortality risks from liver disease. They tracked 30,263 patients with cirrhosis between the ages of 18 and 75 who were



treated within the Veterans Health Administration (VHA). They used data from the VHA for machine learning model training and internal validation, followed by external validation using patient data from the OneFlorida Clinical Research Consortium.

“We are still refining the risk calculator but wanted to post the scoring form as soon as possible to inform clinicians and their patients,” Dr. Goldberg said. “The results can also be very helpful for patients and families who are making advanced care planning decisions.”

Content Type article