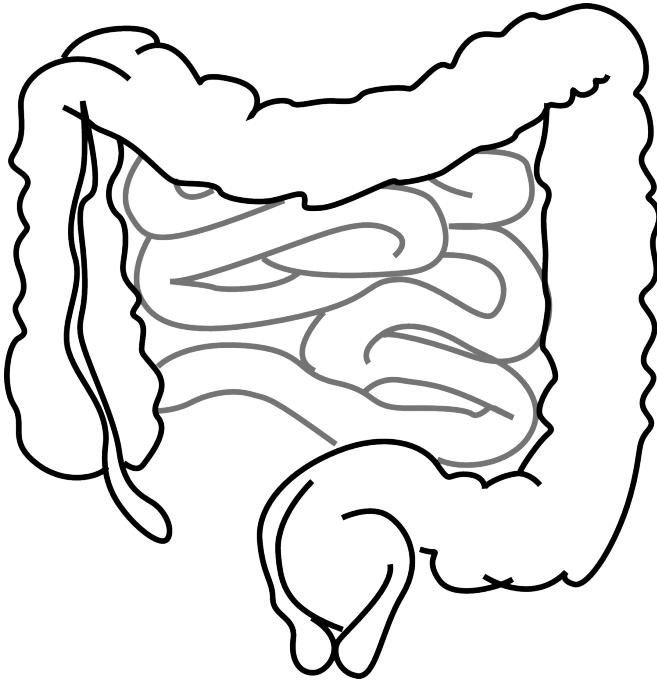


# Gut microbes could help better predict risk of hospitalization for patients with cirrhosis

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The gut microbiome—a collection of bacteria and other microbes in the gut—could be a highly accurate predictor of hospitalizations for patients with cirrhosis, according to a recently published study led by a researcher at Virginia Commonwealth University.

The paper, which published in the journal *JCI Insight* in March, determined that analysis of microbial DNA and microbial RNA could be used alongside current clinical methods to more accurately predict 90-day hospitalizations. Microbial DNA analysis identifies live and dead bacterial species, while microbial RNA analysis identifies the most metabolically active microbial species.

Cirrhosis is a leading cause of increased health

expenditures due to hospitalizations and of mortality worldwide, according to the National Institute on Alcohol Abuse and Alcoholism, part of the National Institutes of Health.

"The hospitalizations that take place with cirrhosis are exorbitantly expensive," said the paper's lead author, Jasmohan Bajaj, M.D., who practices medicine and teaches at the VCU School of Medicine's Department of Internal Medicine and at the Hunter Holmes McGuire VA Medical Center. "Anything that helps us predict the likelihood of hospitalization is better than the status quo."

Bajaj and collaborators from George Mason University theorized that relative abundances of pathogenic and non-pathogenic [bacteria](#) in the gut microbiome would be accurate predictors of hospitalization because of their link with inflammation, which often leads to infection.

"One of the major sources of inflammation in patients with cirrhosis or individuals who are obese is pathogenic bacteria, so, we began looking at gut microbes," Bajaj said. "People with cirrhosis who are hospitalized tend to get a very big inflammatory surge in their body because of infections and other organ failures."

The researchers conducted a trial of patients with cirrhosis at VCU Medical Center and McGuire VA Medical Center who were classified according to cirrhosis-related complications, such as renal dysfunction and infection. Both DNA and RNA analysis were found to be equally effective at predicting hospitalization when combined with the standard predictive blood test. They also were more effective than the standard predictive blood test score alone. Researchers also found that DNA and RNA analysis identified similar beneficial bacteria but differed in the [pathogenic bacteria](#) identified in all patient groups tested.

The team is preparing for a multicenter trial with a

consortium of North American research centers that would further confirm the effectiveness of microbial [analysis](#) in [cirrhosis](#) outcome prediction.

**More information:** Jasmohan S. Bajaj et al, Gut microbial RNA and DNA analysis predicts hospitalizations in cirrhosis, *JCI Insight* (2018).  
[DOI: 10.1172/jci.insight.98019](https://doi.org/10.1172/jci.insight.98019)

Provided by Virginia Commonwealth University

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