



# Cystic Fibrosis Research News

**Title:** A Longitudinal Assessment of Non-Invasive Biomarkers to Diagnose and Predict Cystic Fibrosis-Associated Liver Disease

**Authors:** Wikrom Karnsakul<sup>1\*</sup>; Paul Wasuwanich<sup>1,2</sup>; Thammasin Ingviya<sup>3,4</sup>; Alexandra Vasilescu<sup>1</sup>; Kathryn A. Carson<sup>5</sup>; Peter J. Mogayzel, Jr.<sup>6</sup>; Kathleen B. Schwarz<sup>1</sup>

**Affiliations:** <sup>1</sup>Division of Pediatric Gastroenterology, Nutrition, and Hepatology, Department of Pediatrics, Johns Hopkins University School of Medicine, Baltimore, MD, USA;

<sup>2</sup>Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, IN, USA;

<sup>3</sup>Medical Data Center for Research and Innovation, Prince of Songkla University, Songkhla, Thailand;

<sup>4</sup>Department of Family and Preventive Medicine, Prince of Songkla University, Songkhla, Thailand;

<sup>5</sup>Department of Epidemiology, Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, USA;

<sup>6</sup>Eudowood Division of Pediatric Respiratory Sciences, Department of Pediatrics, Johns Hopkins University School of Medicine, Baltimore, MD, USA.

## What was your research question?

The aim of our study was to investigate the ability of various biomarkers from the blood to detect cystic fibrosis-associated liver disease (CFLD) early.

## Why is this important?

CFLD is a liver disease that develops in patients with cystic fibrosis (CF). With advances in lung and nutrition care, the life expectancy of CF patients has increased. Due to that increased life expectancy, CFLD, which is slow progressing disease, is becoming a growing problem in the CF community. CFLD can result in severe problems such as bleeding from digestive tract and liver failure causing death without liver transplantation. Thus detecting the disease and treating it early is the aim of physicians.

## What did you do?

We investigated a total of six biomarkers: ARPI (Aspartate Aminotransferase to Platelet Ratio Index), FIB-4, AST/ALT ratio (Aspartate Aminotransferase/Alanine Aminotransferase Ratio), platelet count, GGT (Gamma-Glutamyl Transferase), and GPR (GGT Platelet Ratio). These six biomarkers can be obtained and calculated from routine blood tests making them relatively inexpensive. In this study, we tracked 179 CF patients for a median of 8 years.

## Cystic Fibrosis Research News

[cfresearchnews@gmail.com](mailto:cfresearchnews@gmail.com)



# Cystic Fibrosis Research News

## What did you find?

We found that GPR was the best biomarker for predicting whether someone with CF will develop CFLD in the next couple of years. GGT, APRI, and platelet count were also effective, but not as effective as GPR. While FIB-4 was not useful in predicting whether someone will develop CFLD, we found that it is useful for tracking the level of liver injury. We did not find AST/ALT ratio to be useful as a biomarker for CFLD.

## What does this mean and reasons for caution?

These biomarkers are non-invasive and relatively inexpensive, therefore, we believe they will be useful and appealing for patients and physicians. The biomarkers provide a tool to detect CFLD early and thus give physicians the opportunity to prevent severe liver disease. However, our study does have some limitations. One limitation is that the median age of our patients was 14 years by the end of the study, so some of the patients on the younger side may not have had enough time to develop CFLD.

## What's next?

While we believe that using non-invasive biomarkers would be a cost-effective option for monitoring CFLD, additional studies on cost-effectiveness in practice are needed.

## Original manuscript citation in PubMed

[https://pubmed.ncbi.nlm.nih.gov/32482593/?from\\_single\\_result=A+Longitudinal+Assessment+of+Non-Invasive+Biomarkers+to+Diagnose+and+Predict+Cystic+Fibrosis-Associated+Liver+Disease](https://pubmed.ncbi.nlm.nih.gov/32482593/?from_single_result=A+Longitudinal+Assessment+of+Non-Invasive+Biomarkers+to+Diagnose+and+Predict+Cystic+Fibrosis-Associated+Liver+Disease)

Cystic Fibrosis Research News

[cfresearchnews@gmail.com](mailto:cfresearchnews@gmail.com)