

# Cystic Fibrosis Research News

**Title:**

Airway inflammation in mild cystic fibrosis.

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**What was your research question?**

Lung function measurement is a very important and widely used test to determine progression of lung disease in cystic fibrosis (CF). However, people with mild or early CF disease often present with almost complete lung function. We asked if changes in mild disease can be identified by spirometry in people with CF and normal flow in the central airways.

**Why is this important?**

The clinical course of CF lung disease develops very differently between patients. Improved therapies have been driven by the concepts of precision medicine, whereby diagnostic tools like lung function and sputum microbiology can be used to select treatments that are specific for the individual. Though great work has been done on new diagnostic tools such as lung imaging and lung clearance index (LCI), lung function testing by spirometry is still the most widely used diagnostic technique. Therefore detecting early changes of small airways in CF lung disease by simple and widely accessible tools will have substantial clinical benefit.



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## **What did you do?**

Thirty-six people with CF and almost complete lung function were recruited from the outpatient Christiane Herzog CF- Center, Johann Wolfgang Goethe-University, Frankfurt, Germany. They were assigned to two groups according to their efforts in lung function testing: (1) Patients without involvement of the small airways and (2) patients with small airways disease (SAD). The SAD group was diagnosed by measuring the flow in the small airways during spirometry using a technique called MEF25.

## **What did you find?**

People with both CF and SAD featured various lung function parameters that were reduced compared to those with CF but no SAD. We also found that sputum inflammatory cells and other biomarkers are increased in the SAD group in comparison to the Non-SAD group.

## **What does this mean and reasons for caution?**

Although, disease severity in CF is often stratified based on FEV<sub>1</sub>, this parameter represents a poor prognostic disease marker. This study demonstrates that inflammation is more pronounced in CF patients with SAD. Sputum inflammatory cells like neutrophils appear to be the most important disease activity marker for small airways involvement in an individual patient. Moreover, neutrophil cell counts in sputum may represent a target for medical treatment. A drawback of this study is the broad age spectrum of participants.

## **What's next?**

As this cross-sectional study represents data at one time point, data from a longer observation period, otherwise known as a longitudinal study would provide more confidence in our findings. Moreover, other measurements reflecting early changes in CF lung disease like LCI might be helpful to evaluate the effects of new treatments and their impact on the small airways to prevent progressive lung disease.

## **Original manuscript citation in PubMed**

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