



# Cystic Fibrosis Research News

## **Title:**

Strain Rate Echocardiography Uncovers Subclinical Left Ventricular Dysfunction in Cystic Fibrosis

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## **What was your research question?**

Our basic question was that, given the presence of the protein known as the cystic fibrosis transmembrane conductance regulator (CFTR) in the heart, do adults with cystic fibrosis have signs of heart problems, independent of lung disease? We also wanted to know if a sensitive type of echocardiography called strain rate echocardiography can detect early signs of heart problems in CF.

## **Why is this important?**

People with CF are living longer and are more active, which increases the strain on their hearts. So, it is sensible to determine if people with CF are at increased risk for heart problems compared to those without CF. This information will help us to optimize the health of people with CF as they grow older.

## **What did you do?**

Earlier studies on this subject have used traditional echocardiography methods in adults with CF who had poor lung function. These studies reported conflicting results, making it unclear if any abnormalities which were detected stemmed from primary heart problems or were related to existing lung disease. We used a newer form of echocardiography called

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strain rate echocardiography to detect early signs of heart dysfunction in a group of adults with CF who had no known heart problems. This method is more sensitive than traditional echocardiography and is not as affected by existing lung disease.

## **What did you find?**

We found that traditional echocardiography did not detect heart dysfunction during the pumping phase of the heart in adults with CF, but it did detect some abnormalities in the rest state. In contrast, strain rate echocardiography detected heart abnormalities during the pumping phase and also identified more people with abnormalities in the rest phase. When we looked more closely, the abnormalities were no more common in people with more severe lung disease, indicating that strain rate echocardiography can detect abnormalities independent of lung disease.

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

Our results, taken together with those from other studies, suggest that the hearts of adults with CF may not work as well as the hearts of those without CF. Using the most common way of measuring heart function, these abnormalities are seldom found. However, a newer, more sensitive measurement detects abnormalities, which may represent early changes in heart function. We do not know how these abnormalities affect the health and exercise capacity of people with CF. It is also unclear if these early changes will worsen and lead to more noticeable heart problems or whether they will be minor.

## **What's next?**

We will perform larger studies examining heart function in people with CF of different ages and with different levels of lung function. We will also study how heart abnormalities affect exercise capacity and overall health. By studying these individuals over time we can determine if those with CF go on to develop clinically significant heart disease.



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**Original manuscript citation in PubMed**

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