

# Cystic Fibrosis Research News

**Title:**

Quantifying variation in home spirometry in people with cystic fibrosis during baseline health, and associations with clinical outcomes

**Lay Title:**

How to interpret changes in home spirometry when people are feeling well?

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**What was your research question?**

Our research question was to determine how much home spirometry changed day-to-day in people with cystic fibrosis when they were feeling well (or at their baseline health). We also wanted to determine if home spirometry changes that occurred without associated changes in symptoms were associated with upcoming pulmonary exacerbation.

**Why is this important?**

This study is important because home spirometry is being used more as it's easy and convenient. Understanding what these values mean—especially during times when people with CF are feeling well, is unclear. Studies currently done with home spirometry have looked to see if they can predict exacerbation, but little done in otherwise healthy times. It is important to understand if home spirometry changes (such as how variable these readings are) during these asymptomatic periods means anything towards risk of future exacerbations as this may influence decisions with CF care providers (such as prescribing antibiotics if lung function drops).

**What did you do?**



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We took a group of 13 people with CF and asked them to record daily home spirometry and symptom scores. We gave their own home spirometer devices and asked to record it at the same time of day, daily for up to two years. We only looked at periods where symptoms were at each person's baseline. We looked to see how home spirometry compared with clinic spirometry, what type of spirometry variation we see during baseline health, and if more spirometry variation was associated with higher risk of exacerbation. We looked to compare if factors, such as more severe lung disease, correlated with more variability.

## **What did you find?**

We collected over 2500 days of readings from 13 people with CF. We found that compared to clinic, home spirometry was a good way to monitor lung function and people were able to perform it well. We also found on average, people during baseline health had variation day-to-day in their lung function—on average 15% FEV<sub>1</sub>% predicted. Some people had more variability than others, and this seemed to be unique to the individual. The variability in home spirometry during times of baseline health did not correlate with future exacerbation.

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

These findings mean that during baseline health there is some inherent variation to home spirometry readings, and that changes in home spirometry within these values in the absence of changes of symptoms do not necessarily mean that a pulmonary exacerbation is on the way. Our study can help CF care providers when patients call concerned over lung function changes at home when otherwise feeling well. This variability is likely due to many factors such as normal body variation throughout the day or timing around inhaled therapy. Our study was limited in it was a small, and many of the patients were not on Trikafta so this needs to be interpreted with caution.

## **What's next?**

What's next is to do a follow-up study of home spirometry during baseline health in people with CF on Trikafta so we can better understand if similar observations to our study are present.

## **Original manuscript citation in PubMed**

<https://pubmed.ncbi.nlm.nih.gov/37244842/>