



# Cystic Fibrosis Research News

**Title:**

A Comparison of Clinic and Home Spirometry as Longitudinal Outcomes in Cystic Fibrosis

**Lay Title:**

Comparing lung function testing at home vs in the clinic.

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**What was your research question?**

Are there differences between pulmonary function measurements taken at home versus the clinic? Specifically, are there differences in FEV<sub>1pp</sub>: forced expiratory volume in one second as a percentage of that predicted from a healthy population?

**Why is this important?**

Measurement of pulmonary function with devices that can be used at home has increased due to the COVID-19 pandemic. There is also interest in using this type of measurements for clinical research. However, it must be determined if these types of measurements are comparable to those measurements taken in a clinic. Understanding what conditions would make home measurements useable for clinical studies, to make clinical studies more feasible and potentially more available to more individuals with CF.

**What did you do?**

We compared home FEV<sub>1pp</sub> measures to those obtained from the clinic within a study, eICE. This study collected both types of measurements over a 1-year period from its participants. eICE was conducted over the years 2011 to 2015. We compared home and clinic

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measurements at a single time point, and also compared changes over time. Multiple different approaches to analyzing the data were considered to determine how this impacted our single time point and change over time results.

## **What did you find?**

Home based FEV<sub>1</sub>pp measurements tended to be lower than those from the clinic, by roughly 2 percent. Home based FEV<sub>1</sub>pp measurements were also more inconsistent than clinic spirometry done in the clinic, which may have been due to either the device used to collect the spirometry or lack of in-person coaching.

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

These results indicate that using home-based pulmonary function as a substitute for pulmonary function obtained in the clinic requires caution. However, the data from our study used the previous generation of handheld pulmonary function devices, had no real time coaching or data quality review, and did not require nose clip use at home. We remain optimistic that the differences between home and clinic pulmonary function measures will be smaller if these issues are addressed.

## **What's next?**

Further evidence is needed, particularly in a more recent study of individuals with CF which has rigorous quality controls. To use home and clinic FEV<sub>1</sub> together in clinical studies, further research is needed.

## **Original manuscript citation in Pubmed**

<https://pubmed.ncbi.nlm.nih.gov/34474987/>