

# Cystic Fibrosis Research News

**Title:**

Does using the Lung Clearance Index (LCI) inform clinical decisions in children with cystic fibrosis?

**Lay Title:**

Understanding How a Simple Lung Test Can Guide Care for Children with Cystic Fibrosis

**Authors:**

Lucy Perrem, Stephanie Jeanneret-Manning, Stephanie D. Davis, Margaret Rosenfeld, Todd Edwards, Sanja Stanojevic, Felix Ratjen

**Affiliations:**

Children's Health Ireland, University College Dublin, The Hospital for Sick Children, UNC Children's, Seattle Children's Hospital, Dalhousie University

**What was your research question?**

Can a lung test called the Lung Clearance Index (LCI) help doctors make better treatment decisions for children with cystic fibrosis by detecting early lung problems that other tests might miss?

**Why is this important?**

Cystic fibrosis (CF) is a lifelong condition that causes thick mucus to build up in the lungs, leading to infections and permanent damage. Early treatment is essential to keeping the lungs as healthy as possible, but traditional tests often fail to detect problems at an early stage. The LCI test measures how efficiently air moves through the small airways in the lungs and can catch early changes before other tests show any issues. Understanding how useful this test is in real-life decision-making could improve care by giving doctors better tools to track and treat CF.

**What did you do?**

We conducted two parts to this study. First, doctors were asked to review hypothetical cases of children with CF, make treatment decisions based on standard information, and then revisit their decisions after receiving LCI test results. This helped us understand how LCI influenced their decisions. Second, we observed real-life clinic visits to see how often doctors wished for more detailed lung information when deciding treatments.

# Cystic Fibrosis Research News

## **What did you find?**

The study showed that the LCI test significantly influenced doctors' decisions in about 75% of the cases. It either changed their decisions or gave them more confidence that they were doing the right thing. In real clinic visits, doctors often faced situations where extra lung function information, such as LCI results, could have helped. These situations were especially common when deciding whether to start or stop long-term inhaled therapies or antibiotics.

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

The findings suggest that LCI could be an important tool for managing CF, especially for spotting early signs of lung disease and guiding treatments. However, there are challenges to making LCI widely available. The test requires special equipment, time, and training, which may not be feasible in all clinics. Additionally, we used hypothetical scenarios and the actual impact of LCI in daily practice still needs more research. While promising, doctors should consider LCI results alongside other clinical information rather than relying on them alone.

## **What's next?**

Future studies should focus on testing LCI in real-world clinics to confirm its benefits and explore ways to make it more accessible for doctors and patients. This could include reducing the time it takes to perform the test and training more clinics to use it.

## **Original manuscript citation in PubMed**

<https://pubmed.ncbi.nlm.nih.gov/39800642/>