

# Cystic Fibrosis Research News

## Title:

DO CYSTIC FIBROSIS CENTRES WITH THE LOWEST FEV1 STILL USE THE LEAST AMOUNT OF INTRAVENOUS ANTIBIOTICS? A REGISTRY-BASED COMPARISON OF INTRAVENOUS ANTIBIOTIC USE AMONG ADULT CF CENTRES IN THE UK

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## What was your research question?

We want to know if CF centres with patients averaging the lowest lung function (meaning worse outcomes) are using less intravenous (IV) antibiotics compared to centres with higher average lung function (meaning better outcomes).

## Why is this important?

Data from 1994-1995 and 2003-2005 showed that centres with the lowest lung function scores used less IV antibiotics. This is somewhat surprising, because people with lower lung function tend to have more exacerbations, hence are expected to require more IV antibiotic therapy. The 1994-1995 and 2003-2005 results could therefore suggest that inadequate use of IV might explain the lower lung function.

We expect that CF centres nowadays are less dependent upon IV to maintain lung function, due to the availability of powerful treatments to prevent exacerbation e.g. inhaled antibiotics and mucolytics, neither of which is available before the late 1990's. We also know these preventive treatments are increasingly prescribed.

## What did you do?

We analysed the data between 2013 and 2014 from the UK CF registry. We used similar analytical method as the 1994-1995 study, so that our results can be compared against the previous study. This involved dividing 28 CF centres into 3 different groups based on lung function scores, then comparing IV usage between groups of people with similar lung function.



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We also performed various other analyses with statistical modelling (“sensitivity analyses”) to check that our results were robust and to check if differences in lung function could be influenced by prescription of preventive treatments such as inhaled antibiotics.

## **What did you find?**

CF centres with the lowest lung function scores (meaning worse outcomes) are still using less IV compared to centres with higher lung function results (meaning better outcomes). On the other hand, prescription of preventive treatments, such as inhaled antibiotics, does not appear to explain the differences in lung function between centres.

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

Our results suggest that despite the abundant availability of preventive treatments, inadequate IV use could still compromise lung function for people with CF. We suspect that the lower lung function scores could be the result of inadequate detection and treatment of exacerbations.

This is not to say that preventive treatment has no role in maintaining lung function. Preventive treatments work well in a clinical trial setting, when adherence (taking the medication as prescribed) is typically 80-100%. However, real life adherence with these treatments tends to be in the 35-50% range.

## **What’s next?**

A UK National programme is underway to objectively measure adherence of preventive inhaled treatments in routine practice. Analysing IV use along with adherence to preventive treatments would help us understand more about the quality of care in CF.

## **Original manuscript citation in PubMed**

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