

# Cystic Fibrosis Research News

**Title:**

INTEGRATING THE MULTIPLE BREATH WASHOUT TEST INTO INTERNATIONAL MULTICENTRE TRIALS

**Authors:**

Clare Saunders<sup>a,b\*</sup>, Renee Jensen<sup>c\*</sup>, Paul D. Robinson<sup>e,f\*</sup>, Sanja Stanojevic<sup>c,d</sup>, Michelle Klingel<sup>c</sup>, Christopher Short<sup>a,b</sup>, Jane C. Davies<sup>a,b</sup>, Felix Ratjen<sup>c,d</sup>.

**Affiliations:**

*a. Royal Brompton & Harefield NHS Foundation Trust, London, United Kingdom.*

*b. National Heart and Lung Institute, Imperial College London, United Kingdom.*

*c. Translational Medicine, Hospital for Sick Children, Toronto, Canada.*

*d. University of Toronto, Toronto, Canada.*

*e. Department of Respiratory Medicine, The Children's Hospital at Westmead, Sydney, New South Wales, Australia.*

*f. Discipline of Paediatrics and Child Health, Sydney Medical School, University of Sydney, Australia.*

\*authors contributed equally

**What was your research question?**

How to integrate a new breathing test into a large international clinical trial to ensure high quality data is successfully collected at all study sites around the world.

**Why is this important?**

People living with cystic fibrosis (CF) are healthier than ever before; one reason for this is the development of new medicines to treat CF. Scientists have to measure how well a new drug works before it can be given to patients. A new breathing test called Multiple Breath Washout (MBW) can measure the effect of these new medicines on the lungs. To be successful in a clinical trial the breathing test must be performed in exactly the same way at each study site and the data reviewed to ensure there were no mistakes (quality control) that might affect study results.

**What did you do?**

We formed a collaborative international network to incorporate standard MBW training and certification as well as uniform quality control into a large clinical trial with 200 subjects and 50 sites around the world. Collectively, we trained and certified 132 MBW operators from 53 sites to perform MBW testing. We also trained 9 team members to use a standardized quality



# Cystic Fibrosis Research News

control protocol to evaluate study data. Overall 88.1% (1107/1257) of the data was acceptable, acceptability rate and results were similar no matter who evaluated the data or where in the world the testing was performed.

## **What did you find?**

Standard MBW training, certification and quality control is required to successfully incorporate MBW as an outcome in a large multi-centre clinical trial. Our standardized training and quality control program resulted in high rates of successful MBW test performance and high quality data collection. Using this approach, we were able to demonstrate the usefulness of the MBW test in the first global clinical trial that used MBW to measure the effect of an experimental drug.

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

This work confirms that with the proper infrastructure the MBW test can be used successfully in the setting of a clinical trial. We anticipate the results may be used by others as an example of the successes and challenges of incorporating the MBW test into their future studies. One challenge we observed was that sustained test success required ongoing MBW operator support. Offering abbreviated training for previously certified operators may be one way to help compensate for this. This experience also provides insight into challenges that remain for future integration of the MBW test into clinical care. For example, in order to optimize test success it is important to allow adequate time for testing.

## **What's next?**

This work has exciting potential to lead to automated approaches for quality control which may further aid integration of MBW into future studies and clinical care. Future work will also focus on developing more flexible approaches to operator training (e.g. online training) as well as making our data management and quality control processes more efficient.

## **Original manuscript citation in PubMed**

<https://www.ncbi.nlm.nih.gov/pubmed/?term=INTEGRATING+THE+MULTIPLE+BREATH+WASHOUT+TEST+INTO+INTERNATIONAL+MULTICENTRE+TRIALS>