



## NuvoAir and the Royal Brompton Hospital transforming Cystic Fibrosis Remote Care

A PIONEERING approach to cystic fibrosis (CF) care saves on the cost and inconvenience of frequent hospital visits and could help detect changes in lung function sooner. These results come from a pilot study involving people with CF who are being treated at London's Royal Brompton Hospital.

The results come one year after the pilot study began in which those with this life-long condition were shown how to home-test their lung function. In the past, this has always been done in a hospital setting. The 26 patients, who would normally be seen by their clinical team at the hospital on average five to six times a year, were given a hand-held NuvoAir spirometer device to use at home. Connected by Bluetooth to NuvoAir's smartphone app, it allowed them to check their lungs themselves. They were able to identify any significant falls in their lung function by self-testing whenever they wanted, rather than having to wait for their regular hospital check-up. This initiative also allowed patients to discuss any issues with their care team via video consultations in a 'virtual clinic' setting.

The study participants were shown how to use the Air Next spirometer, a simple-to-use device developed by the Swedish health tech company NuvoAir. Each patient simply blows into a mouthpiece that is connected to their own spirometer which in turn links to a smartphone. The results are recorded on Aria, a user-friendly app. This information is displayed on NuvoAir's digital platform, where it can be read by the patient's medical team. The accuracy of the spirometer is ensured with its results scored against those based on the ATS/ERS spirometry guidelines.

Satisfaction among CF patients in general using this new way of sharing data was reflected in a separate independent survey. It showed that 83 percent were highly likely to use a CF app to connect to their hospital. Furthermore, in the same survey, lung function monitoring was seen as one of the most needed self-monitoring devices in their digital toolbox. "The NuvoAir pilot study at the Royal Brompton has demonstrated that self-testing of lung function has many advantages and is only the start of an innovative way of caring for those with a chronic lung condition," says Helen Parrott, the Programme Lead.

An estimated 10,400 people in the UK have this chronic genetic condition which damages the lungs, digestive system and other organs. It is hoped that self-monitoring could help many more of them in the future.

"Our ambition is to make self-monitoring possible for all our patients and we hope to have the resources to progress the project even further in the coming year and invite more people with CF to benefit from it," she says.

"By being able to test their lung function at home, people with CF can monitor the health of their lungs more effectively and potentially more frequently, which could flag up improvements or deterioration sooner than the next clinic visit."

The pilot study looked at how often patients were carrying out a spirometry session (a minimum of three tests per session to obtain a reliable result). It showed they were doing twice as many sessions than they would if simply attending the CF clinic at their hospital. Further findings showed that individuals in this pilot study would spend almost 35 minutes having a remote consultation, of which 23 minutes was engaging in a video consultation. This is compared to an average out-patient CF clinic appointment lasting an average of 75 minutes.

Self-monitoring and shorter remote consultations meant less time travelling to appointments and saved people with CF money too. A survey indicates that on average a patient took 150 minutes travelling to appointments and more than a third of patients would need the help of others to get there. It also showed that the average transportation cost to clinic was £39."

We have built our technology with the patient fully in mind, in everything from the physical design to the app experience," says Lorenzo Consoli, CEO of NuvoAir. "What we have learnt and the feedback from the Royal Brompton has been amazing for our understanding of the needs and everyday life of CF patients. We are very pleased with the outcome so far and we're truly delighted to be able to support these patients with a comfortable solution for home care which allows them to focus on life ahead, and not the next hospital visit."



#### About NuvoAir

Headquartered in Stockholm, Sweden, NuvoAir combines hardware, software and data to improve lives of people suffering from respiratory conditions and to enable better and faster clinical decisions.

Early in 2017 NuvoAir received Euro 2M in seed capital from a leading Venture Fund in the Nordics.

#### About Royal Brompton Hospital

Royal Brompton Hospital is the largest specialist heart and lung medical centre in the United Kingdom. The hospital is part of Royal Brompton and Harefield NHS Foundation Trust, which includes Royal Brompton Hospital in Chelsea and Harefield Hospital near Uxbridge.

Royal Brompton Hospital's cystic fibrosis centre is one of the largest in Europe. It is a world leader in the development of new treatments and has become a model for other units in the UK and Europe.

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