European Cystic Fibrosis Society

Journal of Cystic Fibrosis
The Official Journal of the European Cystic Fibrosis Society

Cystic Fibrosis Research News

Title:

A smartphone application for reporting symptoms in adults with cystic fibrosis improves the detection of exacerbations: results of a randomised controlled trial

Authors:

Jamie Wood[1,2,3], Sue Jenkins[1,2,3], David Putrino[4,5], Siobhain Mulrennan[3,6], Sue Morey[3,6], Nola Cecins[2], Natasha Bear[7], Kylie Hill[1,3]

Affiliations:

[1]School of Physiotherapy and Exercise Science, Curtin University, Perth, Western Australia
[2]Physiotherapy Department, Sir Charles Gairdner Hospital, Perth, Western Australia
[3]Institute for Respiratory Health, Sir Charles Gairdner Hospital, Perth, Western Australia
[4]Abilities Research Center, Department of Rehabilitation and Human Performance, Icahn School of Medicine at Mount Sinai, New York, New York
[5]Department of Rehabilitation Medicine, Icahn School of Medicine at Mount Sinai, New York, New York
[6]Department of Respiratory Medicine, Sir Charles Gairdner Hospital, Perth, Western Australia
[7]Department of Clinical Research and Education, Child and Adolescent Health Services, Perth, Western Australia

What was your research question?

Can a smartphone application, used by adults with cystic fibrosis (CF) to report symptoms to the CF team, detect exacerbations (i.e. flare-ups) in lung disease sooner, enable earlier treatment with oral antibiotics, and reduce the need for treatment with intravenous antibiotics?

Why is this important?

Detecting respiratory exacerbations is one of the cornerstones of CF care. Exacerbations accelerate the rate of lung function decline over time, increase time spent in hospital, reduce health related quality of life and physical activity, and above all are leading to earlier age at death. The late detection of exacerbations can lead to worse outcomes; therefore tools are needed to assist clinicians in identifying exacerbations and providing treatment sooner. This may lead to improved health outcomes such as lung function and health related quality of life.

Cystic Fibrosis Research News

What did you do?

We developed a smartphone application (app) that can be used by adults with CF to report changes in their symptoms directly to the CF team. We conducted a 12 month randomised controlled trial (where participants are chosen to get one of two treatments at random) to investigate the effectiveness of the app at detecting exacerbations with the goal of reducing severe exacerbations needing intravenous antibiotics. The intervention group were asked to use the app weekly, and if their symptoms increased they were contacted by the nurse practitioner to assess their need for antibiotic treatment or review by the CF team.

What did you find?

Using the app led to the earlier detection of exacerbations needing oral or intravenous antibiotics; however, the intervention group did not need fewer intravenous antibiotics than the control group. The adherence to the weekly use of the app was 77%, which is somewhat better than adherence rates seen in previous telehealth studies in CF. Using the app did not affect other outcomes including lung function and health-related quality of life.

What does this mean and reasons for caution?

The results of this study support the continued development of telehealth technologies to identify exacerbations in CF. The use of these technologies is acceptable to adults with CF, and if the intervention carries a low burden (i.e. takes little time to use), it will likely be used enough to have an impact on outcomes. The fact that the use of intravenous antibiotics was not reduced in the group using the app, suggests that technologies aimed at identifying exacerbations need further work. The results also highlight the limited tools available to clinicians for treating exacerbations, and further research is warranted in this area.

What's next?

We will continue to develop and refine our app technology to improve its appearance and functionality, and investigate its impact in larger numbers of people with CF. There is also scope to investigate the use of similar apps in other chronic respiratory disease groups.

Original manuscript citation in PubMed

https://www.ncbi.nlm.nih.gov/pubmed/?term=A+smartphone+application+for+reporting+symptoms+in+adults+with+cystic+fibrosis+improves+the+detection+of+exacerbations%3A+results+of+a+randomised+controlled+trial

cfresearchnews@gmail.com