



Cystic Fibrosis Research News

Title:

THE CHANGING PREVALENCE OF PULMONARY INFECTION IN ADULTS WITH CYSTIC FIBROSIS: A LONGITUDINAL ANALYSIS

Authors:

Kay A. Ramsay, BSc^{a,b}, Harpreet Sandhu, MBChB^c, James B. Geake, MBBS^{d,e}, Emma Ballard, PhD^f, Peter O'Rourke, PhD^f, Claire E. Wainwright, MD^{b,g}, David W. Reid, MD^{h,i}, Timothy J. Kidd, PhD^{j,k,l}, Scott C. Bell, MD^{a,b,i}

Affiliations:

^a Lung Bacteria Group, QIMR Berghofer Medical Research Institute, Herston Rd, Herston, Brisbane, Australia

^b School of Medicine, The University of Queensland, Herston Rd, Herston, Brisbane, Australia

^c Severn Postgraduate Medical Education (PGME) School of Primary Care, Office of General Practice, The Academy, Great Western Hospital, Marlborough Road, Swindon, United Kingdom

^d Department of Thoracic Medicine, Royal Adelaide Hospital, North Tce, Adelaide, Australia

^e Respiratory Medicine, Lyell McEwin Hospital, Haydown Rd, Elizabeth Vale, Adelaide, Australia

^f Statistics Unit, QIMR Berghofer Medical Research Institute, Herston Rd, Herston Brisbane, Australia

^g Lady Cilento Children's Hospital, Stanley St, South Brisbane, Australia

^h Lung Inflammation and Infection Group, QIMR Berghofer Medical Research Institute, Herston Rd, Herston Brisbane, Australia

ⁱ Department of Thoracic Medicine, The Prince Charles Hospital, Rode Rd, Chermside, Brisbane, Australia

^j School of Chemistry and Molecular Biosciences, The University of Queensland, Cooper Rd, Brisbane, Australia

^k Centre for Experimental Medicine, Queen's University Belfast, University Rd, Belfast, United Kingdom

^l Child Health Research Centre, The University of Queensland, Graham St, South Brisbane, Australia

Cystic Fibrosis Research News

cfresearchnews@gmail.com

Cystic Fibrosis Research News

What was your research question?

We had three main research questions:

1. Has the number of adults with cystic fibrosis (CF) with respiratory infection changed over time?
2. Have there been improvements in the health of adolescents at the time they moved from a children's CF care centre to our adult CF care centre?
3. How useful is the definition of long-term (chronic) *Pseudomonas* infection?

Why is this important?

Lung infection, which can be caused by a number of different bacteria (bugs), is one of the main reasons why people with CF need to be hospitalised and treated with antibiotics. One bug, *Pseudomonas* can cause severe lung infections and is very harmful to the health of people with CF. Once established in the lung, *Pseudomonas* is very difficult to eradicate (kill) with antibiotics and, if not treated successfully, can cause chronic infection. Therefore, knowing what bacteria people with CF have in their sputum can help us to monitor how healthy they are and if current antibiotic treatment and care are working.

What did you do?

We collected and counted all the hospital records of lung infection for all people with CF who were cared for at a large adult CF centre from 2001 until 2014. We then looked to see if the rates of individual bacteria causing these infections had either increased or decreased over time. Additional data relating to lung function and nutrition was also collected on the adolescents during their first visit to the adult centre. We used this data, in conjunction with their lung infection results, to see if the health of these young people had improved over time.

What did you find?

Over the 14 years there were 469 adults with CF cared for at the adult centre. Our results showed a reduction over time in several different types of bacteria causing infections in patients with CF. In particular, there was a noteworthy decrease in the percentage of patients infected with *Pseudomonas*, though the percentage of people with chronic infection remained unchanged. Results also showed that lung function and nutrition in the adolescents at time of movement into the adult centre had also greatly improved over time. We also found that for many patients the existing definition of persistent (chronic) *Pseudomonas* infection was difficult to apply. However, by including lung infection results



Cystic Fibrosis Research News

collected from the previous year we were able to more confidently say if a patient has persistent infection with *Pseudomonas* or not.

What does this mean and reasons for caution?

While we can say that the percentage of lung infections has decreased over the 14 years, we cannot say why this has occurred. As a result of the improvements we observed in the health of the adolescents at time of movement, we suggest that one factor contributing to this decrease in infection is the increasing use of antibiotics during childhood to prevent infections caused by *Pseudomonas*.

What's next?

We will continue to monitor the health of people with CF in an adult CF centre by looking at the amount and variety of bacteria in their sputum. We can also see the value in combining this information with antibiotic records, so we will have a better understanding of when treatments are working well.

Original manuscript citation in PubMed

<http://www.ncbi.nlm.nih.gov/pubmed/27515017>