

# Cystic Fibrosis Research News

## Title:

A Longitudinal Analysis of Chronic MRSA and *Pseudomonas aeruginosa* Co-infection in Cystic Fibrosis: A Single-Center Study

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## What was your research question?

People with cystic fibrosis (CF) are susceptible to chronic lung infection with both *Pseudomonas aeruginosa* and methicillin-resistant *Staphylococcus aureus* (MRSA). We examined whether chronic co-infection with both bacteria was associated with worsened lung function and more frequent need for intravenous (IV) antibiotics compared to people with either bacterium alone.

## Why is this important?

MRSA infection has risen from 9% in 2002 to 26% in 2012 among people with CF in the U.S. according to the CF Foundation Patient Registry. Previous research has shown that chronic MRSA infection may worsen disease and affect survival. Additionally, *Pseudomonas aeruginosa* infects nearly 70% of people with CF by adulthood and is known to worsen lung disease once acquired. However, there has been little research into how co-infection with MRSA and *Pseudomonas aeruginosa* affects lung disease in CF.

## What did you do?

We studied how chronic co-infection with both *Pseudomonas aeruginosa* and MRSA affected CF lung disease. We tracked how lung function changed from year to year and the number of intravenous antibiotic treatments of 354 patients attending the care center in Atlanta, GA from 2007-2013. We compared these measures between those with chronic co-infection and those with 1) *Pseudomonas aeruginosa* alone, (2) chronic MRSA alone, (3) intermittent infection, or (4) no MRSA/*Pseudomonas aeruginosa*.



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## What did you find?

Among all 354 individuals studied, 11% had chronic co-infection with *Pseudomonas aeruginosa* and MRSA. Chronic co-infection was associated with a significantly more rapid yearly decline in lung function compared to those with either *Pseudomonas* or MRSA alone or neither. Among those younger than 21 years of age, results were similar except there was no difference in lung function decline between those with chronic co-infection and those with chronic *Pseudomonas* alone. Rate of IV antibiotic treatments (as an indicator of a severe pulmonary exacerbation) was significantly higher among those with chronic co-infection compared to either *Pseudomonas* or MRSA alone or neither.

## What does this mean and reasons for caution?

People with CF with chronic co-infection may have worsened lung disease than those with single infection. However, this study was conducted at a single center in the U.S. and more research is needed to see how chronic co-infection affects all individuals with CF. Because individuals with chronic co-infection had lower lung function at the beginning of the study, factors other than chronic co-infection may have contributed to their worsened lung disease. To better understand how chronic co-infection may affect CF lung disease, an individual's lung function before and after they acquire chronic co-infection should be compared.

## What's next?

Data from the Atlanta Care Center show chronic co-infection is harmful for people with CF. Because MRSA is becoming increasingly common among people with CF, a larger, prospective study should be conducted to investigate how chronic co-infection with MRSA and *Pseudomonas aeruginosa* affects health outcomes in CF.

## Original manuscript citation in PubMed

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