



Cystic Fibrosis Research News

Article citation:

Sagel SD, Thompson V, Chmiel JF, Montgomery GS, Nasr SZ, Perkett E, Saavedra MT, Slovis B, Anthony MM, Emmett P, Heltshe SL. Effect of treatment of cystic fibrosis pulmonary exacerbations on systemic inflammation. *Ann Am Thorac Soc.* 2015 May;12(5):708-17

What was your research question? (50 words maximum)

We studied whether inflammatory proteins in the blood may demonstrate and predict a clinical response to antibiotic therapy for pulmonary exacerbations in cystic fibrosis (CF). We also looked at which proteins are associated with clinical improvement.

Why is this important? (100 words maximum)

There is a need to identify biomarkers (proteins or substances in the body) that can be used to more quickly evaluate potential new treatments in CF. Knowing which biomarkers predict and respond to drugs may lead to a more efficient drug development process.

What did you do? (100 words maximum)

We took blood from eligible participants who were experiencing an acute pulmonary exacerbation at the beginning and end of intravenous (IV) antibiotic treatment, and a third time two weeks after completion of IV antibiotics. We measured levels of 15 proteins that indicate underlying inflammation from the blood samples that were taken. We examined the blood for changes in these



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inflammatory proteins and then compared these changes with measures of clinical improvements including lung function and weight.

What did you find? (100 words maximum)

We found large decreases in 10 blood proteins during IV antibiotic treatment for pulmonary exacerbations. Some of these proteins were associated with worse clinical measures at the start of the exacerbation. Decreases in some of these proteins during IV antibiotic treatment were also associated with improvements in lung function with antibiotic therapy. Levels of some of the proteins at the start of the exacerbation were associated with an increased risk of not recovering to pre-exacerbation baseline with antibiotic treatment.

What does this mean and reasons for caution? (100 words maximum)

Several inflammatory proteins in the blood decreased with antibiotic treatment for pulmonary exacerbations. We may also be able to use these protein measurements to monitor response to antibiotic treatment and predict which patients may struggle to recover to their baseline lung function after an exacerbation. We did not determine whether measuring these proteins in blood can diagnose exacerbations. Also, this study only looked at people 10 years or older and findings cannot be generalized to infants and young children.

What's next? (50 words maximum)

We are continuing to measure blood-based proteins in CF clinical trials as a way to see if the treatments are working. We are trying to determine if



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measuring blood-based proteins is a helpful way to monitor treatment response in addition to looking for improvement in symptoms and lung function.