Cystic Fibrosis Research News

Title:
Comparison of microbial composition of cough swabs and sputum for pathogen detection in patients with cystic fibrosis.

Lay Title:
Can cough swabs be used to identify bacterial infections in patient with cystic fibrosis.

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What was your research question?
We wanted to investigate whether cough swabs could be used to identify bacteria that commonly cause chest infections in patients with cystic fibrosis (CF).

Why is this important?
Patients with CF are more prone to chest infections. Unfortunately, these infections can worsen their lung health over time. Therefore, quick identification of infections and treatment are important. Currently, sputum is used in adults to check for infections. However, new cystic fibrosis therapies (such as transmembrane conductance regulator (CFTR) modulators) can make it harder for patients to produce sputum. An alternative approach is therefore needed. Cough swabs (a painless and relatively simple technique, often used in children, where a patient is asked to cough on to a swab) could be an option if paired with more modern laboratory techniques that improve detection by targeting a bacteria's DNA.

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What did you do?

Cough swabs and sputum samples taken on the same day were collected from 22 adults and 8 children with CF. These samples were then processed using both traditional and modern laboratory approaches to look closely at the bacteria in the samples and to see how similar they are to one another. For this study we looked specifically at bacteria commonly associated with chest infections in patients with CF, such as Pseudomonas aeruginosa and Staphylococcus aureus.

What did you find?

We found that the amount of bacteria detected in a patient's cough swabs or sputum was unique to each patient. Unfortunately, cough swabs did not share similar results as sputum in our study and could not accurately identify important bacteria associated with chest infections.

What does this mean and reasons for caution?

From these findings we cannot recommend the use of cough swabs as an alternative to sputum to diagnose bacterial chest infections in adult patients with CF. Therefore, there remains a need for new diagnostic tools to detect chest infections in patients with CF who cannot produce sputum.

What's next?

New and alternative approaches such as breath analysis that do not rely on traditional sampling techniques should be explored further. This technique uses the air that a patient breathes out and the very small compounds within it (those that can make our breath smell) to detect bacteria or infections. Further research is needed to understand whether this offers a solution.

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