



## Synopsis

# Airway-microbiome-driven mechanisms of disease during optimised self-management: a lesson learned from mechanistic study of the Colour-COPD trial

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## Plain language summary

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## Plain language summary

Chronic obstructive pulmonary disease is a common lung problem mostly affecting adults over the age of 40. It causes breathlessness and cough, and patients often experience flare ups of their symptoms, known as exacerbations. One way of recognising an infectious exacerbation is to look at sputum colour, and compare this to a colour chart – antibiotics are only suggested if the colour indicates an infection. This study added laboratory work to a trial of sputum colour charts in chronic obstructive pulmonary disease (Colour-COPD Trial), to see if it affected basic processes in the lung that could determine how patients feel.

We separated sputum from saliva and stored it to preserve genetic material (deoxyribonucleic acid) from bacteria and viruses. Antibiotics patients take affect patterns in bacterial deoxyribonucleic acid. If the Colour-COPD Trial had been able to show a difference in either quality of life or antibiotic use, we would have proceeded to look at the microbiome related to these outcomes. However, the trial was stopped early due to problems recruiting, mostly related to the effects of the COVID-19 pandemic, so we have had to find other ways to answer our questions. This has involved recruiting patients and collecting their sputum from other studies, which will complete next year.

We decided it was important to try and complete the study, independent of the trial, because if helpful effects are seen within airway bacteria or inflammation that relate to aspects of chronic obstructive pulmonary disease care that can be collected from other sources (not just the trial) then we may be able to start personalising care for chronic obstructive pulmonary disease patients based on how their sputum looks. It may also enable us to design new treatments that alter the same basic processes and help patients. These results will be submitted as a separate publication in 2024.