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Clinical endotypes of exacerbation are associated with differences in microbial composition and diversity in COPD

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The microbiome is heterogeneous at COPD exacerbation, but different microbiota profiles are associated with both the clinical presentation and severity <https://bit.ly/2X1sTzd>

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To the Editor:

COPD exacerbations are associated with worsening symptoms including cough, shortness of breath, sputum production and airflow obstruction. Increased numbers of exacerbations are associated with morbidity and mortality [1]. Exacerbations are classically believed to be associated with viral or bacterial infection, although they may also be associated with noninfectious stimuli including eosinophilic inflammation or paucigranulocytic exacerbation such as the worsening of cardiovascular disease [2]. The mainstay treatment for exacerbation of COPD is antibiotics and corticosteroids; however, treatment with these is not always successful and there is a need for more personalised management of exacerbations [3]. One of the largest studies of the sputum microbiome in COPD compared the microbiome at stability and exacerbation in 161 exacerbations in 78 patients and found no consistent changes in the microbiome with no overall difference in Shannon diversity index between the groups [4]. The most striking finding of this study was that COPD exacerbations could be classified into bacterial, viral and eosinophilic and patients showed remarkable consistency of their exacerbation phenotype over time. A number of studies have supported these defined phenotypes of exacerbation in COPD [2]. Therefore, in this study we aimed to examine whether we could observe changes in the microbiome from stability to COPD exacerbation within these three subtypes of clinically defined events.