

## **Molecular and clinical disease of comorbidities in exacerbated COPD patients**

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The frequent occurrence of comorbidities in patients with chronic obstructive pulmonary disease (COPD) suggests that they may share pathobiological processes and/or risk factors.

To explore these possibilities we compared the clinical disease and the molecular disease of 5447 COPD patients hospitalised because of an exacerbation of the disease. The clinical disease is a network representation of the relationships between diseases, in which diseases are connected if they co-occur more than expected at random; in the molecular disease, diseases are linked if they share associated genes or interaction between proteins.

The results showed that about half of the disease pairs identified in the clinical disease had a biological counterpart in the molecular disease, particularly those related to inflammation and vascular tone regulation. Interestingly, the clinical disease of these patients appears independent of age, cumulative smoking exposure or severity of airflow limitation.

These results support the existence of shared molecular mechanisms among comorbidities in COPD.