

# A simple algorithm for the identification of clinical COPD phenotypes

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This study aimed to identify simple rules for allocating chronic obstructive pulmonary disease (COPD) patients to clinical phenotypes identified by cluster analyses. Data from 2409 COPD patients of French/Belgian COPD cohorts were analysed using cluster analysis resulting in the identification of subgroups, for which clinical relevance was determined by comparing 3-year all-cause mortality. Classification and regression trees (CARTs) were used to develop an algorithm for allocating patients to these subgroups. This algorithm was tested in 3651 patients from the COPD Cohorts Collaborative International Assessment (3CIA) initiative. Cluster analysis identified five subgroups of COPD patients with different clinical characteristics (especially regarding severity of respiratory disease and the presence of cardiovascular comorbidities and diabetes). The CART-based algorithm indicated that the variables relevant for patient grouping differed markedly between patients with isolated respiratory disease (FEV1, dyspnoea grade) and those with multimorbidity (dyspnoea grade, age, FEV1 and body mass index). Application of this algorithm to

the 3CIA cohorts confirmed that it identified subgroups of patients with different clinical characteristics, mortality rates (median, from 4% to 27%) and age at death (median, from 68 to 76 years). A simple algorithm, integrating respiratory characteristics and comorbidities, allowed the identification of clinically relevant COPD phenotypes. © Copyright ERS 2017.