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## Background

Long-acting  $\beta_2$ -agonists (LABAs) and long-acting muscarinic antagonists (LAMAs) are recommended as initial maintenance treatments for COPD, with their combination (LABA-LAMA) advocated as the disease progresses. Randomized trials comparing the effectiveness of this combination with the alternative combination of LABA with inhaled corticosteroid (LABA-ICS) have reported conflicting data, while there are no real-world comparative effectiveness and safety studies of these regimens in clinical practice settings.

## Methods

We identified a cohort of patients with COPD during 2002-2015, age 55 years or older, from the United Kingdom's Clinical Practice Research Datalink. Patients initiating LABA-LAMA on the same day (no ICS) were matched on time-conditional high-dimensional propensity scores with patients initiating LABA-ICS on the same day (no LAMA), and monitored for 1 year for the occurrence of a moderate or severe COPD exacerbation and severe pneumonia.

## Results

The cohort included 1,977 initiators of LABA-LAMA matched with 1,977 initiators of LABA-ICS. The hazard ratio (HR) of moderate or severe COPD exacerbation associated with LABA-LAMA initiation, relative to LABA-ICS initiation, was 1.04 (95% CI, 0.90-1.20), while for a severe exacerbation it was 0.94 (95% CI, 0.65-1.36). The incidence of severe pneumonia requiring hospitalization was lower with LABA-LAMA initiation (HR, 0.66; 95% CI, 0.41-1.05), particularly in the on-treatment analysis (HR, 0.66; 95% CI, 0.50-0.87).

## Conclusions

In a real-world clinical practice setting of COPD treatment, combined LABA-LAMA inhalers appear to be as effective as combined LABA-ICS inhalers in preventing COPD exacerbations. However, a LABA-LAMA combination may be preferred because it is associated with fewer severe pneumonias.

Key Words:

[COPD treatment](#), [database research](#), [observational study](#), [real world evidence](#)

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## Abbreviations:

[CPRD](#) (Clinical Practice Research Datalink), [HR](#) (hazard ratio), [ICS](#) (inhaled corticosteroid), [IMPACT](#) (Informing the Pathway of COPD Treatment), [LABA](#) (long-acting  $\beta_2$ -agonist), [LAMA](#) (long-acting muscarinic antagonist)

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