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Title: Inhaled corticosteroids and the risk of pneumonia in Medicare patients with COPD

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Body: Background: A growing number of studies have found a positive association between the use of inhaled corticosteroids (ICS) in chronic obstructive pulmonary disease (COPD) and the risk of pneumonia. Objective: To determine the relationship between ICS use and risk of pneumonia in the Medicare population with COPD. Methods: We performed a nested case control analysis to study the relationship between ICS use and risk of pneumonia in a cohort of Medicare Advantage members with COPD. We designated a case to be a member's first inpatient or outpatient episode of pneumonia. Cases were matched to controls of the same age and sex who entered the COPD cohort at the same time but had not yet contracted pneumonia by the case's event date. We estimated the association between ICS use and pneumonia using logistic regression analysis. Adjusted models controlled for age, sex, race, use of other COPD medication classes, markers of COPD severity, receipt of the pneumococcal vaccine, and comorbidities. Results: Out of a COPD cohort of 83,455 members, we identified 13,778 episodes of pneumonia, which were matched to 36,767 controls. Adjusting for covariates, we found that having used any ICS during the past year is associated with an increased risk of a pneumonia episode (OR 1.11, 95% CI: 1.05-1.18). In alternative specifications, we found the risk of pneumonia is highest for current ICS users (OR 1.26, 95% CI: 1.16-1.36) and current high-dose users (OR 1.55, 95% CI: 1.25-1.92), compared to non-users. Conclusion: Our study confirms the finding of previous studies that ICS use – especially current use and high-dose use – is associated with an increased risk of pneumonia.