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Combined Impacts of Weather Conditions and COPD on the Risk for Community-Acquired Pneumonia

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Community-acquired pneumonia (CAP) is one of the most frequent causes of death among infectious diseases worldwide. Analyzing a dataset of 5,223 CAP patients in a German multicenter cohort study, our research uniquely explores the twofold combined impact of meteorological conditions, air quality conditions, and pre-existing chronic obstructive pulmonary disease (COPD) on CAP admissions. Both the twofold compound effect of absolute values of meteorological and air quality conditions and, even more, their day-to-day changes significantly influence CAP admissions. Our study emphasizes the important role of air quality conditions over meteorological conditions in contributing to increased CAP admissions, with these weather conditions exerting their influence with a lag time of approximately three to four days. Individuals with pre-existing COPD face the highest risk of CAP admission in the general cohort. The implications of our findings extend to supporting at-risk individuals through protective measures and providing healthcare providers with valuable insights for resource planning during pneumonia-inducing weather conditions.