

European Respiratory Society Annual Congress 2013

Abstract Number: 4809

Publication Number: P784

Abstract Group: 5.2. Monitoring Airway Disease

Keyword 1: COPD - exacerbations **Keyword 2:** Telemedicine **Keyword 3:** Air pollution

Title: Modeling an electronic field registry - An adaptation approach to climate change in mild altitude cities for early prediction of heat related COPD exacerbations

Mr. Baback 15561 Parandian baback.parandian@charite.de MD ¹, Mr. Marc 15562 Hanisch marc.hanisch@charite.de ¹, Mr. Fred 15563 Meier fred.meier@tu-berlin.de ², Mr. Matthias 15564 Grabenhorst matthias.grabenhorst@charite.de MD ¹, Mr. Uta 15568 Liebers uta.liebers@charite.de MD ¹, Mrs. Melissa 33909 Jehn melissa.jehn@charite.de ¹ and Mr. Christian 33933 Witt christian.witt@charite.de MD ¹. ¹ Charité - Universitätsmedizin Berlin, Department of Pneumology, Berlin, Germany and ² Technical University of Berlin, Department of Geography, Berlin, Germany .

Body: Background: The effects of ongoing climate changes significantly impact health status in COPD. The purpose of this study was to evaluate if heat waves and high air pollution reflect the magnitude of COPD exacerbation rates. Objective: To model an Electronic Field Registry in the mid latitude metropolitan Berlin containing climate and clinical patient data. The aim is to evaluate the association between environmental factors and COPD exacerbation rates. By means of an internet-based Electronic Field Map we hope to better screen patients at risk for exacerbation. Methods and Materials: The Electronic Field Registry will store climate and patient data. Climate data includes air temperature and humidity as well as level of air pollutants such as PM10, Black Smoke and O3. Climate data is continuously provided by 17 measuring stations throughout Berlin. Clinical data for exacerbation related hospital admissions were obtained from local hospital registries using ICD J44. Risk modeling is computed by regression analyses and machine learning algorithms. Results: The interface database contains all environmental data from 2011 and 2012. Preliminary analyses show higher risk for COPD exacerbation around periods with high air particle pollution and heat waves. Discussion and Conclusion: Our preliminary results suggest that rises in air pollution and temperature significantly impact exacerbation rates of COPD. Modeling of an Electronic Field Registry can help medical providers plan resources more efficiently by providing an early recognition system for screening high risk COPD patients during periods with poor air quality and heat waves.