



## News Release

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### **FOR MORE INFORMATION, CONTACT:**

Nathaniel Dunford or Rory Williams

[ndunford@thoracic.org](mailto:ndunford@thoracic.org) or [rwilliams@thoracic.org](mailto:rwilliams@thoracic.org)

ATS Office 212-315-8620 or 212-315-8631 (until May 12)

Session A105: COPD Epidemiology: Global Perspective

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### **Regular Aspirin Use May Slow Progression of Early Emphysema**

ATS 2015, DENVER — Regular use of aspirin may help slow the progression of early emphysema, according to new research presented at the 2015 American Thoracic Society International Conference.

“Other than smoking cessation and avoidance, there are no known methods for reducing the risk of developing emphysema,” said researcher Carrie Aaron MD, of the Columbia University Medical Center in New York. “In our large general population sample, we found that regular aspirin use (three or more days per week) was associated with a slower progression of percent emphysema on computed tomography (CT) scans over 10 years.”

The study, which was motivated by findings of pulmonary vascular involvement in emphysema and the importance of platelet function in other vascular diseases, included 4,471 individuals participating in the Multi-Ethnic Study of Atherosclerosis Lung Study. The percentage of lung volume with emphysematous features (percent emphysema) was assessed on up to 4 CT scans performed over approximately 10 years of follow-up. Spirometry, a measure of expiratory airflow, was performed in 81% of study subjects.

Of the 4,471 study subjects, 21% (921) used aspirin regularly, 55% were ever-smokers, and 25% of those with spirometry had results indicating airflow obstruction. Regular aspirin use was associated with a significantly slower progression of percent emphysema over ten years, when compared to those who did not use aspirin, even after adjustment for a number of potential confounding factors, including age, sex, race/ethnicity, cigarettes/day, pack-years, and hypertension. Results were consistent in propensity score analyses, performed to minimize effects of confounding by indication. Similar reductions in the rate of progression of percent emphysema were seen among ever-smokers, and greater reductions were observed among individuals with spirometric evidence of airflow obstruction.

“Our study found that persons taking aspirin regularly had a slower progression of emphysema over 10 years compared to those who did not, and that this difference was not explained by many factors that we believe affect progression of emphysema.” said Dr. Aaron. “The findings might suggest that regular aspirin use may slow the progression of subclinical emphysema, perhaps through effects on platelet activation or inflammation.”

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*\* Please note that numbers in this release may differ slightly from those in the abstract. Many of these investigations are ongoing; the release represents the most up-to-date data available at press time.*

Abstract 69159

Aspirin Use and Longitudinal Progression of Percent Emphysema on CT: The MESA Lung Study

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Late Breaking Abstract

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Authors:

C.P. Aaron<sup>1</sup>, J.E. Schwartz<sup>1</sup>, E.A. Hoffman<sup>2</sup>, R. Tracy<sup>3</sup>, J.H.M. Austin<sup>4</sup>, L.J. Smith<sup>5</sup>, D.R. Jacobs<sup>6</sup>, K.E. Watson<sup>7</sup>, R.G. Barr<sup>1</sup>; <sup>1</sup>Columbia University - New York, NY/US, <sup>2</sup>University of Iowa - Iowa City, IA/US, <sup>3</sup>University of Vermont - Colchester, VT/US, <sup>4</sup>Columbia University - New York/US, <sup>5</sup>Northwestern University - Chicago, IL/US, <sup>6</sup>University of Minnesota - Minneapolis, MN/US, <sup>7</sup>UCLA - Los Angeles, CA/US

### **Abstract Body**

Rationale: Emphysema on computed tomography (CT) is associated with increased morbidity and mortality in the general population without airflow limitation and in COPD; however, there are no preventive strategies except smoking avoidance. The pulmonary vasculature has been implicated in emphysema, and platelets are involved in many vascular diseases. Aspirin reduces platelet activation; however, there is limited information on aspirin use and change in emphysema. We hypothesized that aspirin use would be associated with slower progression of percent emphysema on CT.

Methods: The Multi-Ethnic Study of Atherosclerosis (MESA) enrolled participants 45-84 years old without clinical cardiovascular disease in 2000-02. Medications were ascertained by medication inventory; regular use of aspirin was considered if reported use was 3 or more days/week. The MESA Lung Study assessed percent emphysema below -950 Hounsfield units on lung fields of cardiac CTs at baseline and 1-2 follow-up examinations, and on full-lung CTs at the 10-year follow-up examination. At approximately 5 years after baseline, 80% underwent pre-bronchodilator spirometry. Mixed effect models evaluated the association of baseline aspirin use with longitudinal change in percent emphysema after adjustment for age, sex, race/ethnicity,

height, weight, education, cigarettes/day, pack-years, angiotensin converting enzyme inhibitor or angiotensin II receptor blocker use, hypertension, C-reactive protein, plasma sphingomyelin, CT scanner model and mAs (radiation) dose. Secondary analyses used a propensity score approach with inverse probability of treatment weighting.

Results: At baseline the 4372 participants were mean age  $61 \pm 10$  years, 49% male, 53% ever-smokers, and 20% (890) used aspirin regularly. FEV<sub>1</sub>/FVC was below 0.7 for 25% (863) with spirometry. Median baseline percent emphysema was 2.92 (IQR 1.22, 5.77) and mean increase was 0.83%/10 years (95% CI: 0.53, 1.12; P-value<0.001). Participants who used aspirin were more likely to be older, male, white and ever-smokers. However, participants who used aspirin at baseline had a significantly slower progression of percent emphysema in unadjusted and fully-adjusted models (-0.36%/10 years, 95% CI: -0.63, -0.09; P-value=0.008) compared to those who did not. Results remained significant in propensity score analyses (-0.29%/10 years, 95% CI: -0.54, -0.05; P-value=0.02), were of the same magnitude in ever-smokers (-0.37%/10 years, 95% CI: -0.76, 0.03; P-value=0.07), and of greater magnitude in those with FEV<sub>1</sub>/FVC below 0.7 (-0.93%/10 years, 95% CI: -1.73, -0.13; P-value=0.02).

Conclusions: In a general population sample, regular baseline use of aspirin was associated with a slower progression of mostly subclinical percent emphysema on CT. Further study of aspirin as a preventive strategy in emphysema appears warranted.