


Print this Page for Your Records Close Window

**Control/Tracking Number:** 2025-S-6829-ATS
**Activity:** Scientific Abstract
**Current Date/Time:** 10/31/2024 11:34:01 AM

**Emphysema Severity Index (ESI) In A General Population Sample: A New Spirometric Parameter**

**Author Block: G. Viegi**[1], S. Maio[1], L. Carrozzi[2], S. Baldacci[1], F. Pistelli[2], G. Sarno[1], A. Angino[1], I. Stanisci[1], S. Tagliaferro[1], P. Silvi[1], G. Cenerini[2], M. Occhipinti[3], M. Paoletti[3], M. Pistolesi[3]; [1]Pulmonary Environmental Epidemiology Unit, CNR Institute of Clinical Physiology, Pisa, Italy, [2]Department of Surgical, Medical and Molecular Pathology and Critical Care Medicine, University of Pisa, Pisa, Italy, [3]Department of Experimental and Clinical Medicine, University of Florence, Florence, Italy.

**Abstract:**
BACKGROUND: Emphysema Severity Index (ESI) is a novel parameter that describes, through a mathematical biomechanics model of the airways, the curvilinear shape of the expiratory portion of the flow/volume curve to evaluate the emphysema contribution to the obstruction detected by spirometry. It has been successfully applied in COPD patients and in adult and geriatric populations. AIM: to assess the usefulness of ESI in a general population sample with low prevalence of chronic respiratory diseases. METHODS: A general adult population sample of Pisa (Central Italy) participated in an epidemiological survey through standardized questionnaire and spirometry, within EU-funded project “Indicators of Monitoring COPD an Asthma II” (2009-11). 685 had valid lung function data with hospital admissions up to 2017. The input variables for the ESI computing algorythm are Peak Expiratory Flow, Forced Vital Capacity (FVC) and the Forced Expiratory Flows at 25%, 50% and,75% of FVC. Input variables are in absolute value, independent from percent reference data. ESI is a numerical value ranging from 0 (no emphysema) to 10 (very severe emphysema). Statistics included descriptive analyses, Kruskas-Willis non parametric test and logistic regression models (significance level $p \leq 0.05$). RESULTS: the sample main characteristics were: 52.7% females, 53.5±16.6 yr age, 55.5% ever smokers, 50.7% with occupational exposure, 61.6% exposed to vehicle traffic, 15% with lifetime respiratory hospital admissions. The value of ESI in the Pisa general population sample was: 1.16±0.78 (mean±SD), 0.98-0.39 (median-IQR). ESI had significantly higher values in males, ex-smokers, elderly, in subjects reporting family history of respiratory disease, rhinitis, phlegm, diagnoses of asthma, chronic bronchitis, emphysema, COPD and in those with limited daily activities, higher numbers of doctor visits and hospital admission for respiratory disease. For each ESI unit increment, there were increased 12-month emergency department visits (OR 1.61, 95%CI 1.13-2.29), medical visits (OR 1.67, 1.29-2.17), daily activity limitations (OR 1.33, 1.02-1.73) and respiratory hospital admissions (OR 2.26, 1.38-3.70). DISCUSSION: ESI is associated with environmental risk factors, symptoms and diagnosis of chronic respiratory disease in a general population sample living in a middle town in Italy. ESI may be a useful indicator for the early identification of subjects most likely to use health services.REFERENCES: 1) Occhipinti M, et al. Validation of a method to assess emphysema severity by spirometry in the COPDGene study. Respir Res. 2020;21(1):103. 2) Luoto J, et al. Emphysema severity index (ESI) associated with respiratory death in a large Swedish general population. Respir Med. 2022;200:106899.

**Category (Complete)**: 09. COPD, Emphysema, Chronic Bronchitis, Alpha-1 Antitrypsin Deficiency -> Adult -> Physiology/Pathophysiology /Respiratory Structure and Function (RSF)
**Presentation Preference (Complete)**: Either Poster or Oral
**Abstract Affirmations (Complete)**:
**Basic Science Core Track**: No
**Related to Health Disparities?**: No
**LMIC**: No
**Funded by** : None
**Please select; if Yes is selected, please check all that apply**: No
**I agree to the Author Acknowledgement Statement** : True
**I agree to the Redundancy Statement** : True
**I agree to the Prior Publication Statement** : True
**I agree to the Terms of Use** : True

**Presenter Affirmations (Complete)**:
**Please select your primary ATS Assembly affiliation from the list below. Select "None" if you do not have an assembly affiliation OR are a non-member.**: Environmental, Occupational and Population Health (EOPH)
**Are you a MECOR student or graduate?** : No
**This submission relates thematically to Terrorism and Inhalation Disasters**: No
**This submission relates thematically to Medical Education**: No
**This submission relates thematically to Genetics and Genomics**: No
**Nursing Degree?**: No
**If No, Do any other authors on this abstract have a nursing degree of any kind?**: No
**First/Second Year Fellow?**: No
**Student or in training?**: No
**Early Stage Investigator?**: No
**New Submitter?**: No
**ATS Abstract Scholarship:** No
**International Trainee Scholarship. Please note: U.S. residents are not eligible for this scholarship.** No
**Publish Presenter Email with Abstract?**: No
**Do you agree?**: Yes

**Clinical Trial Affirmation (Complete)**:
**1. Is this abstract reporting results from an NIH-defined Clinical Trial?**
: No

**Status:** Complete

**American Thoracic Society**
25 Broadway
New York 10004-1012
abstracts@thoracic.org

**ATS Technical Support**
Email: ats@support.ctimeetingtech.com

Phone: 217-398-1792
Technical Support is available Monday-Friday, 8am-5pm Central Time.

Feedback

Powered by cOASIS, The Online Abstract Submission and Invitation System SM
© 1996 - 2024 CTI Meeting Technology All rights reserved. Privacy Policy