# Clinical phenotypes in adult patients with bronchiectasis

Stefano Aliberti[1], Sara Lonni[1], Simone Dore[2], Melissa J. McDonnell[3],
Pieter C. Goeminne[4,5], Katerina Dimakou[6], Thomas C. Fardon[7],
Robert Rutherford[3], Alberto Pesci[1], Marcos I. Restrepo[8], Giovanni Sotgiu[2] and
James D. Chalmers[7]

**Affiliations**: [1]School of Medicine and Surgery, University of Milan Bicocca, AO San Gerardo, Monza, Italy.
[2]Clinical Epidemiology and Medical Statistics Unit, Dept of Biomedical Sciences, University of Sassari –
Research, Medical Education and Professional Development Unit, AOU Sassari, Sassari, Italy. [3]Dept of
Respiratory Medicine, Galway University Hospitals, Galway, Ireland. [4]Dept of Respiratory Medicine, University
Hospital Gasthuisberg, Leuven, Belgium. [5]Dept of Respiratory Medicine, UZ Leuven, Leuven, Belgium. [6]5th
Pulmonary Dept, "Sotiria" Chest Hospital, Athens, Greece. [7]Tayside Respiratory Research Group, University of
Dundee, Dundee, UK. [8]Division of Pulmonary Diseases and Critical Care, South Texas Veterans Health Care
System and University of Texas Health Science Center, San Antonio, TX, USA.

**Correspondence**: Stefano Aliberti, School of Medicine and Surgery, University of Milan Bicocca, AO San
Gerardo, Via Pergolesi 33, 20052 Monza, Italy. E-mail: stefano.aliberti@unimib.it

ABSTRACT    Bronchiectasis is a heterogeneous disease. This study aimed at identifying discrete groups of
patients with different clinical and biological characteristics and long-term outcomes.

This was a secondary analysis of five European databases of prospectively enrolled adult outpatients
with bronchiectasis. Principal component and cluster analyses were performed using demographics,
comorbidities, and clinical, radiological, functional and microbiological variables collected during the
stable state. Exacerbations, hospitalisations and mortality during a 3-year follow-up were recorded. Clusters
were externally validated in an independent cohort of patients with bronchiectasis, also investigating
inflammatory markers in sputum.

Among 1145 patients (median age 66 years; 40% male), four clusters were identified driven by the
presence of chronic infection with *Pseudomonas aeruginosa* or other pathogens and daily sputum:
"*Pseudomonas*" (16%), "Other chronic infection" (24%), "Daily sputum" (33%) and "Dry bronchiectasis"
(27%). Patients in the four clusters showed significant differences in terms of quality of life, exacerbations,
hospitalisations and mortality during follow-up. In the validation cohort, free neutrophil elastase activity,
myeloperoxidase activity and interleukin-1β levels in sputum were significantly different among the clusters.

Identification of four clinical phenotypes in bronchiectasis could favour focused treatments in future
interventional studies designed to alter the natural history of the disease.

@ERSpublications

Daily sputum and chronic infection with *Pseudomonas* or other bacteria define clinical
phenotypes in bronchiectasis http://ow.ly/W4H9m