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# Respiratory Diseases in the Elderly

Edited by

V. Bellia and R. Antonelli Incalzi



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RESPIRATORY  
SOCIETY

# **Respiratory Diseases in the Elderly**

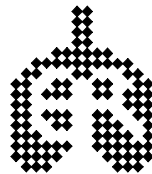
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K. Larsson

This book is one in a series of European Respiratory Monographs. Each individual issue provides a comprehensive overview of one specific clinical area of respiratory health, communicating information about the most advanced techniques and systems needed to investigate it. It provides factual and useful scientific detail, drawing on specific case studies and looking into the diagnosis and management of individual patients. Previously published titles in this series are listed at the back of this book with details of how they can be purchased.

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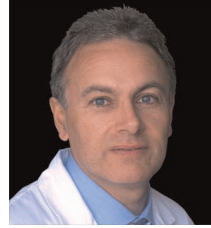
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# The Guest Editors



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# Preface

Human tissue, including airway and lung tissue, changes with age. Lung function deterioration starts in early adulthood and continues to decline throughout life. The mechanical properties of the lungs change, leading to decreased vital capacity, increased end-expiratory volume and changes in blood gases. The increase knowledge of age-related lung alterations may lead to changes in assessment and classification of pulmonary diseases. It is now well known that the forced expiratory volume in one second/vital capacity ratio declines with age implying a risk for the over estimation of chronic obstructive pulmonary disease prevalence in elderly people. There are data supporting the view that ageing is accompanied by increased systemic inflammatory activity due to the reduced capability of the inflammatory system to react to environmental factors, so called inflamm-ageing. The panorama of lung diseases is different in older and younger people and there are a number of immunological conditions and diseases induced by long-term exposure, which are substantially more prevalent in older, in comparison with younger, persons.

As the social standard is improving in the world the population is becoming aged. From a global perspective less than 10% of the population is aged over 65 yrs, but in some westernised countries close to one in five inhabitants are aged over 65 yrs. The change in age profile of the population poses specific medical issues that are highly relevant in respiratory medicine. It is gratifying that the interest for lung diseases in the elderly has been in greater demand during recent years and it is a pleasure to present this *European Respiratory Monograph* entirely focused on respiratory diseases in the elderly. It is a comprehensive, update monograph covering the majority of aspects concerning the lungs in an aging population, and written by the foremost experts within this field. It is certainly a book that will fill a great need and that will find its way to a wide audience of readers.

**Editor in Chief,  
K. Larsson**

## INTRODUCTION

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The world population is rapidly ageing. As a consequence, the portion of the elderly burdened with polipathology and disability will grow, while economic resources to support it will shrink, due to the contraction of the working force. This will require a long-term preventive political strategy but there are also selected healthcare interventions that can be easily implemented to decrease the negative impact of this demographic trend on the well being of our societies. Examples are strategies that slow functional decline and preserve personal capabilities in geriatric populations [1]. Instrumental in developing these strategies is an in-depth knowledge of how older age affects the expression of chronic diseases through several mechanisms, such as age-related comorbidity and cognitive/affective problems, decline/loss of social support, or atypical clinical presentations and special diagnostic problems. All this makes the elderly patient a complex client for the individual physician and for the healthcare system, and renders the traditional "specialist" approach poorly effective. An alternative strategy of integrating different skills in the process of care has been proved to reduce the hospitalisation of older patients with selected chronic disabling diseases (heart failure, for example), without extra costs [2]. These pioneering experiences are worthy of test in chronic respiratory diseases, mainly chronic obstructive pulmonary disease (COPD). Indeed, epidemiological data are consistent with COPD becoming a geriatric disease, mainly in its latest and most care demanding stages [3]. The adjective "geriatric" refers to age but mainly to age-related changes in disease presentation and assessment, which are largely underrepresented in the traditional didactics of respiratory medicine. Examples of variant topics, *i.e.* topics that are not systematically covered by traditional didactics, are listed in table 1 and represent the rationale for the related chapters of the current issue of the *European Respiratory Monograph*.

Promoting awareness of the special features of respiratory diseases in the elderly and implementing interventions able to slow the progressive loss of personal capabilities has an important clinical and economic impact. In a USA citizen >65 yrs of age in 1995, the onset of disability in activities of daily living (ADL) translated into an excess annual medical cost ranging US\$3,400–21,000, depending upon the time of disability onset during the year and the placement at home or in a nursing home; these costs did not take into account basic medical costs and unpaid costs of informal care [4]. However, as physicians, we often do not appreciate how non-respiratory and multidisciplinary care is crucial to preventing disability; even the outcomes of the care and the assessment instruments should depart from the tradition. Accordingly, preserving personal independence in the basic ADLs should be considered more important outcomes than improving forced expiratory volume in one second (FEV<sub>1</sub>). The available knowledge shows that physical limitation is not linearly related to bronchial obstruction which may be because non-respiratory

**Table 1. – Examples of topics that are not systematically covered by the usual didactic in respiratory medicine and are commonly underrepresented in the cultural patrimony of both respiratory physicians and general practitioners**

Neglected topic	Effect of poor awareness
Effects of multidisciplinary care on the health status of geriatric patients	Research activity: trials, most of which are funded by pharmaceutical companies, are designed to test new drugs and not new (to respiratory medicine) strategies of care. Clinical practice: important interventions lie outside the realm of current practice.
Atypical presentation of respiratory diseases	Nonrespiratory, <i>e.g.</i> neurological or psychiatric, symptoms may not help detect an exacerbated or acute respiratory disease.
Age-related technical problems with respiratory function tests	Frail patients are commonly excluded from clinical trials. Proposed guidelines might not apply to these patients.
Availability of “low cost” spirometric measures that are alternative to FEV <sub>1</sub> and FVC	Elderly patients do not benefit from measures that have well-proved classificatory, discriminative and prognostic implications.
Poor quality of spirometric reference standards for the elderly	Spirometric measures, when available, are interpreted without the due caution
Spectrum of risk factors for and mechanisms of aspiration pneumonia	Patient at risk is not recognised in time and preventive measures are not adopted.
Comorbidity as a factor complicating and confounding the clinical picture in COPD	The interpretation of complex clinical pictures is oversimplified.
Palliative and end-of-life care of the respiratory patient	Poor quality of the care provided to very sick patients

FEV<sub>1</sub>: forced expiratory volume in one second; FVC: forced vital capacity; COPD: chronic obstructive pulmonary disease.

features of COPD, *e.g.* sarcopenia or depression, and variability in the threshold for dyspnoea play a major causal role. Accordingly, only a comprehensive view of COPD allows us to recognise both determinants of health status and related needs of care.

The primary aim of the current issue of the *European Respiratory Monograph* is to make respiratory physicians, general practitioners and any other physicians caring for elderly respiratory patients fully aware of how their role goes beyond the care of the respiratory problem. This requires specific competence and a problem-solving approach based on a truly multidisciplinary process of care. Unfortunately, multidisciplinary and comprehensive home and hospital care programmes for respiratory patients are distinctly rare or limited to selected populations, which makes their conclusions barely generalisable [5]. However, some positive evidence can be confidently drawn from mono-dimensional experiences. For example, patients’ education can decrease COPD-related hospitalisations, while regular physical activity is associated with reduced hospitalisation and mortality in COPD patients [6, 7], and rehabilitation can improve personal independence even in severe COPD [8, 9]. It is likely, yet unproved, that combining individually effective measures will favourably affect more outcomes of care. Pursuing such an objective will make respiratory physicians and general practitioners able to propose cost-effective solutions for assisting elderly respiratory patients. Otherwise, it will be very difficult to help our patients beyond the realm and the boundaries of our personal practice, particularly in times of resource shortage.

In conclusion, this issue of the *European Respiratory Monograph* will have reached its objective if the reader makes his/her approach to the elderly respiratory patient truly comprehensive and his/her working model truly cooperative and then multidisciplinary.

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## References

1. Antonelli Incalzi R, Pedone C, Pahor M. Multidimensional assessment and treatment of the elderly with COPD. *In: Antonelli Incalzi R, Bellia V, eds. Pulmonary diseases in the elderly. Eur Respir Mon* 2009; 43: 35–55.
2. Ahmed A. Quality and outcomes of heart failure care in older adults: role of multidisciplinary disease-management programs. *J Am Geriatr Soc* 2002; 50: 1590–1593.
3. Viegi G, Maio S, Simoni M, Baldacci S, Annesi-Maesano I. The epidemiological link between ageing and respiratory diseases. *In: Antonelli Incalzi R, Bellia V, eds. Pulmonary diseases in the elderly. Eur Respir Mon* 2009; 43: 1–17.
4. Guralnik JM, Alexih L, Branch LG, Wiener JM. Medical and long-term care costs when older persons become more dependent. *Am J Public Health* 2002; 92: 1244–1245.
5. Bourbeau J, Julien M, Maltais F, *et al.* Reduction of hospital utilization in patients with chronic obstructive pulmonary disease: a disease-specific self-management intervention. *Arch Intern Med* 2003; 163: 585–591.
6. Effing T, Monninkhof EM, van der Valk PD, *et al.* Self-management education for patients with chronic obstructive pulmonary disease. *Cochrane Database Syst Rev* 2007; 4: CD002990.
7. Garcia-Aymerich J, Lange P, Benet M, Schnohr P, Antò JM. Regular physical activity reduces hospital admission and mortality in chronic obstructive pulmonary disease: a population based cohort study. *Thorax* 2006; 61: 772–778.
8. Lacasse Y, Goldstein R, Lasserson TJ, Martin S. Pulmonary rehabilitation for chronic obstructive pulmonary disease. *Cochrane Database Syst Rev* 2006; 4: CD003793.
9. Carone M, Patessio A, Ambrosino N, *et al.* Efficacy of pulmonary rehabilitation in chronic respiratory failure (CRF) due to chronic obstructive pulmonary disease (COPD): The Maugeri Study. *Respir Med* 2007; 101: 2447–2453.