

Managing COPD

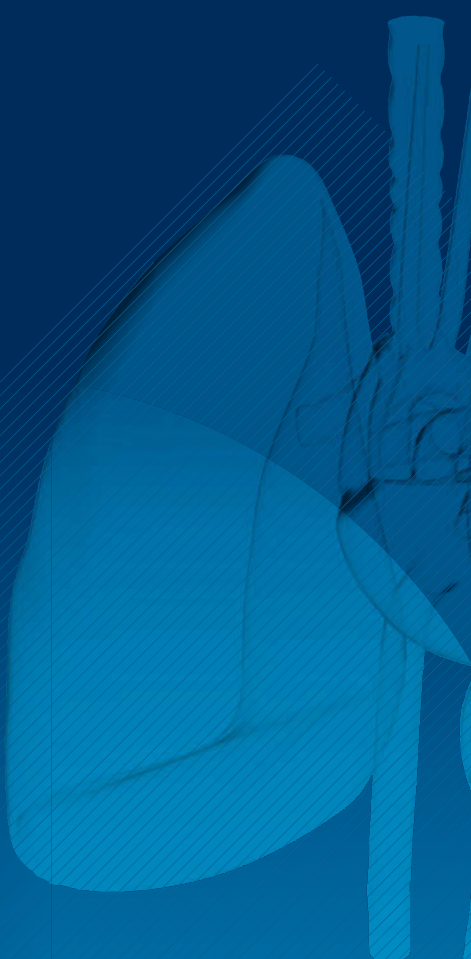
Third Edition

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Springer Healthcare

Published by Springer Healthcare Ltd, 236 Gray's Inn Road, London, WC1X 8HB, UK.

www.springerhealthcare.com

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British Library Cataloguing-in-Publication Data.

A catalogue record for this book is available from the British Library.

ISBN 978-1-908517-69-2

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Printed in Singapore by Stamford Press

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Author biographies

Richard EK Russell, FRCP, PhD, is Honorary Clinical Senior Lecturer at Imperial College, London, UK. He trained at Guy's Hospital and then further in Respiratory Medicine in South London and the Royal Brompton Hospitals. He has been a Consultant at Wexham Park and Windsor Hospitals for 4 years with special interests in chronic obstructive pulmonary disease (COPD), particularly its pathophysiology, asthma and delivery of care across the primary/secondary care interface. Dr Russell completed a PhD as a British Lung Foundation Research Fellow. The primary area of research was into basic mechanisms of COPD and disease progression in smokers in primary care. This is a continuing area of study for Dr Russell. He is active in the British Thoracic Society and the British Lung Foundation. Dr Russell is the lead from secondary care on the primary care quality outcomes framework national working party.

Paul A Ford, MRCP, PhD, is MRC Senior Clinical Research Fellow at Imperial College and Honorary Clinical Fellow at the Royal Brompton, and Wexham and Heatherwood NHS trusts. Dr Ford qualified from St. George's Hospital Medical School, London, in 1990 and completed his PhD in 2003 in Cellular Biology at Imperial College and Royal Brompton NHS trust. His thesis was primarily concerned with the role of the macrophage in airway inflammation, particularly COPD. Currently, he is working on developing novel pharmacological therapies for the treatment of COPD; in particular, modulating airway inflammation.

Peter J Barnes, FMedSci, FRS, is Professor of Thoracic Medicine at Imperial College London, UK. Prof. Barnes runs a large and active multidisciplinary group of over 80 researchers exploring the mechanisms and treatment of asthma and more recently COPD. He has linked molecular and cell biology to clinical studies in order to understand the inflammatory process in airway disease and to understand the mechanisms of action of currently used drugs. He has also pioneered the use of noninvasive markers to monitor lung inflammation, which has enabled research into inflammatory mechanisms to be extended to patients with severe

disease. Prof. Barnes has published over 1000 papers in peer-reviewed journals and has written, edited or co-edited over 30 books on airway diseases and lung pharmacology. He serves on the editorial boards of more than 20 international journals and on several national and international advisory boards, and is a member of the scientific committees for the Global Initiative for Chronic Obstructive Lung Disease (GOLD) and Global Initiative for Asthma (GINA) guidelines.

Sarah Russell qualified as a Nurse at Guys and Lewisham NHS Trust in 1989 and has worked in the primary, secondary and palliative care charity sector as a palliative care clinical nurse specialist, team leader and multi professional educator. Sarah has a particular interest in education, communication skills, advance care planning and palliative care of Chronic Obstructive Pulmonary Disease. Sarah is currently completing a 6 year part time Doctorate in Health Research involving a narrative video research methodology regarding advance care planning entitled *‘What would influence patients to discuss their preferences and wishes about care at the end of life’*.

Introduction

Welcome to a revised guide for use in the management of patients with chronic obstructive pulmonary disease (COPD). We have attempted to take a fresh approach to this disease, with the aim of concentrating on the numerous effects that COPD can have on a patient.

An understanding of the pathological processes involved in the aetiology of COPD underpins effective disease management. In particular, given the disease's wide heterogeneity, a better understanding of the innate and adaptive processes underpinning the complex small airway inflammation will lead to more effective therapies. This knowledge must be applied appropriately, with 'tailored' treatment fitted to individual patients and their disease.

The history of COPD

The terms 'chronic bronchitis' and 'emphysema' were formally defined at a CIBA (Gesellschaft für Chemische Industrie Basel) guest symposium of physicians in 1959, and it is believed that the term COPD was first mentioned by William Briscoe in discussion at the 9th Aspen Emphysema Conference in 1965. This has gradually overtaken other terms to become established today as the preferred name for the disease. Nevertheless, it is important to realise that, in reality, COPD is an 'umbrella term' and describes a heterogeneous group of diseases with similar manifestations, including overlapping disease processes such as chronic bronchitis, emphysema, asthma, bronchiectasis and bronchiolitis.

Bonnet, with his description of 'voluminous lungs' in 1679, is often credited with the first accurate description of emphysema, and Ruysch

(1721) with the first accurate illustration of enlarged air spaces. However, it is also worth bearing in mind that the Greek term *aazein* or ‘sharp breath’ is first described in Homer’s Iliad around 2000 years earlier. The Chinese have probably used ephedrine to treat airway obstruction for just as long, and both Hippocrates (460–357 BC) and Galen (201–130 BC) established that asthma (and quite possibly COPD) is caused by bronchial obstruction. Rene Laennec, in his book *Treatise of Diseases of the Chest* (1821), described lungs that did not collapse at autopsy and theorised that this air trapping occurred because of greater inspiratory forces overcoming weaker expiratory ones. It was an eloquent concept that was subsequently disproved, as we now know that the respiratory system can develop much greater expiratory than inspiratory forces. Einthoven correctly postulated the hallmark expiratory flow resistance in COPD as early as 1892, but it was Dayman in 1951 who was the first to measure this increase in expiratory resistance, ie, give an accurate physiological explanation of dynamic expiratory airflow collapse. The more recent work of James Hogg has further advanced our understanding of the role that small airways play in the pathogenesis of the disease [1,2].

What are the goals of therapy in COPD?

Achieving defined outcomes in COPD disease management is a challenging problem. Lung function in relatively young smokers can improve significantly after smoking cessation, but restoring lung function back to normal is not usually an option. Stepwise treatment algorithms exist for COPD as they do for asthma, but smoking cessation is the only proven effective disease-modifying intervention (Figure 1.1) [3]. However, smoking is not the only causal mechanism; the World Health Organisation (WHO) estimates that nearly 25% of global COPD burden is caused by the use of indoor biomass fuels in developing countries.

Unlike treatment for asthma, treatment for COPD is often without immediate clinical benefit and can seem relatively unrewarding for practitioners. Thus, therapy goals should be realistic. We now understand that evaluating the effects of new therapies in COPD can take many months, and more emphasis may be placed on outcome measures such as quality of life (QOL) and exacerbation rates/severity than more traditional