



ERS | *monograph*

# Inequalities in Respiratory Health

Edited by  
Ian P. Sinha, Alice Lee,  
S. Vittal Katikireddi and  
Jennifer K. Quint

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Editor in Chief  
Peter M.A. Calverley

This book is one in a series of *ERS 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 required for its investigation. 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 *Monograph*.

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# Preface

Peter M.A. Calverley 

In January 1941, President Franklin D. Roosevelt gave an address to Congress in which he outlined four basic freedoms that he believed all people everywhere had a right to expect – freedom of speech, freedom to pursue their religious beliefs, freedom from fear and freedom from want. These freedoms became the basis of the Universal Declaration of Human Rights and much subsequent legislation that is at the core of international law today. In concluding his address, Roosevelt hoped that these freedoms could be achieved within his own time. Sadly, he was mistaken.



Substantial differences still exist within and between countries, which have an enormous impact on the health and well-being of their inhabitants. It is no surprise that these socioeconomic differences influence the health of the less affluent, wherever they live, and that the burden of respiratory illness is particularly great in this group.

Respiratory physicians have known for decades that TB is especially prevalent among society's poorest people and that tobacco smoking shows a similar social gradient. However, until now, there has been no easy resource that summarises the multiple impacts of poor air quality, adverse health behaviours and economic disadvantage on respiratory health.

This gap has been filled by the ambitious and wide-ranging chapters presented in this issue of the *ERS Monograph*. Led by Ian P. Sinha, Alice Lee, S. Vittal Katikireddi and Jennifer K. Quint have gathered together a group of distinguished international contributors and rising stars in the field of health inequalities. Together they have provided new and relevant insights into the way inequalities in many settings influence the prevalence and character of respiratory health. The result is a highly original and informative volume that provides an insight into the global challenge of improving respiratory health. Whether you dip in and out or read the volume through sequentially, you are sure to learn a lot and widen your horizons in the process.

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# Guest Editors

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Alice Lee

Alice Lee is a paediatric trainee in the North West of England, currently working as a clinical research and innovation fellow at Alder Hey Children's Hospital (Liverpool, UK), whilst undertaking a PhD in early years respiratory health inequalities at the University of Liverpool (Liverpool). She works with parent groups to design community models of care to address the wider determinants of health and has worked with the Royal College of Paediatrics and Child Health (London, UK) on a health inequalities tool kit. She previously completed an MA in humanitarianism and conflict response and worked as a population health fellow for Health Education England.



S. Vittal Katikireddi

S. Vittal Katikireddi is Professor of Public Health and Health Inequalities at the University of Glasgow (Glasgow, UK) and an honorary Consultant in Public Health at Public Health Scotland. His chief research interests are in improving the development and application of evidence to inform "healthy public policy": that is, harnessing how government actions outside of the NHS (such as welfare policy and economic policy) can improve health. He particularly focuses on addressing multiple dimensions of health inequalities, including socioeconomic, ethnic and gender inequalities. His research makes use of diverse methods, including social epidemiology, natural experiment studies, systematic reviews, microsimulation modelling and qualitative policy analysis.



## Jennifer K. Quint



Jennifer K. Quint is a Professor of Respiratory Epidemiology in the School of Public Health and the National Heart and Lung Institute at Imperial College London (London, UK), and an Honorary Consultant Physician in Respiratory Medicine at both the Royal Brompton (London) and Imperial College London NHS Foundation Trust (London). She is a Fellow of the Higher Education Academy, the Royal College of Physicians, and of the Faculty of Clinical Informatics. Most recently she has become joint Editor-in-Chief of *Thorax*.

Jennifer uses routinely collected electronic healthcare record data to study several respiratory diseases, the most recent of which is COVID-19, and works towards maximising the quality, linkage and usage of these data for clinical and research purposes.

# Introduction

Ian P. Sinha<sup>1,2</sup>, Alice Lee<sup>2,3</sup>, S. Vittal Katikireddi <sup>4</sup> and Jennifer K. Quint <sup>5</sup>

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**Many forms of respiratory health inequalities exist, across different social groups, health conditions and countries. This *ERS Monograph* provides an accessible and engaging primer for health professionals and academics on all this and more.** <https://bit.ly/3kBm07h>

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The COVID-19 pandemic brought respiratory health into the global spotlight. People with acute, life-threatening respiratory illness were the face of the pandemic, but the media also reported on health inequalities related to socioeconomic position and race, as well as the risks that come with having chronic respiratory illness. The very factors that influence respiratory health – cold and substandard housing, food poverty, air pollution, the tobacco industry, and access to care to name a few – are also front-page news and social media hot-topics that are debated and discussed by members of the public, the mainstream media, mass media, healthcare workers, healthcare leaders, policy-makers and politicians alike. It is, however, risky to consider such problems out of context. Health inequalities have been deeply engrained in our societies since long before the pandemic. We need to reflect on what has driven these inequalities, and critically review the approaches that do and do not work, if we are to begin to address them. And that is why we have produced this *Monograph*. We have brought together leading experts and up-and-coming researchers, in a collection of state-of-the-art articles discussing the drivers and consequences of respiratory inequality.

Respiratory disease is inextricably linked to poverty. In the first section of this *Monograph*, we aim to help the reader understand mechanisms of why this might be the case. It is clear that if people do not live in adequate housing [1], have access to a good diet [2], and breathe clean air [3], then their respiratory health is immediately under threat. For many millions of people around the world, however, this is their reality. Alongside these issues, the first section also considers respiratory inequalities related to sex [4], ethnicity [5] and occupation [6].

In section two we describe some examples of inequalities in respiratory disease. Some of the chapters in this section discuss specific conditions, such as cystic fibrosis [7], lung cancer [8] and asthma [9]; others discuss more broad and societal issues, such as antimicrobial resistance [10] and inclusion health [11]. What becomes clear from reading these chapters is that even though diseases have their own particular issues, there are themes common to all. It is here that

we need to strike the balance – it is important for clinicians to draw on their experience and expertise for their areas of interest; public health approaches will be broader. We need both. We must be careful that clinical approaches to health inequality aren't positioned so far downstream that some groups miss out on interventions that could benefit all people, but we also need to ensure that a population health approach does not pass certain people by because of the characteristics of their disease.

The final section, section three, focuses on certain aspects of global respiratory health and possible approaches to solving these. The global burden of illness and suffering from lung ill-health is immense, and in these chapters we touch on some of the key problems at the moment, including child health [12] and TB [13]. We also recognise that environmental health differs around the world, and this in itself will drive huge amounts of illness. We are excited to share a chapter relating to air pollution in this section [14].

We close with chapters that consider broader approaches to tackling problems of respiratory inequality – namely quality improvement [15], human rights [16] and a global strategy. The ethos of these chapters is to outline that alongside interventions discussed in other parts of the *Monograph*, we should think creatively, societally and critically about how to drive both upstream and downstream change. For example, if we wish to improve respiratory outcomes in women, we should be considering approaches through different lenses – those grounded in quality improvement at a local and national level; those which frame the issue as one of women's rights; and those which consider a global approach to the problem.

We are immensely grateful for all the hard work that has gone into the preparation of this *Monograph*. We are excited to share the chapters with you, and are sure you will find them as stimulating and informative as we did. The list of authors is geographically and professionally diverse, and the chapters are a reflection of how much expertise there is in the field of respiratory inequalities. The people who assisted with peer review have been incredibly helpful in honing these chapters, and we remain thankful for their input. The excellent team at the *ERS Monograph* have continuously offered support and advice, and we are grateful to Peter M.A. Calverley, John R. Hurst, Rachel Gozzard and Caroline Ashford-Bentley, not just for their expert guidance, but also for their persistence and organisational skills in keeping such a large project on track.

It has been a privilege to commission, read, review and edit the chapters in this *Monograph* – we hope you find them as useful and informative as we did.

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# List of abbreviations

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CO	carbon monoxide
COVID-19	coronavirus disease 2019
DALYs	disability-adjusted life years
ETS	environmental tobacco smoke
FEV <sub>1</sub>	forced expiratory volume in 1 s
FVC	forced vital capacity
GP	general practitioner
HIC	high-income country
Ig	immunoglobulin
ILD	interstitial lung disease
IPF	idiopathic pulmonary fibrosis
LIC	low-income country
LMIC	low- and middle-income country
MIC	middle-income country
NO	nitric oxide
NO <sub>x</sub>	oxides of nitrogen
NO <sub>2</sub>	nitrogen dioxide
O <sub>3</sub>	ozone
PM	particulate matter
SARS-CoV-2	severe acute respiratory syndrome coronavirus 2
SDG	sustainable development goal
SO <sub>2</sub>	sulfur dioxide
TB	tuberculosis
TRAP	traffic-related air pollution
VOC	volatile organic compound
WHO	World Health Organization