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0521546613 - Essential Epidemiology: An Introduction for Students and Health Professionals

Penny Webb, Chris Bain and Sandi Pirozzo

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Essential Epidemiology

An Introduction for Students and Health Professionals

This is an accessible, easily readable and modern introduction to epidemiology for students of medicine and public health. It combines a strong public health perspective and rationale with modern methodological insights in a coherent and straightforward way. It emphasises the fundamental principles common to all areas of epidemiology and, unlike many other texts, integrates both public health and clinical epidemiology and the study of infectious and chronic diseases. It aims to give health professionals a good understanding of the methods and potential problems underlying epidemiological data and reports but also provides a thorough introduction for would-be epidemiologists. The 'nuts and bolts' of epidemiology are embedded in the wider health perspective, and the concluding chapter explores future possibilities and emphasises the integration of the various strands of the discipline. The basic messages are reinforced through numerous examples and questions, with answers provided.

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Preface

This book has grown out of our collective experience of teaching introductory epidemiology both in the classroom and to distance students enrolled in public health and health studies programmes in the School of Population Health (formerly the Department of Social and Preventive Medicine), University of Queensland. It began life as a detailed set of course notes that we wrote because we could not find a single epidemiology text that covered all of the areas we felt were important in sufficient detail. As the notes were to be used primarily by distance students, we tried hard to make them accessible with lots of examples, minimal jargon and equations, and by engaging readers in ‘doing’ epidemiology along the way. Feedback from students and colleagues convinced us that the notes were both approachable and practical. We have built on this, and offer this text as a practical introduction to epidemiology for those who need an understanding of health data they meet in their everyday working lives, as well as for those who wish to pursue a career in epidemiology.

Chapter 1 is a general introduction that both answers the question ‘what is epidemiology and what can it do?’ and presents the main concepts that are the focus of the rest of the book. Chapters 2–8 cover the basic principles and underlying theory of epidemiology in a very ‘hands-on’ way, leading to Chapters 9–11, which integrate this information in a practical look at how we read and interpret epidemiological reports, think about assessing causality and finally synthesise a mass of information in a single review. Chapters 12–14 then look at some specific applications of epidemiology and Chapter 15 concludes with a fresh look at what epidemiology is and what it can do to help address the health concerns facing the world today.

Symbols

The following symbols are used to define key elements within the text. We strongly believe that the best way to learn anything is by actually doing it and so have included questions within the text for those who like to test their understanding as they go. Because we also know how frustrating it is to have to search





for answers, we have provided these immediately following the questions for those in a hurry to proceed.

We have used numerous real-life examples from all around the world to illustrate the key points and to provide additional insights in some areas. Extra examples that provide added interest and complement the main message in the text are given in boxes featuring this symbol.



Many books present clinical epidemiology as a separate discipline from public health epidemiology – a distinction that is strengthened by the fact that clinical epidemiologists have developed their own names for many standard epidemiological terms. In practice all epidemiology is based on the same underlying principles, so we have integrated the two approaches throughout the book but have also highlighted specific examples more relevant to the clinical situation. (Please note that this book does not offer a comprehensive coverage of clinical epidemiology; rather we aim to show the similarity of the two areas where they overlap.)



We have deliberately tried to keep the main text free of unnecessary detail and equations but have included some epidemiological ‘extras’. This material is not essential to the continuity of the core text but provides some additional information for those who like to see where things have come from or want a more detailed perspective.

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If we were to name everyone who had contributed in some way to this book the list would be endless. We would, however, like to acknowledge some of the great teachers (and their books) from whom we have learned most of what we know, and the books we have relied heavily on for our teaching. These include Brian MacMahon (*Epidemiology: Principles and Methods*, MacMahon and Pugh, 1970), Olli Miettinen, Charlie Hennekens (*Epidemiology in Medicine*, Hennekens and Buring, 1987), Ken Rothman (*Modern Epidemiology*, 1986), *Foundations of Epidemiology* (Lilienfeld and Lilienfeld, 1980), and *Epidemiology* (Gordis, 1996). We would also like to thank our colleagues and friends, especially the Fellows from the NHMRC Capacity Grant in Longitudinal Study Methods in the School of Population Health, University of Queensland, and the staff and students from the Cancer and Population Studies Group at the Queensland Institute of Medical Research who willingly read drafts of the text and whose constructive feedback helped shape the final version. Particular thanks go to Adrian Sleight (Australian National University) who authored Chapters 4 and 12 and also contributed to Chapter 15, Susan Jordan (QIMR) who helped with pulling everything together and Christine Howes (Bristol, UK) who drew all otherwise non-attributed illustrations. Finally, we would like to acknowledge the School of Population Health, University of Queensland, which provided the intellectual environment that led to this book as well as financial support to cover the costs of preparing the final draft.