

MANAGERIAL EPIDEMIOLOGY

PRINCIPLES & APPLICATIONS

AMIR A. KHALIQ

PhD, MBBS, MSc, MSHS
University of Oklahoma, College of Public Health



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To:

Namir, the embodiment of all my hopes and dreams.

*Shirin, my East and West and my Sunday rest.**

*My parents, to whom the debt of my gratitude shall remain
forever unpaid.*

*Borrowed from a poem by W. H. Auden

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About the Author

Amir A. Khaliq is a Professor of Health Administration and Policy at the University of Oklahoma Health Sciences Center, College of Public Health, where he has taught courses in Managerial Epidemiology, Operations Research, Decision Analysis, and Comparative International Health Systems since

2000. He was trained as a physician in Pakistan and received MSc in Community Health and MS in Health Services degrees from the Universities of London and California. He earned a PhD in Health Administration from the University of Toronto.

Preface

Many academic programs offering a degree in health administration include a course on managerial epidemiology in their curriculum. The content of these courses, understandably, differs from one program to another. The diversity in the content of managerial epidemiology courses across programs reflects the diversity of opinions about the scope and nature of the field called *managerial epidemiology*. Increasingly, program directors and instructors favor content that combines elements of traditional introductory epidemiology courses with traditional population health courses. The desire to combine concepts, methods, and skills from epidemiology and population health is not accidental but reflects two important realities. First, the whole idea of managerial epidemiology is to extend the boundaries of epidemiology from an investigation of the determinants and distribution of disease and injury to the examination of the determinants and distribution of health outcomes in populations. Second, because of the changes taking place in our thinking about health and healthcare delivery, there is a growing need for healthcare managers to acquire epidemiologic skills on one hand and develop an understanding of the concepts and methods related to population health on the other. As such, managerial epidemiology must include the application of information regarding the determinants and distribution of disease and injury to health promotion, disease prevention, and planning of health services. This text presents a combination of materials from epidemiology and population health with the view that future healthcare managers need to have a good grasp of various aspects of population health as well as a foundational understanding of the epidemiologic principles and methods. The need for a new text in managerial epidemiology is evident from the dearth of existing textbooks on this subject.

Chapter 1 in the text is foundational in nature and sets the stage for in-depth discussions in succeeding chapters on the determinants and distribution of health in individuals and populations, assessment of population health status, and methods for community health needs assessment. The chapter prepares

the reader for these discussions by introducing the underlying concepts of epidemiology, management, and evidence-based management.

Chapters 2–5 focus on the determinants, assessment, and measurement of health in individuals and populations and the characterization of health and disease in terms of person, place, and time. Chapter 2 explains the holistic concept of health and the population model of health as opposed to the traditional medical model. The chapter also provides a detailed discussion of genetic, socioeconomic, and racial or ethnic determinants of health. Chapter 3 deals with the complex concepts of disease, death, and disability and various approaches to assess the health and well-being of individuals and populations. Chapter 4 discusses various measures of morbidity and mortality and different types of summary statistics reported in literature as indicators of population health status. The chapter includes clear and concise definitions for a number of epidemiologic concepts necessary to measure the health status and distribution of diseases in populations. Chapter 5 discusses the demographic, geographic, and temporal characterization and reporting of health problems in terms of person, place, and time. The chapter also includes a discussion of different types of descriptive epidemiologic investigations in the way of case reports and cross-sectional studies.

Chapters 6–9 focus on the determinants of health in relation to lifestyle and personal behavior, the distribution of infections and injuries in populations, and assessment of quality of care delivered by the healthcare system. The materials presented in these chapters represent different dimensions of population health. Chapter 6 deals with health problems related to lifestyles and personal behavior, including sedentary lifestyle, substance abuse, and the impact of lifestyles on the prevalence of cardiovascular disease and diabetes in different populations. Chapter 7 engages in a detailed discussion of infectious disease epidemiology in the United States and worldwide, including the problem of emerging infectious diseases and antimicrobial drug resistance in microorganisms. Chapter 8 discusses the epidemiology of various kinds of injuries

and provides national and international data on violence, drownings, and burns. Chapter 9 explains the relationship of the structure and processes of care with health outcomes and various methods of monitoring and reporting ambulatory and inpatient quality of care. The chapter also includes a discussion of the impact of severity of disease and case mix on health outcomes and indicators of healthcare quality.

Chapters 10 and 11 are designed to equip future healthcare managers with the tools and skills necessary for community health needs assessment and planning for adequate delivery of services. The chapters include various methods for estimating primary and secondary service areas, determination of the size of a geographic market, level of competition in a geographic market, and estimation of market share held by various providers. Chapter 11 describes different approaches toward healthcare planning, setting priorities, determining levels of access, and designation of health professional shortage areas by the U.S. Health Resources and Services Administration.

Chapters 12–15 deal with the concepts of prevention, monitoring, surveillance, and reporting of diseases that pose serious public health threats and the

technical aspect of designing and conducting various kinds of epidemiologic investigations. Chapter 13 serves as a convenient resource for brushing up on basic quantitative and statistical concepts. Chapters 14 and 15 provide comprehensive information on the design, comparative suitability, and technical challenges of observational and experimental epidemiologic investigations. Chapter 14 discusses the importance, intricacies, and comparative advantages of prospective and retrospective cohort and case-control studies. Chapter 15 provides a discussion of the frequency and relevance of experimental epidemiologic investigations in the form of randomized controlled trials and the practical aspects of conducting experimental studies.

The content and case studies in various chapters are organized in a manner suitable to meet the needs of a diverse body of students and are drawn from a vast body of literature. The author hopes this text will make a meaningful contribution to the field of managerial epidemiology and serve as a valuable resource worthy of the time and attention of students and instructors in health administration programs.

Amir A. Khaliq