Modern Infectious Disease Epidemiology Concepts Methods Mathematical Models And Public Health Statistics For Biology And Health

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Infectious Disease: A Very Short Introduction - Marta Wayne 2015-06-25

As doctors and biologists have learned, to their dismay, infectious disease is a moving target: new diseases emerge every year, old diseases evolve into new forms, and ecological and socioeconomic upheavals change the transmission pathways by which disease spread. By taking an approach focused on the general evolutionary and ecological dynamics of disease, this Very Short Introduction provides a general conceptual framework for thinking about disease. Ecology and evolution provide the keys to answering the 'where', 'why', 'how', and 'what' questions about any particular infectious disease: where did it come from? How is it transmitted from one person to another, and why are some individuals more susceptible than others? What biochemical, ecological, and evolutionary strategies can be used to combat the disease? Is it more effective to block transmission at the population level, or to block infection at the individual level? Through a series of case studies, Benjamin Bolker and Marta L. Wayne introduce the major ideas of infectious disease in a clear and thoughtful way, emphasising the general principles of infection, the management of outbreaks, and the evolutionary and ecological approaches that are now central to much research about infectious disease. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

The Drugs Don't Work - Professor Dame Sally Davies 2013-09-15

The Drugs Don't Work - A Penguin Special by Professor Dame Sally Davies, the Chief Medical Officer for England 'If

we fail to act, we are looking at an almost unthinkable scenario where antibiotics no longer work and we are cast back into the dark ages of medicine where treatable infections and injuries will kill once again' David Cameron, Prime Minister Resistance to our current range of antibiotics is the new inconvenient truth. If we don't act now, we risk the health of our parents, our children and our grandchildren. Antibiotics add, on average, twenty years to our lives. For over seventy years, since the manufacture of penicillin in 1943, we have survived extraordinary operations and life-threatening infections. We are so familiar with these wonder drugs that we take them for granted. The truth is that we have been abusing them: as patients, as doctors, as travellers, in our food. No new class of antibacterial has been discovered for twenty six years and the bugs are fighting back. If we do not take responsibility now, in a few decades we may start dying from the most commonplace of operations and ailments that can today be treated easily. This short book, which will be enjoyed by readers of An Inconvenient Truth by Al Gore and Bad Pharma by Ben Goldacre, will be the subject of a TEDex talk given by Professor Dame Sally Davies at the Royal Albert Hall. Professor Dame Sally C. Davies is the Chief Medical Officer for England and the first woman to hold the post. As CMO she is the independent advisor to the Government on medical matters with particular interest in Public Health and Research. She holds a number of international advisory positions and is an Emeritus Professor at Imperial College. Dr Jonathan Grant is a Principal Research Fellow and former President at RAND Europe, a not-for-profit public policy research institute. His main research interests are on health R&D policy and the use of research and evidence in policymaking. He was formerly Head of Policy at The Wellcome Trust. He received his PhD from the Faculty of Medicine, University of London, and his B.Sc. (Econ) from the London

School of Economics. Professor Mike Catchpole is an internationally recognized expert in infectious diseases and the Director of Infectious Disease Surveillance and Control at Public Health England. He has coordinated many national infectious disease outbreak investigations and is an advisor to the European Centre for Disease Prevention and Control. He is also a visiting professor at Imperial College.

Mathematical Models in Epidemiology - Fred Brauer 2019-10-10

The book is a comprehensive, self-contained introduction to the mathematical modeling and analysis of disease transmission models. It includes (i) an introduction to the main concepts of compartmental models including models with heterogeneous mixing of individuals and models for vector-transmitted diseases, (ii) a detailed analysis of models for important specific diseases, including tuberculosis, HIV/AIDS, influenza, Ebola virus disease, malaria, dengue fever and the Zika virus, (iii) an introduction to more advanced mathematical topics, including age structure, spatial structure, and mobility, and (iv) some challenges and opportunities for the future. There are exercises of varying degrees of difficulty, and projects leading to new research directions. For the benefit of public health professionals whose contact with mathematics may not be recent, there is an appendix covering the necessary mathematical background. There are indications which sections require a strong mathematical background so that the book can be useful for both mathematical modelers and public health professionals.

Mathematical Epidemiology - Fred Brauer 2008-04-30

Based on lecture notes of two summer schools with a mixed audience from mathematical sciences, epidemiology and public health, this volume offers a comprehensive introduction to basic ideas and techniques in modeling

infectious diseases, for the comparison of strategies to plan for an anticipated epidemic or pandemic, and to deal with a disease outbreak in real time. It covers detailed case studies for diseases including pandemic influenza, West Nile virus, and childhood diseases. Models for other diseases including Severe Acute Respiratory Syndrome, fox rabies, and sexually transmitted infections are included as applications. Its chapters are coherent and complementary independent units. In order to accustom students to look at the current literature and to experience different perspectives, no attempt has been made to achieve united writing style or unified notation. Notes on some mathematical background (calculus, matrix algebra, differential equations, and probability) have been prepared and may be downloaded at the web site of the Centre for Disease Modeling (www.cdm.yorku.ca).

An Introduction to Infectious Disease Modelling - Emilia Vynnycky 2010-05-13

Mathematical models are increasingly used to guide public health policy decisions and explore questions in infectious disease control. Written for readers without advanced mathematical skills, this book provides an introduction to this area.

Handbook of Infectious Disease Data Analysis - Leonhard Held 2019-11-07

Recent years have seen an explosion in new kinds of data on infectious diseases, including data on social contacts, whole genome sequences of pathogens, biomarkers for susceptibility to infection, serological panel data, and surveillance data. The Handbook of Infectious Disease Data Analysis provides an overview of many key statistical methods that have been developed in response to such new data streams and the associated ability to address key scientific and epidemiological questions. A unique feature of the Handbook is the wide range of

topics covered. Key features Contributors include many leading researchers in the field Divided into four main sections: Basic concepts, Analysis of Outbreak Data, Analysis of Seroprevalence Data, Analysis of Surveillance Data Numerous case studies and examples throughout Provides both introductory material and key reference material

Trends in Infectious Diseases - Shailendra K. Saxena 2014-04-23

This book gives a comprehensive overview of recent trends in infectious diseases, as well as general concepts of infections, immunopathology, diagnosis, treatment, epidemiology and etiology to current clinical recommendations in management of infectious diseases, highlighting the ongoing issues, recent advances, with future directions in diagnostic approaches and therapeutic strategies. The book focuses on various aspects and properties of infectious diseases whose deep understanding is very important for safeguarding human race from more loss of resources and economies due to pathogens.

Industrial Engineering in the Digital Disruption Era - Fethi Calisir 2020-03-16

This book gathers extended versions of the best papers presented at the Global Joint Conference on Industrial Engineering and Its Application Areas (GJCIE), held on September 2–3, 2019, in Gazimagusa, North Cyprus, Turkey. It covers a wide range of topics, including decision analysis, supply chain management, systems modelling and quality control. Further, special emphasis is placed on the state of the art and the challenges of digital disruption, as well as effective strategies that can be used to change organizational structures and eliminate the barriers that are keeping industries from taking full advantage of today’s digital technologies.

Social Entrepreneurs - David Crowther 2022-06-09

Social Entrepreneurs: Mobilisers of Social Change works to fill a gap in research literature, exploring the notion of social entrepreneurs, their role, facets, and implications to address the social problems.

Modeling Infectious Diseases in Humans and Animals - Matt J. Keeling 2011-09-19

For epidemiologists, evolutionary biologists, and health-care professionals, real-time and predictive modeling of infectious disease is of growing importance. This book provides a timely and comprehensive introduction to the modeling of infectious diseases in humans and animals, focusing on recent developments as well as more traditional approaches. Matt Keeling and Pejman Rohani move from modeling with simple differential equations to more recent, complex models, where spatial structure, seasonal "forcing," or stochasticity influence the dynamics, and where computer simulation needs to be used to generate theory. In each of the eight chapters, they deal with a specific modeling approach or set of techniques designed to capture a particular biological factor. They illustrate the methodology used with examples from recent research literature on human and infectious disease modeling, showing how such techniques can be used in practice. Diseases considered include BSE, foot-and-mouth, HIV, measles, rubella, smallpox, and West Nile virus, among others. Particular attention is given throughout the book to the development of practical models, useful both as predictive tools and as a means to understand fundamental epidemiological processes. To emphasize this approach, the last chapter is dedicated to modeling and understanding the control of diseases through vaccination, quarantine, or culling. Comprehensive, practical introduction to infectious disease modeling Builds from simple to complex predictive models Models and methodology fully supported by examples drawn from research literature Practical models aid

students' understanding of fundamental epidemiological processes For many of the models presented, the authors provide accompanying programs written in Java, C, Fortran, and MATLAB In-depth treatment of role of modeling in understanding disease control

Quantitative Methods for Investigating Infectious Disease Outbreaks - Ping Yan 2019-08-16

This book provides a systematic treatment of the mathematical underpinnings of work in the theory of outbreak dynamics and their control, covering balanced perspectives between theory and practice including new material on contemporary topics in the field of infectious disease modelling. Specifically, it presents a unified mathematical framework linked to the distribution theory of non-negative random variables; the many examples used in the text, are introduced and discussed in light of theoretical perspectives. The book is organized into 9 chapters: The first motivates the presentation of the material on subsequent chapters; Chapter 2-3 provides a review of basic concepts of probability and statistical models for the distributions of continuous lifetime data and the distributions of random counts and counting processes, which are linked to phenomenological models. Chapters 4 focuses on dynamic behaviors of a disease outbreak during the initial phase while Chapters 5-6 broadly cover compartment models to investigate the consequences of epidemics as the outbreak moves beyond the initial phase. Chapter 7 provides a transition between mostly theoretical topics in earlier chapters and Chapters 8 and 9 where the focus is on the data generating processes and statistical issues of fitting models to data as well as specific mathematical epidemic modeling applications, respectively. This book is aimed at a wide audience ranging from graduate students to established scientists from

quantitatively-oriented fields of epidemiology, mathematics and statistics. The numerous examples and illustrations make understanding of the mathematics of disease transmission and control accessible. Furthermore, the examples and exercises, make the book suitable for motivated students in applied mathematics, either through a lecture course, or through self-study. This text could be used in graduate schools or special summer schools covering research problems in mathematical biology.

Wildlife and Emerging Zoonotic Diseases: The Biology, Circumstances and Consequences of Cross-Species Transmission - James E. Childs 2007-07-23

This volume offers an overview of the processes of zoonotic viral emergence, the intricacies of host/virus interactions, and the role of biological transitions and modifying factors. The themes introduced here are amplified and explored in detail by the contributing authors, who explore the mechanisms and unique circumstances by which evolution, biology, history, and current context have contrived to drive the emergence of different zoonotic agents by a series of related events.

Scutchfield and Keck's Principles of Public Health Practice - Paul C Erwin 2016-02-10

Widely used and often quoted, PRINCIPLES OF PUBLIC HEALTH PRACTICE, Fourth Edition, is a long-standing, essential tool for all those in working in or preparing for public health practice. Written and edited by nationally recognized experts, this book emphasizes evidence-based practice and the science behind it to provide a critical foundation in public health operations and systems. The overhauled fourth edition also adds several new chapters on emerging topics, including tribal public health and global health, along with many review questions, appendices, and features that make PRINCIPLES OF PUBLIC HEALTH PRACTICE

indispensable at any stage of your career. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

An Introduction to Mathematical Modeling of Infectious Diseases - Michael Y. Li 2018-01-30

This text provides essential modeling skills and methodology for the study of infectious diseases through a one-semester modeling course or directed individual studies. The book includes mathematical descriptions of epidemiological concepts, and uses classic epidemic models to introduce different mathematical methods in model analysis. Matlab codes are also included for numerical implementations. It is primarily written for upper undergraduate and beginning graduate students in mathematical sciences who have an interest in mathematical modeling of infectious diseases. Although written in a rigorous mathematical manner, the style is not unfriendly to non-mathematicians.

Law and Global Health - Michael Freeman 2014-05-29

Current Legal Issues, like its sister volume Current Legal Problems (now available in journal format), is based upon an annual colloquium held at University College London. Each year leading scholars from around the world gather to discuss the relationship between law and another discipline of thought. Each colloquium examines how the external discipline is conceived in legal thought and argument, how the law is pictured in that discipline, and analyses points of controversy in the use, and abuse, of extra-legal arguments within legal theory and practice. Law and Global Health, the sixteenth volume in the Current Legal Issues series, offers an insight into the scholarship examining the relationship between global health and the law. Covering a wide range of areas from all over the world, articles in the volume look at areas of human rights, vulnerable populations,

ethical issues, legal responses and governance.

Mathematical Epidemiology of Infectious Diseases - O. Diekmann 2000-04-07

Mathematical Epidemiology of Infectious Diseases Model Building, Analysis and Interpretation O. Diekmann University of Utrecht, The Netherlands J. A. P. Heesterbeek Centre for Biometry Wageningen, The Netherlands The mathematical modelling of epidemics in populations is a vast and important area of study. It is about translating biological assumptions into mathematics, about mathematical analysis aided by interpretation and about obtaining insight into epidemic phenomena when translating mathematical results back into population biology. Model assumptions are formulated in terms of, usually stochastic, behaviour of individuals and then the resulting phenomena, at the population level, are unravelled. Conceptual clarity is attained, assumptions are stated clearly, hidden working hypotheses are attained and mechanistic links between different observables are exposed. Features: * Model construction, analysis and interpretation receive detailed attention * Uniquely covers both deterministic and stochastic viewpoints * Examples of applications given throughout * Extensive coverage of the latest research into the mathematical modelling of epidemics of infectious diseases * Provides a solid foundation of modelling skills The reader will learn to translate, model, analyse and interpret, with the help of the numerous exercises. In literally working through this text, the reader acquires modelling skills that are also valuable outside of epidemiology, certainly within population dynamics, but even beyond that. In addition, the reader receives training in mathematical argumentation. The text is aimed at applied mathematicians with an interest in population biology and epidemiology, at theoretical biologists and

epidemiologists. Previous exposure to epidemic concepts is not required, as all background information is given. The book is primarily aimed at self-study and ideally suited for small discussion groups, or for use as a course text.

Silent Victories - John W. Ward 2006-11-16

Americans' health improved dramatically over the twentieth century. Public health programs for disease and injury prevention were responsible for much of this advance. Over the century, America's public health system grew dramatically, employing science and political authority in response to an increasing array of health problems. As the disease burden of the old scourges of infection, perinatal mortality, and dietary deficiencies began to lift, public health's mandate expanded to take on new health threats, such as those resulting from a changing workplace, the rise of the automobile, and chronic and complex conditions caused by smoking, diet and other lifestyle and environmental factors. Public health measures almost always occur on contested ground; accordingly, controversies and recriminations over past failures often persist. In contrast, public health's many successes, even the imperfect ones, become part of the fabric of everyday life, a fact already apparent early in the last century, when C.E.A. Winslow reminded his peers that the lives saved and healthy years extended were the "silent victories" of public health. In its exploration of ten major public health issues addressed in the 20th century, Silent Victories takes a unique approach: for each issue, leading scientists in the field trace the discoveries, practices and programs that reduced morbidity and mortality from disease and injury, and an accompanying chapter by a historian or social scientist highlights key moments or conflicts that shaped public health action on that issue. The book concludes with a look

toward the challenges public health must face in the future. Silent Victories reveals the lessons of history in a format designed to appeal to students, health professionals and the public seeking to understand how public health advanced the country's health in the 20th century, and the challenges to protecting health in the future.

An Introduction to Mathematical Epidemiology - Maia Martcheva 2015-10-20

The book is a comprehensive, self-contained introduction to the mathematical modeling and analysis of infectious diseases. It includes model building, fitting to data, local and global analysis techniques. Various types of deterministic dynamical models are considered: ordinary differential equation models, delay-differential equation models, difference equation models, age-structured PDE models and diffusion models. It includes various techniques for the computation of the basic reproduction number as well as approaches to the epidemiological interpretation of the reproduction number. MATLAB code is included to facilitate the data fitting and the simulation with age-structured models.

Epidemiology - Klaus Krickeberg 2019-07-10

This unique textbook presents the field of modern epidemiology as a whole; it does not restrict itself to particular aspects. It stresses the fundamental ideas and their role in any situation of epidemiologic practice. Its structure is largely determined by didactic viewpoints. Epidemiology is the art of defining and investigating the influence of factors on the health of populations. Hence the book starts by sketching the role of epidemiology in public health. It then treats the epidemiology of many particular diseases; mathematical modelling of epidemics and immunity; health information systems; statistical methods and sample surveys; clinical epidemiology including clinical trials; nutritional, environmental, social, and genetic

epidemiology; and the habitual tools of epidemiologic studies. The book also reexamines the basic difference between the epidemiology of infectious diseases and that of non-infectious ones. The organization of the topics by didactic aspects makes the book ideal for teaching. All examples and case studies are situated in a single country, namely Vietnam; this provides a particularly vivid picture of the role of epidemiology in shaping the health of a population. It can easily be adapted to other developing or transitioning countries. This volume is well suited for courses on epidemiology and public health at the upper undergraduate and graduate levels, while its specific examples make it appropriate for those who teach these fields in developing or emerging countries. New to this edition, in addition to minor revisions of almost all chapters: • Updated data about infectious and non-infectious diseases • An expanded discussion of genetic epidemiology • A new chapter, based on recent research of the authors, on how to build a coherent system of Public Health by using the insights provided by this volume.

Challenges in Infectious Diseases - I.W. Fong 2012-09-06

This next volume in the series will provide up to date Information and discussion on future approach to control several challenging Infectious Disease worldwide. The past decade has been highlighted by numerous advances in research of medical scientific knowledge. medical technology and the biological and diagnostic techniques-but somewhat less dramatic changes or improvement in management of medical conditions. This volume will address some of the emerging issues, challenges, and controversies in Infectious Diseases.

Disease Ecology - Sharon K. Collinge 2006-01-26

Summary: The chapters in this book llustrate aspects of communityy ecology that

influence pathogen transmission rates and disease dynamics in a wide variety of study systems.

Infectious Disease Epidemiology - Ibrahim Abubakar 2016-04-07

Infectious Disease Epidemiology is a concise reference guide which provides trainees and practicing epidemiologists with the information that they need to understand the basic concepts necessary for working in this specialist area. Divided into two sections, part one comprehensively covers the basic principles and methods relevant to the study of infectious disease epidemiology. It is organised in order of increasing complexity, ranging from a general introduction to subjects such as mathematical modelling and sero-epidemiology. Part two examines key major infectious diseases that are of global significance. Grouped by their route of transmission for ease of reference, they include diseases that present a particular burden or a high potential for causing mortality. This practical guide will be essential reading for postgraduate students in infectious disease epidemiology, health protection trainees, and practicing epidemiologists.

Introduction to Psychoneuroimmunology - Jorge H. Daruna 1984-01-28

Health is maintained by the coordinated operation of all the biological systems that make up the individual. The Introduction to Psychoneuroimmunology, Second Edition, presents an overview of what has been discovered by scientists regarding how bodily systems respond to environmental challenges and intercommunicate to sustain health. The book touches on the main findings from the current literature without being overly technical and complex. The result is a comprehensive overview of psychoneuroimmunology, which avoids oversimplification, but does not overwhelm the reader. Single

authored for consistency of breadth and depth, with no redundancy of coverage between chapters Covers endocrine-immune modulation, neuro-immune modulation, and the enhancing or inhibiting processes of one or more systems on the others Expanded use of figures, tables, and text boxes

Infectious Disease Epidemiology - Kenrad E. Nelson 2007

Covers a range of essential topics from a survey of important historical epidemics to study designs for infectious disease investigations. The first part of the text covers ID epidemiology background and methodology, whereas the second focuses on specific diseases as examples of different transmission modalities. TB, HIV and Influenza are among the pathogens discussed in great detail. Includes four new chapters on immunology, measles, meningococcal disease, and vector-borne infections. The HIV chapter has been expanded to include issues of host genetics as well as a review of behavioral interventions.

Mathematical Tools for Understanding Infectious Disease Dynamics - Odo Diekmann 2013

This book explains how to translate biological assumptions into mathematics to construct useful and consistent models, and how to use the biological interpretation and mathematical reasoning to analyze these models. It shows how to relate models to data through statistical inference, and how to gain important insights into infectious disease dynamics by translating mathematical results back to biology.

Eras in Epidemiology - Mervyn Susser 2009-08-13

At its core, epidemiology is concerned with changes in health and disease. The discipline requires counts and measures: of births, health disorders, and deaths, and in order to make sense of these counts it requires a population base defined by place and time.

Epidemiology relies on closely defined concepts of cause - experimental or observational - of the physical or social environment, or in the laboratory. Epidemiologists are guided by these concepts, and have often contributed to their development. Because the disciplinary focus is on health and disease in populations, epidemiology has always been an integral driver of public health, the vehicle that societies have evolved to combat and contain the scourges of mass diseases. In this book, the authors trace the evolution of epidemiological ideas from earliest times to the present. Beginning with the early concepts of magic and the humors of Hippocrates, it moves forward through the dawn of observational methods, the systematic counts of deaths initiated in 16th-century London by John Graunt and William Petty, the late 18th-century Enlightenment and the French Revolution, which established the philosophical argument for health as a human right, the national public health system begun in 19th-century Britain, up to the development of eco-epidemiology, which attempts to re-integrate the fragmented fields as they currently exist. By examining the evolution of epidemiology as it follows the evolution of human societies, this book provides insight into our shared intellectual history and shows a way forward for future study.

Modern Infectious Disease Epidemiology - Alexander Krämer 2010-01-23

Hardly a day goes by without news headlines concerning infectious disease threats. Currently the spectre of a pandemic of influenza A|H1N1 is raising its head, and heated debates are taking place about the pro’s and con’s of vaccinating young girls against human papilloma virus. For an evidence-based and responsible communication of infectious disease topics to avoid misunderstandings and overreaction of the public, we need solid scientific knowledge and an understanding of all aspects of infectious diseases

and their control. The aim of our book is to present the reader with the general picture and the main ideas of the subject. The book introduces the reader to methodological aspects of epidemiology that are specific for infectious diseases and provides insight into the epidemiology of some classes of infectious diseases characterized by their main modes of transmission. This choice of topics bridges the gap between scientific research on the clinical, biological, mathematical, social and economic aspects of infectious diseases and their applications in public health. The book will help the reader to understand the impact of infectious diseases on modern society and the instruments that policy makers have at their disposal to deal with these challenges. It is written for students of the health sciences, both of curative medicine and public health, and for experts that are active in these and related domains, and it may be of interest for the educated layman since the technical level is kept relatively low.

Viral Pathogenesis - Michael G. Katze 2015-12-30

Viral Pathogenesis: From Basics to Systems Biology, Third Edition, has been thoroughly updated to cover topical advances in the evolving field of viral pathogenesis, while also providing the requisite classic foundational information for which it is recognized. The book provides key coverage of the newfound ability to profile molecular events on a system-wide scale, which has led to a deeper understanding of virus-host interactions, host signaling and molecular-interaction networks, and the role of host genetics in determining disease outcome. In addition, the content has been augmented with short chapters on seminal breakthroughs and profiles of their progenitors, as well as short commentaries on important or controversial issues in the field. Thus, the reader will be given a view of virology research with

perspectives on issues such as biomedical ethics, public health policy, and human health. In summary, the third edition will give the student a sense of the exciting new perspectives on viral pathogenesis that have been provided by recent developments in genomics, computation, modeling, and systems biology. Covers all aspects of viral infection, including viral entry, replication, and release, as well as innate and adaptive immunity and viral pathogenesis Provides a fresh perspective on the approaches used to understand how viruses cause disease Features molecular profiling techniques, whole genome sequencing, and innovative computational methods Highlights the use of contemporary approaches and the insights they provide to the field

Modern Infectious Disease Epidemiology, Third Edition - Johan Giesecke 2016-07-15 Authoritative yet highly practical, this new edition of Modern Infectious Disease Epidemiology has been thoroughly updated and revised in line with changing health concerns. This successful book continues to outline the tools available to the infectious disease student or clinician who wishes to gain a thorough background in epidemiology of infectious and communicable diseases. Using many case studies and practical scenarios, the book then uses the tools learnt to illustrate the fundamental concepts of the study of infectious diseases, such as infection spread, surveillance and control, infectivity, incubation periods, seroepidemiology and immunity in populations. This highly popular book, praised for its clarity and highly readable text, is a unique work of synthesis combining a detailed, yet down to earth account of theoretical epidemiology and statistical tools and method, with the principles of infectious disease. All students of epidemiology, infectious disease medicine and microbiology will find this text invaluable ensuring its

continued popularity.

The Development of Modern Epidemiology - Walter W Holland 2007-04-05

This book marks the 50th anniversary of the foundation of the International Epidemiological Association (IEA). It is a unique compendium by the world's leading epidemiologists of how the field has developed, and how it can be (and has been) applied to the control of common conditions and threats to public health. Five distinct sections guide the reader through the wealth of material: · Gives an historical account of the concepts and ideas, and current importance of epidemiology to global health issues and to organisations such as the WHO. · Illustrates the advances and contributions to epidemiologic knowledge and the control of disease in specific areas such as cancer, cardiovascular disease, respiratory disease, tuberculosis, maternal and child health, non-biologic disorders such as war and disasters, and new infectious diseases. · Outlines the use of epidemiology in areas such as public health, health services, occupational and environmental medicine, social epidemiology and nutrition. · Discusses methodological developments such as statistics, information sources, investigation of disease outbreaks and clinical epidemiology. · Looks at how the subject has developed internationally, with perspectives on regions such as the Americas, Poland, Spain, Eastern Mediterranean, New Zealand, China, Thailand and Japan. This remarkable insight into how epidemiology has developed is essential reading for both existing and aspiring epidemiologists.

Modeling Infectious Disease Parameters Based on Serological and Social Contact Data - Niel Hens 2012-10-24

Mathematical epidemiology of infectious diseases usually involves describing the flow of individuals between mutually exclusive infection states. One of the key parameters

describing the transition from the susceptible to the infected class is the hazard of infection, often referred to as the force of infection. The force of infection reflects the degree of contact with potential for transmission between infected and susceptible individuals. The mathematical relation between the force of infection and effective contact patterns is generally assumed to be subjected to the mass action principle, which yields the necessary information to estimate the basic reproduction number, another key parameter in infectious disease epidemiology. It is within this context that the Center for Statistics (CenStat, I-Biostat, Hasselt University) and the Centre for the Evaluation of Vaccination and the Centre for Health Economic Research and Modelling Infectious Diseases (CEV, CHERMID, Vaccine and Infectious Disease Institute, University of Antwerp) have collaborated over the past 15 years. This book demonstrates the past and current research activities of these institutes and can be considered to be a milestone in this collaboration. This book is focused on the application of modern statistical methods and models to estimate infectious disease parameters. We want to provide the readers with software guidance, such as R packages, and with data, as far as they can be made publicly available.

Oxford Textbook of Infectious Disease Control - Andrew Cliff 2013-04-11

The Oxford Textbook of Infectious Disease Control: A Geographical Analysis from Medieval Quarantine to Global Eradication is a comprehensive analysis of spatial theory and the practical methods used to prevent the geographical spread of communicable diseases in humans. Drawing on current and historical examples spanning seven centuries from across the globe, this indispensable volume demonstrates how to mitigate the public health impact of infections in disease hotspots and prevent the

propagation of infection from such hotspots into other geographical locations. Containing case studies of longstanding global killers such as influenza, measles and poliomyelitis, through to newly emerged diseases like SARS and highly pathogenic avian influenza in humans, this book integrates theory, data and spatial analysis and locates these quantitative analyses in the context of global demographic and health policy change. Beautifully illustrated with over 100 original maps and diagrams to aid understanding and assimilation, in six sections the authors examine surveillance, quarantine, vaccination, and forecasting for disease control. The discussion covers theoretical approaches, techniques and systems central to mitigating disease spread, and methods that deliver practical disease control. Essential information is also provided on the geographical eradication of diseases, including the design of early warning systems that detect the geographical spread of epidemics, enabling students and practitioners to design spatially-targeted control strategies. Despite the early hope of eradication of many communicable diseases after the global eradication of smallpox by 1979, the world is still working at the control and elimination of the spatial spread of newly-emerging and resurgent infectious diseases. Learning from past examples and incorporating modern surveillance and reporting techniques that are used to design value-for-money spatially-targeted interventions to protect public health, the Oxford Textbook of Infectious Disease Control is an essential resource for all those working in, or studying ways to control the spread of communicable diseases between humans in a timely and cost-effective manner. It is ideal for specialists and students in infectious disease control as well as those in the medical sciences, epidemiology, demography, public health, geography, and medical

history.

Epidemiologic Methods for the Study of Infectious Diseases - James C. Thomas 2001-03-22

This is the first comprehensive text on the methodological issues in epidemiologic research on infectious diseases. It will be an invaluable resource both to students of epidemiology and to established researchers. The authors address such questions as: What needs to be considered when enrolling participants in a study of sexually transmitted diseases? What are common sources of measurement error in population-based studies of respiratory infections? What are some sources of existing data for epidemiologic studies of infectious diseases? Answers to these and many other related questions can be found in this well-organized, comprehensive and authoritative volume - the first to thoroughly address the methodologic issues in conducting epidimiologic research on infectious diseases. The book will be an ideal complement to texts on general epidemiology and infectious disease. An introductory section will make it accessible to a wide variety of disciplines by providing an overview of topics that are foundational to understanding infectious disease epidemiology, such as the immunology of infections, the biology of infectious diseases, and concepts of causation, transmission, and dynamics. The rest of the book is structured around sections on data sources and measurement; methods by transmission type; outbreak investigation and evaluation research; and special topics such as HIV/AIDS research, infections in the elderly, and research collaborations in developing countries.

Modern Infectious Disease Epidemiology - Alexander Krämer 2012-05-03

Hardly a day goes by without news headlines concerning infectious disease threats. Currently the spectre of a pandemic of influenza A|H1N1 is raising its head, and heated

debates are taking place about the pro's and con's of vaccinating young girls against human papilloma virus. For an evidence-based and responsible communication of infectious disease topics to avoid misunderstandings and overreaction of the public, we need solid scientific knowledge and an understanding of all aspects of infectious diseases and their control. The aim of our book is to present the reader with the general picture and the main ideas of the subject. The book introduces the reader to methodological aspects of epidemiology that are specific for infectious diseases and provides insight into the epidemiology of some classes of infectious diseases characterized by their main modes of transmission. This choice of topics bridges the gap between scientific research on the clinical, biological, mathematical, social and economic aspects of infectious diseases and their applications in public health. The book will help the reader to understand the impact of infectious diseases on modern society and the instruments that policy makers have at their disposal to deal with these challenges. It is written for students of the health sciences, both of curative medicine and public health, and for experts that are active in these and related domains, and it may be of interest for the educated layman since the technical level is kept relatively low.

Microbial Threats to Health - Institute of Medicine 2003-08-25

Infectious diseases are a global hazard that puts every nation and every person at risk. The recent SARS outbreak is a prime example. Knowing neither geographic nor political borders, often arriving silently and lethally, microbial pathogens constitute a grave threat to the health of humans. Indeed, a majority of countries recently identified the spread of infectious disease as the greatest global problem they confront. Throughout history, humans have struggled to control both the causes and

consequences of infectious diseases and we will continue to do so into the foreseeable future. Following up on a high-profile 1992 report from the Institute of Medicine, Microbial Threats to Health examines the current state of knowledge and policy pertaining to emerging and re-emerging infectious diseases from around the globe. It examines the spectrum of microbial threats, factors in disease emergence, and the ultimate capacity of the United States to meet the challenges posed by microbial threats to human health. From the impact of war or technology on disease emergence to the development of enhanced disease surveillance and vaccine strategies, Microbial Threats to Health contains valuable information for researchers, students, health care providers, policymakers, public health officials. and the interested public.

Infectious Diseases of Humans - Roy M. Anderson 1992-08-27

This book deals with infectious diseases -- viral, bacterial, protozoan and helminth -- in terms of the dynamics of their interaction with host populations. The book combines mathematical models with extensive use of epidemiological and other data. This analytic framework is highly useful for the evaluation of public health strategies aimed at controlling or eradicating particular infections. Such a framework is increasingly important in light of the widespread concern for primary health care programs aimed at such diseases as measles, malaria, river blindness, sleeping sickness, and schistosomiasis, and the advent of AIDS/HIV and other emerging viruses. Throughout the book, the mathematics is used as a tool for thinking clearly about fundamental and applied problems having to do with infectious diseases. The book is divided into two parts, one dealing with microparasites (viruses, bacteria and protozoans) and the other with macroparasites (helminths and parasitic

arthropods). Each part begins with simple models, developed in a biologically intuitive way, and then goes on to develop more complicated and realistic models as tools for public health planning. The book synthesizes previous work in this rapidly growing field (much of which is scattered between the ecological and the medical literature) with a good deal of new material.

Modern Infectious Disease Epidemiology - Johan Giesecke 2017-05-08

Highly practical yet authoritative, the new edition of Modern Infectious Disease Epidemiology has been thoroughly updated and revised in line with changing health concerns. This successful book continues to outline the tools available to the infectious disease student or clinician seeking a thorough background in the epidemiology of infectious and communicable diseases. Building on many case studies and practical scenarios included, the book then uses the tools learnt to illustrate the fundamental concepts of the study of infectious diseases, such as infection spread, surveillance and control, infectivity, incubation periods, seroepidemiology, and immunity in populations. New edition of this popular book, completely revised and updated Retains the clarity and down-to-earth approach praised in previous editions Successfully combines epidemiological theory with the principles of infectious disease treatment and control A highly experienced author brings a personal and unique approach to this important subject All students of epidemiology, infectious disease medicine and microbiology will find this text invaluable, ensuring its continued popularity.

Encyclopedia of Infectious Diseases - Michel Tibayrenc 2007-07-31

Discover how the application of novel multidisciplinary, integrative approaches and technologies are dramatically changing our understanding of the pathogenesis of infectious diseases and their treatments.

Each article presents the state of the science, with a strong emphasis on new and emerging medical applications. The Encyclopedia of Infectious Diseases is organized into five parts. The first part examines current threats such as AIDS, malaria, SARS, and influenza. The second part addresses the evolution of pathogens and the relationship between human genetic diversity and the spread of infectious diseases. The next two parts highlight the most promising uses of molecular identification, vector control, satellite detection, surveillance, modeling, and high-throughput technologies. The final part explores specialized topics of current concern, including bioterrorism, world market and infectious diseases, and antibiotics for public health. Each article is written by one or more leading experts in the field of infectious diseases. These experts place all the latest findings from various disciplines in context, helping readers understand what is currently known, what the next generation of breakthroughs is likely to be, and where more research is needed. Several features facilitate research and deepen readers' understanding of infectious diseases: Illustrations help readers understand the pathogenesis and diagnosis of infectious diseases Lists of Web resources serve as a gateway to important research centers, government agencies, and other sources of information from around the world Information boxes highlight basic principles and specialized terminology International contributions offer perspectives on how infectious diseases are viewed by different cultures A special chapter discusses the representation of infectious diseases in art With its multidisciplinary approach, this encyclopedia helps point researchers in new promising directions and helps health professionals better understand the nature and treatment of infectious diseases.

A Dictionary of

Epidemiology - Miquel S. Porta 2014
This edition is the most updated since its inception, is the essential text for students and professionals working in and around epidemiology or using its methods. It covers subject areas - genetics, clinical epidemiology, public health practice/policy, preventive medicine, health promotion, social sciences and methods for clinical research.
Concepts of Epidemiology - Raj S. Bhopal 2016
Epidemiology is a population science that underpins health improvement and health care, by exploring and establishing the pattern, frequency, trends, and causes of a disease. Concepts of Epidemiology comprehensively describes the application of core epidemiological concepts and principles to readers interested in population health research, policy making, health service planning, health promotion, and clinical care. The book provides an overview of study designs and practical framework for the geographical analysis of diseases, including accounting for error and bias within studies. It discusses the ways in which epidemiological data are presented, explains the distinction between association and causation, as well as relative and absolute risks, and considers the theoretical and ethical basis of epidemiology both in the past and the future. This new edition places even greater emphasis on interactive learning. Each chapter includes learning objectives, theoretical and numerical exercises, questions and answers, a summary of the key points, and exemplar panels to illustrate the concepts and methods under consideration. Written in an accessible and engaging style, with a specialized glossary to explain and de\'1fne technical terminology, Concepts of Epidemiology is ideal for postgraduate students in epidemiology, public health, and health policy. It is also perfect for clinicians, undergraduate students and researchers in medicine,

nursing and other health disciplines who wish to improve their understanding of fundamental epidemiological concepts.