

## Disease Surveillance A Public Health Informatics Approach

H1N1 ("swine flu"), SARS, mad cow disease, and HIV/AIDS are a few examples of zoonotic diseases--diseases transmitted between humans and animals. Zoonotic diseases are a growing concern given multiple factors: their often novel and unpredictable nature, their ability to emerge anywhere and spread rapidly around the globe, and their major economic toll on several disparate industries. Infectious disease surveillance systems are used to detect this threat to human and animal health. By systematically collecting data on the occurrence of infectious diseases in humans and animals, investigators can track the spread of disease and provide an early warning to human and animal health officials, nationally and internationally, for follow-up and response. Unfortunately, and for many reasons, current disease surveillance has been ineffective or untimely in alerting officials to emerging zoonotic diseases. *Sustaining Global Surveillance and Response to Emerging Zoonotic Diseases* assesses some of the disease surveillance systems around the world, and recommends ways to improve early detection and response. The book presents solutions for improved coordination between human and animal health sectors, and among governments and international organizations. Parties seeking to improve the detection and response to zoonotic diseases--including U.S. government and international health policy makers, researchers, epidemiologists, human health clinicians, and veterinarians--can use this book to help curtail the threat zoonotic diseases pose to economies, societies, and health.

"This text presents an organized approach to planning, developing, and implementing public health surveillance systems. It has a broad scope, discussing legal and ethical issues as well as technical problems"--Jacket cover. As public accountability has increased and resources have become scarcer, public health, like clinical medicine, has been forced to re-examine the benefits and costs of its activities. Decision and economic analysis are basic tools in carrying out that mission. These methods have become standard practice in clinical medicine and health services research. This book, now in its second edition, was written in an effort to apply and adapt that experience with public health situations. The book was originally written to introduce Centers for Disease Control and Prevention staff to the concepts of decision and economic analysis, to provide guidance on methods to maximize comparability of studies, and to provide access to frequently used reference information. It has been adapted to meet the needs of scientists and managers in state and local health departments and managed care organizations as well as students in schools of public health and clinicians for an introductory text --a text that shows how these methods can be applied in population-based practice, to facilitate better comparability of studies, and to solidify understanding of the scientific basis for use of these tools in decision making. Decision makers will learn how these studies are conducted so they can be critical consumers-- understanding the strengths and limitations- and apply findings to policy and practice. The second edition updates and expands upon the standard methodology for conducting prevention effectiveness analyses. Each chapter has been revised or re-written. The chapters on measuring effectiveness, decision analysis, and making information useful for decision makers as well as several appendices are entirely new.

The first textbook on public health intelligence presents in depth the key concepts, methods, and objectives of this increasingly important competency. It systematically reviews types of evidence and data that comprise intelligence, effective techniques for assessment, analysis, and interpretation, and the role of this knowledge in quality health service delivery. The book's learner-centered approach gives readers interactive context for mastering the processes of gathering and working with intelligence as well as its uses in informing public health decision-making. And its pragmatic framework will help establish standards for training, practice, and policy, leading to continued improvements in population health. This path-breaking resource: Offers a comprehensive, up-to-date introduction to public health intelligence, a core area of public health competency. Is suitable for both graduates' and healthcare professionals' training and development for national and international contexts. Helps readers apply theory to real-life scenarios, from multi-professional perspectives. Features activities, case studies, and discussion tasks for easy reader engagement. Anticipates and examines emerging developments in the field. *Public Health Intelligence - Issues of Measure and Method* is bedrock reading for postgraduate and advanced undergraduate students in public health, global health, health policy, health service management, nursing, medicine, statistics, epidemiology, quantitative methods, health intelligence, health inequality, and other allied healthcare fields. It is also a salient text for public health practitioners and health policymakers. "This book is a 'must-read' for students contemplating a career in Public Health or for anyone who is already in practice. The breadth of chapters from respected authors provide a detailed overview and critique of issues related to public health intelligence. A key strength of the book is that it is written with both students and practitioners in mind." Gurch Randhawa, PhD, FFPH, Professor of Diversity in Public Health & Director, Institute for Health Research, University of Bedfordshire, UK

Infectious Disease Surveillance

Spatial and Syndromic Surveillance for Public Health

Transforming Public Health Surveillance - E-Book

Oxford Textbook of Infectious Disease Control

Animal Disease Surveillance and Survey Systems

Biosurveillance

***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.**

**Public health thrives on high-quality evidence, yet acquiring meaningful data on a population remains a central challenge of public health research and practice. Social monitoring, the analysis of social media and other user-generated web data, has brought advances in the way we leverage population data to understand health. Social media offers advantages over traditional data sources, including real-time data availability, ease of access, and reduced cost. Social media allows us to ask, and answer, questions we never thought possible. This book presents an overview of the progress on uses of social monitoring to study public health over the past decade. We explain available data sources, common methods, and survey research on social monitoring in a wide range of public health areas. Our examples come from topics such as disease surveillance, behavioral medicine, and mental health, among others. We explore the limitations and concerns of these methods. Our survey of this exciting new field of data-driven research lays out future research directions.**

**Rev. ed. of: Principles and practice of public health surveillance / edited by Steven M. Teutsch, R. Elliott Churchill. 2nd ed. 2000.**

**This handbook compiles methods for gathering, organizing and disseminating data to inform policy and manage health systems worldwide. Contributing authors describe national and international structures for generating data and explain the relevance of ethics, policy, epidemiology, health economics, demography, statistics, geography and qualitative methods to describing population health. The reader, whether a student of global health, public health practitioner, programme manager, data analyst or policymaker, will appreciate the methods, context and importance of collecting and using global health data.**

**Assessing the Capabilities of the Public and Private Sectors: Workshop Summary  
Searching Eyes**

**Syndromic Surveillance for Public Health and Bio-Defense**

**Monitoring the Health of Populations by Tracking Disease Outbreaks**

**Technological Contributions to Global Health Security**

**BioWatch and Public Health Surveillance**

**This book presents a comprehensive theory of the ethics and political philosophy of public health surveillance based on reciprocal obligations among surveillers, those under surveillance, and others potentially affected by surveillance practices. Public health surveillance aims to identify emerging health trends, population health trends, treatment efficacy, and methods of health promotion--all apparently laudatory goals. Nonetheless, as with anti-terrorism surveillance, public health surveillance raises complex questions about privacy, political liberty, and justice both of and in data use. Individuals and groups can be chilled in their personal lives, stigmatized or threatened, and used for the benefit of others when health information is wrongfully collected or used. Transparency and openness about data use, public involvement in decisions, and just distribution of the benefits of surveillance are core elements in the justification of surveillance practices. Understanding health surveillance practices, the concerns it raises, and how to respond to them is critical not only to ethical and trustworthy but also to publicly acceptable and ultimately sustainable surveillance practices. The book is of interest to scholars and practitioners of the ethics and politics of public health, bioethics, privacy and data technology, and health policy. These issues are ever more pressing in pandemic times, where misinformation can travel quickly and suspicions about**

disease spread, treatment efficacy, and vaccine safety can have devastating public health effects.

Provides an unparalleled overview of population-based approaches to the prevention of non-communicable diseases, reflecting the latest research in the field, and a key resource for anyone with an interest in NCD prevention as they develop the knowledge and skills needed for effective population-based prevention strategies.

Following the events of 9/11 and in the current world climate, there is increasing concern of the impact of potential bioterrorism attacks. Spatial surveillance systems are used to detect changes in public health data, and alert us to possible outbreaks of disease, either from natural resources or from bioterrorism attacks. Statistical methods play a key role in spatial surveillance, as they are used to identify changes in data, and build models of that data in order to make predictions about future activity. This book is the first to provide an overview of all the current key methods in spatial surveillance, and present them in an accessible form, suitable for the public health professional. It features an abundance of examples using real data, highlighting the practical application of the methodology. It is edited and authored by leading researchers and practitioners in spatial surveillance methods. Provides an overview of the current key methods in spatial surveillance of public health data. Includes coverage of both single and multiple disease surveillance. Covers all of the key topics, including syndromic surveillance, spatial cluster detection, and Bayesian data mining.

Public Health Surveillance (PHS) is of primary importance in this era of emerging health threats like Ebola, MERS-CoV, influenza, natural and man-made disasters, and non-communicable diseases. Transforming Public Health Surveillance is a forward-looking, topical, and up-to-date overview of the issues and solutions facing PHS. It describes the realities of the gaps and impediments to efficient and effective PHS, while presenting a vision for its possibilities and promises in the 21st century. The book gives a roadmap to the goal of public health information being available, when it is needed and where it is needed. Led by Professor Scott McNabb, a leader in the field, an international team of the top-notch public health experts from academia, government, and non-governmental organizations provides the most complete and current update on this core area of public health practice in a decade in 32 chapters. This includes the key roles PHS plays in achieving the global health security agenda and health equity. The authors provide a global perspective for students and professionals in public health. Seven scenarios lay out an aid to understand the context for the lessons of the book, and a comprehensive glossary, questions, bullet points, and learning objectives make this book an excellent tool in the classroom.

**Oxford Textbook of Public Health**

**Theory to Practice**

**Scientific Criteria to Ensure Safe Food**

**Proactive Measures for Prevention, Detection, and Response**

**Saving Humanity from the Next Plague**

**Concepts and Methods in Infectious Disease Surveillance**

This valuable text presents methods and techniques for conducting an animal disease surveillance program, and developing an animal health monitoring system. The text is a 'recipe book' for these techniques as it explains modern techniques, while emphasizing the fundamentals and principles of using these techniques. The book is targeted to epidemiologists and other animal health authorities who are working in national, regional, and international programs. The book can be used as a text for professional and postgraduate training curricula. This text will be of value in veterinary epidemiology and regulatory medicine, where there is need for a concise collection of material on animal disease monitoring, surveillance, and reporting strategies. This need arises from a new era of international trade regulations based on animal diseases, new demands for accountability in utilization of research funds, and calls for prioritizing and economically justifying animal health regulatory and diagnostic activities.

A NEW AND ESSENTIAL RESOURCE FOR THE PRACTICE OF EPIDEMIOLOGY AND PUBLIC HEALTH The CDC Field Epidemiology Manual is a definitive guide to investigating acute public health events on the ground and in real time. Assembled and written by experts from the Centers for Disease Control and Prevention as well as other leading public health agencies, it offers current and field-tested guidance for every stage of an outbreak investigation -- from identification to intervention and other core considerations along the way. Modeled after Michael Gregg's seminal book Field Epidemiology, this CDC manual ushers investigators through the core elements of field work, including many of the challenges inherent to outbreaks: working with multiple state and federal agencies or multinational organizations; legal considerations; and effective utilization of an incident-management approach. Additional coverage includes: · Updated guidance for new tools in field investigations, including the latest technologies for data collection and incorporating data from geographic information systems (GIS) · Tips for investigations in unique settings, including healthcare and community-congregate sites · Advice for responding to different types of outbreaks, including acute enteric disease; suspected biologic or toxic agents; and outbreaks of violence, suicide, and other forms of injury For the ever-changing public health landscape, The CDC Field Epidemiology Manual offers a new, authoritative resource for effective outbreak response to acute and emerging threats. \*\*\* Oxford University Press will donate a portion of the proceeds from this book to the CDC Foundation, an independent nonprofit and the sole entity created by Congress to mobilize philanthropic and private-sector resources to support the Centers for Disease Control and Prevention's critical health protection work. To learn more about the CDC Foundation, visit [www.cdcfoundation.org](http://www.cdcfoundation.org).

The Manual for the Surveillance of Vaccine-Preventable Diseases, updated through 2013, provides current guidelines for those directly involved in surveillance of vaccine-preventable diseases, especially personnel at the local health departments. For each of the vaccine-preventable diseases, this manual includes a chapter describing the importance of rapid case identification; the importance of surveillance; disease reduction goals; case definitions (including clinical description and case classifications); epidemiologically important data to be collected during case investigation; activities for enhancing surveillance; activities for case investigation; and activities for outbreak control. Other chapters include information on surveillance indicators; surveillance data analyses; reporting adverse events following vaccination; and enhancing surveillance. In addition, the manual includes a section reserved for insertion of state-specific guidance for VPD surveillance and

extensive appendices. This manual was first developed in 1996 to provide general guidance to state and local health department personnel who are involved in surveillance activities for vaccine-preventable diseases. This manual answers commonly asked questions regarding the surveillance and reporting of vaccine-preventable diseases and provides information on enhancing existing surveillance systems. A comprehensive, best practices resource for public health and healthcare practitioners and students interested in humanitarian emergencies.

Methods and Case Studies

Health in Humanitarian Emergencies

Prevention Effectiveness

A Public Health Informatics Approach

Privacy, the State, and Disease Surveillance in America

Diagnostic Applications of Health Intelligence and Surveillance Systems

This fully updated edition of *Infectious Disease Surveillance* is for frontline public health practitioners, epidemiologists, and clinical microbiologists who are engaged in communicable disease control. It is also a foundational text for trainees in public health, applied epidemiology, postgraduate medicine and nursing programs. The second edition portrays both the conceptual framework and practical aspects of infectious disease surveillance. It is a comprehensive resource designed to improve the tracking of infectious diseases and to serve as a starting point in the development of new surveillance systems. *Infectious Disease Surveillance* includes over 45 chapters from over 100 contributors, and topics organized into six sections based on major themes. Section One highlights the critical role surveillance plays in public health and it provides an overview of the current International Health Regulations (2005) in addition to successes and challenges in infectious disease eradication. Section Two describes surveillance systems based on logical program areas such as foodborne illnesses, vector-borne diseases, sexually transmitted diseases, viral hepatitis healthcare and transplantation associated infections. Attention is devoted to programs for monitoring unexplained deaths, agents of bioterrorism, mass gatherings, and disease associated with international travel. Sections Three and Four explore the uses of the Internet and wireless technologies to advance infectious disease surveillance in various settings with emphasis on best practices based on deployed systems. They also address molecular laboratory methods, and statistical and geospatial analysis, and evaluation of systems for early epidemic detection. Sections Five and Six discuss legal and ethical considerations, communication strategies and applied epidemiology-training programs. The rest of the chapters offer public-private partnerships, as well lessons from the 2009-2010 H1N1 influenza pandemic and future directions for infectious disease surveillance.

*Disease Surveillance: Technological Contributions to Global Health Security* reminds us of the continued vulnerability of the world to contagious infections. The book presents examples of disease surveillance systems and evaluates promising advances as well as opportunities for new systems. It also explains how newer technologies can allow countries

Health surveillance and intelligence play an important role in modern health systems as more data must be collected and analyzed. It is crucial that this data is interpreted and analyzed effectively and efficiently in order to assist with diagnoses and predictions. *Diagnostic Applications of Health Intelligence and Surveillance Systems* is an essential reference book that examines recent studies that are driving artificial intelligence in the health sector and helping practitioners to predict and diagnose diseases. Chapters within the book focus on health intelligence and how health surveillance data can be made useful and meaningful. Covering topics that include computational intelligence, data analytics, mobile health, and neural networks, this book is crucial for healthcare practitioners, IT specialists, academicians, researchers, and students.

Food safety regulators face a daunting task: crafting food safety performance standards and systems that continue in the tradition of using the best available science to protect the health of the American public, while working within an increasingly antiquated and fragmented regulatory framework. Current food safety standards have been set over a period of years and under diverse circumstances, based on a host of scientific, legal, and practical constraints. *Scientific Criteria to Ensure Safe Food* lays the groundwork for creating new regulations that are consistent, reliable, and ensure the best protection for the health of American consumers. This book addresses the biggest concerns in food safety— including microbial disease surveillance plans, tools for establishing food safety criteria, and issues specific to meat, dairy, poultry, seafood, and produce. It provides a candid analysis of the problems with the current system, and outlines the major components of the task at hand: creating workable, streamlined food safety standards and practices.

Public Health Intelligence

Manual for the Surveillance of Vaccine-Preventable Diseases, 2013

Public Health Systems and Emerging Infections

Infectious Disease Informatics

Sustaining Global Surveillance and Response to Emerging Zoonotic Diseases

Environmental Tracking for Public Health Surveillance

Today the citizens of developed countries have never experienced a large-scale disease outbreak. One reason is the success of the public health community, including epidemiologists and biostatisticians, in tracking and identifying disease outbreaks. *Monitoring the Health of Populations by Tracking Disease Outbreaks: Saving Humanity from the Next Plague* is the story of the application of statistics for disease detection and tracking. The work of public health officials often critically depends on the use of statistical methods to help discern whether an outbreak may be occurring and, if there is sufficient evidence of an outbreak, then to locate and track it. Statisticians also help design surveys and experiments to collect critical information, and they analyze the resulting data to help investigators zero in on a cause for a disease.

Features:

- Discusses the crucial roles of statistics in early disease detection.
- Outlines the concepts and methods of disease surveillance.
- Covers surveillance techniques for communicable diseases like Zika and chronic diseases such as cancer.
- Gives real world examples of disease investigations including smallpox, syphilis, anthrax, yellow fever, and microcephaly (and its relationship to the Zika virus). This book tells the story of how medical and public health professionals use statistics to separate critical disease information from all the noise of our modern world so that they can most effectively intervene and mitigate the effects of disease. Through the process of identifying an outbreak, finding its cause, and developing a plan to prevent its reoccurrence, statisticians and epidemiologists help improve public health across the world.

Chronic diseases are common and costly, yet they are also among the most preventable health problems. Comprehensive and accurate disease surveillance systems are needed to implement successful efforts which will reduce the burden of chronic diseases on the U.S. population. A number of sources of surveillance data—including population surveys, cohort studies, disease registries, administrative health data, and vital statistics—contribute critical information about chronic disease. But no central surveillance system provides the information needed to analyze how chronic disease impacts the U.S. population, to identify public health priorities, or to track the progress of preventive efforts. *A Nationwide Framework for Surveillance of Cardiovascular and Chronic Lung Diseases* outlines a conceptual framework for building a national chronic disease surveillance system focused primarily on cardiovascular and chronic lung diseases. This system should be capable of providing data on disparities in incidence and prevalence of the diseases by race, ethnicity, socioeconomic status, and geographic region, along with data on disease risk factors, clinical care delivery, and functional health outcomes. This coordinated surveillance system is needed to integrate and expand existing information across the multiple levels of decision making in order to generate actionable, timely

knowledge for a range of stakeholders at the local, state or regional, and national levels. The recommendations presented in A Nationwide Framework for Surveillance of Cardiovascular and Chronic Lung Diseases focus on data collection, resource allocation, monitoring activities, and implementation. The report also recommends that systems evolve along with new knowledge about emerging risk factors, advancing technologies, and new understanding of the basis for disease. This report will inform decision-making among federal health agencies, especially the Department of Health and Human Services; public health and clinical practitioners; non-governmental organizations; and policy makers, among others.

Early detection is essential to the control of emerging, reemerging, and novel infectious diseases, whether naturally occurring or intentionally introduced. Containing the spread of such diseases in a profoundly interconnected world requires active vigilance for signs of an outbreak, rapid recognition of its presence, and diagnosis of its microbial cause, in addition to strategies and resources for an appropriate and efficient response. Although these actions are often viewed in terms of human public health, they also challenge the plant and animal health communities. Surveillance, defined as "the continual scrutiny of all aspects of occurrence and spread of a disease that are pertinent to effective control", involves the "systematic collection, analysis, interpretation, and dissemination of health data." Disease detection and diagnosis is the act of discovering a novel, emerging, or reemerging disease or disease event and identifying its cause. Diagnosis is "the cornerstone of effective disease control and prevention efforts, including surveillance." Disease surveillance and detection relies heavily on the astute individual: the clinician, veterinarian, plant pathologist, farmer, livestock manager, or agricultural extension agent who notices something unusual, atypical, or suspicious and brings this discovery in a timely way to the attention of an appropriate representative of human public health, veterinary medicine, or agriculture. Most developed countries have the ability to detect and diagnose human, animal, and plant diseases. Global Infectious Disease Surveillance and Detection: Assessing the Challenges -- Finding Solutions, Workshop Summary is part of a 10 book series and summarizes the recommendations and presentations of the workshop.

This book aims to describe the achievements, policy and system of immunization management in China during the last 60 years.

Immunization is one of the most effective and cost-effective means to prevent infectious diseases. The Chinese government has long attached great importance to immunization, and with several generations of effort, China has made great achievements through its immunization program. The book consists of 9 chapters, including the introduction of vaccination and immunization policy, immunization services, innovative vaccines, immunization activities in China. The book also demonstrates some of the hardships and difficulties behind the immunization achievements, and introduces the effort of Expanded Program of Immunization (EPI) staff and the support and assistance from the international community.

Methods and Applications

Issues of Measure and Method

The Control of Communicable Diseases

Disease Surveillance

An Introduction to Population-Level Prevention of Non-Communicable Diseases

The Palgrave Handbook of Global Health Data Methods for Policy and Practice

*An up-to-date and comprehensive treatment of biosurveillance techniques With the worldwide awareness of bioterrorism and drug-resistant infectious diseases, the need for surveillance systems to accurately detect emerging epidemics is essential for maintaining global safety.*

*Responding to these issues, Disease Surveillance brings together fifteen eminent researchers in the fields of medicine, epidemiology, biostatistics, and medical informatics to define the necessary elements of an effective disease surveillance program, including research, development, implementation, and operations. The surveillance systems and techniques presented in the text are designed to best utilize modern technology, manage emerging public health threats, and adapt to environmental changes. Following a historical overview detailing the need for disease surveillance systems, the text is divided into the following three parts: Part One sets forth the informatics knowledge needed to implement a disease surveillance system, including a discussion of data sources currently used in syndromic surveillance systems. Part Two provides case studies of modern disease surveillance systems, including cases that highlight implementation and operational difficulties as well as the successes experienced by health departments in the United States, Canada, Europe, and Asia. Part Three addresses practical issues concerning the evaluation of disease surveillance systems and the education of future informatics and disease surveillance practitioners. It also assesses how future technology will shape the field of disease surveillance. This book's multidisciplinary approach is ideal for public health professionals who need to understand all the facets within a disease surveillance program and implement the technology needed to support surveillance activities. An outline of the components needed for a successful disease surveillance system combined with extensive use of case studies makes this book well-suited as a textbook for public health informatics courses*

*Intrusive Interventions is a history and critical study of public health in the Victorian and Edwardian period. Drawing on an array of archival sources from across provincial England and London, it investigates the emergence and consolidation of a set of government policies that came to be known as infectious disease surveillance, including compulsory infectious disease notification, domestic quarantine, mandatory removal to a hospital, contact tracing, and the disinfection of homes and belongings. Although these were a set of spatialized practices implemented in diverse settings such as hospitals, schools, and disinfecting stations, their effect was to retrain the gaze of public health onto domestic space and in the process both disrupt and reinforce the centrality of the family and domesticity in Victorian and Edwardian culture. Examining political ideologies of freedom and individuality as well as social policy, medical theory, laboratory research, material culture, and public health practice, author Graham Mooney argues that infectious disease surveillance reconfigured late nineteenth-century hygienic norms and forms of citizenship. Public health practice had to be continually reshaped in order to negate the political fallout of a tendency toward coercion and unwanted interference -- debates that, as the author of this important study points out, continue to resonate today. Graham Mooney is Assistant Professor at the Institute of the History of Medicine, Johns Hopkins University.*

*Satellite imagery and data are widely used in public health surveillance to provide early warning of disease outbreaks and for averting pandemics. Convergence of these technologies began in the 1970s and has gained wide acceptance in the 21st Century. Environmental Tracking for Public Health Surveillance focuses on the expanding use of satellite sensor imagery and long-term spectral measurements for assessing and modelling Earth's environments in context of public health surveillance. It addresses vector-borne, air-borne, water-borne, and zoonotic diseases, and explores analytical methods for forecasting environmental conditions and their potential for consequent disease outbreaks. Infectious and contagious diseases are of particular interest in this volume because once parasite-vector-human host pathways are triggered by favourable biological circumstances, pandemic diseases can spread to global scale in a matter of hours. The chapters advance readers through three sets of material. Part I reviews the 1970-2012 history of satellite Earth-science surveillance technology that led to linking natural environments to human diseases, and more generally to public health applications. Part II describes specific infectious and contagious diseases and the threat of emerging and re-emerging diseases. Part III explores the kinds of satellite data, modelling, and electronic information systems being developed to expedite health intercessions and responses at local to regional and global scales of reference. Equally important are the extensive reference sections for chapters in Parts II and III. For readers interested in tracking the development of Earth-science technology, these constitute a thorough entrée to both the health and environmental literature. The chapters are written jointly by experts in both the health and Earth-science technologies. Each chapter is accompanied by an extensive list of citations to provide background and validation of the current state-of-the-art for a variety of high-interest human diseases and associated health and well-being issues. The*

*importance of day-to-day weather patterns, the impacts of severe weather events and longer-term climate cycles form the basis for developing information systems that meet goals and expectations of national and international health monitoring bodies. Environmental Tracking for Public Health Surveillance provides a state-of-the-art overview on how environmental tracking data from satellite, airborne, and ground-based sensors are being integrated into appropriate geophysical and spatial information system models to enhance public health surveillance and decision-making from local to global levels, and is intended primarily for a cross-disciplinary professional audience consisting of public health decision-makers, spatial data analysts, modelers, Earth observation specialists, and medical researchers.*

*The Forum on Emerging Infections was created in 1996 in response to a request from the Centers for Disease Control and Prevention and the National Institutes of Health. The goal of the forum is to provide structured opportunities for representatives from academia, industry, professional and interest groups, and government to examine and discuss scientific and policy issues that relate to research, prevention, detection, and management of emerging infectious diseases. A critical part of this mission has been the convening of a series of workshops. Public Health Systems and Emerging Infections summarizes the fourth in a series of five workshops. With a focus on our knowledge and understanding of the role of private and public health sectors in emerging infectious disease surveillance and response, the participants explored the effects of privatization of public health laboratories and the modernization of public health care. The issues discussed included epidemiological investigation, surveillance, communication, coordination, resource allocations, and economic support.*

*Statistical Principles and Methods for Public Health Surveillance*

*Foundations of Epidemiology*

*Public Health, Domestic Space, and Infectious Disease Surveillance in England, 1840-1914*

*A Geographical Analysis from Medieval Quarantine to Global Eradication*

*Sustaining Surveillance: The Importance of Information for Public Health*

*Report of a Committee of the American Public Health Association*

An up-to-date and comprehensive treatment of biosurveillance techniques With the worldwide awareness of bioterrorism and drug-resistant infectious diseases, the need for surveillance systems to accurately detect emerging epidemics is essential for maintaining global safety. Responding to these issues, Disease Surveillance brings together fifteen eminent researchers in the fields of medicine, epidemiology, biostatistics, and medical informatics to define the necessary elements of an effective disease surveillance program, including research, development, implementation, and operations. The surveillance systems and techniques presented in the text are designed to best utilize modern technology, manage emerging public health threats, and adapt to environmental changes. Following a historical overview detailing the need for disease surveillance systems, the text is divided into the following three parts: Part One sets forth the informatics knowledge needed to implement a disease surveillance system, including a discussion of data sources currently used in syndromic surveillance systems. Part Two provides case studies of modern disease surveillance systems, including cases that highlight implementation and operational difficulties as well as the successes experienced by health departments in the United States, Canada, Europe, and Asia. Part Three addresses practical issues concerning the evaluation of disease surveillance systems and the education of future informatics and disease surveillance practitioners. It also assesses how future technology will shape the field of disease surveillance. This book's multidisciplinary approach is ideal for public health professionals who need to understand all the facets within a disease surveillance program and implement the technology needed to support surveillance activities. An outline of the components needed for a successful disease surveillance system combined with extensive use of case studies makes this book well-suited as a textbook for public health informatics courses

Following the attacks of September 11, 2001 and the anthrax letters, the ability to detect biological threats as quickly as possible became a top priority. In 2003 the Department of Homeland Security (DHS) introduced the BioWatch program--a federal monitoring system intended to speed detection of specific biological agents that could be released in aerosolized form during a biological attack. The present volume evaluates the costs and merits of both the current BioWatch program and the plans for a new generation of BioWatch devices. BioWatch and Public Health Surveillance also examines infectious disease surveillance through hospitals and public health agencies in the United States, and considers whether BioWatch and traditional infectious disease surveillance are redundant or complementary.

Applies traditional epidemiologic methods for determining disease etiology to the real-life applications of public health and health services research. This text contains a chapter on the development and use of systematic reviews and one on epidemiology and the law.

This history of public health service in the United States spans more than a century of conflict and controversy with the authors situating the tension inherent in public health surveillance in a broad social and political context.

*A Nationwide Framework for Surveillance of Cardiovascular and Chronic Lung Diseases*

*Global Infectious Disease Surveillance and Detection*

*Assessing the Challenges—Finding Solutions: Workshop Summary*

*Social Monitoring for Public Health*

*The CDC Field Epidemiology Manual*

*Intrusive Interventions*

Computer-based infectious disease surveillance systems are capable of real-time or near real-time detection of serious illnesses and potential bioterrorism agent exposures and represent a major step forward in disease surveillance. Infectious Disease Informatics: Syndromic Surveillance for Public Health and Bio-Defense is an in-depth monograph that analyzes and evaluates the outbreak modeling and detection capabilities of existing surveillance systems under a unified framework, and presents the first book-length coverage of the subject from an informatics-driven perspective. Individual chapters consider the state of the art, including the facilitation of data collection, sharing and transmission; a focus on various outbreak detection methods; data visualization and information dissemination issues; and system assessment and other policy issues. Eight chapters then report on several real-world case studies, summarizing and comparing eight syndromic surveillance systems, including those that have been adopted by many public health agencies (e.g., RODS and BioSense). The book concludes

with a discussion of critical issues and challenges, with a look to future directions. This book is an excellent source of current information for researchers in public health and IT. Government public health officials and private-sector practitioners in both public health and IT will find the most up-to-date information available, and students from a variety of disciplines, including public health, biostatistics, information systems, computer science, and public administration and policy will get a comprehensive look at the concepts, techniques, and practices of syndromic surveillance.

Foundations of Epidemiology is an open access, introductory epidemiology text intended for students and practitioners in public or allied health fields. It covers epidemiologic thinking, causality, incidence and prevalence, public health surveillance, epidemiologic study designs and why we care about which one is used, measures of association, random error and bias, confounding and effect modification, and screening. Concepts are illustrated with numerous examples drawn from contemporary and historical public health issues.

This text explores the critical issues in the statistical analysis and interpretation of public health surveillance data. It covers statistical methods for detecting disease outbreaks and clusters, the use of survey methods and interpreting time trends and geographic patterns, among other topics.

As evidenced by the anthrax attacks in 2001, the SARS outbreak in 2003, and the H1N1 influenza pandemic in 2009, a pathogen does not recognize geographic or national boundaries, often leading to devastating consequences. Automated biosurveillance systems have emerged as key solutions for mitigating current and future health-related events. Focusing on this promising public health innovation, Biosurveillance: Methods and Case Studies discusses how these systems churn through vast amounts of health-related data to support epidemiologists and public health officials in the early identification, situation awareness, and response management of natural and man-made health-related events. The book follows a natural sequence from theory to application. The initial chapters build a foundation while subsequent chapters present more applied case studies from around the world, including China, the United States, Denmark, and the Asia-Pacific region. The contributors share candid, first-hand insights on lessons learned and unresolved issues that will help chart the future of biosurveillance. As this book illustrates, biosurveillance operates in a complex, multidimensional problem space that incorporates varied data. Capturing the progress of modern-day pioneers who are walking in John Snow's footsteps, this volume shows how contemporary information technology can be applied to the age-old challenge of combating the spread of disease and illness.

Immunization Program in China

Evaluating Systems for the Early Detection of Biological Threats: Abbreviated Version

Principles and Practice of Public Health Surveillance

Applied Epidemiology

Monitoring the Health of Populations

A Guide to Decision Analysis and Economic Evaluation

*Infectious disease surveillance has evolved at an extraordinary pace during the past several decades, and continues to do so. It is increasingly used to inform public health practice in addition to its use as a tool for early detection of epidemics. It is therefore crucial that students of public health and epidemiology have a sound understanding of the concepts and principles that underpin modern surveillance of infectious disease. Written by leaders in the field, who have vast hands-on experience in conducting surveillance and teaching applied public health, Concepts and Methods in Infectious Disease Surveillance is comprised of four sections. The first section provides an overview, a description of systems used by public health jurisdictions in the United States and legal considerations for surveillance. The second section presents chapters on major program-area or disease-specific surveillance systems, including those that monitor bacterial infections, foodborne diseases, healthcare-associated infections, and HIV/AIDS. The following section is devoted to methods for conducting surveillance and also approaches for data analysis. A concluding section summarizes communication of surveillance findings, including the use of traditional and social media, in addition to showcasing lessons learned from the New York City Department of Health's experience in surveillance and epidemiology training. This comprehensive new book covers major topics at an introductory to intermediate level, and will be an excellent resource for instructors. Suitable for use in graduate level courses in public health, human and veterinary medicine, and in undergraduate programs in public-health-oriented disciplines, Concepts and Methods in Infectious Disease Surveillance is also a useful primer for frontline public health practitioners, hospital epidemiologists, infection control practitioners, laboratorians in public health settings, infectious disease researchers, and medical and public health informaticians interested in a concise overview of infectious disease surveillance.*