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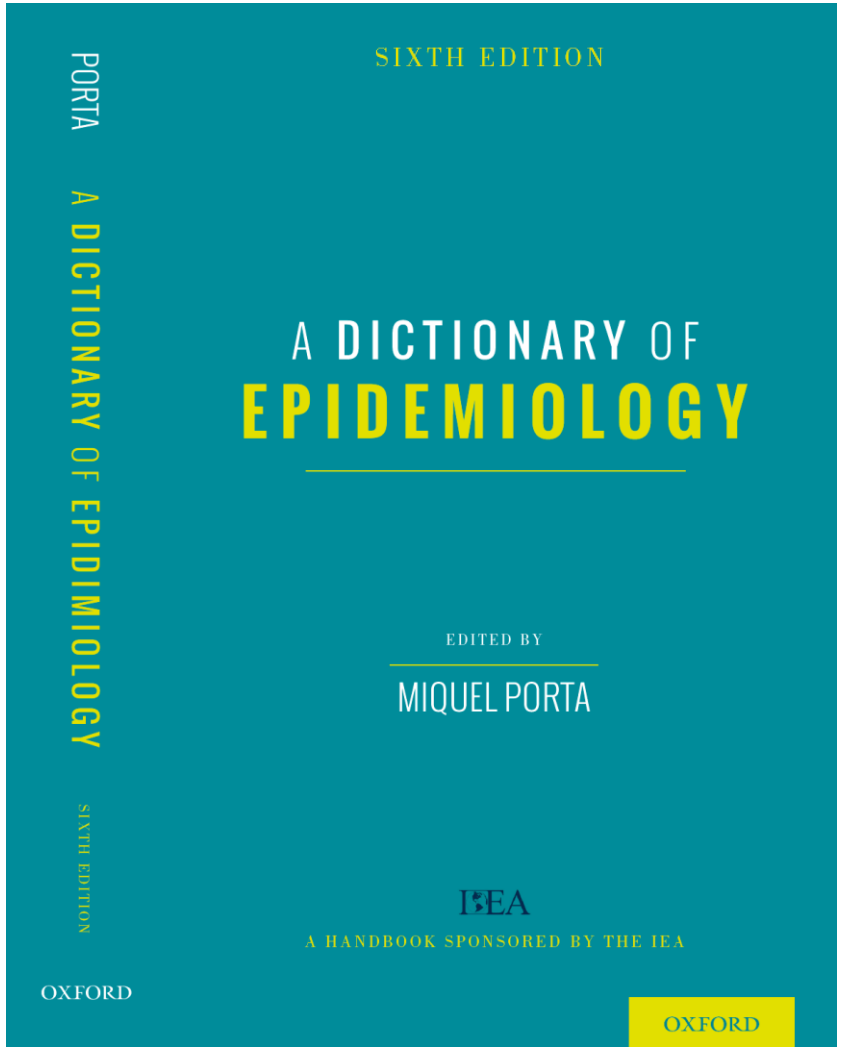
WORLD CONGRESS OF EPIDEMIOLOGY 2024



The new IEA Dictionary of Epidemiology

7th. edition, 2025

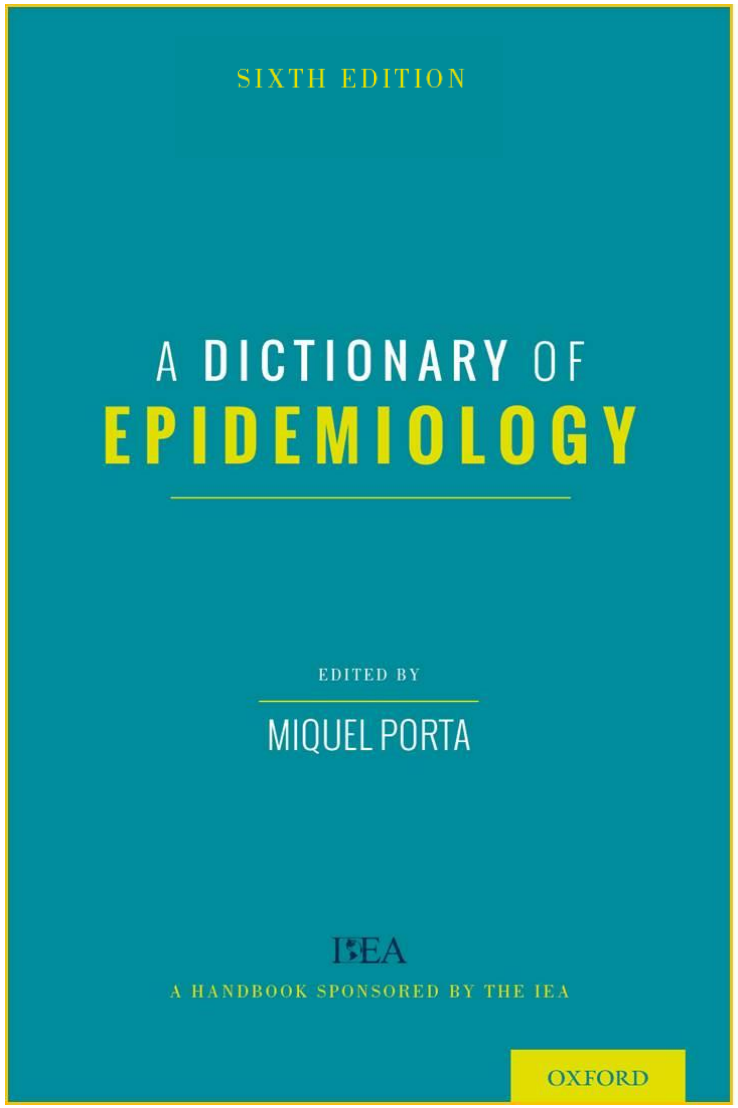
MIQUEL PORTA

IMIM UAB PRBB, Barcelona

Editor, *A dictionary of epidemiology*

dictionaryepi@researchmar.net

This is your last chance to review novelties that the dictionary will include, make suggestions, and discuss. All welcome to attend and participate.



A Dictionary of Epidemiology

Sixth Edition

Edited for the
International Epidemiological Association
by
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Professor of Preventive Medicine & Public Health,
School of Medicine, Universitat Autònoma de Barcelona
Senior Scientist, Hospital del Mar Institute of Medical Research – IMIM
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Miguel Hernán
Isabel dos Santos Silva
John M. Last

Assistant Editor
Andrea Burón

OXFORD
UNIVERSITY PRESS

Please send suggestions to dictionaryepi@researchmar.net until Friday October 4.

The vision for the Dictionary

We favour comprehensive, inclusive, and **integrative applications of the science of epidemiology**. Focused on research, and on public health policies & services. Relevant as well for any other activities that influence citizens' health.

Please think through the Preface of the current 6th. edition (2014).

The present of the IEA Dictionary

- The Dictionary is among the **most valid** and, thus, **trustworthy sources of knowledge on epidemiology, public health**, and related disciplines, worldwide.
- **For epidemiologists and other users of epidemiology in all fields**: academia (research & teaching), public health services, medicine and the other health professions, policy-makers, citizens, institutions, the social networks & media.
- **For students** in most health, social, and biological sciences.

Most relevant in pandemic times.

This is also the future.

"A required tool for any student of the discipline."

—American Journal of Epidemiology

"This is an excellent way of refreshing, revising, and reminding yourself when memory has faded a little. It is a 'must-have' for any serious epidemiologist or student of epidemiology. "

—Public Health

"Anybody among us—epidemiologists and would-be epidemiologists—should also have a copy of this book at hand for frequent consultation. Priceless!"

—Journal of Epidemiology & Community Health

"The dictionary can be of interest to a wide audience of people, scientists or not."

—Preventive Medicine

We can all be proud
of this unique collegial work.

I cannot believe that I'm actually enjoying reading formulas, examining charts and graphics, and perusing exact definitions. The clarity and depth of them all are truly striking. Do not miss the definition of the epidemiologist, which includes the observation that "epidemiologists show a rich plurality of scientific cultures and practices" (p. 95). Perhaps my favorite, though, is the insight into public health today: "Like most sculptures, symphonies, and other works of art, certain important things in life have several dimensions. The definition of public health has four dimensions."

Not all symphonies are created equal. But this particular one brings magnificent music for any rainy day.

by Hugh H. Tilson

I will not hold back: a dictionary is absolutely necessary and it is a pleasure to hold the new edition and browse through it. Miquel Porta, editor of the fifth and sixth editions, discusses precisely this issue in the preface (very entertaining: recommended reading!) and suggests that '[the dictionary] can be more relevant and useful than ever before because nowadays we suffer from an unprecedented level of air pollution, noise and potential confusion'.

Lorenzo Richiardi

International Journal of Epidemiology, 2015

that led to the new edition. A large number of eminent epidemiologists contributed to the definition of at least one of the terms in the current and previous editions (and they are acknowledged as contributors), and John Last, Sander Greenland, Miguel Hernan and Isabel dos Santos Silva acted as associate editors. Furthermore, a call for contributions was launched and widely disseminated in 2012. Thus, if you do not find your favourite term in the *Dictionary*, do not complain and get prepared to contribute to the next edition.

Lorenzo Richiardi

International Journal of Epidemiology, 2015

Please send suggestions to dictionaryepi@researchmar.net until Friday October 4.

Who will read this book? The senior editor invokes a land of epidemiology, expressing the hope that this book will prove useful to visitors and immigrants from other disciplines, to epidemiologists making a foray into foreign lands, and to natives of the country continuing to work within the increasingly porous borders of the epidemiology terrain. Those 3 kinds of readers indeed will find much here that is valuable. For the visitor to epidemiology, it offers a uniquely useful guide. Most important, the book is complete and yet compact, with all the major and many minor terms and concepts covered. For students in epidemiology and other public health disciplines, it serves quite well as a central reference volume. An epidemiology dictionary cannot give the overarching framework of the field, but along with one comprehensive epidemiology text and another solid statistics text, the new dictionary belongs on the student's bookshelf. For the long-time practitioner, *A Dictionary of Epidemiology* earns its place on the short shelf of books within easy reach.

Patricia Hartge *Am J Epidemiol.* 2015

In important respects, this radically revised edition still stays within the tradition of its predecessors, going back to the original 114-page volume edited by John Last and published in 1983. In particular, it does not attempt to draw bright borders between what is and what is not epidemiology. It assiduously seeks common ground in terminology and usage where possible and liberally provides synonyms. The book rests on the assumptions of a legitimate pluralism of theory in epidemiology and a natural and ongoing evolution of practice.

Why was this book revised and reissued in 2014? The editors are exquisitely sensitive to arguments that current information technology might make a printed book that lists definitions in epidemiology trivial, redundant, or impossible.

includes hundreds of new or revised terms essential to working in those domains. It also still includes plenty of language regarding what we mean when we talk about cause.

Other reviews praising what we IEA members did

– **Floud S**. *European Journal of Clinical Investigation* 2014.
– **Bernier R**. *The Epidemiology Monitor* 2014.
– **Bhopal RS**. *Annals of Epidemiology* 2015.
– **Terracini B**. *Epidemiologia & Prevenzione* 2015.
– **Fine P**. *The Lancet* 2015.
– **Kogevinas M**. *International Journal of Epidemiology* 2015.
– **Ferreira Antunes JL**. *Revista Brasileira de Epidemiologia* 2016.
– **Canoy D**. *BBA Clinical* 2015.
– **Faerstein E**. *Cadernos de Saúde Pública* 2016.

We can all be proud
of this unique collegial work.

Dictionary of Epidemiol

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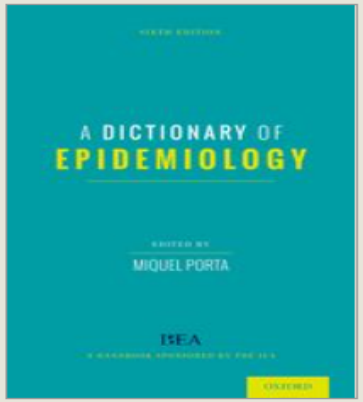

Find Print Edition in Library

A Dictionary of Epidemiology (6 ed.)

Edited by Miquel Porta

Previous Edition (5 ed.)

Over 2,000 entries

This sixth edition of *A Dictionary of Epidemiology*—the most updated since its inception—reflects the profound substantive and methodological changes that have come to characterize epidemiology and its associated disciplines. Sponsored by the International Epidemiological Association, this work remains the essential reference for anyone studying or working in epidemiology, biostatistics, public health, medicine, or the growing number of health sciences in which epidemiologic competency is now required.

More than just a dictionary, this text is an essential guidebook to the st ... More

BIBLIOGRAPHIC INFORMATION

Publisher: Oxford University Press
Print ISBN-13: 9780199976720
Current Online Version: 2016
eISBN: 9780199390069

Print Publication Date: 2014
Published online: 2016
DOI: 10.1093/acref/9780199976720.001.0001

Miquel Porta, *editor*

Miquel Porta is a physician, epidemiologist and scholar from Barcelona who pioneered clinical and molecular epidemiology in Europe and has promoted the integration of biological, clinical, environmental, and social knowledge and methods in research and teaching worldwide. Porta has served as a visiting scientist at many global institutions, including the University of North More

upf. Universitat Pompeu Fabra Barcelona

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ALL CONTENTS | ENTRIES

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Available in print and digital media

Digital editions have been available since the 5th. edition (2008), and remain available for the current 6th. (2014); e.g., the dictionary also exists as an Ebook, Kindle, Nook book, etc.

Most valuable is the inclusion of the entire 6th. edition in ***Oxford Reference***, which is not only useful for epidemiologists and other health professionals with access to Oxford Reference: it also enables thousands of other users of Oxford Reference to access the definitions of the dictionary when searching for terms that our dictionary includes; thus, Oxford Reference contributes significantly to **disseminate epidemiological concepts beyond epidemiological circles.**

→ Buy it at OUP, etc.

The calendar (OUP)

- Call to submit changes and other suggestions: September 2023.
- Deadline: next week.
- Publication: early-mid 2025.

Please have at hand the current 6th. edition.

Please send suggestions to dictionaryepi@researchmar.net until Friday October 4.

You had / have a chance to contribute

→ Members of IEA and other health professionals worldwide **were invited to contribute to the 7th. edition** by submitting to the editor amendments, **corrections of existing definitions, new material,** and any other relevant suggestions.

→ A structured mechanism for submissions.

Please have at hand the current 6th. edition.

Contribute by suggesting:

1. Complete removal of a term in the present 6th. edition (2014).
2. Change in the definition of a term in the 6th. edition.
3. New term for the new 7th. edition.
4. New term and its corresponding definition.
5. Removal or update of a Figure included in the present edition, or suggest a new Figure.
6. Change in a bibliographic reference.
7. Make other comments and suggestions.

Please have at hand the current 6th. edition.

EPIDEMIOLOGY The study of the occurrence and distribution of health-related events, states, and processes in specified populations, including the study of the DETERMINANTS influencing such processes, and the application of this knowledge to control relevant health problems.

Study includes surveillance, observation, screening, hypothesis testing, analytic research, experiments, and prediction. *Distribution* refers to analysis by time, place (or space), and population (i.e., classes or subgroups of persons affected in an organization, population, or society, or at regional and global scales). *Determinants* are the geophysical, biological, behavioral, social, cultural, economic, and political factors that influence health. *Health-related events, states, and processes* include outbreaks, diseases, disorders, causes of death, behaviors, environmental and socioeconomic processes, effects of preventive programs, and use of health and social services. *Specified populations* are those with common contexts and identifiable characteristics. *Application to control* . . . makes explicit the aim of epidemiology—to promote, protect, and restore health, and to advance scientific knowledge.

EPIDEMIOLOGY The study of the occurrence and distribution of health-related events, states, and processes in specified populations, including the study of the DETERMINANTS influencing such processes, and the application of this knowledge to control relevant health problems.

The primary "knowledge object" of epidemiology as a scientific discipline are causes of health-related events, states, and processes in groups and populations. In the past 90 years, the definition has broadened from concern with communicable disease epidemics to include all phenomena related to health in populations.

Therefore, epidemiology is much more than a branch of medicine treating of epidemics.

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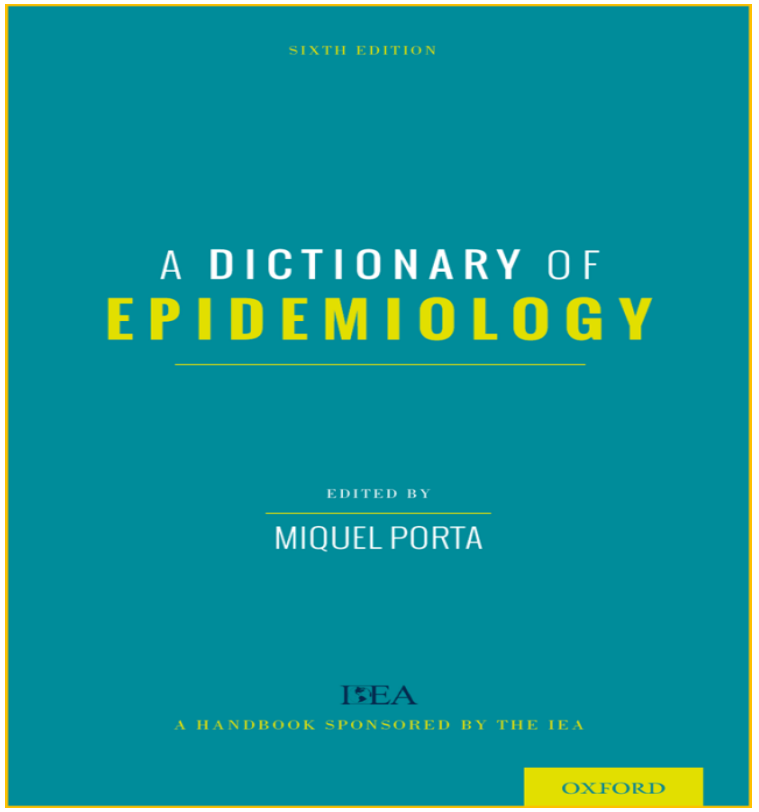
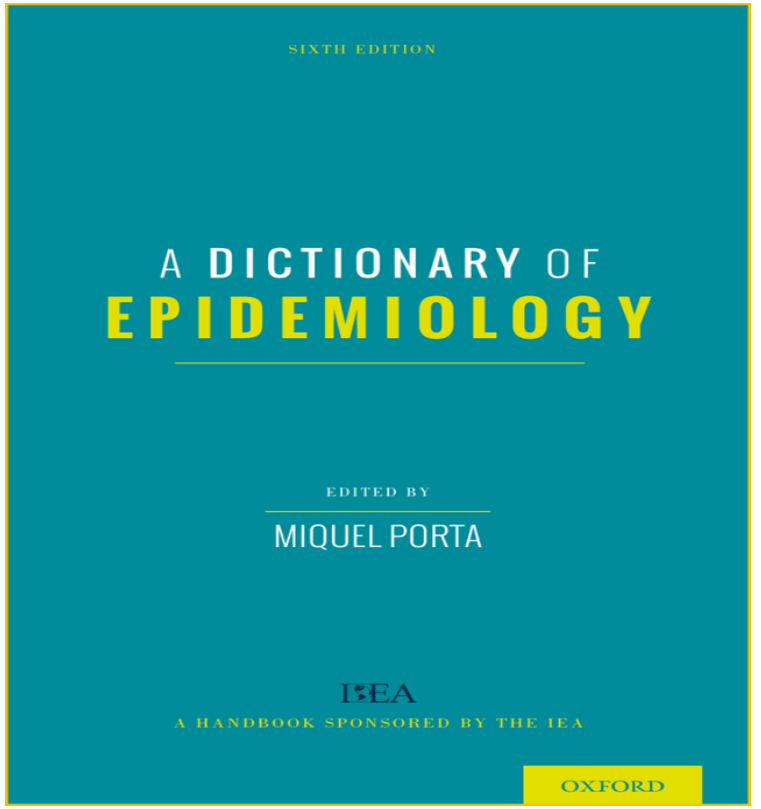
PUBLIC HEALTH, GLOBAL HEALTH,
PREVENTIVE MEDICINE, PANDEMIC,
PREVENTION STRATEGIES,
BURDEN OF DISEASE, EMBODIMENT,
CULTURAL INHERITANCE, BIAS,
DISEASES OF COMPLEX ETIOLOGY,
SOCIAL CAPITAL, SYSTEMIC, METAPHOR,
CAUSALITY, COLLIDER, GENETIZATION,
INTEGRATIVE RESEARCH, CONFOUNDING,
PLASTICITY, BIRTH COHORT, RISK, COST,
DETERMINANT, RISK FACTOR, CARRIER,
SIGNIFICANCE, RELEVANCE, CREATIVITY,
HEALTH IMPACT ASSESSMENT,
SELECTION BIAS, NNS, NNT, POLICY,
DYSREGULATION, SUSTAINABILITY, INEQUALITY,
IATROGENESIS, INEQUALITY, INTERPRETIVE BIAS,
'HEALTH IN ALL POLICIES', MINIMALLY IMPORTANT DIFFERENCE,
EVIDENCE-BASED MEDICINE & PUBLIC HEALTH,
COSTS OF INACTION, DENOMINATOR, 'DISEASE MONGERING',
QUALITY-ADJUSTED LIFE YEARS, AGENCY RELATIONSHIP...



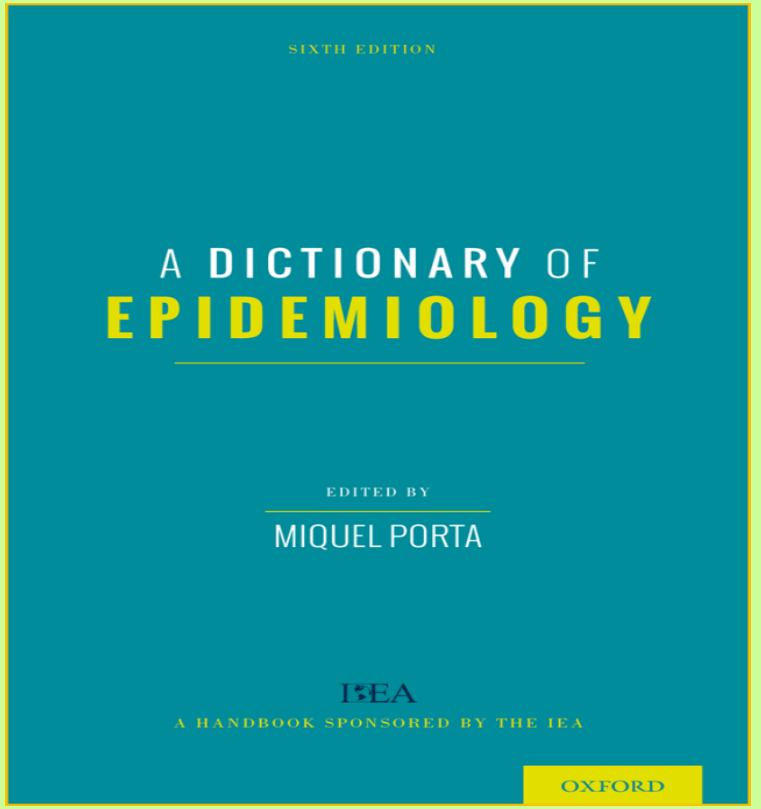
Oxford University Press, 2014

CAUSAL CRITERIA.
CAUSALITY. COHERENCE.
BIOLOGICAL PLAUSIBILITY.
INTEGRATION.
COMPONENT CAUSES.
CONSISTENCY.
DETERMINISM, GENETIC.
DISEASES OF COMPLEX ETIOLOGY.
EPIGENETICS.
EVANS'S POSTULATES.
HENLE-KOCH POSTULATES.
HILL'S CRITERIA OF CAUSATION.
MULTIPLE CAUSATION.
RISK FACTOR. DOSE-RESPONSE. MONOTONIC.
CAUSES IN PUBLIC HEALTH SCIENCES.
WEB OF CAUSATION. DYSREGULATION. SYSTEMIC.



Oxford University Press, 2014

SCREENING.
EARLY CLINICAL DETECTION.
NATURAL HISTORY OF DISEASE.
INCUBATION PERIOD.
INDUCTION PERIOD.
LATENCY PERIOD.
PREVENTION.
RISK FACTOR.
STRATEGY, “HIGH-RISK.”
STRATEGY, “POPULATION.”
PREVENTION PARADOX.
SIGNIFICANCE, CLINICAL.
SIGNIFICANCE, PUBLIC HEALTH
DETERMINANT, DISTAL (DISTANT).
DETERMINANT, PROXIMAL (PROXIMATE).
CASE FINDING.



Oxford University Press, 2014

CLINICAL TRIAL.

RANDOMIZED CONTROLLED TRIAL.

COMMUNITY TRIAL.

RANDOM ALLOCATION.

EXPLANATORY STUDY.

PRAGMATIC STUDY.

BLINDED STUDY.

DOUBLE-BLIND TRIAL.

OBSERVATIONAL STUDY.

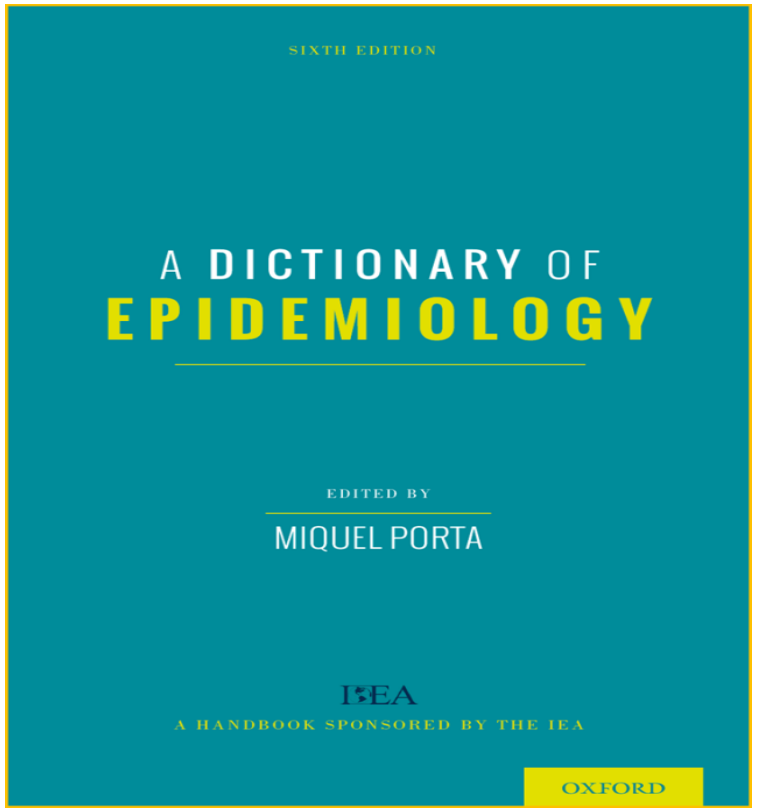
EXPERIMENTAL STUDY.

NATURAL EXPERIMENT.

CASE REPORTS.

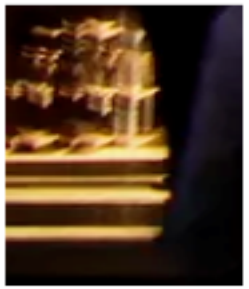
CASE SERIES.

INTENTION-TO-TREAT ANALYSIS (ITT).



Oxford University Press, 2014

Vox



Why the WHO won't call the coronavirus a pandemic

The virus has spread across all continents. But the WHO has held back on using the term "pandemic" for it.

By Kelsey Piper | Mar 9, 2020, 2:25pm EDT

The head of the World Health Organization **said that the world is in "uncharted territory"** with a dangerous and rapidly spreading disease that has caused serious outbreaks around the world. But there's one word the World Health Organization has yet to use to describe the outbreak: "pandemic."

When it comes to defining a pandemic, things get a little more complicated.

According to ***A Dictionary of Epidemiology***, the standard reference for epidemiologists, a pandemic is "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people."

A "pandemic" disease sounds much scarier than a mere "outbreak." But it's important to remember that "pandemic" refers to how many parts of the world are dealing with an elevated rate of the disease — and, in theory, says nothing about how serious the disease is.

IEA, A dictionary of epidemiology. 6th. edition (Oxford University Press, 2014). http://www.oxfordreference.com

PANDEMIC An EPIDEMIC occurring over a very wide area, crossing international boundaries, and usually affecting a large number of people. Only some pandemics cause severe disease in some individuals or at a population level. Characteristics of an infectious agent influencing the causation of a pandemic include: the agent must be able to infect humans, to cause disease in humans, and to spread easily from human to human.[69,116,645-647]

EPIDEMIC CURVE A graphic plotting of the distribution of cases by time of onset.[8]

EPIDEMIOLOGICAL INTELLIGENCE (Syn: epidemic intelligence) The process of detecting, verifying, analyzing, assessing, and investigating signals that may represent a threat to public health.[160,366,380] Activities aimed at managing epidemiological crises, biochemical threats, radiological risks, natural disasters, or the public health impact of terrorist attacks and wars. A government body engaged in collecting secret or sensitive information related to epidemic outbreaks. The Global Public Health Intelligence Network (GPHIN) of the World Health Organization is an Internet-based multilingual early-warning tool that continuously searches news wires and websites to identify information about disease outbreaks and other events of potential international public health concern. To ensure a comprehensive picture of the epidemic threat to global health security, WHO also gathers epidemic intelligence from informal sources. With the advent of modern communication technologies, many initial outbreak reports now originate in the electronic media and electronic discussion groups.[381] See also DIGITAL EPIDEMIOLOGY.

IEA. A dictionary of epidemiology. 6th. edition (Oxford University Press, 2014). http://www.oxfordreference.com

EPIDEMICS, HISTORY OF A domain of history that deals with the effects of diseases on the course of history.[39-42,69,324,382-386] A rather comprehensive monograph is Thomas McKeown's *The Origins of Human Disease.*[387] Partial accounts include histories of the impact on societies of syphilis,[388] tuberculosis,[389] smallpox,[390] typhus,[391] AIDS,[392] diseases in ancient Greece,[393,394] and many other conditions.[395]

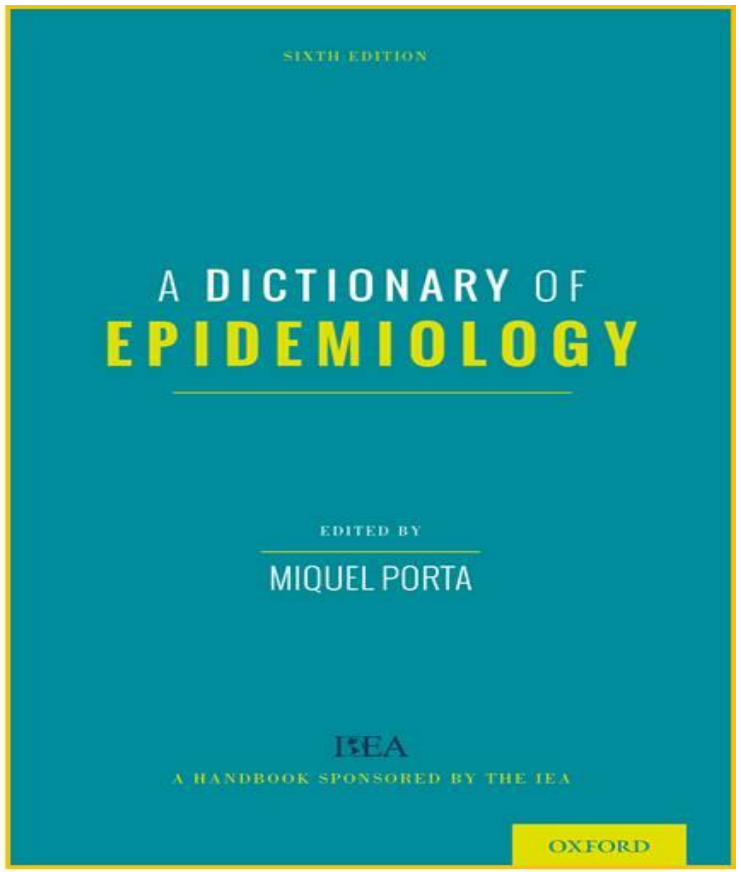
EPIDEMIC THRESHOLD The number or density of susceptibles required for an epidemic to occur. According to the MASS ACTION PRINCIPLE, the epidemic threshold is the reciprocal of the INFECTION TRANSMISSION PARAMETER.

APPLIED EPIDEMIOLOGY The application and evaluation of epidemiological knowledge and methods (e.g., in public health or in health care). It includes applications of etiological research, priority setting, and evaluation of health programs, policies, technologies, and services. It is epidemiological practice aimed at protecting and/or improving the health of a defined population. It usually involves identifying and investigating health problems, MONITORING changes in health status, and/or evaluating the outcomes of interventions. It is generally conducted in a time frame determined by the need to protect the health of an exposed population and an administrative context that results in PUBLIC HEALTH action.[28,72]

FIELD EPIDEMIOLOGY The practice of epidemiology in the field—in the community—commonly in a public health service (i.e., a unit of government or a closely allied institution). Field epidemiology is how epidemics and outbreaks are investigated, and it is a tool for implementing measures to protect and improve the health of the public. Field epidemiologists must deal with unexpected, sometimes urgent problems that demand immediate solution. Its methods are designed to answer specific epidemiological questions in order to plan, implement, and/or evaluate public health interventions. These studies must consider the needs of those who will use the results. The task of a field epidemiologist is not complete until results of a study have been clearly communicated in a timely manner to those who need to know and an intervention has been made to improve the health of the people.[28,191] See also APPLIED EPIDEMIOLOGY.

RISK FACTOR (Syn: determinant) A factor that is causally related with a change in the RISK of a relevant health process, outcome or condition. The causal nature of the relationship is established on the basis of scientific evidence (including, naturally, evidence from EPIDEMIOLOGICAL RESEARCH) and CAUSAL INFERENCE. The causal relationship is inherently probabilistic, as it happens in many other spheres of nature and human life.[101] Examples of types of risk factors are offered throughout this book; they may be a socioeconomic characteristic, personal behavior or lifestyle, environmental exposure, inherited characteristic or another TRAIT. Risk factors for human health often have individual and social components; even when individual and social risk factors can be separated, they often interact.

To prevent MEDICALIZATION of life and IATROGENESIS, the RELEVANCE and SIGNIFICANCE of the factor-outcome risk relationship must be cautiously assessed; so must uncertainties and ambiguities in risk-related concepts, as well as different legitimate meanings of risk across and within cultures.[1,2,3,5,6,9,13,29,33,38,42,56,58,91,106-108,113,158,215,248,270,279,292,303,304,332-336,350,361,426,539,600,603,712-718]



DETERMINANT(S) (Syn: risk factor) A collective or individual RISK FACTOR (or set of factors) that is causally related to a health condition, outcome, or other defined characteristic. The concept is probabilistic, and thus the term does not imply a DETERMINISTIC philosophy of health; e.g., it does not embody genetic, environmental, or social determinisms. In human health —and, specifically, in DISEASES OF COMPLEX ETIOLOGY— sets of determinants often act jointly in relatively complex and long-term processes. They commonly operate both at aggregate (e.g., social, regional, global) and distal levels, as well as at the individual, personal level; i.e., across macro- and micro-levels, SYSTEMICALLY.[14,17,28,158,213,215,279,302,306] See also CAUSALITY; CAUSES IN PUBLIC HEALTH SCIENCES.

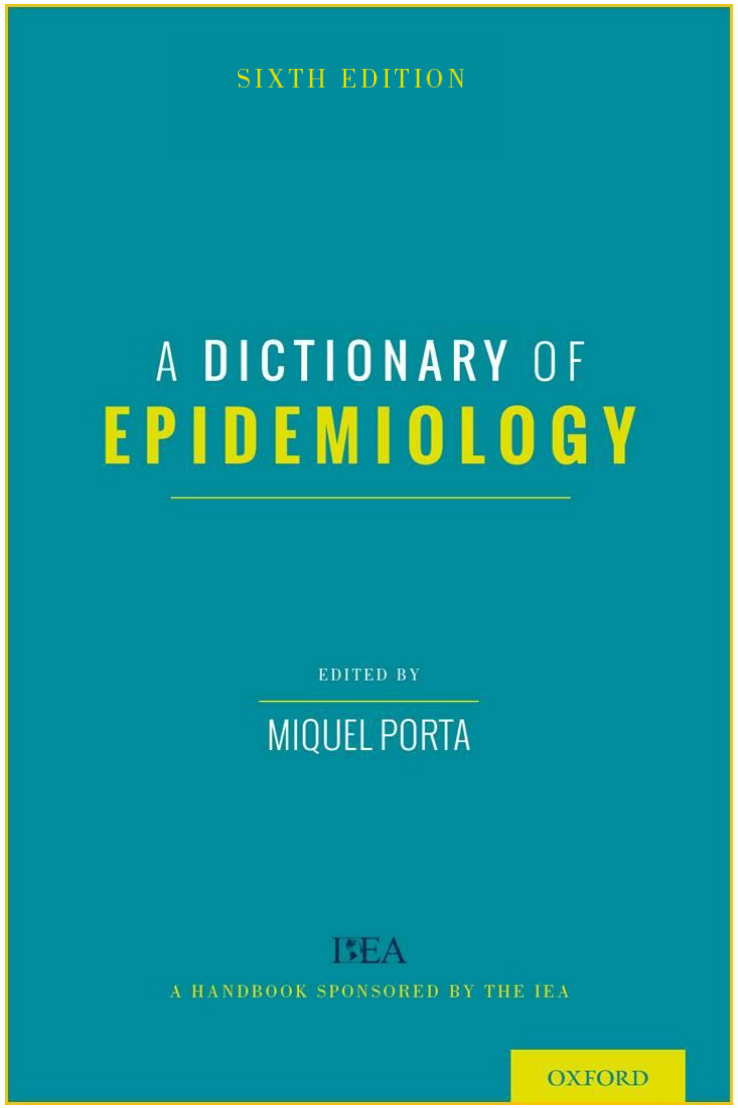
SYSTEM A set of interacting and interdependent elements connected in an organized (sometimes, stable and coherent) way to produce as a whole functions and outputs that none of such components alone could achieve; the properties of the different levels of the system are qualitatively different from the properties of the components; the components are affected by the system and the behavior of the system is altered by changes in the components.

SYSTEMIC

1. Relating to a whole system, rather than to just a particular component, that (dys)regulates or otherwise affects (often, positively) key structural or functional networks of and, hence, a whole body, organism, organization, set of functions, region, sector or society.

2. In medicine, a process affecting the body as a whole, rather than individual organs (e.g., when an infection or an autoimmune disease is systemic rather than localized).

This may be your last chance to review novelties that the dictionary will include, make suggestions, and discuss. All welcome to attend and participate.



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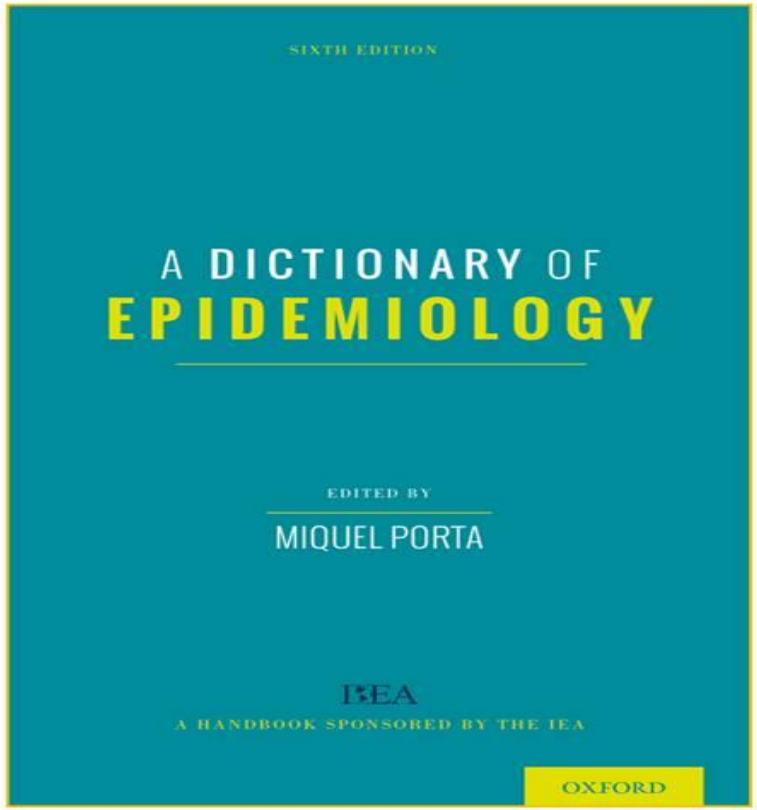
Please send suggestions to dictionaryepi@researchmar.net until Friday October 4.

A profound methodological renewal
—or perhaps "revolution"— is ongoing.

It is partly or completely changing basic concepts such as, *risk, rate, attributable fraction, bias, selection bias, confounding, interaction, cumulative and density sampling, generalizability, open population, test hypothesis, null hypothesis, causal null, causal inference, Berkson's bias, Simpson's paradox, representativeness, missing data, standardization, or overadjustment*.

It is also reflected in terms as *collider, M-bias, causal diagram, backdoor (biasing path), instrumental variable, negative controls, inverse probability weighting, identifiability, transportability, positivity, ignorability, collapsibility, exchangeable, g-estimation, marginal structural models, risk set, immortal time bias, Mendelian randomization, counterfactual outcome, potential outcome, sample space*.

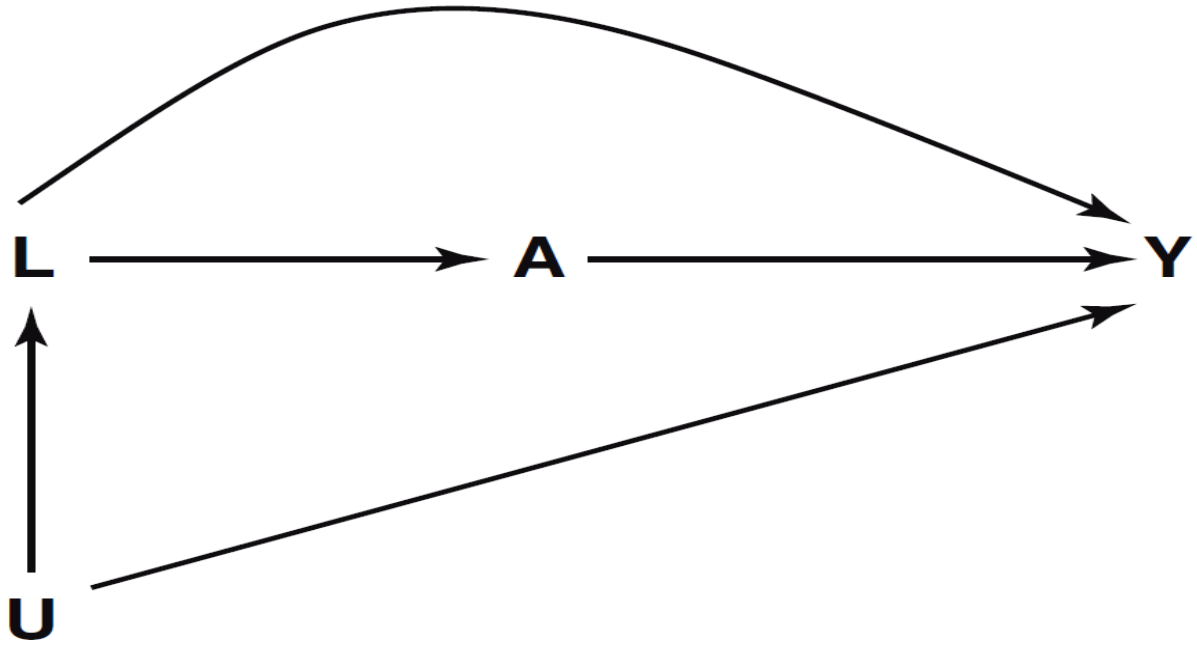


EXPERIMENTAL STUDY A study in which the investigator intentionally alters one or more factors and controls the other study conditions in order to analyze the effects of so doing. A study in which conditions are under the direct control of the investigator.[7,101]

INTENTION-TO-TREAT ANALYSIS (ITT) A fundamental way to analyze a RANDOMIZED CONTROLLED TRIAL in which all subjects allocated to each arm of the trial are analyzed "as intended" upon randomization, whether or not they actually received the exposure allocated or completed treatment.[1,2,24,272,443-445,641,800] Failure to follow this approach defeats the main purpose and advantage of RANDOM ALLOCATION and can cause serious CONFOUNDING BIAS. This approach is virtually always required as part of the primary analysis of studies aiming to influence clinical or public-health decisions and policy formulation. It may be complemented by an explanatory analysis, in which subjects are analyzed according to the exposure they actually experienced (with adjustment for possible confounders, i.e., with an analytic approach similar to an observational cohort study), or in which some participants (e.g., subjects who complied poorly with the protocol) are excluded from analyses.[1,6,9,26,58,101,270,272,641,800] An intention-to-treat analysis does not determine whether and how to impute missing data on the outcome measure. Because of its pragmatic nature, ITT can underestimate treatment efficacy or have a low explanatory capacity

OBSERVATIONAL STUDY (Syn: nonexperimental study) A study that does not involve any intervention (experimental or otherwise) on the part of the investigator.[1-3,6,9,25,26,39-42,197,239,269,270,272,795] A study with RANDOM ALLOCATION of treatments or other exposures is inherently experimental or nonobservational. Observations are not just a haphazard collection of facts; in their own way, observational studies must apply the same rigor as experiments, and vice versa.[201,276] Many important preclinical, clinical, and epidemiological studies (and studies in other branches of science) are completely observational or have strong observational components.[101] Dismissive attitudes toward observational research have a weak scientific basis. In the health, life, and social sciences—and in other sciences as well—there has long been a fruitful dialectic tension between observation and experiment; facts and reasons; actions, explanations, mechanisms.[1,3,6,9,26,38-42,64,83,101,201-203,639-641,798,800] Often, observational and experimental studies on the apparently same issue actually answer *different questions*; for example, a randomized clinical trial will compare women allocated to hormone replacement therapy (HRT) and women allocated to another therapy or a placebo, and perform an INTENTION-TO-TREAT ANALYSIS, whereas an observational study will compare rather different women (than those included in a RCT) who were actually exposed to HRT and women exposed to other therapies or none; characteristics of subjects, context, exposures, timing, confounders, and interactions are just six of the many reasons that usually make different designs answer different questions. Also, different designs have different strengths and weaknesses to help make decisions and CAUSAL INFERENCES. Some observational studies may be analyzed as experiments; and some experiments, as observational studies.[2,641,800] See also CASE REPORTS; CLINICAL STUDY.

CAUSAL DIAGRAM (Syn: causal graph, path diagram) A graphical display of causal relations among variables, in which each variable is assigned a fixed location on the graph (called a *node*), and in which each direct causal effect of one variable on another is represented by an arrow with its tail at the cause and its head at the effect.[100] Direct noncausal associations are usually represented by lines without arrowheads. Graphs with only directed arrows (in which all direct associations are causal) are called *directed graphs*. Graphs in which no variable can affect itself (no feedback loop) are called *acyclic*. Methods have been developed to determine from causal diagrams which sets of variables are sufficient to control CONFOUNDING and for when control of variables leads to BIAS.



Causal diagram representing outcome Y, exposure A, their unmeasured common cause U, and risk factor L. Graph theory can be used to show that data on L are sufficient to eliminate the confounding, caused by the presence of U, for the effect of A on Y.

COLLIDER A variable directly affected by two or more other variables ("parents" of the variable) in the CAUSAL DIAGRAM;[1,2,34,100,101,209,242,243] e.g., a variable that is the common effect of an exposure and an outcome. In the following "inverted fork" $X \rightarrow C \leftarrow Y$ the arrow represents a direct effect of the tail variable on the head variable; C is then a collider on the X-C-Y pathway in the graph. Conditioning on a collider (i.e., controlling for the collider through stratification, restriction, or adjustment) will tend to induce a noncausal association (often referred to as *collider bias*) between the parent variables (i.e., the shared direct causes) of the collider.

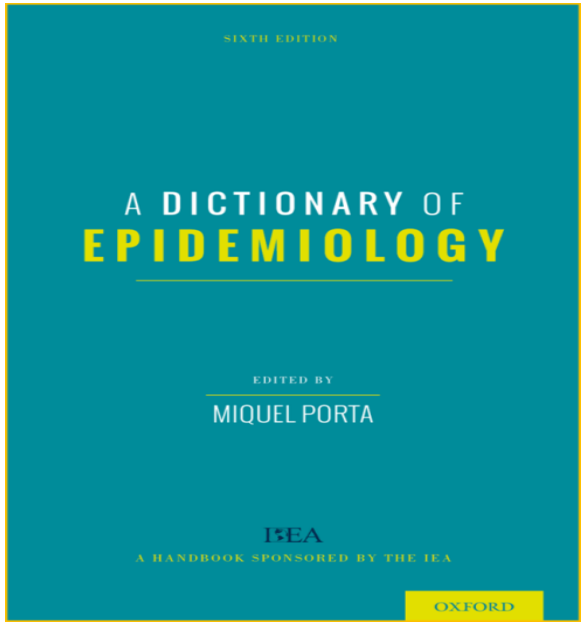
COLLIDER BIAS See COLLIDER.

DAG (DIRECTED ACYCLIC GRAPH) See CAUSAL DIAGRAM.

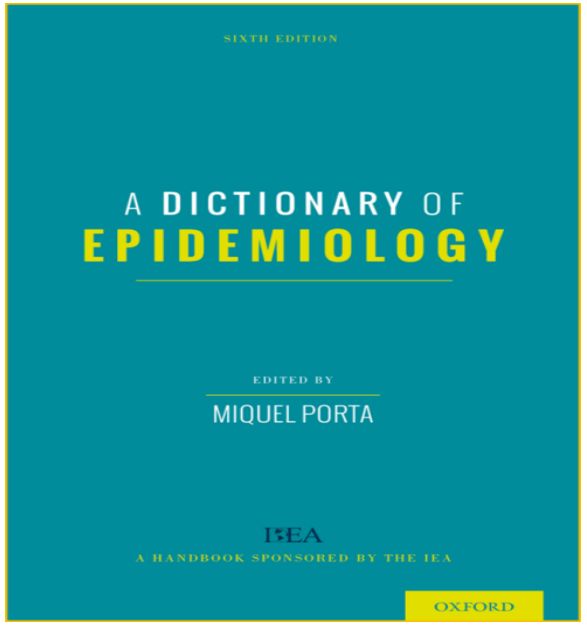
PATH DIAGRAM The original term for what has commonly come to be called a CAUSAL DIAGRAM.

RELEVANCE

1. The importance for existing ideas or practices. The degree to which a study, program, policy, or organization should theoretically change or can actually influence knowledge, beliefs, ideas, attitudes, decisions, actions, policies, structures, procedures, techniques, or processes of all sorts (social, cultural, political, organizational, individual, medical, biological, etc.).
2. In epidemiology, a relevant study or program may be one that makes a practical or a theoretical contribution to the identification, characterization, understanding, or solution of a public health, environmental, social, clinical, biological, or technological problem. EPIDEMIOLOGICAL RESEARCH usually aims at having social, environmental, or public health relevance; epidemiological studies often also have clinical, biological, methodological, or technological relevance.
3. In clinical and epidemiological research, *relevance* is commonly used as a synonym of importance and of SIGNIFICANCE. Statistical significance must be distinguished from clinical and public health significance. A statistically significant effect may be found in a study with a large number of participants and yet lack clinical or public health significance (because the magnitude of the effect is small, for instance). Hence, statistical significance should never be assumed to equal *significance*, and *significance* encompasses more than statistical significance. Clinical studies usually aim at being clinically significant, important, or relevant for the care of patients. Sometimes, epidemiological and clinical studies are also mechanistically relevant; e.g., they produce knowledge on mechanisms of disease.[1-3,5-9,25,26,28,91,101,202,222] See also MECHANISTIC EPIDEMIOLOGY; MINIMALLY IMPORTANT DIFFERENCE; SIGNIFICANCE, CLINICAL.



SIGNIFICANCE, CLINICAL Importance, RELEVANCE, or meaning for the care of individuals, who often are—in clinical research—patients. A difference in effect size considered to be important (e.g., by a patient or a professional) in medical decisions regardless of the degree of statistical significance. statistical significance can never be taken to equal clinical significance. For example, when large numbers of subjects are studied, some differences will be statistically significant even if their magnitude or size is small; hence they will be of little importance for patient care. Conversely, when small numbers of subjects are studied, some differences will not be statistically significant even if their magnitude is large; hence they may be of importance for patient care.[1,3,6,9,25,26,38,58,91,202,203,225] See also MINIMALLY IMPORTANT DIFFERENCE.



IEA. *A dictionary of epidemiology*. 6th. edition (2014).

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SIGNIFICANCE, PUBLIC HEALTH Importance, RELEVANCE, or meaning from a public health perspective; e.g., if exposure to an environmental factor that causes a small increase in the individual risk of a disease is common in a population, the factor may have public health significance or importance because of its impact on the BURDEN OF DISEASE in the population.[12,28,83,101,366,426] See also STRATEGY.

SIGNIFICANCE, STATISTICAL

1. The probability of the observed or a larger value of a test statistic under the NULL HYPOTHESIS. Often equivalent to the probability of the observed or larger degree of association under the null hypothesis. This usage is synonymous with *P* VALUE.[1,7,101,270]
2. The event of the *P* value falling below a prespecified cutoff or ALPHA LEVEL for declaring a result "statistically significant", typically 0.05. This event should not be confused with clinical, public health, or scientific SIGNIFICANCE. See also CHI-SQUARE

SOCIAL CAPITAL

1. The resources—for example, trust, norms, and the exercise of sanctions—available to members of social groups. The social group can take different forms, such as a work place, a voluntary organization, or a tightly-knit residential community. The salient feature of this approach is that social capital is conceptualized as a group attribute.[741]
2. The resources—for example, social support, information channels, social credentials—that are embedded within an individual's social networks. In this approach, social capital is conceptualized as an individual attribute as well as a property of the collective.[742]

Empirical research on social capital has stimulated a vigorous debate regarding its conceptualization and definition. Two points of contention are whether social capital ought to be considered as an individual or as a group attribute, and as social cohesion or as resources embedded in networks.[303,741-746]

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CREATIVITY

1. The ability to produce ideas, knowledge, policies, and objects (including scientific knowledge and "knowledge objects") that are both novel or original and worthwhile or appropriate (i.e., useful, attractive, meaningful, relevant, and valid).[237]

2. In EPIDEMIOLOGICAL RESEARCH, the capacity of a set of studies to harmonize relevance, validity, meaning, innovation, feasibility, and precision—ideally, beauty and simplicity as well. An epidemiological study reflects creativity to the extent that it generates knowledge that is relevant, new, valid, practical, and precise. Complexity may be a plus; it need not clash with simplicity and elegance. Relevance may be social, environmental, sanitary, clinical, biological, methodological, ethical, technological, intellectual.... Studies may blend, weave, knit, or weld such qualities in extraordinarily different ways.

3. A public health policy or program shows creativity when it is relevant, meaningful, useful, and attractive for populations, persons, companies, and institutions... when it is innovative, imaginative, simple... if effective and efficient in abating harmful determinants of health and significantly improving important health indicators. It may be morally and socially relevant if it increases freedom, justice, education, equity, or social cohesion. It needs to be culturally, environmentally, and economically sustainable. Creativity is an important value for epidemiology and the other health, life, and social sciences.[26,38,58,202,290,482]

PREVENTION Actions that prevent disease occurrence. Actions aimed at eradicating, eliminating, or minimizing the impact of disease and disability, or if none of these is feasible, retarding the progress of disease and disability.

The concept is best defined in the context of *levels* of prevention, traditionally called primary, secondary, and tertiary prevention.[24] Other levels (primordial prevention, quaternary prevention) are also used. There is significant conceptual and practical overlapping among levels—largely, depending on the type of disease (e.g., on the NATURAL HISTORY OF THE DISEASE). Effective prevention STRATEGIES often interact and operate across levels.

PRIMARY PREVENTION aims to reduce the incidence of disease by personal and communal efforts, such as decreasing environmental risks, enhancing nutritional status, immunizing against communicable diseases, or improving water supplies.[3,5,13,24,28,67,84,121,211,214,366,426] It is a core task of PUBLIC HEALTH, including HEALTH PROMOTION. See also COSTS OF INACTION.

A DICTIONARY OF
EPIDEMIOLOGY

SECONDARY PREVENTION aims to reduce the prevalence of disease by shortening its duration. If the disease has no cure, it may increase survival and QUALITY OF LIFE; it will also increase the prevalence of the disease. It seldom prevents disease occurrence; it does so only when EARLY DETECTION of a precursor lesion leads to complete removal of all such lesions. It is a set of measures available to individuals and communities for the early detection and prompt intervention to control disease and minimize disability; e.g., by the use of SCREENING programs. It is a core task of PREVENTIVE MEDICINE. Both EARLY CLINICAL DETECTION and population-based SCREENING usually aim at achieving secondary prevention. in certain diseases, these activities may also contribute to tertiary prevention.[5]

TERTIARY PREVENTION: measures aimed at softening the impact of long-term disease and disability by eliminating or reducing impairment, disability, and handicap; minimizing suffering; and maximizing potential years or useful life. It is mainly a task of rehabilitation.

A DICTIONARY OF
EPIDEMIOLOGY

QUATERNARY PREVENTION: procedures and policies that identify individuals and groups at risk of overdiagnosis or overmedication, and that decrease excessive medical and sanitary intervention.[679] Actions that prevent IATROGENESIS and "DISEASE MONGERING."

MEDICALIZATION The process by which conditions, processes, or emotional states traditionally considered nonmedical are redefined and treated as medical issues. The process of identification and labeling of a personal or social condition as a medical issue subject to medical intervention. The expansion of the influence and authority of the health professions and industries into the domains of everyday existence.[248,292,323,337,338,363,364,470,482,600] See also GENETIZATION; INTEGRATION; REDUCTIONISM.

QUATERNARY PREVENTION: procedures and policies that identify individuals and groups at risk of overdiagnosis or overmedication, and that decrease excessive medical and sanitary intervention.[679] Actions that prevent IATROGENESIS and "DISEASE MONGERING."

IATROGENESIS Literally, "doctor-generated"; often, broadly used to refer to adverse effects of preventive, diagnostic, therapeutic, surgical, and other medical, biotechnical, cosmetic, sanitary, and public health products, services, procedures, interventions, or policies. The process through which a professional activity generates an adverse health effect. There is a natural plurality of views on what constitutes iatrogenesis and its scope. Medicine and public health are obviously not the only professions that cause adverse health effects.[28,236,248,539] See also PREVENTION, QUATERNARY.

IATROGENIC EFFECT An adverse effect on health resulting from the activity of a health professional or organization. Adverse health effects are also caused by non-sanitary organizations (e.g., unjustified fear caused by DISEASE MONGERING by a marketing campaign).

Source: A dictionary of epidemiology. 6th. edition (2014).

QUATERNARY PREVENTION: procedures and policies that identify individuals and groups at risk of overdiagnosis or overmedication, and that decrease excessive medical and sanitary intervention.[679] Actions that prevent IATROGENESIS and "DISEASE MONGERING."

"DISEASE MONGERING" The practice of breaking and widening evidence-based diagnostic and therapeutic boundaries of illnesses and disorders, of inflating frequencies and risks, and of publicly promoting such exaggerated visions in order to expand the markets for those who sell and deliver health-related services and products, which may include segments of some pharmaceutical and biotechnological companies, health professionals, media, and consumer and patient organizations. Part of the process of MEDICALIZATION and GENETIZATION of ordinary life, in which social construction of illness is strongly influenced by corporate interests and DYSREGULATION.[323,337-339] See also IATROGENESIS; PREVENTION, QUATERNARY.

QUATERNARY PREVENTION: procedures and policies that identify individuals and groups at risk of overdiagnosis or overmedication, and that decrease excessive medical and sanitary intervention.[679] Actions that prevent IATROGENESIS and "DISEASE MONGERING."

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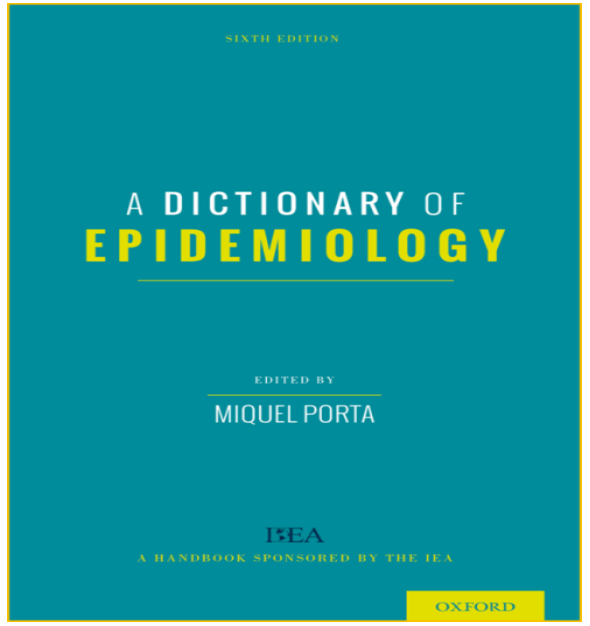
DISEASE PROGRESSION BIAS

2. In etiologic studies, biases that occur when disease progression entails metabolic or other pathophysiologic changes that alter the characteristics or concentrations (e.g., in blood, adipose tissue, target organs, peritumoral tissue) of the study exposure BIOMARKERS. Biomarkers of exposure collected during subclinical or overt disease will then not reflect exposures of true etiologic significance that took place in more distant time windows, and may hence cause REVERSE CAUSATION; e.g., lower blood concentrations of certain vitamins may not actually increase the risk of a disease, but be a consequence of the (subclinical) disease. Similarly, during the progression of some cancers, long before clinical diagnosis, blood concentrations of lipophilic substances of putative etiologic interest (e.g., lipophilic vitamins, organochlorine compounds) may be increased or decreased due to pathophysiologic changes associated with cancer-induced weight loss, cholestasis, or lipid mobilization.[146] See also PATHOPHYSIOLOGY.

DYSREGULATION Relative or complete failure to regulate (check, control, enforce, adjust, lead) an organization, system, area, or process to preserve its nature, balance, aims, or functions (such as homeostasis, immunity, metabolism, health, validity, accountability, cohesion, freedom, equity, efficiency, wealth). Examples include many types of physiological, mental, emotional, economic, political, technological, and genetic dysregulation, leading to responses and effects that are poorly modulated, disruptive, costly, inefficient, unjust, corrupt, unsustainable, unhealthy, or pathological.[13,32,33,38,40,58,78,80,83,120,121,128,140,150,164,169,183-186,213,246,249,267,286,290,313-320,323,333,339,342,799] See also EPIGENETICS; EPIGENOME; GLOBALIZATION; MULTISTAGE MODELS.



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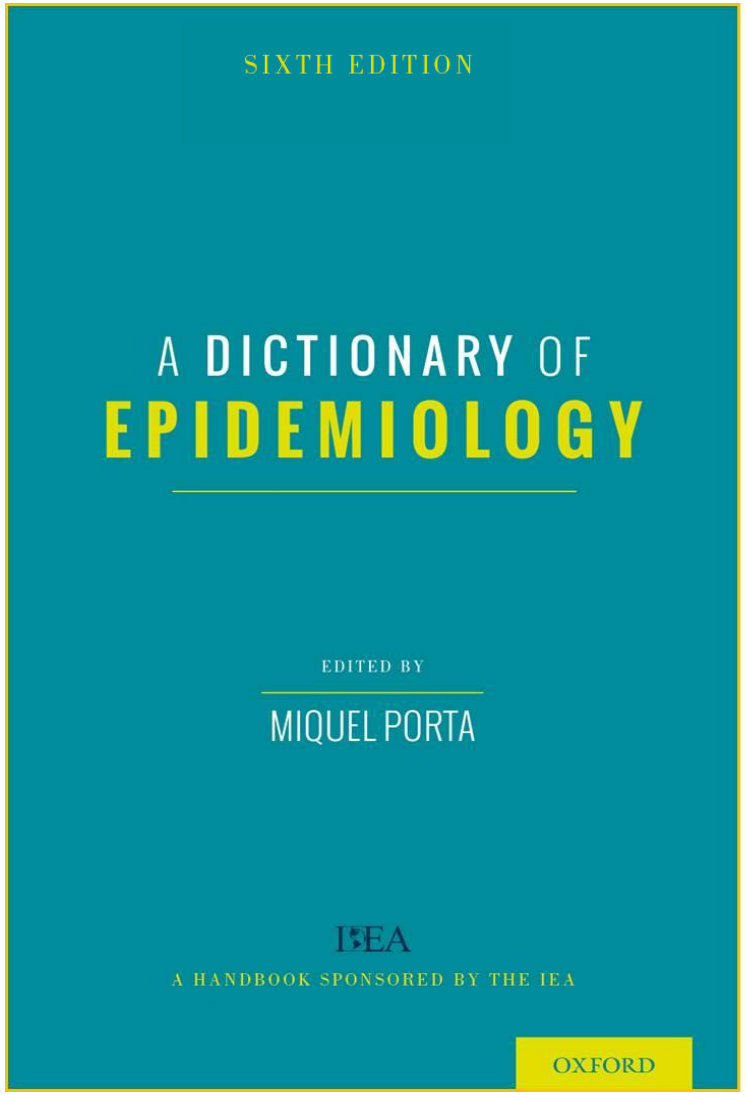

A Dictionary of Epidemiology

Sixth Edition

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please use it,
and promote it.

thanks!

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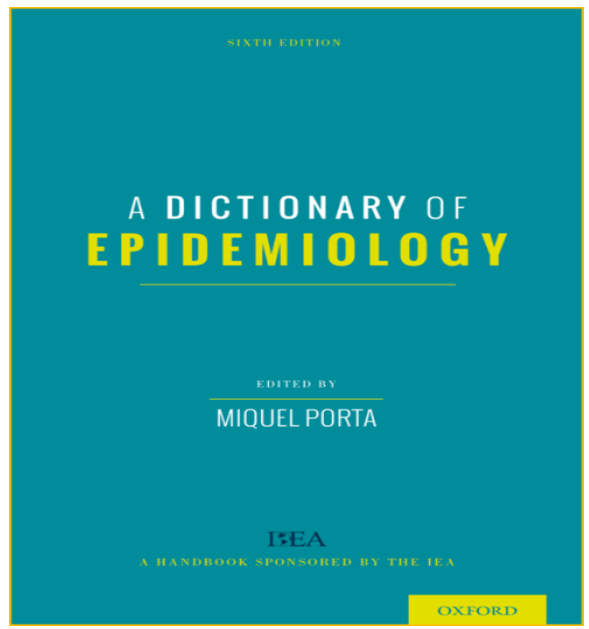
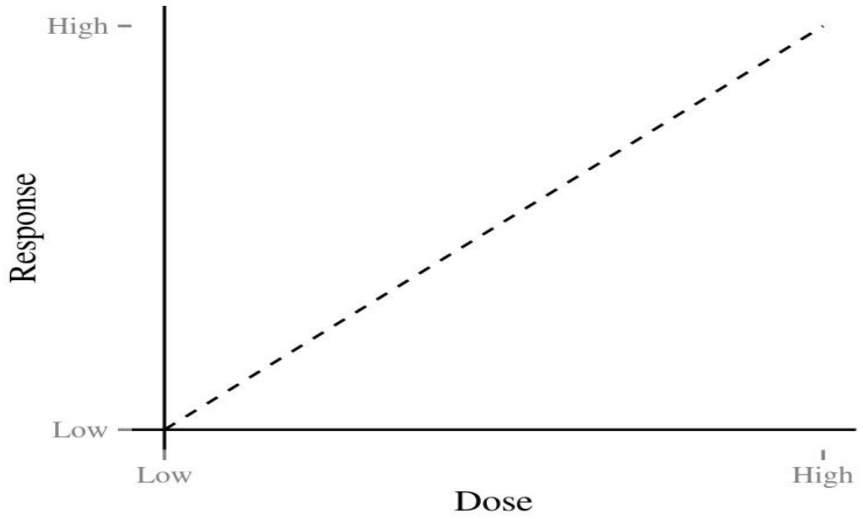
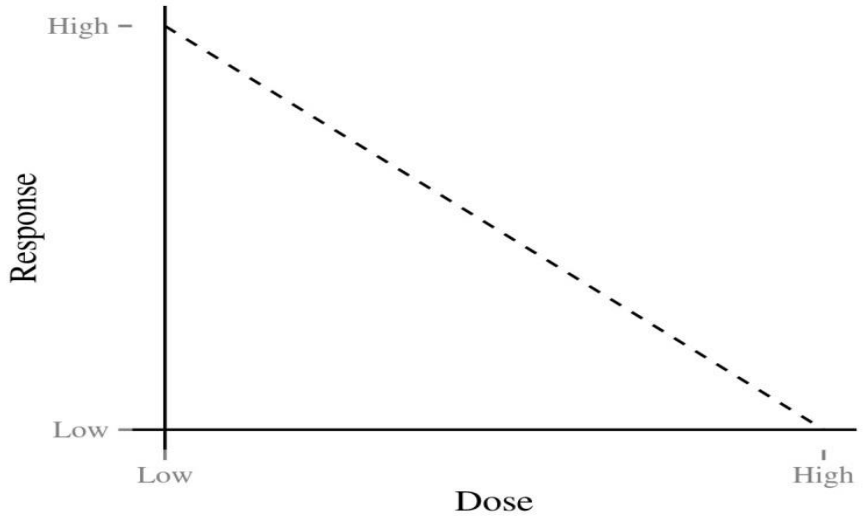
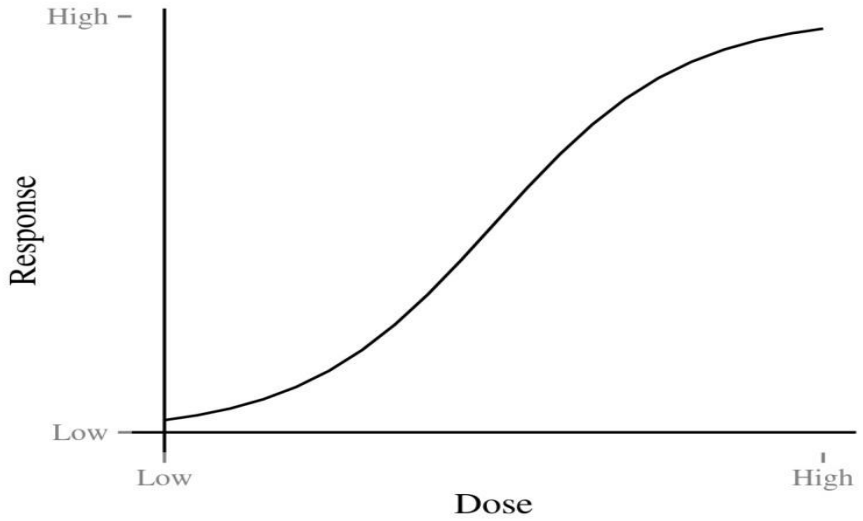
until Friday October 4.

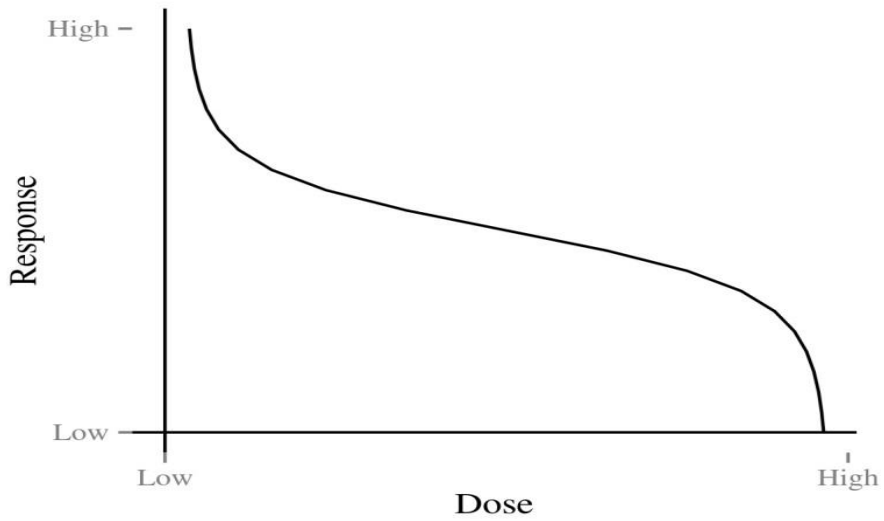
GENETIZATION The process by which issues considered to be medical but not necessarily genetic become defined as problems with a strong genetic component or as having a genetic cause. The attribution of physiological, pathological, behavioral, or social conditions to genetic causes, often at the expense of clinical, environmental, cultural, economic, or social explanations. The expansion of genetics into the life and health sciences and professions (e.g., the genetization of prenatal medicine, oncology, primary care), and into everyday existence. In genetization processes "genetic" is often considered to be synonymous with *inherited*, and vice versa, thus neglecting somatic (acquired) genetic alterations and cultural inheritance.[80,187,292,323,361-364,470,481,482] See also HEREDITY; INTEGRATION; MEDICALIZATION; REDUCTIONISM.



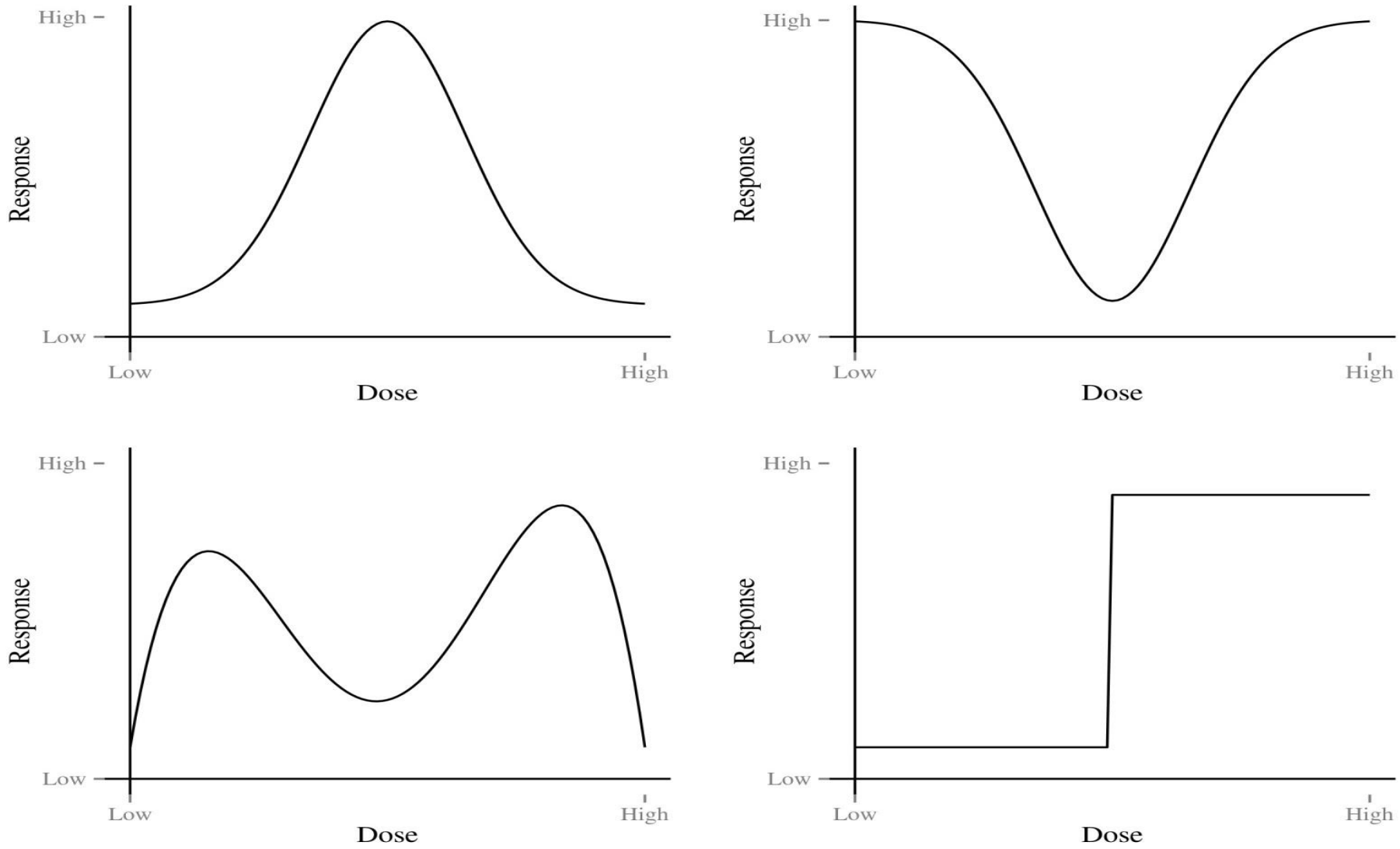








Source: Vandenberg LN et al. *Endocrine Reviews* 2012. See also: *A dictionary of epidemiology*, 6th. edition (2014). pp. 83-85.



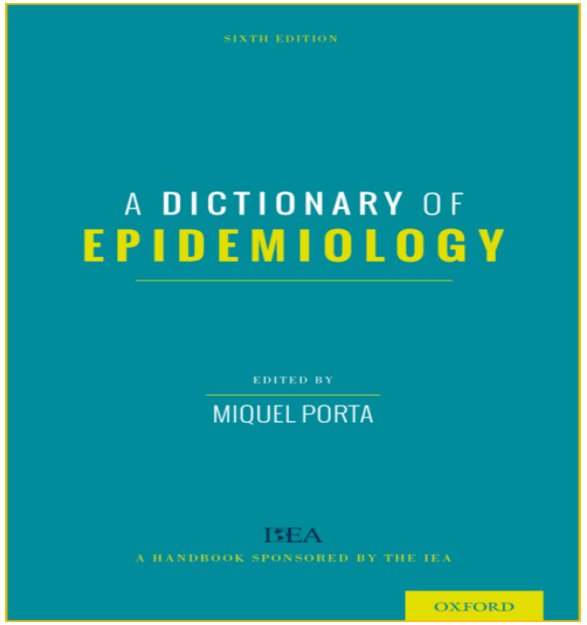
Source: Vandenberg LN et al. *Endocrine Reviews* 2012. See also: *A dictionary of epidemiology*, 6th. edition (2014). pp. 83-85.

MONOTONIC (Syn: monotone) A relationship, sequence, or TREND is said to be monotonically increasing if each value is greater than or equal to the previous one and monotonically decreasing if each value is less than or equal to the previous one. Monotonic responses may be linear or nonlinear, but the slope does not change sign.[1,2,13] This justifies using high-dose testing as the standard for assessing chemical safety.[14,342] Contrast with NONMONOTONIC.

NONMONOTONIC A nonmonotonic relationship between an exposure and an outcome or effect is a nonlinear relationship in which the slope of the curve changes sign from positive to negative or vice versa at one or more points along the range of doses examined.[1,2] Such curves and TRENDS often have a U- or inverted U-shape, and are thus referred to as biphasic. Abundant examples of biological and social mechanisms responsible for nonmonotonicity exist in the biological, clinical, epidemiological, and economic literature. Natural hormones and endocrine-disrupting chemicals frequently show nonmonotonic relationships and low-dose effects. When nonmonotonic DOSE-RESPONSE curves occur, the effects of low doses cannot be predicted by the effects observed at high doses.[12-14,342] Contrast with MONOTONIC.

Source: Porta M, ed. A dictionary of epidemiology. 6th. edition (2014). pp. 83-85.

INTENTION-TO-TREAT ANALYSIS (ITT) A fundamental way to analyze a RANDOMIZED CONTROLLED TRIAL in which all subjects allocated to each arm of the trial are analyzed "as intended" upon randomization, whether or not they actually received the exposure allocated or completed treatment.[1,2,24,272,443-445,641,800] Failure to follow this approach defeats the main purpose and advantage of RANDOM ALLOCATION and can cause serious CONFOUNDING BIAS. This approach is virtually always required as part of the primary analysis of studies aiming to influence clinical or public-health decisions and policy formulation. It may be complemented by an explanatory analysis, in which subjects are analyzed according to the exposure they actually experienced (with adjustment for possible confounders, i.e., with an analytic approach similar to an observational cohort study), or in which some participants (e.g., subjects who complied poorly with the protocol) are excluded from analyses.



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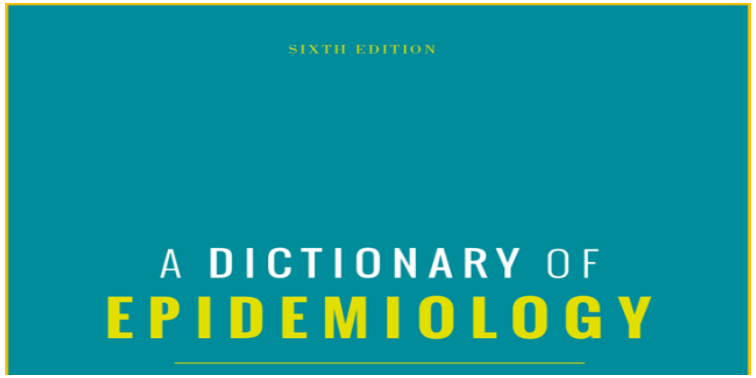

EXPOSOME A potential measure of the effects of life course exposures on health. It comprises the totality of exposures to which an individual is subjected from conception to death, including those resulting from environmental agents, socioeconomic conditions, lifestyle, diet, and endogenous processes. Characterization of the exposome could permit addressing possible associations with health outcomes and their SIGNIFICANCE, if any, alone or in combination with genomic factors.[80,91,153,186,187,446-448,799]

IEA. A dictionary of epidemiology. 6th. edition (2014).

PUBLIC HEALTH Like most sculptures, symphonies, and other works of art, certain important things in life have several dimensions. The definition of public health has four dimensions. Public health is:

1. The health of a whole society. It can be measured and assessed through quantitative and qualitative indicators and analytic processes.
2. The specific policies, services, programs and other essential efforts agreed (ideally, and often, democratically), organized, structured, financed, monitored, and evaluated by society to collectively protect, promote, and restore the people's health and its determinants.
3. The institutions, public and private organizations—including private and public companies—, and other citizens organizations, that plan, develop, fund, and implement such efforts, and which are thus an integral part of local, national, regional, and global public health systems.
4. The scientific disciplines and professions, knowledge, methods, art, and craft essential to positively influence HEALTH DETERMINANTS, and thus prevent disease and disability, prolong life, and promote HEALTH through the organized and collective efforts of society.

A dictionary of epidemiology. 6th. edition (2014).

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actions of public health + and −
during the pandemic made it clear massively.

Public health takes care daily of what we breathe, drink, and eat, how we work, move, and live together. Economic, environmental, social, educational, occupational, medical, and other policies intertwined with public health change with changing social values and networks, policies and technologies; yet, the goals—diverse as they are in democratic societies—remain the same: to reduce the amount of health-related suffering, disease, disability, and premature death in the population. Public health is a SYSTEM of professions and scientific disciplines, social organizations and institutions, values, and actions.

epidemiology & public health are
already existing realities,
partly (in)visible.
and a diverse set of proposals
(political, cultural, ethical, civic).

EPIDEMIOLOGICAL RESEARCH Scientific research among human populations and defined groups of individuals into the frequency of occurrence, distribution and causes of phenomena of public health, clinical, social, or biological RELEVANCE, with valid selection of subjects and measurements, and formal CAUSAL INFERENCES on the DETERMINANTS of such phenomena.[1-3,5-9,24-26,39-42,58,85,128,202,270,279] See also CREATIVITY; INTEGRATIVE RESEARCH.

RESEARCH A class of activities designed to develop or contribute to knowledge. In applied science, the goal is generalizable knowledge, where the latter consists of theories, principles, relationships, products, or the accumulation of information on which these are based that can be corroborated by acceptable scientific methods of observation, inference, or experiment. When humans are the subjects of EPIDEMIOLOGICAL RESEARCH, ethical review is mandatory; however, there is a blurry boundary between research, which must undergo review, and common clinical or public health practice (e.g., SURVEILLANCE and epidemic control), to which the same rules may not apply, but that still must comply with ethical requirements.[1,3,5-9,26,202,270] See also INTEGRATIVE RESEARCH.

Source: Porta M, ed. A dictionary of epidemiology. 6th. edition (2014).

EPIDEMIOLOGICAL RESEARCH Scientific research among human populations and defined groups of individuals into the frequency of occurrence, distribution and causes of phenomena of public health, clinical, social, or biological RELEVANCE, with valid selection of subjects and measurements, and formal CAUSAL INFERENCES on the DETERMINANTS of such phenomena.[1-3,5-9,24-26,39-42,58,85,128,202,270,279] See also CREATIVITY; INTEGRATIVE RESEARCH.

INTEGRATIVE RESEARCH Research that integrates knowledge, data, methods, techniques, reasoning, and other scientific and cultural referents from multiple disciplines, approaches, and levels of analysis to generate knowledge that no discipline alone could achieve. For instance, research that integrates cultural, economic, and other "macro-level" or contextual factors with individual factors, as in MUTILEVEL ANALYSIS; analyses of the relationships among gene structure, expression, and function; research on the relationships among molecular pathways, PATHOPHYSIOLOGY, and clinical phenotypes, as in clinical pharmacology and clinical genetics; research that integrates interactions among environmental, genetic, and epigenetic processes.[1,13,26,33,80,146,202,323,339,411,548,799] Epidemiology is an inherently integrative discipline, and so are many of its subspecialities, and approaches, like CLINICAL and MOLECULAR EPIDEMIOLOGY, SOCIAL EPIDEMIOLOGY or ENVIRONMENTAL EPIDEMIOLOGY; DEVELOPMENTAL AND LIFE COURSE EPIDEMIOLOGY, for instance, attempts to integrate biological and social risk processes.[23,25] See also CLINICAL STUDY; HEALTH IMPACT ASSESSMENT; TRANSDISCIPLINARITY; REDUCTIONISM.

INTEGRATION

1. The action or process of integrating. To integrate: to make a new whole; to combine parts into a new system and get them to interact so that the system expresses functions unavailable to the parts. The organizing of elements to form a coherent whole or system. Integration of knowledge from different scientific disciplines yields knowledge that no discipline alone may achieve.
2. In HEALTH PROMOTION and disease PREVENTION, strategies that target several risk factors, use multiple STRATEGIES at various levels of influence, and require INTERSECTORAL ACTION.[121] Integration entails multiplicity (more than one RISK FACTOR, level, sector, agent), and synergy resulting from multiplicity.[17]

Integration is no less crucial to science than to the functioning of postmodern societies. Examples: quality public transportation favors integration of disabled individuals and disadvantaged groups into society; integration of racial and ethnic minorities into the educational system; integration of preventive services into clinical care.[25,33,426,548] Synonyms, analogies, and METAPHORS are here useful as well: *integration* involves and refers to interaction, dialogue, complicity, performance, symbiosis, sharing, pooling, porousness, amalgamation, merging, coalescing, fusing, welding, blending, weaving.

Source: Porta M, ed. A dictionary of epidemiology. 6th. edition (2014).