

Models of Population Health: Their Value for US Public Health Practice, Policy, and Research

This issue of the *American Journal of Public Health* contains 6 articles focusing on models of population health. These models are schematic representations of factors that affect the health of populations, measured primarily as the average level of health in the population, but increasingly also considering the distribution of health within populations. Taken together, these articles provide an introduction to current US, Canadian, and European debates over population health, the factors that influence population health, and the policy and programmatic implications of models of population health.

Szreter traces contemporary discussions of models of population health to their intellectual origins through the last 2 centuries, and stresses the persistence of core questions about the relationship between material prosperity and population health.¹ Evans and Stoddart reconsider their seminal 1990 article “Producing Health, Consuming Health Care,”² in light of factors that they identified as underemphasized in their initial model. These factors include individuals’ genetic endowments and the role of development over the life cycle; the complexity of the interactions among factors, such as the expression of genetic endowment and its relationship to the physical and social environments; and the dependence of the income–health relationship on the social and cultural environments.³ Kindig and Stoddart propose a definition of population health as the “health outcomes of a group of individuals,

including the distribution of such outcomes within the group.”⁴ They emphasize that, in the past, the concept of population health became confused with its determinants, and they urge a clear distinction of one from the other, with the inclusion of both in population health models. Kickbusch places models of population health within the context of World Health Organization health promotion policies of the last 2 decades.⁵ She discusses how those policies have evolved from emphasizing individual risk factors to addressing the determinants of population health, while simultaneously promoting community participation in improving population health. Glouberman and Millar review the conceptualizations of health determinants in Canada since the 1974 publication of the Lalonde report,⁶ and the impacts of those conceptualizations on both health policy and health information systems.⁷ Coburn and colleagues critically review the assumptions underlying conceptualizations by the influential Canadian Institute for Advanced Research of the determinants of population health, and introduce alternative perspectives to current population health paradigms.⁸

WHAT ARE MODELS OF POPULATION HEALTH?

In discussing models of population health, it is important to acknowledge that no single widely accepted definition of population health exists. Kindig and Stoddart attempt to correct this gap by proposing definitions

of population health and the field of population health;⁴ discussion of both their definition and definitions proposed by others^{3,9–15} will help to achieve semantic and conceptual agreement.

Models of population health differ not only in their implicit or explicit definitions of population health, but in other key ways as well. They

- include different categories of factors affecting population health, and vary in their relative emphases on certain categories.
- depict different causal relationships among factors, and between those factors and population health.
- represent interactions among factors differently.
- vary in their presentation of factors as actually determining population health rather than influencing it.¹⁶
- differ in their distinction between population health and individual health, and the relative influence of various factors on each.¹⁷

Underlying the differences among models are differences in their definitions of population health.^{2,3,18–24} Careful attention to these differences can help in the elucidation of assumptions about the nature of population health and the factors that should be addressed in population health research, programs, and policies.

Contemporary conceptual discussions of population health have been generated within academia, within public health practice, and among policymakers,

and in Canada, the United Kingdom, other European countries, and the United States. These discussions have been accompanied by a wealth of research on the relationship of various factors to health, sometimes at the population level and sometimes at the individual level. These include social factors (inequalities, support, cohesion, structure, stress), natural environment, socioeconomic factors (material resources at the individual level, income inequality at the contextual level), biology and early childhood development, and the built environment (e.g., transportation). Less studied, although highly relevant, is the political context in which health and intersectoral policies affect the relative salience of each of these categories of influence.^{25,26}

Despite the liveliness of recent discussions and research into factors that affect population health, we believe that these discussions have been more highly valued in public health policy and practice outside, rather than within, the United States. The relative lack of attention to models of population health in US public health and epidemiological research is reflected in the emphasis given to relative risk (which can be viewed as relating more to individual health and clinical practice) rather than to attributable risk (which can be viewed as relating more to population health).^{27–31}

POPULATION HEALTH MODELS AND PUBLIC HEALTH PROGRAMS

Active discussion of models of population health can enhance public health programs in the United States as it has in other countries. Models of population

health can help identify the multiple arenas in which public health must act and collaborate to effect improvements in population health. Rather than concentrating on narrowly conceived public health programs, models of population health can remind us of the differences between focusing on improvements in the health of the population and population subgroups and focusing on improvements in the health of individuals. Although no single public health program can address the wide range of influences on population health, the use of these models in public health practice can reorient programs away from more isolated and categorical approaches to more integrated approaches.

Population health models illustrate the need for intersectoral activities in developing and implementing programs to improve the population's health, and make obvious the inherent limits of public health programs undertaken without explicit attention to contextual influences (such as public policies, culture, and the natural environment) and community influences (such as material resources, collective lifestyles and health practices, social interactions, the built environment, health services, and biological characteristics). Models of population health can also enrich public health practice by providing evaluative frameworks for program design and implementation.

POPULATION HEALTH MODELS AND PUBLIC HEALTH SURVEILLANCE

Active discussion of models of population health can also improve the practice of public health surveillance and health statistics in the United States. With

some notable exceptions, the current ongoing collection, analysis, and reporting of health data by national and state health agencies largely reflect a lack of consideration of multiple contextual influences on population health. Ongoing measurement now focuses primarily on single particular diseases in individuals, with inadequate attention to functional status, well-being, and comorbidities. Disease and other manifestations of ill health are often interpreted as individual rather than population phenomena, with the underlying and erroneous assumption that populations and individuals are influenced by various factors in the same ways. Ongoing surveillance and health statistics databases are inadequate for understanding the reasons for health disparities across population subgroups.

Widespread use of models of population health could reorient the practice of surveillance and health statistics in the United States to provide this needed understanding of the reasons for health disparities among population subgroups. The use of population health models could also encourage the development of a more balanced portfolio of data reflecting both the wide range of influences on population health and the need for a wider range of measures of population health.

POPULATION HEALTH MODELS AND PUBLIC HEALTH RESEARCH

As with public health programs, surveillance, and health statistics, public health research also may be informed and guided by models of population health. Especially important is research explicitly focusing upon population health—rather than

individual health—as the outcome of interest, and population health as manifested at different stages of the life cycle.^{32–36} Similarly important in public health research is the definition of population health outcomes as extending beyond diseases to also include functional status and well-being, both physical and mental.^{37,38}

The use of models of population health can help to focus on the importance of considering the full range of influences on a population's health,³⁹ including the society's political context and the role of public policies and laws directed toward multiple sectors, enfranchisement, and community empowerment.⁴⁰ Research guided by models of population health would explore simultaneously the nature and strength of interactions among multiple factors influencing population health, rather than merely examining the relationship between population health and factors selected according to the particular interests of researchers.⁴¹ Such research on influences would be informed by the recognition that influencing factors may operate differentially over time, in different settings, and at different geopolitical levels.^{41–45} Multilevel models of population health are needed to explore differences in the relative strength of influencing factors and their interactions at these different levels.^{44,46–51}

A focus on the multiplicity of influences on population health and their interactions must also be accompanied by a clearer distinction between individual and population health and efforts to improve the assessment of population health in the health statistics enterprise. Finally, both point-in-time and longitudinal re-

search must seek to identify differential influences on population health among different populations and subpopulations.⁵²

STIMULATING DEBATE ABOUT POPULATION HEALTH MODELS IN THE UNITED STATES

Evans and Stoddart, Glouberman and Millar, and Kickbusch indicate how the use of models of population health has effected changes in public health practice and policy in Canada and some European countries. Disagreement exists about the extent, nature, and value of those changes.⁵³⁻⁵⁵ However, we believe that vigorously debating existing models of population health and perhaps developing additional models particularly suited to the contemporary United States can reorient and enrich public health programs, surveillance and health statistics, and research.

Some of this reorientation has already begun. The US National Committee on Vital and Health Statistics, the congressionally mandated public advisory body on health information policy to the secretary of the US Department of Health and Human Services, has sought to advance the use of a population health framework and models of population health in its recent report, *Shaping a Health Statistics Vision for the 21st Century*.⁵⁶ The National Institutes of Health has also sought to advance a population health agenda in its report *Progress and Promise in Research on Social and Cultural Dimensions of Health: A Research Agenda*.⁴⁸ We hope that the collection of articles in this issue of the *American Journal of Public Health* can contribute further to stimulating

discussion and debate in the United States over models of population health. ■

Daniel J. Friedman, PhD
Barbara Starfield, MD, MPH

About the Authors

Daniel J. Friedman is with the Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, Boston. Barbara Starfield is with the Johns Hopkins Bloomberg School of Public Health, Baltimore, Md.

Requests for reprints should be sent to Daniel J. Friedman, PhD, Bureau of Health Statistics, Research and Evaluation, Massachusetts Department of Public Health, 250 Washington St, Boston, MA 02108-4619 (e-mail: dan.friedman@state.ma.us).

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