Building the Science for a Population Health Movement

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*Participants in the activities of the IOM Roundtable on Population Health Improvement

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Building the Science for a Population Health Movement

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A movement for population health starts with a basic understanding that health is determined by far more than health care and that the focus of health investments must go beyond health care alone. It follows that we need to invest in healthy environments, in efforts to ameliorate social and economic disparities and their impacts on health, and in creating a positive “culture of health” that both recognizes and encourages health-promoting action on the part of individuals and institutions. A corollary of the population health movement is that health policy cannot be limited to health care policy. Instead, what is needed is a rallying call for “health in all policies.”

Although the central tenet of population health and its policy-related corollary have gained some traction, there are a number of challenges to institutionalizing these. The framing of the quest to do so as a “movement” rather than a “paradigm change” acknowledges the political as well as intellectual components of population health. Some of the challenges to establishing population health derive from political and social concerns, while others derive from intellectual and scientific ones. In this discussion paper, we consider how the growing field of population health research can contribute to the movement for population health action. We argue that a population health movement will be most effective if it integrates both research and action and finds new ways to ensure that each informs the other.

WHAT IS POPULATION HEALTH RESEARCH?

Kindig and Stoddart (2003) define population health as “the health outcomes of a group of individuals, including the distribution of such outcomes within the group.” Population health research has evolved to include a broad range of disciplines, scientific methods, and theories that contribute to understanding the mechanisms through which these outcomes and their distributions can be understood and improved. Most descriptions of the field include one or more of the following characterizations:

- Population health research is interdisciplinary and focuses on the health outcomes of groups of individuals, which can be defined in multiple ways (e.g., workers at a workplace, residents of a neighborhood, people sharing a common race or social status, or the population of a nation).
- Population health researchers conduct studies that seek to characterize, explain, and/or influence the levels and distributions of health within and across populations.
- Population health researchers view health as the product of multiple determinants at the biologic, genetic, behavioral, social, and environmental levels and their interactions among individuals, communities, time, and place.

1 Participants in the activities of the IOM Roundtable on Population Health Improvement.
2 See the Robert Wood Johnson Foundation’s (RWJF’s) Culture of Health blog.
The field addresses health outcomes, health determinants, and policies and interventions that link the two in efforts to improve population health and ameliorate health disparities.

Population health research addresses a diverse set of outcomes. Some are risk factors for reduced population health, such as biological markers of physiological functioning, health-related behaviors, and specific diseases. Other important outcomes are global indicators of health, such as overall well-being, healthy life expectancy, and mortality.

**HALLMARKS OF THE FIELD**

The “field” of population health is defined less by its boundaries than by its core purpose—to develop answers to complex questions about the drivers of health in a population. The foundations of population health research are found in many disciplines. For example, the study of population mortality trends and differentials has always been a core feature of demography, and that of disease incidence and prevalence at the population level a core feature of epidemiology. One of the hallmarks of the field is its attention to the social causes of disease and health, an insight pioneered by early scholars from Quetelet to Durkheim, institutionalized in the field of social epidemiology (Berkman and Kawachi 2000), and, increasingly, examined in other fields that historically have had minimal interest in health as an outcome. Social and behavioral scientists of all stripes have now joined in the study of the determinants of health. Sociologists bring the study of institutions, stratification, discrimination, social networks, and the life course to bear on health outcomes; anthropologists bring the study of culture and practice; economists bring research on micro-level forces shaping individual actions and health outcomes and macro-level conditions shaping national investment and health outcomes; political scientists bring analysis of formal and informal decision-making processes that lead to health policy; historians bring the evolution of our health systems; and psychologists bring the cognitive, affective, and behavioral mediators of social environments on health. Among others, geographers, ecologists, environmental scientists, urban planners, health professionals, geneticists, and neuroscientists also contribute to answering questions about population health.

The major advance in population health research has been to integrate the contributions of these fields to build a multilevel understanding of health, from cells to society. This includes not only the “upstream” causes of health (from the social to the physical and chemical environment) but also the behavioral and biological pathways that link these to population health. Population health scientists typically begin with a complex problem and then assemble the disciplines and perspectives needed to provide a full understanding. Such efforts have already been made in the area of tobacco use and smoking through programs such as the Transdisciplinary Tobacco Use Research Centers at eight U.S. universities. These centers, funded by multiple National Institutes of Health (NIH) agencies and the Robert Wood Johnson Foundation (RWJF), were motivated by the recognition that it would take scientists from multiple backgrounds working together and recognizing the contributions of those outside their field to solve the nation’s tobacco issues. Similar efforts will be necessary to tackle the obesity epidemic and improve population health more generally.
MANY CONTRIBUTIONS TO DATE

Population health research has already contributed substantially to the population health movement. It has provided the foundation for reports such as RWJF’s Commission to Build a Healthier America, the report of the World Health Organization’s Commission on the Social Determinants of Health, Closing the Gap in a Generation, and many recent reports from the National Academy of Sciences. It has provided the basis for ratings systems such as the County Health Rankings & Roadmaps project. Evidence documenting the importance of upstream determinants of health has motivated key institutions to adopt multisectoral approaches to improving population health; examples include RWJF’s programs on obesity, The California Endowment’s “Building Healthy Communities” commitment, the Federal Reserve Bank’s initiative on healthy communities, the Centers for Disease Control and Prevention’s Health Community Design Initiative, and the Obama administration’s place-based initiatives. Although the National Institutes of Health remains primarily focused on finding cures for disease, many of its components have also adopted programs directed at multisectoral, upstream interventions to improve health.

The Health in All Policies initiative of the National Association of County and City Health Officials is also grounded in population health research. Health impact assessment necessarily draws on the tools and findings of population health scientists, both to recognize what policies can potentially impact health and to design studies that can rigorously identify policy impacts. Population health researchers’ work relating early childhood experience to later health provides an example. Investments in early childhood education are not intuitively health-related, yet population health researchers have begun to tease out the social, economic, and biological pathways that link the early development of cognitive and non-cognitive skills to later health.

WHAT ARE THE MOST PRESSING QUESTIONS IN POPULATION HEALTH?

Despite widespread efforts to address the upstream causes of poor health, the imbalance in health investment in the United States has not been fundamentally altered. We still invest disproportionately in curing and managing diseases that could have been prevented with investments in prevention and population health. Achieving the goal of maximizing population health depends not only on convincing the public and policy makers to do the right thing, but also on providing data to guide choices about the most effective levers for improving population health, demonstrating the return on investment for manipulating them, specifying the conditions under which they are most effective, and identifying the mechanisms producing their effects. We believe that existing research provides a sound basis for moving forward to improve population health in many areas. However, we also believe that research and action must go hand in hand to solidify the evidence base and achieve maximal impact. The public and policy makers have experienced the failure of “commonly accepted scientific knowledge” and “programs we know will work” too many times to proceed without undertaking new research. Moving forward on the basis of existing knowledge will produce successes and failures; integrating action and research will uncover new knowledge that pushes us toward greater success.

One of the clearest findings in population health research is the ubiquitous nature of socioeconomic disparities in health, but we lack a rigorous understanding of the mechanisms

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4 Recent examples include IOM (2012a,b); IOM and NRC (2013); and NRC (2009).
5 For examples, see the National Heart, Lung, and Blood Institute–led Healthy Communities Study and the National Cancer Institute–led program of Research on Population Health and Health Disparities.
involved in producing these. We still cannot explain with confidence how social and economic disadvantage “gets under the skin” to affect health outcomes. This makes the process of ameliorating disparities dependent on one’s favorite hypothesis, or, on the other hand, makes it easy for nonbelievers to dismiss as fantasy the prospect of improving health by eliminating social and economic disadvantage. The turn in population health research from documenting disparities to understanding the causal pathways creating them is relatively recent (Adler and Stewart, 2010). There is still much work to be done to identify the pathways that are responsive to effective intervention.

A different problem exists in the realm of environmental exposures, be they chemical toxins, neighborhood crime, or food deserts. The language of “exposure,” adopted from epidemiology and environmental science, discounts the very important role of human and institutional agency in creating the environments we are exposed to and in shaping the choices people make about where to live and how to behave. We have come only so far in learning how to isolate the effects of a single aspect of the environment from the multiple confounding effects of the social system in which it is embedded.6 We have also made limited progress in capturing complex sets of exposures over time and place. Recent efforts are under way at the Environmental Protection Agency to support research on cumulative risk assessment methods that integrate social and behavioral information with toxicity and exposure data to better understand how multiple environmental hazards affect the health of individuals in a community. This type of decision-making tool is in its infancy, and significant challenges lie ahead, including the sheer volume of information needed to conduct this type of assessment and the complexities of interpreting and integrating disparate information (Lewis et al. 2011).

Changing patterns of population health also pose new questions. For example, we have few explanations for the alarming finding that mortality is increasing for those lacking a high school degree, especially among white women (Kindig and Cheng, 2013; Montez and ZaJacova, 2013; Olshansky et al., 2012). Finding out why this is happening is a critical question for population health, but we do not understand the relevant mechanisms.

Research will also be needed to facilitate ambitious goals, such as RWJF’s laudable proposal to create a new “culture of health.” Such an initiative requires modifying or replacing our existing, medicine-dominated culture of health. Immersion in the current culture makes it more challenging to introduce a new one. Social movements research can help to overcome this difficulty, as can research on our current culture, its distribution across space and groups, its evolution over time, and the relation of its key elements to health behaviors, use of medical services, and public investments.

A RAPIDLY EXPANDING FIELD

The field of population health is growing fast. This growth is evident in the many schools of medicine and public health that have established departments with a population health focus; the establishment of new interdisciplinary disciplines, such as social epidemiology and population neuroscience (Falk et al., 2013); the movement of disciplinary scholars into interdisciplinary departments focused on health; the expansion of social science surveys to include markers of health and disease; and the growth, within disciplinary journals, of population health content. In the two

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6 For example, little research that measures the effect of built and chemical environments adequately takes into account the mobility processes that lead people to live in the environments under study or the processes through which community residents shape their exposures.
decades between 1970 and 1989, less than 1 percent of articles published in the flagship journals of demography and sociology were about health; since 2000, 31 and 10 percent, respectively, have focused on health. Special features about the contributions of social science to understanding gene–environment interactions have appeared in the *American Journal of Sociology* (2008) and the *American Journal of Public Health* (2013).

This growth has occurred for many reasons: increasing awareness of the economic costs of our population’s poor health and the need for population health action, the lure of research funding from NIH, the promotion of interdisciplinary science by NIH and other science funders, and the fact that the field offers a wealth of important and novel challenges that have real import for society. RWJF has been a major force in the growth of the field, largely through its Health and Society Scholars program. The foundation launched this program more than a decade ago to equip scientists with the skills for tackling such complex interdisciplinary questions. So far, the program has graduated 157 scholars, who now hold positions in research, policy, and the private sector in institutions all over the United States. Alumni of the program are enriching existing fields of study with new questions, new methods, and interdisciplinary perspectives; training new population health scholars; and recruiting many disciplinary scientists into population health research. They are also promoting an enhanced vision for how academic research can have an impact on health via dissemination, policy, and practice—as well as a vision for the types of questions that need to be answered more effectively in the service of a population health movement.

### MEETING CHALLENGES

New interdisciplinary fields rarely grow without facing serious challenges, and the field of population health research is no exception. One lingering challenge for the field is the lack of consensus on a clear definition. Because the field is defined less by boundaries than by goals and the field encompasses everything that affects health, it sometimes seems to beg the question, What is *not* population health? Also, the term “population health” has been used in diverse ways by different communities. The medical community typically uses it to signify a group of patients to whom they are delivering care; others, including the authors of this paper, use it to refer to the health status of whole communities or nations. These differences need to be bridged and clarified.

Challenges also result from the nature of traditional academic structures. The production and dissemination of knowledge tends to be the domain of well-established disciplines. Fragmented knowledge housed in many different disciplinary homes creates challenges for widespread knowledge accumulation and application in population health. Applied research is often disparaged in disciplines with a basic focus. Science in areas of inquiry that bridge disciplines tends to face systematic challenges in getting published because most peer-reviewed journals reflect disciplinary boundaries. As the number and prestige of diverse, interdisciplinary publication outlets grows, population health science will also expand. But disciplinary departmentalization in higher education

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7 Authors’ own calculations based on a search of Web of Science.
8 A few examples of work by alumni of the program include economic analysis of the impact of taxes on sugary sodas (Fletcher et al., 2010), working to integrate analysis of health impacts in community development (Jutte et al., 2011), and development of a private firm providing technologies for tracking asthma attacks in time and space (van Sickle et al., 2013).
9 This is not unusual. In his classic textbook on social psychology, Roger Brown (1965) critiqued the existing definitions of the field (e.g., the linkage between psychology and sociology) and finally defined it as “that set of activities that people who call themselves Social Psychologist do.”
10 See Kindig (2012) on the difference between population health and population medicine.
remains. A population health research movement must pursue a dual strategy that works both within existing disciplines that have new insights necessary for improving population health and outside disciplines to create new professional spaces that link researchers in productive ways and allow them to study persistent population health challenges.

Challenges also accompany the way population health research is funded. Just as the structure of academic institutions is siloed by disciplinary departments, the structure of the major funder of health research, NIH, is siloed by disease type. There are a few cross-cutting units, such as the Office of Behavioral and Social Sciences Research, the National Institute on Aging, and the Institute for Minority Health and Health Disparities, but these control a small share of NIH resources. At a time of flat or diminishing funding, the lack of support is particularly worrisome.

**HOW CAN POPULATION HEALTH RESEARCH ADVANCE POPULATION HEALTH ACTION?**

We argue above that research and action must go hand in hand in the movement for population health. Although there are undeniably many challenges in making this happen, there are exciting opportunities as well.

The biggest challenge is to develop better bridges between basic and applied research and among researchers, policy makers, and practitioners. In a society increasingly skeptical of experts and expert knowledge, it is critically important to develop agile institutional mechanisms that link population health science and practice. As the evidence base grows and as research results suggest explanations that have practical applications, it will be important to establish clear processes that can capitalize on this evidence. Similarly, when research results are put into practice, it will be important for organizations to have sufficient resources to evaluate the integration of this research in an applied setting and to have a process to inform population health researchers about the application. This type of interdependent relationship, if done well, can create an innovative learning environment that is mutually beneficial—an environment in which corrective actions based on the emergence of new scientific evidence build public trust, rather than corrode it.

New developments in research and practice may facilitate such bridges. The evolution of electronic medical records, electronic sensing devices, and technologies for capturing everyday social and economic transactions are now making possible the development of continuously operating integrated population data platforms that link timely information on the environmental, policy, socioeconomic, behavioral, and health system factors that interact to produce health outcomes for a community. Such “big data” platforms are already being developed in communities across the country and provide a nexus for linking research and practice (Barrett et al., 2013). With appropriate privacy protections, these new data systems will provide an unprecedented resource for systems approaches to understanding how the multiple determinants of population health interact. They will also be a critical resource for health impact assessment and the evaluation of population health interventions. This work would be facilitated by agreement within the field about the best metrics for assessing overall population health.

Research alone will not produce the change that we all seek in the nation’s health investments and health outcomes. Much scholarship demonstrates that “evidence” is a marginal factor in public decision making, yet, over time, as accumulated evidence affects public awareness and credibility, policy makers heed it. A population health movement built around sound strategies to change the nation’s culture of health will facilitate this process. Putting in place an effective

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11 The movement to resist vaccination programs is an example.
partnership between research and action—a mutually interdependent system that is continuously updated—will help to ensure that the movement achieves substantial and lasting improvements to the nation’s health.

REFERENCES


