Training in Interdisciplinary Population Health Science:

Current Successes and Future Needs

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Executive Summary

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Executive Summary

Population health is an approach to understanding and improving health that focuses on the health of entire populations of people and disparities in health across population groups. Population health complements health care by addressing the multiple causes of health that operate at different levels – including biology, behavior, and social and physical environments. It makes explicit the need for strategies that are grounded in an integrative, multi-level understanding of the causes of health and the mechanisms through which health and health disparities are produced.

Population health science is not its own discipline; rather, it integrates knowledge, theory, and tools from multiple disciplines to develop a broad understanding of the multi-factorial pathways that produce health and health disparities so that more effective solutions can be found. While acknowledging a close relationship to public health, population health programs extend traditional scholarship and training in public health to better incorporate the full range of disciplines that contribute to population health knowledge, including basic social sciences.

The adoption of population health strategies within public health, medical, business, government, and educational institutions signals a growing demand for a trained workforce that can develop and apply the evidence from population health science. However, relevant training programs that provide a fundamental understanding of population health science are in short supply. Some have emerged within schools of public health, public policy, health professional schools, and liberal arts programs, but most are limited in interdisciplinary range, health outcomes considered, and in attention to interdisciplinary skills and translation. The only existing postdoctoral program explicitly devoted to training in population health science will be closing in 2016.

On June 1-2, 2015, scientists, educators, and practitioners met at the Institute of Medicine in Washington DC to reflect on future priorities for training in interdisciplinary population health science. This report presents their vision and recommendations.

Key competencies: Training in population health science requires the development of three categories of competencies. These include knowledge (broad knowledge of the fundamentals of population health science, including metrics, methods, and research design); interdisciplinary skills (the ability to effectively lead and/or work with others who have different approaches to or expertise in population health topics); and knowledge translation and exchange (skills and expertise in communication, knowledge translation and exchange).

Critical elements of training: These competencies can be achieved through a combination of mechanisms, but three are noteworthy for their importance in population health science training. These include: (1) immersion of trainees in an interdisciplinary environment; (2) mentoring (using a multiple mentor model) in scientific areas, knowledge exchange, interdisciplinary skills, and professional development domains; and (3) experience as part of an interdisciplinary research team.

Institutional supports: A diverse and supportive institutional context is essential for success, both within academia and in the collaboration between academic and other sectors (e.g., business, health care, community). Host institutions must value interdisciplinarity and create incentives for strengthening linkages among diverse departments and schools; faculty mentoring; interdisciplinary courses and research opportunities; and enrollment by top students in interdisciplinary programs. Fostering collaboration across departments and sectors and aligning incentive structures and funding supports with the needs of interdisciplinary training are among the important issues to be addressed. While some academic institutions are able to prioritize such initiatives, the leadership of external funders is often required to stimulate and support them.

The training pipeline: Training opportunities are needed at multiple levels. The greatest current need is for advanced scientific training at the doctoral and postdoctoral level. Postdoctoral fellowships are a high priority. Training at the postdoctoral level can transform individuals with demonstrated scientific ability by broadening their understanding of the diverse disciplinary approaches that contribute to improving health, exposing them to the full continuum of knowledge translation, and developing mature interdisciplinary leadership skills. At the pre-doctoral level, both interdisciplinary doctoral programs in population health science and programs that supplement disciplinary training with population health training should be made available. Investment at the high school and college levels is also important to provide early exposure to population health concepts. At these levels, programs can engage students' interest and lay a foundation of basic skills and competencies. Summer programs, mid-career and senior level sabbaticals can also contribute to an integrated strategy for population health training.

Diversity: Programs should strive to achieve diversity among trainees and faculty, such as by discipline, sector, and racial, ethnic, socioeconomic, and regional background. Attracting students from minority and disadvantaged backgrounds is a critical challenge that may be facilitated by investments at the college or high school level. Attracting trainees with interests and goals that span the continuum from basic science to application is another important challenge.

A recommended model: Participants in the June, 2015 meeting developed a recommended model for future training in interdisciplinary population health science at the pre- and postdoctoral levels. The model is *center-based*, with participating centers representing three types of strengths: (1) capacity to conduct state-of-the-art interdisciplinary population health research; (2) capacity to engage with and address population health problems in underserved and/or high-need geographic areas and population groups; and (3) capacity to recruit diverse and underrepresented trainees.

Each center engages a critical mass of trainees in hands-on, experiential research training, through involvement in problem-focused research teams that are interdisciplinary and/or multi-sectoral. Each center designs its own curriculum and implements an intensive, multidisciplinary mentoring system. Each center is expected to foster "impactful science" by deepening the integration of science, translation, and research user communities in their programs. The overall set of center-based programs captures broad heterogeneity in the types of population health problems addressed and specific approaches to program design and curricula. Mechanisms are created to promote networking, exchange, and synergies among the individual programs. The model, while requiring a complex set of resources, flexibly leverages existing centers and programs to build a cost-effective strategy for advancing training in interdisciplinary population health science.

Building on this and other potential models to strengthen training in interdisciplinary population health science is of vital importance to efforts to improve health and reduce health disparities. This report provides a vision and a way forward to developing innovative programs.