

The Value of Public Health Services and Systems Research

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Systems research is not new; it routinely has been used in chemistry, biology, ecology, economics, and epidemiology for many years and has been applied toward understanding the public health system for nearly 2 decades. During that time, the CDC, other operating divisions within the DHHS, and several international organizations have been using systems research to advance the field of public health. The CDC has made major contributions through developing the National Public Health Performance Standards Program, the precursor to accreditation of health departments, and leading the establishment of the first national public health systems research agenda in 2006. The CDC also has funded nine Preparedness and Emergency Response Research Centers that are pursuing a multidisciplinary public health systems research approach to improving preparedness and response. Each of these research centers is yielding important results that are relevant to policy and practice.

Elsewhere in DHHS, systems research is being applied to other public health problems. For instance, the NIH is applying systems research to the complex issue of health literacy, a problem that affects people's access to care, skills in comprehending and acting on health information, and decision making about behavior change such as healthy eating and exercise. (obsr.od.nih.gov/scientific_areas/social_culture_factors_in_health/health_literacy/index.aspx). In June 2011, the Health Resources and Services Administration released a tool kit, based on systems thinking and systems analysis, for mapping state child health care.¹ The Administration for Health Research and Quality is also using systems research and design to understand and improve the complex socio-technical system of healthcare delivery in the U.S. (www.ahrq.gov/qual/systemdesign.htm).

Historically, one of the most dramatic and effective uses of systems-based thinking and interventions was the worldwide eradication of smallpox. This achievement was accomplished through the development and coordi-

nation of a complex global system of laboratory research, disease surveillance, vaccine production and distribution, technology development leading to the bifurcated needle, and international logistics. The introduction of a new systems approach in West Africa, surveillance and containment, was the final element that led to the eradication of the disease.² Systems-based thinking and interventions similar to those used to defeat smallpox are also the foundation for current international work to eradicate polio. Included are the use of immunization systems, immunization information campaigns, and global surveillance systems to detect possible outbreaks, direct interventions, and monitor progress toward eradication.

The WHO recognizes the value of systems research and has established an Alliance for Policy and Health Systems Research (Alliance; www.who.int/alliance-hpsr/en/). The Alliance takes a multinational approach toward building evidence and information to improve health services delivery, ensuring equitable access to medical technology, and improving the health workforce in low-income countries. Broader WHO and Alliance objectives include stimulating the generation and synthesis of policy-relevant health systems knowledge and promoting dissemination and use of this knowledge among researchers, policymakers, and other stakeholders as demonstrated in their flagship report *Systems Thinking For Health Systems Strengthening*.³

The Robert Wood Johnson Foundation, the University of Kentucky, and their many partners are to be congratulated for developing the national public health services and systems research (PHSSR) agenda. We are proud that CDC was among the contributors to this effort. The agenda will help ensure that services and systems research resources are used efficiently and effectively, that the field of research is focused on the most critical public health issues, and that innovation and the evidence base for services and systems improvement continue to grow. Services and systems research can provide critical information for effectively integrating and coordinating public health and healthcare systems, as well as for opportunities emerging from the Affordable Care Act and Prevention and Public Health Fund. This integration is needed to address the nation's emerging health threats and control the injuries and chronic diseases that affect so many Americans.

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The CDC has identified public health priorities where CDC and public health can make significant progress in a relatively short time frame—generally within 1 to 4 years. These priorities have been called “winnable battles” and include healthcare-associated infections; HIV; motor vehicle injuries; obesity, nutrition, and food safety; teen and unintended pregnancy; and tobacco (www.cdc.gov/winnablebattles/Resources.html).

The CDC’s success with winnable battles is, in no small part, affected by the efficiency and effectiveness of the public health system.³ Four examples illustrate this point. First, our efforts to decrease pregnancies among adolescent females, implement and support the National HIV/AIDS Strategy, and reduce the number of new HIV infections in the U.S. will be enhanced and supported by answers to questions about how public health agency organization affects service delivery and effectiveness. Second, services and systems research can improve the integration of public health approaches to patient care, leading to improved surveillance for conditions such as healthcare-acquired infections.

Third, establishing best practice standards for public health data collection and surveillance supports our commitment to improving knowledge of incidence, trends, burden, and causes of foodborne illness. Finally, understanding how shifting laws and policies affect the financing of public health services and systems dedicated to tobacco control, obesity, and healthy eating and the implementation of evidence-based programs and policies to prevent motor vehicle-related injury and death will establish the information base decision makers need to allocate scarce resources.

Public health services and systems research also can play an important role in national efforts to reduce health disparities. Services and systems research provides a unique opportunity to identify important areas where interventions or policy changes could have the greatest impact in reducing or eliminating these disparities. By embracing perspectives of multidisciplinary sciences and employing cutting-edge research methods, this approach represents a change in the historical approach to understanding health disparities. The new PHSSR agenda helps to foster collaborative research that builds bridges between disciplines interested in both health disparities and systems research.⁴

Services and systems research and the new agenda also contribute to improvements in the dissemination and adoption of public health practices and interventions. Although public health experts develop the best evidence-based strategies, such as those in the *Guide to Community Preventive Services (Community Guide; www.thecommunityguide.org)*, practitioners do not always adopt these strategies. Systems research is an appropriate way to examine critical issues hindering the adoption of evidence-based strategies to

improve health and identify associated factors that lead to the widespread use of evidence-based interventions.

Public health services and systems research is a valuable tool in efforts to improve public health in the U.S. The national research agenda is an important contributor to increasing the evidence base for services and systems improvement. The challenge to the field of PHSSR is building that evidence base to the level that public health services and systems improvements become an integral part of the *Community Guide*. Health services and systems improvements are included in the *Community Guide*, and we encourage the PHSSR community to work with the Community Preventive Services Task Force to fully incorporate best practices for improving public health services and systems into the *Community Guide*.

Accumulating evidence and producing actionable information for public health practitioners might mean using nontraditional data sources such as market research data or working with leaders in public health laboratories, public health surveillance systems, service delivery systems such as immunizations, and national public health program areas such as injury prevention. The application of services and systems research to public health issues (data and technology, workforce, finance, organization, and structure), and its effect on the adoption of evidence-based public health interventions and population impact, will provide public health practitioners at all levels with new insights and strategies needed to implement change successfully and meet the increasing demands for an integrated and improved health system.⁵

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