



**Public Health Systems Research:
Summary of Research Needs**

Over the past decade, the public health practice and academic communities have expressed a growing interest in public health systems research (PHSR). Several research agendas have been developed to highlight the research needed to help practice agencies and organizations better protect the public's health. The Council on Linkages Between Academia and Public Health Practice (Council) has examined existing PHSR agendas and compiled lists of research needs related to each of the following topics:

- Organization and Structure
- Finance
- Workforce
- Technology, Data, and Methods

In developing these lists of research needs, the Council drew from documents developed by the following organizations:

- Centers for Disease Control and Prevention – general PHSR and workforce agendas, and the November 2005 draft of the CDC Health Protection Research Guide, 2006-2015
- Council on Linkages Between Academia and Public Health Practice – agendas related to worker recruitment and retention and competencies use, and research gaps identified by the 3rd Annual National PHSR Leadership Forum
- National Association of County and City Health Officials – agenda on voluntary accreditation of local public health agencies and certification and credentialing of public health workers
- University of Pittsburgh Center for Rural Practice – rural public health research agenda

For more information on PHSR, please see <http://www.phf.org/Link/research.htm> or contact Chris Day (cday@phf.org).



Public Health Systems Research Needs: Organization and Structure*

Performance Management

- Explore the relationship between performance and health outcomes (and the chain of impacts that leads from improved performance to improved health outcomes).
- Define the characteristics of high-performing local, state, and federal public health agencies and systems.
- Identify, develop, and refine measures of health outcomes that are sensitive to public health systems capacity and performance.
- To what extent are various assessment models used—e.g., PATCH, MAPP? Who uses them? Who administers them? How are they used? To what degree are they modified?
- Explore what factors and processes facilitate community involvement in using the National Public Health Performance Standards Program in system improvement activities.
- Determine the impacts accreditation has had on the health of populations and communities, the practice of professions, and the organization and delivery of services in the public sector.
- Document and review the current practices of accreditation in the United States for public sector professionals and organizations to provide a comprehensive look at the processes used, the costs entailed, and the intended and unintended consequences, such as “unfunded mandates”, of these practices.
- Differentiate among the current structure, processes, and costs used for accreditation of public sector organizations in order to discern the advantages/disadvantages and strengths/weaknesses of the different types of processes currently in use.
- Document and report on the processes and timeframes that have already been used to introduce and perfect accreditation of public sector organizations.
- Evaluate how public health assessment, surveillance, intervention, and service delivery programs can be optimally structured to deliver the highest quality and widest array of proven activities to meet community health needs.
- How is government organized (i.e., different state/regional/local models) across the US to assure accountability for preparedness in rural areas and what are the implications for incident command, allocation of funding, cross-jurisdictional response, etc.?
- What health outcomes are associated with various service delivery models and public health models? What are the outcomes associated with major medical diagnoses—e.g., diabetes, cardiovascular disease?
- Explore the relationship between social determinants of health and system performance.
- Evaluate how and to what extent a highly performing public health system is indicative of preparedness.
- Design, conduct, and interpret community-based participatory research (CBPR) to increase the relevance, acceptability, and usefulness of evidence-based scientific findings in improving the health of communities. Evaluate the influence of CBPR on improvements in

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community health status and reduction of health disparities, especially in disadvantaged, minority, and hard-to-reach populations. Identify barriers to and opportunities for successful engagement of communities in research. Study and adapt evidence-based practices for use in diverse populations. Conduct CBPR to understand and evaluate interventions at the community level, especially those that focus on policy and environmental changes aimed at reducing the burden of and risk factors for chronic conditions and increasing the dissemination of effective health-promotion interventions. Evaluate comprehensive community interventions (e.g., the *Guide to Community Preventive Services* [11]) and identify research gaps. Evaluate the effectiveness of strategies to increase community involvement (e.g., community members, partners, and stakeholders, including those with regional and urban planning expertise) in the planning, translation, and execution of health research and interventions to enable community health status to be assessed in new and comprehensive ways. Evaluate the impact of dissemination of research findings and knowledge to the community.

Partners in the System

- Define and quantify dimensions of public health systems including interorganizational relationships and the role of the agency within the public health system.
- Study the role of state public health departments in filling gaps in local public health services in rural areas.
- What agencies comprise the full range of providers of public health services in rural communities? (e.g., LPHAs, Community Health Centers, hospitals, community coalitions, cooperative extensions)
- Explore strategies and technologies to facilitate communication and collaboration between different groups focused on health protection activities.
- Determine the best methods of facilitating collaboration between academia and other groups (e.g., community-based organizations) and integrating efforts with public health practice.
- Evaluate how regional hospitals and emergency medical services can be coordinated to better respond both to incidents widely impacting community populations and to discrete mass casualty events.
- Research economically and logistically managing surge demand (e.g., demands associated with pandemic flu or terrorist events).
- What capacities exist within the safety net system to support public health and safety services in rural areas?

General

- Determine how public health agency structure affects performance.
- What are the characteristics and components of communities—including legal authority and governance, role of community health coalitions, and community demographics—that allow them to develop and sustain public health?
- Explore the effectiveness (within the agency and the system) of local and state governance structures.
- Study the relationship of state and local public health governance and its affect on local public health performance.
- What are the necessary public health basic services and are there any standards for community by size (i.e., workforce ratios)?
- Correlate the size of various public health systems with their flexibility and capacity to identify new and emerging threats.

- Study questions of economies of scale and consider the possibility of local health departments' merging (particularly in rural areas).
- How do differences in infrastructure across rural and urban areas affect the provision of the ten essential public health services?
- Evaluate the effectiveness of laws and policies as public health interventions. Identify factors that contribute to their effectiveness, and identify their interaction with legal rights and principles.
- Evaluate the economic, cultural, social, and structural determinants of access to medical care and public health services.
- Explore how specific populations, particularly those that may not be familiar or comfortable with branded organizations, perceive the public health brand.
- What lessons have been learned from previous public health response experiences/events that are applicable to our current efforts to strengthen preparedness? How can those lessons influence/inform models of preparedness, readiness evaluation tools, training strategies, etc?
- What components/functions of preparedness are currently and should be provided by rural communities? How are rural communities mobilizing and organizing resources (including people to fulfill those roles and responsibilities)?
- Is the perception of the likelihood of bioterrorist and other public health emergency threats different in rural vs. non-rural (urban, suburban) areas? Between rural areas? Does the perception of threat affect the level of preparedness?
- Study the impact of changing demographics on public health systems needs (e.g. aging, urbanization, etc.).



**Public Health Systems Research Needs:
Finance***

- Evaluate the costs to achieve and maintain acceptable/optimal levels of performance of public health agencies and systems.
- Develop a public health financing database.
- Evaluate the factors that lead to a more effective and cost-effective public health system and maximize health outcomes per dollar invested.
- Explore the pros and cons of different funding approaches in public health, such as categorical and block grant funding, contracts, and outsourcing.
- What is the relationship between the level of funding and different sources of funding and rural public health infrastructure? Which public health needs are not met by categorical funding? How does dependence on service reimbursement as a funding source affect rural residents? Do rural public health agencies charge more for services provided?
- Develop and apply economic theories and methods to examine the supply and demand for public health services, and to estimate the monetary and social costs of diseases and injuries. Study the effectiveness of interventions to inform resource allocation. Develop models to illustrate how public health resources and funding can most efficiently be used to optimize the public's health. Conduct applied economic studies of factors (e.g., delayed gratification, risk perception of behaviors, preventive health interventions, and risk-taking preferences) that can affect individual and organizational choices.
- Evaluate how shifting policy and financial priorities affect performance of public health systems.
- What effect do state/governmental policies have on access to care/safety net issues (eg, scope of practice issues, state budget cuts, welfare reform, etc.)?

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**Public Health Systems Research Needs:
Workforce***

Education, Training, and Competencies

- Determine the best methods for identifying, updating, and validating competencies necessary for an effective, efficient health workforce.
- To what extent do competencies-based education and training lead to improved performance?
- What tools are used by other fields to measure and improve individual competency? Can those tools be applied to public health?
- Assess the impact of trained public health professionals on specific outcomes (e.g., improved health of people and improved public health practice or capacity).
- Define and assess the knowledge, attitude, and skill competencies needed by the public health workforce, and identify information gaps, resources, and other areas in need of improvement.
- Identify strategies to create and sustain career development and entry-level supply lines to ensure the existence of a workforce pool capable of meeting the increased demands on public health.
- How does the current educational structure contribute to the workforce difficulties faced by rural public health? What are the alternatives—non-traditional models, experiential learning, etc.
- Has distance education affected the rural public health workforce? If so, what are the components for success?
- What is the efficacy of hiring generalists and providing on-the-job training? What are the benefits and barriers of implementing continuous training programs?
- Are the Health Resources and Services Administration's Public Health Training Centers and the Centers for Disease Control and Prevention's Centers for Public Health Preparedness effective in meeting the workforce development and training needs of current workers in the field?
- How do we effectively prepare students, leaders and practitioners to possess the knowledge, skills and motivation to address rural disparity issues (such as interventions, cultural competency, effective practices, evaluation, community capacity building)?
- Who comprises the response network and what competencies are necessary for readiness? What are the most effective training methods?
- Determine the organizational variables that support development and application of skill competencies.
- How can competencies be incorporated into job descriptions? How can agencies and organizations design performance evaluations that are correlated to such competencies-based job descriptions? Do competencies-based job descriptions help to more effectively identify individuals who meet specific position requirements?

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- What quality standards, if any, exist to ensure that competencies-based courses provide learners with the best bang for their buck? How could state-based or national systems be implemented to raise the quality of competencies-based education and training? What incentives are being used or could be implemented to encourage course providers to elevate the quality of their products?
- To what extent are the Core Competencies for Public Health Professionals and other competencies sets measurable? How could they be made more measurable? Who would measure them?
- What strategies can help agencies and institutions determine which set of competencies to use? How do the various competency sets fit together?
- How can employers determine the competencies necessary for success in a particular position and design diagnostic tools that reflect those competencies?
- Do competencies-based learning self-assessments reveal training needs or learner preferences? How can feedback from supervisors about an employee's ability to perform necessary tasks be integrated into those assessments? What time burden is acceptable for obtaining this type and amount of information from public health professionals?
- What are the connections between organizational and individual competencies?
- What are the implications of competencies on national credentialing and/or certification efforts?
- To what extent is it necessary for public health workers in the field to understand the lexicon and structure of the competencies? Is it more effective to focus on teaching the content of the competencies—the knowledge, skills, and attitudes—without explicitly identifying them as competencies?
- What tools are available and what is still needed to help course providers design competencies-based courses and curricula? What guidelines can help trainers assign competencies and skill levels to existing courses?

Recruitment and Retention

- Evaluate the role of labor market forces on recruitment, retention, wage, salary, benefits, and personnel-system characteristics.
- What are the reasons governmental public health agencies have difficulty recruiting and retaining workers?
- What is the proportion of the public health workforce not in governmental agencies and what are the reasons behind their choice to work in those organizations?
- What, if any, is the correlation between salaries of public health workers and worker performance and community health outcomes?
- How do salaries of entry-level public health workers compare with those of workers in other fields?
- Where do individuals work after graduating from schools of public health and what affects those decisions?
- What career paths do individuals who begin at entry-level positions in public health organizations follow? What opportunities exist for advancement with increased experience and education?
- When employees leave positions at governmental public health agencies, where do they go and why?

- What are the opportunities for movement of employees from other sectors into public health or among nonprofit, government, and for-profit public health settings? What are the benefits and challenges of increased mobility? What programs and/or incentives could increase mobility?
- What are the advantages and disadvantages of high turnover rates?
- What aspects of a worker's experiences during their first few years at a governmental public health agency predict the likelihood that the individual will stay in the field?
- What is the public perception of public health and how does this impact worker recruitment and retention?
- What are the costs, risks, and benefits of internship programs?
- What is the impact of programs that try to entice students in kindergarten through twelfth grade to pursue careers in public health practice?

Certification and Credentialing

- Determine the impacts certification and credentialing have had on the health of populations and communities, the practice of professions, and the organization and delivery of services in the public sector.
- Document and review the current practices of certification and credentialing in the United States for public sector professionals and organizations to provide a comprehensive look at the processes used, the costs entailed, and the intended and unintended consequences, such as "unfunded mandates", of these practices.
- Differentiate among the current structure, processes, and costs used for certification and credentialing of public sector professionals in order to discern the advantages/disadvantages and strengths/weaknesses of the different types of processes currently in use.
- Document and report on the processes and timeframes that have already been used to introduce and perfect certification and credentialing of public sector professionals.

General

- Determine the relationship between performance indicators related to workforce (National Public Health Performance Standards - Essential Service #8) and health outcomes controlled for community context.
- What are the best indicators for workforce performance (e.g., workforce size, etc.)?
- Monitor the workforce, including size, distribution, qualifications, and tenure. Develop a needs-based and demand-driven workforce enumeration.
- Identify and apply new methods to forecast future public health workforce needs.
- What are the best practices for the rural public health workforce? Are they replicable?
- Analyze critical workforce issues in nursing. Examine the ways public health nursing differs from other public health professions.



**Public Health Systems Research Needs:
Technology, Data, and Methods[§]**

- To what extent do our existing surveillance systems (e.g., CDC, NIH, State) enable us to assess and monitor health disparities in rural areas?
- Identify and develop efficient and effective data-collection instruments and surveys to ensure that accurate data are available for analysis by public-health practitioners and healthcare professionals.
- Explore approaches and best practices for visualizing, analyzing, and mapping public health data.
- Study the impacts of technology, information data standards, and information management on workforce performance.
- How has/can technology solutions (such as telemedicine) be used to identify and address rural health problems?
- Explore practices and strategies for using electronic and personal health records for public health.
- What are the social determinants of health in rural populations (economic, environmental, social)?
- Explore strategies and approaches to efficiently manage public health knowledge so that it can be appropriately used according to need and audience. Investigate practices and technologies that could render public health knowledge more accessible (e.g., capturing successes and lessons learned, storing and classifying information to facilitate quick retrieval, repurposing content, identifying experts in specific subjects, and providing ways for experts to share information).
- Improve evaluation methods, and conduct evaluations on the public health impact of interventions, programs, and policies. Develop methods for evaluating the public health impact of social programs and policies not explicitly designed to address health issues (e.g., policies for housing, transportation, education, labor, early childhood development, and reduction of discrimination).
- Develop and evaluate strategies to translate, disseminate, and sustain science-based interventions, and identify best practices to promote health and quality of life by preventing and controlling disease, injury, and disability. Identify methods that can be used to accelerate the adoption of science-based programs, policies, laws, and behaviors at the individual, family, community, organizational, and social policy levels. Investigate means of ensuring the culturally competent delivery of interventions. Develop effective strategies to improve “knowledge transfer” from the public to the private sector.
- Explore technologies and methodologies that will assist decision-makers in creating public health solutions. Identify technologies and practices that can: a) assist key decision-makers, call-response personnel, public health practitioners, and subject matter experts in determining the most probable cause of a problem; and b) facilitate the creation of decision trees that outline ways to solve those problems in accurate and scientific ways. Employ consequence management technologies to evaluate the potential impact and outcomes associated with public health responses, which will assist key decision-makers in the rapid

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and informed determination of risks. Evaluate approaches for the presentation of community health event trends for healthcare providers. Examine approaches for evidence-based public health decision support systems and prioritization systems. Develop and evaluate public health expert systems and expert systems tools to assist key decision-makers both within and outside of healthcare environments. Develop and evaluate tools to assist public health professionals in making rapid and informed determination of risks. Improve measurement tools and data evaluation strategies regarding public health outcomes.

- Determine the best methods of improving the development and promoting the adoption of ethical frameworks and practices in the conduct of public health research and programs.
- Develop the methodological basis for research on law and policy as public health tools.