

Governmental Public Health and the Economics of Adaptation to Population Health

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The Affordable Care Act (ACA) and co-occurring state health reform initiatives are fueling a new wave of deliberation and experimentation with population health strategies (IOM, 2013a). Although lacking a precise definition, these strategies aim to improve health status on a population-wide basis—at the level of a neighborhood, city, county, or some other defined group boundary—by targeting fundamental and often multiple determinants of health (Adler et al., 2013). These strategies require collective and coordinated action by multiple stakeholders, frequently spanning the boundaries between government and the private sector and in many cases extending well beyond the conventional spheres of medical care delivery and public health programming (Kindig and Stoddard, 2003). As these efforts take shape across the United States, key questions emerge about the roles and responsibilities of governmental public health agencies, which have long advocated for population-wide approaches for health improvement but have not always secured the financial, human, and political capital necessary to implement such approaches successfully (IOM, 2012a).

In some cases, population health strategies may offer a more effective and efficient alternative to activities previously undertaken in whole or in part by governmental public health agencies, suggesting that *substitution* should occur. In other cases, governmental public health agencies may provide essential infrastructure and support that enables and/or enhances population health strategies, suggesting the need for *complementary and synergistic* relationships between public health and population health efforts. In still other cases, governmental public health agencies may uniquely perform important health protection functions that fall outside the purview of population health approaches, suggesting the need for *separate and independent* approaches. These possibilities raise important questions about governmental public health responsibilities and their interface with population health strategies:

- How do the activities that are currently financed and delivered through governmental public health agencies relate to population health strategies?
- How should governmental public health agencies adapt their operations to best support a new generation of population health strategies, taking into account the merits of substitution, synergy, and independence?
- What resources and incentives are likely to be required to achieve this adaptation?

This paper examines possible responses to these questions and identifies areas for further research and development.

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GOVERNMENTAL PUBLIC HEALTH ACTIVITIES AND THEIR FINANCING

Governmental public health agencies undertake a notoriously broad and heterogeneous set of activities across the United States, reflecting the dominant roles played by state and local governments in choosing and financing these activities. Total spending on governmental public health activities reached \$75.0 billion in 2012, according to the National Health Expenditure Accounts, and state and local governments accounted for 86 percent of these outlays (CMS, 2014).³ The federal government's relatively minor role in public health financing leaves state and local governments with broad discretion for determining what activities to support and how much to spend on them. As a consequence, both the scope and scale of governmental public health activities vary widely across states and local communities (Mays et al., 2009, 2010). At the state level, data assembled by the Trust for America's Health from fiscal year 2012 show that governmental public health spending per capita varies by a factor of more than 7 between the top 10 and bottom 10 states, ranging from \$155 per capita in Hawaii to less than \$4 per capita in Nevada (TFAH, 2013). At the local level, data collected by the National Association of County and City Health Officials from local public health agencies shows that per capita spending varies by a factor of more than 11 between the top and bottom 20 percent of public health agencies, ranging from more than \$140 per capita among the highest quintile of agencies to less than \$12 among the lowest quintile (Mays et al. 2009; NACCHO, 2014). By comparison, medical care spending varies by a factor of 2 between the top and bottom quintiles of local health care markets (IOM, 2013b). The scope of programs and services offered is the largest single determinant of governmental public health spending, accounting for 15 percent of the variation observed among local agencies and far outweighing other factors such as input prices and economies of scale (Mays et al. 2009).

Wide heterogeneity in governmental public health activity across the United States reflects the confluence of multiple forces, including differences in population health needs and risks that exist across states and communities; differences in public preferences and policy choices about the desired roles of government in protecting health; differences in the fiscal capacity of state and local governments to fund public health programs and services; differential successes of government agencies in competing for federal public health funding and attracting private contributions; and differences in how governments choose to finance and deliver medical services. This last force—public health responsibilities in delivering personal health services to individuals who lack access to mainstream medical providers—has long been a controversial source of heterogeneity because of its potential to dominate agency budgets and crowd out the ability to undertake activities with a broader, population-wide health impact (Hsuan and Rodriguez, 2014). For many agencies, the delivery of personal health services has diminished over time and is expected to decline even further as health insurance coverage expands with ACA implementation, leading to further revisions in governmental public health roles.

Although only about 11 percent of the nation's 2,800 local public health agencies offered comprehensive primary care services as of 2013, many offer categorical personal health services, such as the 90 percent of agencies that offer immunization programs, 60 percent that offer screening and treatment for sexually transmitted infectious, and 60 percent that offer maternal and child home-visiting programs (NACCHO, 2014). Beyond these services, the programs and activities most frequently offered by local public health agencies include communicable disease

³ For more information, see Mays, G. P. No recovery yet in public health spending. *Public Health Economics*. <http://publichealtheconomics.org/2014/01/09/no-recovery-yet-in-public-health-spending>.

surveillance (91 percent), retail food service inspections (78 percent), tuberculosis screening and treatment (76 percent), nutrition counseling (69 percent), and tobacco prevention (68 percent). The delivery of population-based prevention programs is considerably more variable among these agencies, including programs to prevent unintended pregnancy (49 percent), physical inactivity and obesity (52 percent), unintentional injury (38 percent), and violence (21 percent). Heterogeneity in public health program offerings is less pronounced at the state level than at the local level, but it persists in many domains, such as the 25 percent of states that do not offer diabetes prevention programs, the 30 percent of states without violence prevention programs, and the 33 percent of states without programs to prevent unintended pregnancy (ASTHO, 2010). Beyond simple variation in program availability, studies indicate that public health agencies vary widely in the reach, intensity, and quality of program implementation (see, e.g., Brownson et al., 2007; Slater et al., 2007).

FINANCING MECHANISMS AND HETEROGENEITY IN PUBLIC HEALTH ACTIVITIES

Funding sources and financing mechanisms drive much of the heterogeneity in governmental public health activities. In total, state public health agencies receive almost 50 percent of their revenue from federal sources, resulting in somewhat greater consistency in program offerings (ASTHO, 2010). Because most federal public health funding flows through categorical grants rather than block grants, states have relatively little discretion in how to allocate and use these resources (Kinner and Pelligrini, 2009). By comparison, state agencies collectively receive about 46 percent of their revenue from state government sources and earned fee revenue, which often allows for greater flexibility in using funds for state and local needs. Almost 24 percent of the funds received by state health agencies are passed through to local public health agencies, and another 11 percent are passed through to nongovernmental health organizations (ASTHO, 2010). At the local level, public health agencies receive about one-third of their revenue directly from local governmental appropriations and nonclinical fee revenue—typically the most flexible funding sources—and another 16 percent of revenue from reimbursements for clinical services (Mays and Smith, 2009; NACCHO, 2014). Excluding clinical revenue, state and federal funding each comprise about 21 percent of local agency resources.

Aggregate estimates of governmental public health resource flows mask wide variation in funding sources and mechanisms across state and local agencies. Governance structures are one major source of this variation. In 18 states and about 20 percent of local agency settings, the local public health agency operates as a centralized administrative unit of state government, whereas in 27 states and three-quarters of local agencies, the local public health agency operates as a decentralized, independent administrative unit of local government (NACCHO, 2014). In the remaining five states and 5 percent of local agencies, the local public health agency operates under the shared authority of both state and local governments as a special governmental district. Total governmental public health spending is approximately 13 percent lower under centralized structures compared with other forms of governance, mostly due to lower contributions from local governments (Mays and Smith, 2009).

Another dominant source of variation in governmental public health spending is the fiscal capacity of state and local governments. Because state and local governments account for 86 percent of total governmental public health spending in the United States, and because state and

local governments depend heavily on income and property taxes as sources of revenue, governmental public health spending tracks closely with underlying disparities in household income and housing wealth across states and communities. For example, the level of inequality in local governmental public health spending per capita, as measured by the commonly used Gini coefficient, reached 0.46 in 2005 and exceeded the level of inequality in U.S. household income across counties of 0.42 (Mays and Smith, 2009). As a consequence, poorer states and communities face disproportionately high levels of preventable disease burden and risks due to their socioeconomic status, but have disproportionately low fiscal capacity to support public health activities, particularly when competing needs for social services are taken into account. In the aggregate, federal public health spending is insufficient to smooth out these imbalances between fiscal need and fiscal capacity.

The net result of wide heterogeneity in governmental public health activities is that some U.S. residents receive more extensive health protections than others based largely on where they live (Mays and Smith, 2009; TFAH, 2013). This heterogeneity contributes to uncertainty among policy makers and the public at large about the necessity and value of these activities, helping to lock in large differences in governmental outlays for public health. To the extent that this heterogeneity reflects low-value governmental activities that have outlived their utility and are not very effective in preventing disease and injury, the solutions should focus on strategies for shifting governmental resources to more productive uses in order to reduce waste and inefficiency. However, a growing body of evidence shows that, over time, differences in governmental public health spending contribute to differences in health outcomes across communities (Brown, 2013; Erwin et al., 2011; Grembowski et al., 2010; Mays and Smith, 2011). These findings suggest that at least some of the heterogeneity in governmental public health activities involves high-value programs and protections, indicating a need for solutions that reduce gaps and inequities in the implementation of these activities.

GOVERNMENTAL ADAPTATION TO POPULATION HEALTH APPROACHES

The growth of population health strategies provides governmental public health agencies with an opportunity to disentangle low-value from high-value activities and pursue solutions to unwarranted heterogeneity in public health activities through three types of adaptation: *substitution*, *synergy*, and *independence*. With substitution, agencies examine which public health activities can be performed “better, cheaper, and faster” outside the agency and develop strategies for transitioning these responsibilities to outside stakeholders. Personal health services represent a class of activities that are strong candidates for substitution, given the potential gains to be realized through the joint delivery of medical care, preventive care, and social services to populations with shared health needs and risk factors. Public health agencies that offer individual categorical services like communicable disease screening and treatment, vaccinations, and chronic disease screening risk promoting fragmentation, duplication, and inefficiency in service delivery, particularly as more people gain access to comprehensive sources of medical care under the ACA. Agencies may be able to increase the value of these categorical services by transitioning them to other stakeholders who are able bundle them with related medical and social services through integrated approaches to service delivery, such as medical homes, medical neighborhoods, and accountable care community models (IOM, 2012b). Bundling has been used in other social policy arenas to improve the effectiveness and efficiency of public services (Ghosh et al., 2007) and is being tested in medical care (Cutler and Ghosh, 2012), but

has been rarely used in public health to date. If done correctly, substitution could enable bundling and service integration in ways that enhance the health and economic value of population health approaches.

Substitution may also allow public health agencies to free up and repurpose resources previously used to maintain specialized staff, equipment, and space for clinical services delivery. Retaining and repurposing these freed resources, however, may require explicit policy decisions that enable reinvestment of resources in other high-value public health activities. For these reasons, a 2012 Institute of Medicine (IOM) report noted that state and local governments have the potential to strengthen core public health programming substantially under the ACA by adopting the recommendation that “state and local public health funding currently used to pay for clinical care that becomes reimbursable by Medicaid or state health insurance exchanges under Affordable Care Act provisions be reallocated by state and local governments to population-based prevention and health promotion activities conducted by the public health department” (IOM, 2012a). In cases where resource retention is not possible, public health agencies may experience net reductions in resources and activities.

A second adaptation strategy of synergy is possible in situations where governmental public health agencies enable or facilitate the implementation of population health approaches, which in turn have positive spillover effects on the work of the agencies. In some cases, public health agencies may serve in a *leading role* as “population health integrator,”⁴ convening key stakeholders, brokering community relationships, and using planning and community development functions to design and manage multisectoral health improvement strategies. In other cases, public health agencies may function in a *contributing role* by aligning their operations and exercising their authority in ways that correspond with the needs of multisectoral initiatives led by other stakeholders. In still other cases, public health agencies may function in a *supporting role* by providing data and surveillance resources, communication mechanisms, analytic capabilities, or community outreach and engagement activities necessary for the operation and evaluation of initiatives. In each of these cases, governmental public health agencies work in tandem with a larger population health collaborative to achieve shared goals, which in turn directly benefit the agency’s own mission and operations.

A third adaptation strategy for public health agencies is to maintain independence from population health strategies in order to preserve a position of objectivity and impartiality. Such a strategy can be important in cases where public health agencies exercise regulatory authority or monitoring and oversight responsibilities for activities included in population health strategies, such as licensing health care facilities, inspecting retail food establishments, monitoring air and water quality, and enforcing tobacco control and environmental health ordinances. For example, public health agencies charged with monitoring the community benefit activities implemented by tax-exempt community hospitals may find it desirable to remain independent of hospital-based population health strategies, so that these agencies can provide independent reviews of such approaches without potential conflicts of interest. In other cases, public health agencies may be called upon to arbitrate disagreements among contributing stakeholders, or to ensure the appropriate use of public and community resources within these collaboratives. In these cases, public health agencies may be able to shape population health approaches most effectively from the outside by avoiding direct roles and responsibilities within them.

⁴ See Chang, D. I. What does a population health integrator do? *Improving Population Health*. <http://www.improvingpopulationhealth.org/blog/2012/05/what-does-a-population-health-integrator-do.html> (accessed January 13, 2014).

INCENTIVIZING ADAPTATION IN PUBLIC HEALTH

As public bureaucracies, governmental public health agencies face numerous legal, political, and economic barriers to adapting their operations. Proactive policy strategies may be required to help agencies adapt to population health approaches as they emerge within states and communities. First, where substitution is the desired adaptation response, policy options may be required that allow some portion of freed-up resources to be retained and redirected by the public health agency to support other high-value activities. This type of reinvestment strategy may be particularly important in cases where the activity to be substituted generates revenues or other resources that are needed to support (cross-subsidize) other important agency activities. Without such a strategy, the loss in valued governmental public health work could exceed the gains in population health capability achieved through substitution. In situations where clinical revenues cross-subsidize the implementation of population-based programs by public health agencies, these cross-subsidies should be carefully accounted for in the reinvestment strategy.

Second, where synergistic adaptation of public health activities is desired, mechanisms for sharing the gains realized from population health approaches among all contributing stakeholders—including public health agencies—is likely to be necessary. Developing transparent and equitable gain-sharing mechanisms for complex population health initiatives is far from straightforward and may require improved data systems for measuring the costs and benefits realized by contributors. To the extent that such systems also enable ongoing monitoring of and improvements to the implementation strategy, they are likely to further accelerate the process of adaption.

Third, a national accreditation program for state and local public health agencies is already under way that offers new opportunities for facilitating the adaption of governmental public health activities to population health strategies. The Public Health Accreditation Board, launched in 2012, has created a uniform set of performance standards and measures for the activities that every governmental public health agency should be able to offer its residents. Although compliance is voluntary, this program has the potential to enhance public accountability and political support for agencies to meet nationally recognized professional standards of practice, thereby helping to reduce unwarranted variation in practice. The architects of population health strategies should become familiar with the accreditation standards and measures and carefully consider how they align with the need for adaptation in governmental public health activities. In some cases, it may be possible to build incentives for accreditation into the design and implementation of population health strategies. Correspondingly, it may be possible to build incentives for adaptation to population health strategies into the design of future accreditation standards and measures.

Finally, a series of activities are now under way to develop consensus on a “minimum package” of governmental public health services that should be available in every U.S. state and community, as recommended by the IOM’s 2012 report on public health funding (IOM, 2012a). As recommended, this package would include two basic components: (1) a set of targeted public health programs and policies that have proven effective in addressing high-priority health problems and risks; and (2) a set of cross-cutting organizational capabilities that are needed for the successful design and implementation of public health activities. Several states already have defined the components of a minimum package of services for their own state and local agencies—including Ohio, Washington, and Colorado—and an expert consensus process is now

under way to recommend components for a national minimum package.⁵ Looking across these existing state and national initiatives (some of which are not yet complete), there appears to be considerable convergence in the domains of activity considered to be key responsibilities of state and local governmental public health agencies, including

- programs to detect and control communicable diseases, including vaccine-preventable diseases, sexually transmitted infections, enteric diseases, and health care–associated infections;
- programs and policies to reduce tobacco exposure, including clean indoor air regulations, quit-lines, cessation programs, and mass-media educational campaigns;
- programs and policies to promote healthy eating and physical activity as strategies for preventing obesity and related chronic diseases;
- environmental health programs designed to ensure the safety of retail food sources, public and private water sources, and sewage and waste disposal processes;
- maternal and child health programs that support family planning, maternal and infant nutrition, high-risk pregnancy management, and effective parenting skills;
- disease and injury surveillance, health assessment, and epidemiological investigation capabilities;
- communication capabilities that reach health-related organizations, policy makers, and the general public;
- capabilities for planning, policy development, and policy analysis; and
- community engagement and partnership development capabilities that include outreach to relevant governmental, business, and community-based organizations.

Once fully articulated, a consensus package of services and capabilities holds considerable potential for helping governmental public health agencies adapt their operations in ways that are supportive of population health approaches. As with accreditation, the architects of population health strategies should consider ways of building in incentives and supports that help public health agencies conform to a minimum package of services. Doing so promises to reduce unwarranted heterogeneity in public health activities and to clarify the value of governmental public health activities as part of population-wide health improvement strategies.

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⁵ See, for example, Levy, J. Advancing the public health system by defining the foundational capabilities for public health. *Huffington Post*. http://www.huffingtonpost.com/jeffrey-levi/public-health_b_2758277.html (accessed January 13, 2014).

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