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THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine

FOR THE PUBLIC'S HEALTH

Investing in a Healthier Future

Committee on Public Health Strategies to Improve Health

Board on Population Health and Public Health Practice

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

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"Knowing is not enough; we must apply.
Willing is not enough; we must do."
—Goethe

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Reviewers

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their review of this report:

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Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations, nor did they see the final draft of the report before its release. The review of this report was overseen by **Kristine M. Gebbie,** Flinders University, and **Donald M. Steinwachs,** Johns Hopkins University. Appointed by the National Research Council and Institute of Medicine, they were responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authoring committee and the institution.

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The committee's work was considerably enhanced by the expertise and advice of consultants who volunteered their time, and the committee thanks Helen Halpin, Mark Horton, Craig Jones, Paula Lantz, and Mary Wellik for their thoughtful input. The committee learned much from its reading of commissioned papers individually written and prepared by Sara Rosenbaum, Eileen Salinsky, and Samuel Y. Sessions (see Appendixes B, C, and D, respectively). Many local public health leaders participated in a survey to inform the commissioned paper by Salinsky, and the committee is grateful to Susan Allen, Kaye Bender, Bobbie Berkowitz, Gus Birkhead, Leah Devlin, Paul Halverson, Peggy Honoré, Paul Kuehnert, Pat Libbey, Pat McConnon, Michael Meit, Tom Milne, Bruce Miyahara, Herminia Palacio, Bobby Pestronk, Phred Pilkington, Doug Scutchfield, and Kathy Vincent. The commissioned papers were critical to the committee's deliberations. Jonathon P. Leider assisted the committee by preparing a figure depicting the flow of public health funding.

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Preface: Introduction to the Series of Reports

In 2009, the Robert Wood Johnson Foundation asked the Institute of Medicine (IOM) to convene a committee to examine three topics in relation to public health: measurement, the law, and funding. The committee's complete three-part charge is provided in Box P-1. The IOM Committee on Public Health Strategies to Improve Health explored the topics in the context of contemporary opportunities and challenges and with the prospect of influencing the work of the health system (broadly defined as in the report summary) in the second decade of the 21st century and beyond. The committee was asked to prepare three reports—one on each topic—that contained actionable recommendations for public health agencies and other stakeholders that have roles in the health of the U.S. population. This report is the third and final in the series.

The committee's three tasks and the series of reports prepared to respond to them are linked by the recognition that measurement, laws, and funding are three major drivers of change in the health system. Measurement (with the data that support it) helps specialists and the public to understand health status in different ways (for example, by determinant or underlying cause where national, local, and comparative evidence is available), to understand the performance of the various stakeholders in the system, and to understand the health-related results of investment. Measurement also helps communities to understand their current status, to determine whether they are making progress in improving health, and to set priorities for their next actions. Although the causal chains between actions of the health system and health outcomes are not always clearly elucidated, measurement is a fundamental requirement for the reasons listed above.

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BOX P-1
Charge to the Committee

Task 1 (completed)

The committee will review population health strategies, associated metrics, and interventions in the context of a reformed health care system. The committee will review the role of score cards and other measures or assessments in summarizing the impact of the public health system, and how these can be used by policy makers and the community to hold both government and other stakeholders accountable and to inform advocacy for public health policies and practices.

Task 2 (completed)

The committee will review how statutes and regulations prevent injury and disease, save lives, and optimize health outcomes. The committee will systematically discuss legal and regulatory authority; note past efforts to develop model public health legislation; and describe the implications of the changing social and policy context for public health laws and regulations.

Task 3 (accomplished in the present report)

The committee will develop recommendations for funding state and local health systems that support the needs of the public after health care reform. Recommendations should be evidence based and implementable. In developing their recommendations the committee will:

- Review current funding structures for public health
- Assess opportunities for use of funds to improve health outcomes
- Review the impact of fluctuations in funding for public health
- Assess innovative policies and mechanisms for funding public health services and community-based interventions and suggest possible options for sustainable funding.

Laws transform the underpinnings of the health system and also act at various points in the complex environments that generate the conditions for health. Those environments include the widely varied policy context of multiple government agencies—such as education, energy, and transportation agencies—and many statutes, regulations, and court cases intended to reshape the factors that improve or impede health. The measures range from national tobacco policy to local smoking bans and from national agricultural subsidies and school nutrition standards to local school-board decisions about the types of foods and beverages to be sold in school vending machines.

Funding that supports the activities of public health agencies is provided primarily by federal, state, and local governments, and it varies widely

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among states and localities. However, government budgets must balance a variety of needs, programs, and policies, and the budgets draw on different sources (including different types of taxes and fees), depending on jurisdiction. Therefore, the funds allocated to public health depend heavily on how the executive and legislative branches set priorities. Other funding sources support public health activities in the community, including "conversion" foundations that are formed when nonprofit hospitals and health insurers became privatized (such as the California Wellness Foundation). Funds for population health and medical care activities are also provided by community-based organizations that have substantial resources, by not-for-profit clinical care providers, and by stakeholders in other sectors.

The subjects addressed in the committee's three reports are not independent of each other and, indeed, should be viewed together. For example, measurement of health outcomes and of progress in meeting objectives can provide evidence to guide the development and implementation of public health laws and the allocation of resources for public health activities. Laws and policies often require the collection of data and can circumscribe the uses to which the data are put by, for example, prohibiting access to personally identifiable health information. Similarly, statutes can affect funding for public health through such mechanisms as program-specific taxes or fees. And laws shape the structure of governmental public health agencies, grant them their authority, drive partnerships with other sectors, and influence policy.

In its three reports, the committee has made the case for increased accountability of all sectors that affect health—including the clinical care delivery system, the business sector, academe, nongovernment organizations, communities, the mass media, and various government agencies—with coordination, wherever possible, by the governmental public health agency that is leading or coordinating activities and sectors.

The committee's first report, released in December 2010, focused on measurement of population health and related accountability at all levels of government. The second report, released in June 2011, reflected the committee's thinking about legal and public policy reform on three levels: the public health departments' powers, duties, and limitations as defined in enabling statutes (that establish their structure, organization, and functioning); the use of legal and policy tools to improve the public's health; and other sectors of government at the national, state, and local levels and diverse private and not-for-profit sector actors. This third report on funding, in a time of declining resources, considers resource needs and approaches to addressing them in a predictable and sustainable manner to ensure a robust population health system.

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Summary

The Institute of Medicine (IOM) Committee on Public Health Strategies to Improve Health was asked to address three topics related to population health in the United States—measurement, law and policy, and funding—in the context of the reform of the medical care system outlined in the Affordable Care Act. In its first and second reports, *For the Public's Health: The Role of Measurement in Action and Accountability* and *For the Public's Health: Revitalizing Law and Policy to Meet New Challenges*, the committee added its voice to a growing consensus that population health improvement depends on addressing the multiple determinants of health effectively (IOM, 2011a,b). Much has been learned about the actual or distal (as opposed to the proximal) causes of death and disease, including social and economic conditions that impair health and make it hard to avoid health risks. Therefore, it is no longer sufficient to expect that reforms in the medical care delivery system (for example, changes in payment, access and quality) alone will improve the public's health. Large proportions of the U.S. disease burden are preventable. The failure of the health system[1] (which includes medical care and governmental public health) to develop and deliver effective preventive strategies is taking a large and growing toll not only on health, but on the nation's economy. That is evident in the nation's poor health performance and high per capita health expenditures compared

[1]The health system, as envisioned in the committee's previous reports, comprises governmental public health, medical care, and other actors that have the ability to influence health (IOM, 2011a,b).

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with those of its high-income peers (Commonwealth Fund Commission on a High Performance Health System, 2011; OECD, 2010b).

Data collection, reporting, and action—including public policy and laws informed by data and quality metrics—are needed to support activities that will alter the physical and social environment for better health. In the present report, *For the Public's Health: Investing in a Healthier Future*, the committee continues the arguments presented in its first report: to the detriment of society, its fixation on clinical care and its delivery eclipses attention to population-based activities that offer efficient and effective approaches to improving the nation's health.

Viewing U.S. health problems through a funding lens reveals two issues: (1) insufficient funding for public health and (2) dysfunction in how the public health infrastructure is funded, organized, and equipped to use its funding.[2] The solutions that the committee proposes in this report are intended to address both issues. Chapter 1 provides an introduction and context for the report. In Chapter 2, the committee describes how the governmental public health system and its financing can be reformed. The two-part Chapter 3 discusses the administrative changes needed to facilitate more efficient and rational allocation and use of funds in public health, and the research needed to help the public health infrastructure to become more knowledgeable about and effective in its use of funding. Chapter 4 offers recommendations for providing funding that is sufficient, stable, and sustainable to permit optimal functioning of the public health infrastructure. Although the report focuses largely on the funding of governmental public health activities, the committee recognizes that a far broader societal approach to improving population health is necessary. It would extend to an array of stakeholders and societal strategies to improve the conditions and environments that influence health (such as education, employment, and housing). Stakeholders, some described in the committee's other reports as actors in a multi-sectoral health system, include non-health government agencies, businesses, philanthropic organizations, and community-based organizations. Their contributions to health improvement include policy actions, financial support, and a variety of interventions. First, however, the nation's health investments require change to achieve better value for money. Solutions that have been proposed include

- Controlling administrative waste.
- Remedying sources of excess cost and other inefficiencies in clinical care, while improving quality (IOM, 2011c).

[2]In Chapter 2, the committee revisits the multi-sector health system that it described in its first report and describes the evidence-based solutions that will help the nation to achieve better health outcomes and realize greater value from its investments in health.

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- Achieving universal coverage (this involves increased cost for basic services but also savings achieved by intervening earlier and broadening coverage) (CBO, 2008, 2009; IOM, 2003).
- Implementing population-based health improvement strategies (including action on non-health factors that are known to influence health outcomes).

The first three solutions have been discussed in detail by prior IOM committees, the IOM Roundtable on Value & Science-Driven Health Care, and many others (Berwick et al., 2003; CBO, 2009; IOM, 2003, 2011c). The present committee has examined the fourth solution, although focusing mostly on the governmental public health enterprise and its contributions to population health.

ESSENTIAL INGREDIENTS FOR A RENEWED PUBLIC HEALTH ENTERPRISE AND A HEALTHY NATION

Solving the system challenges described in this report will empower public health to "bend the curve" on health risks, contributing to a decrease in the volume of people who require medical care for preventable conditions, and in a broader sense, leading to improved population health outcomes. Steps to renew the public health enterprise include

- Ensuring adequate and sustainable funding for governmental public health, which is able to generate information about the influences on population health and lead or support interventions to address them.
- Reforming how governmental public health infrastructure is funded and operates, for example, changing how funds are allocated to align spending with need and escaping "siloed" funding of lower priority activities; articulating the boundaries, linkages and financial flows between state, local, and federal programs; and creating a new chart of accounts that is integrated into a sound management information system.
- Using public health knowledge to help reform the delivery of clinical care quality with an emphasis on efficiency, appropriateness, and integration with public health's population-based efforts.

To address the lackluster health outcomes and unsustainable health care expenditures of the United States, a critical first step is to focus national efforts by setting a national target for health system performance on two key measures: longevity and per capita health spending. Comparing life expectancy and health spending can help in assessing value realized for

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money; in this analysis, U.S. performance is disappointing. Although U.S. spending on health goes far beyond the threshold of diminishing returns, life expectancy and other key measures of health status lag behind those of other high-income nations (Darzi et al., 2011; OECD, 2010b). Excessive spending on medical care also presents opportunity costs—less money remains for investment in other socially important activities, such as education. Bringing health expenditures more in line with other wealthy nations will free up resources that can support other U.S. objectives that improve not only the health of Americans, but their quality of life. The committee proposes a modest target for health improvement. Based on current data, the United States would need to add an average of approximately 1.33 years to the life expectancies of 50-year-old women and 0.90 years to the life expectancies of 50-year-old men (NRC, 2011; OECD, 2010a). These estimates, however, do not reflect the fact that comparable countries will continue to make gains over time, thus, the committee recognizes that the current gap in years that needs to be closed is less than the increase that will be needed to bring U.S. life expectancy to a level comparable to the average among its peers.

Recommendation 1: The Secretary of the Department of Health and Human Services should adopt an interim explicit life expectancy target, establish data systems for a permanent health-adjusted life expectancy target, and establish a specific per capita health expenditure target to be achieved by 2030. Reaching these targets should engage all health system stakeholders in actions intended to achieve parity with averages among comparable nations on healthy life expectancy and per capita health expenditures.

REFORMING PUBLIC HEALTH AND ITS FINANCING

To achieve a more effective national public health effort, the nation will have to change how it allocates health expenditures in general and public health funds specifically. Spending on population-based public health prevention efforts is a very small proportion of overall national health expenditures. The allocation of public health spending also is not commensurate with need or with achieving the greatest value: conditions responsible for the highest preventable burden of disease are considerably underfunded. In addition, public health funding is inflexible, uncoordinated, and fragmented. To transform how funding is allocated and used, the federal departments and agencies that fund state and local public health departments—the Department of Health and Human Services (HHS), the U.S. Department of Agriculture, the Environmental Protection Agency, and others—could make administrative rule changes and procedural changes in the existing funding

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streams (such as contracts, grants, and cooperative agreements) to enable more flexible, rational, and efficient use of resources.

Recommendation 2: To ensure better use of funds needed to support the functioning of public health departments, the committee recommends that

(a) The Department of Health and Human Services (and other departments or agencies as appropriate) enable greater state and local flexibility in the use of grant funds to achieve state and local population health goals;

(b) Congress adopt legislative changes, where necessary, to allow the Department of Health and Human Services and other agencies, such as the U.S. Department of Agriculture, the necessary funding authorities to provide that flexibility; and

(c) Federal agencies design and implement funding opportunities in ways that incentivize coordination among public health system stakeholders.

Public health lacks an organizing concept for the cross-cutting capabilities that every public health department needs to be effective, and this attests in part to the fragmented and rigidly siloed nature of much public health funding. All health departments need capacity in, for example, information technology, policy analysis, and communication which cross-cut programs. It would be inefficient and ineffective to build separate systems and capacity for different programs rather than having what the committee has termed *foundational capabilities* that apply to all programs. Moreover, the committee developed the concept of a *minimum package of public health services*, which includes the *foundational capabilities* and an array of *basic programs* that no health department can be without (see Chapter 2). Although this package is built on the well-known and long-established concepts of the Three Core Public Health Functions and the Ten Essential Public Health Services, it is intended to make more specific the services that every community should receive from its state and local health departments and to inform public health funding decisions. It is also intended to serve as a framework for program and financial management, including the development of charts of accounts. Communicating to the American public the nature of and need for a *minimum package of public health services* could enhance people's understanding of the critical nature of population-based approaches (what communities get for their investment), and their understanding of the package as an instrument to ensure a standard level of health protection for all communities.

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Recommendation 3: The public health agencies at all levels of government, the national public health professional associations, policymakers, and other stakeholders should endorse the need for a *minimum package of public health services*.

The passage of health care reform, which makes coverage available to a broader cross-section of the population, raises the question of the role of some public health departments as clinical care providers. That responsibility has a complex history, and there are advantages and disadvantages to the public health role in direct provision of care. In large measure, however, public health agencies must be freed to focus more intensively on delivery of population-based services. Circumstances may make it more appropriate for public health agencies in some jurisdictions to provide specific kinds of clinical services directly. Examples might include specialized programs that have a population health component, such as tuberculosis or sexually transmitted disease control and specialized services delivered in community settings, such as nurse home visiting or community health worker health promotion activities, and in localities that do not have an infrastructure to serve at-risk (uninsured and underinsured) populations. Aside from these exceptions, transitioning clinical care out of public health will give health departments the opportunity to forge new and stronger partnerships with the health care delivery system by applying their unique knowledge and skill sets to help clinical care to improve its performance from a population health standpoint.

Recommendation 4: The committee recommends that as clinical care provision in a community no longer requires financing by public health departments, public health departments should work with other public and private providers to develop adequate alternative capacity[3] in a community's clinical care delivery system.

INFORMING INVESTMENT IN HEALTH

Building a stronger and more transparent public health system requires a financial management and services research infrastructure that is consistent among jurisdictions and capable of producing accurate data on program activities, especially those tied to the *minimum package of public health services*. Challenges to a better understanding of revenues and expenditures in public health agencies include the lack of a universally accepted definition of what constitutes public health activity. There are differences

[3]Adequate capacity refers not merely to the ability to provide services of similar breadth, quality, and accessibility (such as cultural competence) but to the ability to provide care to the overall community as opposed to patient-by-patient.

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in local and state practice (for example, some health departments include environmental health, others do not), and there are gaps in what and how financial data are collected and reported.

> **Recommendation 5: The committee recommends that a technical expert panel be established through collaboration among government agencies and organizations that have pertinent expertise to develop a model chart of accounts for use by public health agencies at all levels to enable better tracking of funding related to programmatic outputs and outcomes across agencies.[4]**

The Affordable Care Act authorized a program of research related to many of the issues raised in this report,[5] but funding and infrastructure development for this program is not yet available. The committee recommends steps to achieve a strengthened research infrastructure, including dedicated funding of up to 15 percent of total public health funding. That level of investment is benchmarked alongside high-growth, high-adaptation industries that rely on research and development innovations to sustain them.

> **Recommendation 6: The committee recommends that Congress direct the Department of Health and Human Services to develop a robust research infrastructure for establishing the effectiveness and value of public health and prevention strategies, mechanisms for effective implementation of these strategies, the health and economic outcomes derived from this investment, and the comparative effectiveness and impact of this investment. The infrastructure should include**
> - **A dedicated stream of funding for research and evaluation.**
> - **A national research agenda.**
> - **Development of data systems and measures to capture research-quality information on key elements of public health delivery, including program implementation costs.**

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[4]Agencies and organizations would include HHS, public health departments, ASTHO, NACCHO, the Public Health Accreditation Board, and the National Association of State Budget Officers.

[5]"This section would require the Secretary, through the CDC Director, to fund research on public health services and systems, to include (1) examining evidence-based prevention practices relating to prevention, including comparing community-based public health interventions in terms of effectiveness and cost; (2) analyzing the translation of interventions from academic settings to real world settings; and (3) identifying effective strategies for organizing, financing, or delivering public health services in community settings, including comparing state and local health department structures and systems in terms of effectiveness and cost. Such research would have to be coordinated with the TFCPS" (Patient Protection and Affordable Care Act §4301, 42 USC §300u-15).

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- **Development and validation of methods for comparing the benefits and costs of alternative strategies to improve population health.**

Research infrastructure would be shared among three HHS agencies—the National Institutes of Health, the Agency for Healthcare Research and Quality, and the Centers for Disease Control and Prevention—and a national research agenda needs to include a prioritized list of topics to be addressed by the research. Development of data systems and measures to capture research-quality information (and training of staff to do so) is needed at the national, state, and community levels. The information would include expenditures, workforce size and composition, and the volume, intensity, and mix of activities produced.

On the basis of what is known about what public health agencies can and cannot afford to do and the imbalance in national spending on clinical care compared to population-based health services, the committee concludes that the nation does not invest sufficiently in public health. The information available, however, does not allow the committee to determine with any precision what portion of the nation's health spending is needed to support population-based public health efforts. Improvements in the tracking of revenues and expenditures in public health and the enhancements in research and evaluation described above will inform the determination of public health funding needs better, but a nationally guided effort is needed to review information as it is developed and to make recommendations for an optimal balance. As the *minimum package of public health services* is established and the resources required to deliver them are ascertained, the public will gain a deeper understanding of how and in what settings public health action at the population level can create greater value and efficiency than can clinical care. This also will inform investment in the public health system and the appropriate allocation between clinical care and population health.

Recommendation 7: Expert panels should be convened by the National Prevention, Health Promotion, and Public Health Council to determine

- **The components and cost of the *minimum package of public health services* at local and state and the cost of main federal functions.**
- **The proportions of federal health spending that need to be invested in the medical care and public health systems.**

The information developed by the panels should be included in the council's annual report to Congress.

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FUNDING SOURCES AND STRUCTURES TO BUILD PUBLIC HEALTH

The committee concluded that funding for governmental public health is inadequate, unstable, and unsustainable. There is also considerable imbalance between federal contributions and state and local contributions to public health activity in the United States. The National Health Expenditure Accounts estimate that federal contributions amount to just under 15 percent of the $77.2 billion in governmental public health spending ($11.6 billion) in 2009 (CMS, 2011). The $77.2 billion in total governmental public health spending represents a mere 3 percent of the nation's overall spending on health. Although the data available to estimate the need are characterized by weaknesses and limitations (including inconsistent definitions of public health), the committee made several calculations to arrive at a figure that could serve as a starting point for dialogue on the funding needed to strengthen and advance the governmental public health infrastructure.

Recommendation 8: To enable the delivery of the *minimum package of public health services* in every community across the nation, the committee recommends that Congress double the current federal appropriation for public health, and make periodic adjustments to this appropriation based on the estimated cost of delivering the *minimum package of public health services*.

As discussed in Chapter 2, public health agencies will continue to play a role in assuring the availability of clinical care in their communities. As recommended in the committee's first report (IOM, 2011b), public health departments could work to form partnerships with medical care entities and share information derived from clinical data sources to identify health priorities in their communities. Public health can also collaborate with the clinical care system to inform Americans about the appropriateness, quality, safety, and efficiency of clinical care services delivered in their communities. Reducing the role of governmental public health in direct clinical service delivery could free up general state or local funds in public health budgets that have been allocated to provision of care—apart from funding streams that are specifically allocated for clinical care, such as state or local Medicaid. The newly available funds could be used to build data capacity and other essential public health services in localities. As coverage for health care is extended to the entire population in the course of implementing health care reform, public health departments need to be able to retain for their population-health mission general state and local resources that were previously used to cover clinical care.

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Recommendation 9: The committee recommends 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.

The annual appropriations process and frequent fluctuations in funding (such as funding cuts interspersed with increases due to bioterrorism and stimulus legislation) are reducing the ability of public health departments to prevent disease, promote health, and protect the health of their communities in the face of a wide array of threats. The committee reviewed a variety of options for raising funds to support an adequate level of annual funding for governmental public health. A national tax on medical care transactions, which exists in a number of states and has been used to raise funds to expand access to medical care in Minnesota and Vermont (Michael, 2011; PHPG, 2012), meets the committee's three criteria for evaluating potential funding sources: ability to raise sufficient funds, pertinence or a link to population health, and low likelihood of deleterious economic effects.

Recommendation 10: The committee recommends that Congress authorize a dedicated, stable, and long-term financing structure to generate the enhanced federal revenue required to deliver the *minimum package of public health services* in every community (see Recommendation 8).

Such a financing structure should be established by enacting a national tax on all medical care transactions to close the gap between currently available and needed federal funds. For optimal use of new funds, the Secretary of the Department of Health and Human Services should administer and be accountable for the federal share to increase the coherence of the public health system, support the establishment of accountabilities across the system, and ensure state and local co-financing.

CONCLUDING OBSERVATIONS

This report has several key messages. First, the committee echoes the widespread concern in the health sector about the increasing costs of medical care and the poor value realized. The United States is first in health spending but far from its peer nations in health outcomes. The committee calls on the nation in the next 20 years to achieve outcomes and cost levels

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that are comparable with the average of other wealthy nations. That will require changing how the nation invests its health funding. Second, the committee reiterates the finding in its first report that population-based prevention efforts are critical for improving population health and that the public health infrastructure of federal, state, and local health departments is qualified to implement or support such efforts. Third, the public health infrastructure is not funded adequately to carry out its mission, and the ways in which funding is allocated and used require retooling and the application of knowledge derived from better financial information and research. Investment of dividends in the nation's economic productivity and ultimately many small and moderate changes could lead to a more sustainable future for national health spending and could increase healthy-life expectancy. Finally, the committee revisits the notion of a multisectoral health system and reasserts the need for greater collaboration between public health and its clinical care counterparts to improve the outcomes of clinical care and the field's contributions to population health.

REFERENCES

Berwick, D. M., N. A. DeParle, D. M. Eddy, P. M. Ellwood, A. C. Enthoven, G. C. Halvorson, K. W. Kizer, E. A. McGlynn, U. E. Reinhardt, R. D. Reischauer, W. L. Roper, J. W. Rowe, L. D. Schaeffer, J. E. Wennberg, and G. R. Wilensky. 2003. Paying for performance: Medicare should lead. *Health Affairs* 22(6):8-10.

CBO (Congressional Budget Office). 2008. *Statement of Peter R. Orszag. Opportunities to Increase Efficiency in Health Care.* Statement at the Health Reform Summit of the Committee on Finance, United States Senate, June 16, 2008. Washington, DC: CBO.

CBO. 2009. *Long-Term Outlook for Medicare, Medicaid, and Total Health Care Spending.* Washington, DC: CBO.

CMS (Centers for Medicare and Medicaid Services). 2011. *National Health Expenditures.* https://www.cms.gov/NationalHealthExpendData/downloads/tables.pdf (Decemeber 19, 2011).

Commonwealth Fund Commission on a High Performance Health System. 2011. *Why Not the Best? Results from the National Score Card on U.S. Health System Performance, 2011.* New York: The Commonwealth Fund.

Darzi, A., S. Beales, M. Hallsworth, D. King, M. Macdonnell, and I. Vlaev. 2011. *The Five Bad Habits of Healthcare. How New Thinking About Behaviour Could Reduce Health Spending.* Geneva, Switzerland: World Economic Forum and Imperial College.

IOM (Institute of Medicine). 2003. *The Future of the Public's Health in the 21st Century.* Washington, DC: The National Academies Press.

IOM. 2011a. *For the Public's Health: Revitalizing Law and Policy to Meet New Challenges.* Washington, DC: The National Academies Press.

IOM. 2011b. *For the Public's Health: The Role of Measurement in Action and Accountability.* Washington, DC: The National Academies Press.

IOM. 2011c. *The Healthcare Imperative: Lowering Costs and Improving Outcomes—Workshop Series Summary.* Washington, DC: The National Academies Press.

Michael, J. 2011. *MinnesotaCare Provider Taxes.* St. Paul, MN: The Research Department of the Minnesota House of Representatives.

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For the Public's Health: Investing in a Healthier Future

NRC (National Research Council). 2011. *Explaining Divergent Levels of Longevity in High-Income Countries*. Washington, DC: The National Academies Press.

OECD (Organisation for Economic Co-operation and Development). 2010a. *Health Care Systems: Getting More Value for Money, OECD Economics Department Policy Notes No. 2*. Paris, France: OECD.

OECD. 2010b. OECD health data 2010: How does the United States compare? In *OECD Health Data 2010: Statistics and Indicators*. Paris, France: OECD.

PHPG (The Pacific Health Policy Group). 2012. *Health Care-Related Tax Study Report. Prepared for the Department of Vermont Health Access*. Vermont: Department of Vermont Health Access.

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1

Introduction and Context

Debate over America's place at the top of economic superpowers aside, it is clear that it is not a superpower in health. In fact, this Institute of Medicine (IOM) Committee on Public Health Strategies to Improve Health asserts that merely reaching the average of comparable high-income countries in health status would require considerable national effort.

Despite spending far more on medical care than any other nation, and despite having seen a century of unparalleled improvement in population health and longevity, the United States is now falling behind many of its global counterparts and competitors in such health outcomes as overall life expectancy and the incidence of preventable diseases and injuries. A fundamental but often overlooked driver of the imbalance between spending and outcomes is the nation's inadequate investment in strategies that promote health and prevent disease and injury population-wide. Strategies that are often summarized by the set of Essential Public Health Services[1] include monitoring and reporting on community health status; investigating and controlling disease outbreaks; educating the public about health risks and prevention strategies; implementing community-wide health improvement initiatives (including the social and physical environment); developing and enforcing laws and regulations to protect health; and assuring the safety and quality of water, food, air, and other resources necessary for health. All of these services require coordinated action at the local, state, and national

[1]The committee's previous two reports (IOM, 2011a,b) listed the 10 Essential Public Health Services, a list that serves as a cornerstone to descriptions of the work of public health departments and their community partners.

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levels, and public health departments have essential roles in informing and mobilizing public- and private-sector efforts.

The U.S. public health infrastructure—the constellation that includes federal, state, and local public health agencies, laboratories, and information technology and surveillance networks—is fragmented and lacks the resources necessary to carry out its roles effectively and ensure a basic level of health protection for all Americans. Historically, public health responsibilities emerged as primarily locally- and state-based, with the federal government intervening in the course of some epidemics. At the federal level, the Department of Health and Human Services (HHS) came together in piecemeal fashion in the 20th century, as discussed in more detail in the 2003 IOM report on the future of the public's health. Today, this highly complex infrastructure is supported by diminishing resources, and that poses grave threats to and the loss of important opportunities for the nation's health. Over 52,200 combined state and local public health jobs have been lost since 2008 (17 percent of the state and territorial public health workforce and 22 percent of the local public health workforce [ASTHO, 2012]).

The underinvestment in public health has ramifications for the nation's overall health status, for its financially-strained health care delivery system, and, the committee argues, for its economic vitality and global competitiveness. Although 2012 is a challenging time in national and world economic history, the nation's portfolio of investments in health must be reconsidered and rebalanced to lead the way toward an invigorated "health system," economy, and society. In referring to the nation's health system,[2] the committee means not only the component that delivers medical care, but the intersectoral system that was first introduced in the 2003 report *The Future of the Public's Health in the 21st Century* (IOM, 2003) and that comprises the governmental public health agencies and various partners, including communities, the health care delivery system, employers and businesses, the mass media, and the education sector.

At a time when expenditures on medical care are limiting its ability to make crucial investments in other arenas that are critical for the quality of life and economic health of Americans, the committee believes that a strong governmental public health infrastructure can mobilize strategies that reduce the occurrence of disease and injury, offset the need for ever-

[2]In its report on measurement, the system was redefined by the committee as simply "the health system" because "the modifiers *public* and *population* are poorly understood by most people other than public health professionals and may have made it easier to misinterpret or overlook the collective influence and responsibility that all sectors have for creating and sustaining the conditions necessary for health. In describing and using the term *the health system*, the committee [sought] to reinstate the proper and evidence-based understanding of health as not merely the result of medical or clinical care but the result of the sum of what we do as a society to create the conditions in which people can be healthy (IOM, 1988)" (IOM, 2011b).

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more costly medical interventions, and foster the productivity and wellbeing of the nation. Fulfilling that promise requires strategic expenditures to ensure capable and well-equipped public health agencies in all regions and greater attention to health promotion and disease prevention in all sectors of American society.

In previous two reports the committee summarized salient evidence on the social determinants of health (IOM, 2011a,b). There is substantial support for the links between health outcomes and factors related to where people live, learn, work, and play. However, there are gaps in the evidence on population-based interventions, that is, on what strategies are most effective in addressing the factors that contribute to poor health outcomes. The gaps in evidence are in large measure due to failures to invest in building the knowledge base on population health, including not only research on population-based interventions but on public health infrastructure, financing and functioning. Research and experience have demonstrated the effectiveness of some approaches, but the knowledge has not been operationalized for reasons that include lack of funding, insufficient political will, and the requirement to change societal norms. In this report, the committee offers a vision for a revitalized governmental public health enterprise, and discusses the financial resources that are needed to ensure an effective public health infrastructure in all communities.

THE REPORT'S SCOPE

The committee was given the following charge:

> Develop recommendations for funding state and local public health systems that support the needs of the public after health care reform. Recommendations should be evidence based and implementable. In developing their recommendations the committee will:
> - Review current funding structures for public health
> - Assess opportunities for use of funds to improve health outcomes
> - Review the impact of fluctuations in funding for public health
> - Assess innovative policies and mechanisms for funding public health services and community-based interventions and suggest possible options for sustainable funding

The committee's starting challenge was to explain the boundaries of governmental public health in its study. The committee began with the recognition, described in the committee's previous report on law, that public health has historically identified health problems, their causes, and potential solutions without necessarily bearing or assuming the responsibility for addressing them. In many cases, other government agencies came to be

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charged with responsibilities over aspects of sanitation, safe water, safe food, and housing, among others (IOM, 2011a, p. 21). Moreover, other areas of government action and societal investment such as education, housing, transportation, and urban planning, are also determinants of health whose links to population health have been documented in existing research. For the purposes of the present study, the committee acknowledged the breadth of influences on health and the wide range of societal actors engaged in acting on the health of the population—public health writ large—but it did not attempt to review the myriad public- and private-sector funding streams involved. For reasons first of committee composition and expertise, and second of data and time limitations, the committee provides little discussion on private-sector funding for population health, or societal investments in areas beyond health that may have ramifications for national health status. In the report, the term "public health" is used to denote the governmental public health enterprise. At times, however, the report refers to the broader understanding of public health as the multitude of strategies and actors that contribute to improving population health, and that is explained in the text.

The report is comprised of four chapters. After the introduction, the second chapter is devoted to examining how governmental public health activity (in state and local public health departments) is funded and the requirements placed on public health spending. The third chapter discusses the administrative changes needed to support the uniform collection and reporting of public health financial information (revenues and expenditures), and the research needed to inform the most efficient and effective use of public health funding. The fourth and final chapter describes contemporary public health funding, provides some estimates of need, and discusses options for generating revenues to ensure stable, sustainable, and adequate funding for public health defined in this context somewhat narrowly to encompass only the state and local public health departments.

THE NATION'S HEALTH

The health of a nation's population is determined by the conditions that it creates for living, the equity in opportunity that it affords, and the access to and quality of its medical care delivery system.[3] Health in the United States advanced during the last century, adding approximately 30 years to life expectancy between 1900 and 1999 (CDC, 1999b). More

[3]The United States entered the 21st century with glaring inadequacies in health and health care delivery system experiences for vulnerable subsets of the U.S. population due in large measure to socioeconomic and attendant environmental risks, as well as to inadequate access to care and variations in clinical practice (Braveman et al., 2011a; de la Plata et al., 2007; Haider et al., 2008; Lucas et al., 2006; Shafi et al., 2007).

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than two-thirds of that increase was related to public health strategies that resulted in improvements in conditions for living such as nutrition, water and workplace safety, and prevention and control of communicable diseases with immunizations, antibiotics, and outbreak control (Bunker et al., 1994; CDC, 1999b). Despite its unrivaled wealth, the United States nonetheless ended the century lagging behind many developed countries in health status as reflected in indicators of mortality, morbidity, and loss of potential productivity. Table 1-1 shows U.S. rankings on life expectancy, infant mortality, and maternal mortality according to three different sources: the Organisation for Economic Co-operation and Development (OECD),[4] which has 34 member countries, including "many of the world's most advanced countries but also emerging countries like Mexico, Chile and Turkey" (OECD, 2012); the United Nations (UN), which provides data on up to 196 countries;[5] and the Central Intelligence Agency (CIA), which provides data on 221 countries (CIA, 2011).

Medical Costs

Non-communicable, preventable chronic conditions are consuming increasing and extraordinary amounts of national spending on health, accounting for more than 75 percent of the $2.6 trillion spent each year on medical care (KFF, 2012). In 2007 and 2008, 23 percent of U.S. adults reported having one chronic medical condition, and an additional 31 percent reported having two or more (KFF, 2012; Soni, 2011). Chronic medical conditions associated with modifiable risk factors (smoking, nutrition, weight, and physical activity) represented 6 of the 10 costliest medical conditions[6] in the United States with a combined medical care expenditure of $338 billion in 2008 (Soni, 2011). Those same six largely preventable conditions accounted for 29 percent of the total increase in U.S. medical care spending during the 1987-2000 period (Thorpe et al., 2004b, 2010).

The indirect costs associated with preventable chronic diseases—costs related to diminished labor supply and worker productivity and the resulting fiscal drag on the nation's economic output—have been estimated at over $1 trillion a year (DeVol and Bedroussian, 2007). The nation's poor health status and the expense of its medical care delivery system place an enormous burden on the still-weak U.S. economy, the deficit-burdened federal

[4]The OECD mission is "to promote policies that will improve the economic and social well-being of people around the world" (OECD, 2012).

[5]The UN data from *World Population Prospects, The 2008 Revision* includes data for 196 countries ("[o]nly countries or areas with 100,000 persons or more in 2009"), although its multi-year data and estimates (2005-2010) includes only 146 countries (UN, 2009).

[6]The 10 are heart disease, cancer, mental disorders, trauma-related disorders, osteoarthritis, asthma, hypertension, diabetes, back problems, and hyperlipidemia (Soni, 2011).

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TABLE 1-1 U.S. Health Rankings

	U.S. Ranking (U.S./Total)		
Source	Life Expectancy	Infant Mortality	Maternal Mortality
UN	28/146 (2005-2010 data)	32/146 (2005-2010 data)	n/a
OECD	26/34 (2007 data)	31/34 (2007 data)	25/34 (2007 data)
CIA	50/221 (2011 estimated data; in 2010 data, U.S. ranked 49th)	174/222 (2011 estimated data)	121/172 (2011 estimated data)

NOTE: n/a = not available.
SOURCES: CIA, 2011; NRC, 2011; OECD, 2011; United Nations, 2009.

budget, and the financial security of many individual households. National health expenditures in 2010 reached $2.57 trillion, 17.3 percent of gross domestic product (GDP). Spending is projected to increase to $4.48 trillion, 19.3 percent of GDP, by 2019 (Truffer et al., 2010). Most of that increase will be due to federal spending on major medical care programs—including Medicare, Medicaid, the Children's Health Insurance Program, and subsidies for eligible individuals who are expected to gain health insurance coverage under the federal Affordable Care Act (ACA).

The last decade's growth in health care cost has dramatically affected household budgets, consuming nearly all the gains in income that were realized by the average U.S. family in the decade. Increased insurance premiums, out-of-pocket costs, and taxes devoted to health care consumed all but $95 of the increase in average monthly income from 1999 to 2009 (Auerbach and Kellermann, 2011). Family premiums for a typical insurance plan are estimated to rise 94 percent from 2008 to 2020, from $12,298 to $23,842 (Schoen et al., 2009). During the 10-year period 2009-2019, individual out-of-pocket expenses are expected to increase by 64 percent (from $284 billion to $466 billion), an average annual increase of 6.3 percent, which is more than twice the rate of increase in 2009 (CMS, 2010).

The financial impact of increasing health care costs is seen in bankruptcy trends and other signs of household financial insecurity. In two separate surveys, Himmelstein et al. (2009) reported that the rate of medical bankruptcies increased 50 percent from 2001 to 2007. The "medical debtors" were largely insured (75 percent), well-educated, and owners of homes, and made up 62 percent of the national random sample of 2,314 bankruptcies (Himmelstein et al., 2009). The impact of high medical care costs was reported in the 2011 Employee Benefits Research Institute's consumer health confidence survey of adult Americans which found decreased

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savings for retirement (29 percent of respondents); decreased non-retirement savings (56 percent); increased credit card use (19 percent); delay in going to the doctor (44 percent); and skipping of medication doses or not filling prescriptions altogether (26 percent) (Fronstin, 2011).

The high cost associated with the poor health of Americans poses global competitive disadvantages for the nation in employer and national costs. Current OECD data show that per capita U.S. health expenditures are more than two times the OECD average ($7,960 vs. $3,223 in 2009), and 2-3 times greater than those of such rapidly advancing economies as Czech Republic, Korea, Poland, and Turkey (OECD, 2010b). Obesity alone accounts for up to 20 percent of the rise in medical care spending over the past decade, and obese adults present medical care costs 37 percent greater than those of their normal-weight counterparts because of their risks of diabetes, high blood pressure, and related chronic conditions (Thorpe et al., 2004a). Preventable diseases and injuries are important components of the labor costs that saddle U.S. employers. It has been estimated that the cost of treating obese adults was about $147 billion in 2008, that the annual excess health care cost to private payers per obese adult was $1,140 in 2006 (Finkelstein et al., 2009), and that obese working-age adults (18-65 years) incurred 37 percent higher annual health care costs than their normal-weight counterparts (Sturm, 2002). Health risk factors that are highly amenable to population-based preventive strategies (i.e., smoking, cholesterol, physical inactivity, and obesity) have strong influences on annual health care costs. Workers who had medium risk (three or four risk factors) were shown to incur $1,261 more in annual health care costs than workers who had low health risk (two or fewer risk factors), and those who had high risk (five or more risk factors) $3,321 more (Edington, 2001). The economic burden of excess chronic disease morbidity on employers also includes substantial adverse effects on productivity due to lost work time ("absenteeism") and diminished performance at work because of illness ("presenteeism") (Collins et al., 2005; Kessler et al., 2001; Wang et al., 2003). The medical care delivery system is expensive today; if it stays on its current course, it will be unsustainable in the future (CBO, 2011).

Putting Prevention at the Center of National Strategies

An estimated 80 percent of cases of heart disease and of type 2 diabetes and 40 percent of cases of cancer could be prevented by exercising more (which might be made possible by, for example, improving green spaces and increasing neighborhood safety), eating better (made possible by, for example, increasing affordability and availability of fresh foods), and avoiding tobacco (made possible by, for example, sponsoring programs for smoking prevention and cessation) (see Brownson et al., 2006; CDC, 2011d; Ewing,

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2005; Mokdad et al., 2004; Ver Ploeg et al., 2009; WHO, 2012a; WHO Commission on Social Determinants of Health, 2008). But the United States is not making substantial progress in advancing the prevention strategies needed to support these changes. One-fifth of adults still smoke and half of adults—and nearly 20 percent of children—are overweight or obese (Cory et al., 2010). Without system-wide changes, one-third of American adults will develop diabetes by 2050 (up from one-tenth today) (Boyle et al., 2010). The current generation of children and young adults in the United States could become the first generation to experience shorter life spans and fewer healthy years of life than those of their parents (Olshansky et al., 2005).

Despite the knowledge that most cases of those costly chronic conditions are preventable, the national strategy to address the health crisis is directed predominantly downstream at the medical care delivery system. Strategic interventions are aimed at improving coordination of transitions of care (acute hospitals and step down institutions or home care), strengthening primary care, reforming payments and financial incentives, modernizing the information system infrastructure, and improving management of persons with chronic conditions. The Affordable Care Act includes several provisions that aim to advance population health, and is a legislative precedent worth building on. However, upstream causes (such as low educational attainment) of health problems continue to generate large volumes of new cases that require additional attention and adequate resources. Success in improving population health and reducing the volume of cases of non-communicable disease entering the medical delivery system will require a major strategic focus and aggressive action on root causes. Homer and Hirsch (2006), among others, have illustrated the system dynamics (beginning with social and behavioral risks) that ultimately lead to increased demand for medical care.[7]

The committee finds that poor U.S. health status and costly medical care consumption reflect a failure of the nation's health system as a whole—medical care, governmental public health, and other actors—to support strategies that advance population health. Solutions will require more than reforms of the delivery and payment systems for medical care. They will also require greater health system efficiency and more balanced investment in health, especially in the use of population-level interventions. Better public health efforts can reduce the rising prevalence of chronic diseases and influence other high-priority outcomes, such as injuries, mental illness, and substance abuse—and simultaneously attenuate the downstream medical care costs associated with them. Improving the effectiveness of the nation's governmental public health infrastructure can contribute to offsetting medical costs in three ways:

[7]See Figure 4 in Homer and Hirsch (2006, p. 457).

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1. Population-based public health strategies (such as policies to control tobacco, reduce motor vehicle injuries, require immunization, and reshape the social determinants of health) mobilized by this infrastructure can decrease numbers of cases of disease and injury (Halpin et al., 2010; see Box 1-1).
2. Public health agencies can use their data surveillance, analysis, and reporting capabilities to assist the medical care delivery system in identifying ineffective or inappropriate clinical care and in creating opportunities to advance population health in the clinical setting.
3. Public health agencies can convene or join partnerships aimed at creating environments in which people can be healthy.

A growing body of evidence indicates that effective prevention strategies can substantially improve health with little or no additional lifetime medical spending (i.e., from more potential years of medical care use). A recent study modeled various scenarios to estimate the potential benefits of effective interventions to reduce risk factors of adults in mid-life. It found that those exposed to successful clinical prevention interventions for obesity, hypertension, and diabetes experienced reduced lifetime medical spending and lived longer (Goldman et al., 2009). For example, as the population ages, diabetes prevalence is predicted to rise, peaking at about 34 percent at the age of 79 years. In the predicted scenarios where interventions had success rates of 10, 20, or 50 percent, the predicted diabetes prevalence was lowered to about 30, 25, and 16 percent, respectively (Goldman et al., 2009). Preventive efforts that decrease the prevalence of risk factors through non-clinical approaches can be expected to reduce costs further, because population-based strategies are typically less expensive than clinical ones. A recent American Heart Association literature review and policy statement, characterized primordial prevention as a key approach to obtaining value from decreasing the burden of cardiovascular disease (Weintraub et al., 2011). In terms of broader economic impact, one study estimates a net gain in economic growth of $1.2 trillion in real GDP over 20 years because of the effects of increases in chronic disease prevention efforts on labor productivity (DeVol and Bedroussian, 2007).

Collaboration Between Public Health and Clinical Care

As shown above, public health prevention strategies can help to contain medical care costs: they require relatively modest investments; they attack problems largely by addressing root causes of disease and injuries and thereby reduce the need for advanced, costly medical care; and they operate at the level of the population rather than through one-on-one clinical interventions. At a time when there is little agreement on the most appro-

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BOX 1-1
Public Health Action and Tobacco Control

The history of tobacco control and smoking prevention illustrates how properly funded and researched public health prevention programs can address 21st century challenges population health. Tobacco has long been a public health scourge responsible for illness and death in both smokers and those around them, and tobacco control efforts have decreased rates of smoking-related disease and death (CDC, 2004, 2005, 2008; IOM, 2009). "Between 1965 and 2005, the percentage of adults who once smoked and who had quit more than doubled from 24.3 to 50.8 percent and the percentage of adults who have never smoked more than 100 lifetime cigarettes increased by approximately 23 percent from 1965 to 2005" (IOM, 2007). Those reductions are due largely to public health prevention efforts that began after the surgeon general's report was published (IOM, 2007).

State and local smoking prevention programs were paid for through a combination of excise taxes on the sale of cigarettes, federal funds (for comprehensive prevention programs), and contributions by philanthropic organizations (IOM, 2007). In 1999, the Centers for Disease Control and Prevention (CDC) replaced two large programs with one program that provided funds to all 50 states and the District of Columbia. State programs contained various initiatives (such as public education, counter advertising, smoke-free workplaces, and increased taxes on cigarettes). The programs were based on evidence that showed that interventions focused on individual behavior were "not likely to result in large-scale declines in smoking prevalence." Hence the new focus on altering social and environmental influences (IOM, 2007).

The level of state funding for tobacco control correlates with the success of smoking prevention programs (Farrelly et al., 2003). Tauras and colleagues (2005)

priate strategies for constraining the growth in medical cost—particularly strategies that raise concerns about limiting access to services or restraining innovation and discovery in medical science—cost-effective population-based approaches offer considerable appeal. That suggests that an essential component of health care cost control strategies is to attack the occurrence of disease and injury through population-based strategies, on which a solid knowledge base and successful track record are available, even as the search for medical care delivery reforms continues.

Other approaches to cost containment that use public health skills and competencies would rely on an improved governmental public health infrastructure to accelerate the movement toward more effective and more efficient strategies for medical care delivery. For example, some public health departments are uniquely positioned (although not many have the capacity) to assess the appropriateness and effectiveness of medical care services that

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studied state expenditures on tobacco control and found evidence that tobacco control funding was inversely related to the percentage of young people who smoked and "the average number of cigarettes smoked by young smokers." States with the most comprehensive (and thus resource-intensive) smoking prevention programs saw a greater decline in smoking rates than the national average (Tauras et al., 2005). Aggressive state campaigns aimed at adults in the late 1990s also contributed to a decrease in the prevalence of smoking by adults (IOM, 2007). The California Tobacco Control Program,[a] a program with stable funding, was associated with almost twice the reduction of smoking prevalence from 1989 and 1993 compared with the rest of the United States (Gilpin et al., 2001).

CDC has recommended minimum state spending levels needed for successful tobacco use prevention and cessation (CDC, 2004). However, most states do not meet that minimum and since 2002 states have needed to cut funding to their tobacco prevention programs (IOM, 2007). In 2008, Farrelly and colleagues looked at state tobacco use prevention funding levels from 1995 to 2003 and found that states that had larger declines in adult smoking spent more on those programs (they controlled for other factors such as increased tobacco prices) (Farrelly et al., 2008). Overall, research shows that implementation of comprehensive state tobacco prevention and cessation programs that are also adequately funded has a substantial effect on tobacco use in a state (Campaign for Tobacco-Free Kids, 2011; CDC, 1996; Dilley et al., 2011; Farrelly et al., 2003, 2008; Pierce et al., 2011, also see California Department of Public Health Tobacco Control Program, 2009, 2011; Oregon Health Authority, 2011).

[a]The Tobacco Tax and Health Protection Act (Proposition 99) started a 25-cent tax on each package of cigarettes sold in California and led to the creation of the California Tobacco Control Program which allowed California to be the first state to fund a comprehensive tobacco control program (California Department of Public Health, 2009).

can have considerable effects on population health (see example in Box 1-2). By coupling analytic capabilities with an expanded information system, public health departments can provide leadership in measuring, monitoring, and reporting the performance of medical care delivery systems, and enhancing the transparency of their costs, quality, and outcomes. Similarly, public health can play an important role in advancing health literacy, consumer knowledge, and protections and in furthering standard and rigorous processes for generating the best community and preventive service recommendations throughout the various agencies of federal and state governments.

The committee's report on measurement (IOM, 2011b) recommended collaboration between the public health and clinical care worlds to draw on the expertise of public health to improve aspects of clinical care both to advance the health of populations, and to familiarize Americans with the meaning of high-value (evidence-based, efficient, and appropriate) care,

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BOX 1-2
Improving Quality and Offsetting Medical Care Costs: A Pilot Project for the New York State Department of Health

Percutaneous coronary intervention (PCI) is effective in evolving heart attacks, but its value compared with that of medical management has not been demonstrated in patients who have no history of recent heart attack or unstable angina. In addition, PCI carries a greater risk of procedure-related heart attacks than does medical management. A 2010 New York State Department of Health (NYSDOH) review of the care of people who underwent PCI revealed that a substantial number of procedures performed in New York hospitals did not meet the American College of Cardiology and American Heart Association 2009 criteria for appropriateness. Initially, the department will alert the medical care delivery system when there has been a departure from the criteria. The Basic Benefits Review Work Group of the NYSDOH has recommended that Medicaid coverage of PCI be eliminated when criteria for PCI have not been met. The department anticipates that savings associated with avoidance of unnecessary procedures will directly support a cardiac services registry to continue evaluations of appropriateness and quality of care and that additional savings will accrue directly to the Medicaid program.

SOURCE: Medicaid Redesign Team, 2011.

in the form of local aggregated performance reports on the appropriateness, quality, safety, and efficiency of clinical care services delivered in the community. Because data analysis and surveillance are fundamental tasks of public health, public health agencies in collaboration with medical care delivery systems are well positioned to develop mechanisms for tracking and analyzing inputs into and outputs of the medical care delivery system that allow the identification and early resolution of system problems. Some jurisdictions that serve smaller populations may never achieve local capacity of this kind—in some states or territories, it may require a more centralized function—but governmental public health should be able to provide information to the medical care delivery system, and to the public it serves, on the effectiveness and efficiency of the latter's operation. In addition to interaction or integration between the public health and clinical care systems described above, some current examples are: reports of outlier rates of hospitalization for selected diseases and of the degree of consistency between procedure use per population consistent with predicted prevalence of need in a population. New York State provides a useful example of the role that a state public health agency could play in improving aspects of clinical care delivery while lowering cost (see Box 1-2).

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Environments in Which People Can Be Healthy

Public health has special skills and a knowledge base to help society to understand the factors that are contributing most to poor population health outcomes, and how to alter them. This includes a wide array of potential activities that may or may not reside within governmental public health's immediate sphere of influence. For example, some of the underlying determinants of disease and death such as educational attainment, early childhood development, and aspects of the built environment (Wilkinson and Marmot, 2003). Others are risk factors more proximate to the outcomes, such as behaviors including poor eating habits and inactivity, and yet others pertain to the availability, quality, and appropriateness of clinical care services. Public health has contributions to make in changing many of the factors described, implementing strategies that seek to prevent poor outcomes at multiple levels, from the most distal (facilitating societal attention to broad-based factors that influence population health) to the more proximal (population-based action on the conditions that influence health behaviors) (IOM, 2011b).

The United States seems to lag behind most high-income nations in the deployment of socially protective strategies that appear to correlate with better population health (NRC, 2011; OECD, 2009, 2010b). Excessive allocation of national spending on medical care services poses major societal opportunity costs and restricts funding opportunities for other essential sectors such as education, energy, water, transportation, agriculture, and employment (Anderson and Frogner, 2008; Darzi et al., 2011). For example, the rise of medical care costs and the recent recession have contributed to a decline in state appropriations for public higher education (Kane and Orszag, 2003; Orszag, 2010). In 2008, some 43 states cut financing for colleges and universities or increased tuition (Johnson et al., 2011). The decrease in state subsidizing of public higher education has left public colleges and universities less competitive in salaries and spending on students than private colleges and universities and has decreased the quality of public higher education in the United States. Educational achievement has been found to be a more powerful predictor of health status than access to medical care, thereby raising the question of how the nation considers its priorities for resource allocation if disinvestments in education predictably lead to a less educated populace, with poorer health status (Cutler and Lleras-Muney, 2006; Woolf et al., 2007).

A World Economic Forum report noted that "as the economic burden of chronic disease grows, it could crowd out monies needed to improve other critical issues as well as to meet basic needs such as education and infrastructure" (World Economic Forum, 2008, p. 5). Indeed, national investments in other social services and infrastructure are key to health and health

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system performance and to sustained economic development. An analysis of data on 30 OECD countries that examined the relationship between five population health outcomes (life expectancy, maternal mortality, infant mortality, low birth weight, and productive life years lost) and health care or non–health care social spending showed that spending allocation in the United States is the reverse of that in other OECD countries (Bradley et al., 2011). The ratio of non–health care social spending to health care social spending was 2.0 in the OECD countries compared to 0.83 in the United States (see Figure 1-1).

Bradley and colleagues reported improved population health outcomes both in association with health care social spending (measured by life expectancy and maternal mortality) and for non–health care social spending (measured by life expectancy, infant mortality, and potential years of life lost), demonstrating the favorable health effects of other social domains on health (Bradley et al., 2011). In other studies of social spending influences on health, Eikemo and colleagues (2008) and Muntaner et al. (2011) have grouped European countries according to well-established political typologies that reflect a variety of social programs (health and non–health related social spending) and characteristics. Both sets of researchers found evidence of a relationship between national health status and national investment in social programs such as social transfers (for example, social security and unemployment benefits) and policies that support full employment and income protection. Scandinavian countries topped the ranking. Eastern and southern European nations had the lowest levels of social spending and the poorest health outcomes. It is important to note that there are considerable social and political differences among these nations and between them and the United States. However, there is no doubt that when a high proportion of social spending goes for medical care, as is the case in the United States, there is less money available for other important contributors to health (such as early childhood development and education) (see Box 1-3). Smeeding (2005) and Garfinkel et al. (2005) found that the vast majority of U.S. social spending goes toward medical care, and a far smaller fraction remains available for other social programs. OECD data from the last several years shows that the United States invests far less than its peers in several dimensions of child well-being. It was beyond the committee's ability to ascertain the implications of such differences and the opportunity cost of the nation's social spending, but an upcoming report from a joint National Research Council–Institute of Medicine committee will consider the effect of national attention to such factors on health differences among high-income nations (NRC and IOM, 2012).

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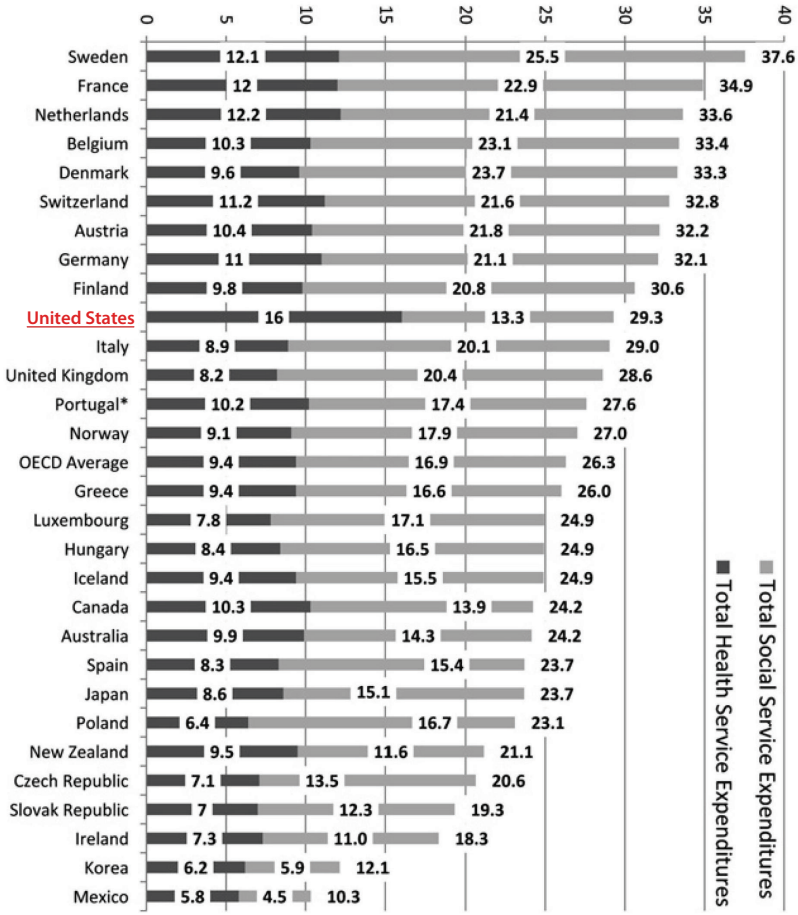

FIGURE 1-1 Average social-service expenditures versus average health-services expenditures as percentages of gross domestic product (GDP) from 1995 to 2005 by country.
SOURCE: Bradley et al., 2011, p. 3.

Spending More Prudently

In the United States, public health and prevention strategies are financed through a complex and often ad hoc patchwork of funding streams with federal, state, local, and private sources that vary widely among communities and exhibit considerable instability (this is discussed in detail in Chapter 2). Funding levels and targets are rarely based on objective measures of

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BOX 1-3
An Example of the Opportunity Costs of Runaway Medical Care Spending

The nation's excessive medical care expenditures present opportunity costs. For example, the United States underinvests in infant and early childhood development, and investments in education are uneven, leaving some populations disadvantaged (Barnett et al., 2010; Epstein and Barnett, 2010). There is compelling evidence of the significance of education for numerous health outcomes including infant mortality (maternal education) (Matthews et al., 2008), life expectancy (Census Bureau, 2010), and adult health behaviors and health status (Cutler and Lleras-Muney, 2006). An "education gradient" exists that demonstrates increased health benefits with greater levels of education and is consistent in men, women, blacks, and whites (Cutler and Lleras-Muney, 2006). Infants' and children's social and economic environments have profound and potentially lifelong impacts on health through brain, cognitive, and behavior development (Garner et al., 2012). Associations have been shown between early childhood brain developmental experiences and numerous chronic conditions which account for much of adult morbidity, mortality, and health care cost including hypertension, cardiovascular disease, stroke, obesity, depression, and diabetes (Cubbin et al., 2008).

preventable disease burden and risk but rather are driven by the confluence of historical precedent, government fiscal capacities, political dynamics, and agency entrepreneurship. The results are large gaps between population health needs and available resources in many communities and large inequities in health protection and risk reduction among communities and population groups.

The current U.S. level of support for the governmental public health infrastructure is inadequate to deliver the health and economic benefits of prevention. Although more than 75 percent of health care costs is attributable to preventable conditions, estimates consistently indicate that as little as 3 percent of U.S. health spending is devoted to public health and prevention activities (CMS, 2011; Mays and Smith, 2011; Miller et al., 2008). Although public health writ large commands additional resources through other government agencies and programs that foster the health of the public (such as highway safety or food security) (Grogan, 2012) these contributions are not included in the CMS calculation. Nor does this report consider them in any detail, given the committee's charge to examine funding streams that support governmental public health infrastructure. (The committee elaborates further on this in Chapter 4.) Several sources attest to the inadequacy of that spending level, including recent National Association

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of County and City Health Officials and Association of State and Territorial Health Officials reports of program cuts and deep staff reductions, Trust for America's Health assessments of health department preparedness for public health emergencies, and various reports showing how state or local public health departments struggle to make ends meet while fulfilling their statutory duties to their communities (ASTHO, 2012; NACCHO, 2012; TFAH, 2012). In fact, the nation spends several times as much on administrative overhead for medical care and health insurance as it does on public health activities (CMS, 2011; Mays and Smith, 2011). Turnock (2009) notes that 2 percent of HHS funding goes to the Centers for Disease Control and Prevention (CDC) and the Health Resources and Services Administration, the primary federal funding sources for local public health activities. The bulk of HHS funding goes to publicly funded clinical care (through Medicaid and Medicare) and to the National Institutes of Health, largely for basic research, little of it for primary prevention and even less for population-based interventions.

Medicine's lack of success in countering the rise in obesity demonstrates the limited reach of clinical interventions. The available evidence suggests that population-based efforts are needed to modify the social, environmental, and policy contexts that encourage poor eating and inactivity (Candib, 2007; Kumanyika et al., 2002; TRB and IOM, 2005). Considerable evidence links obesity to environmental factors that are clearly out of the reach of clinical interventions: for example, children's eating habits and nutritional preferences are affected by advertising, and those early influences affect lifelong behaviors (McGinnis et al., 2006; Wilcox et al., 2004). Leverage from outside the clinical care sector, such as urban design and food policy shifts to address obesity for population health improvements is also important. Consequently, solutions to complex population-level problems like obesity require the ability to design and mobilize coordinated, multi-pronged initiatives that support changes at multiple points on the web of causation [for an example, see CDC, 2011b,c, describing the effect of an array of community-based obesity prevention programs on the prevalence of childhood obesity in New York City (Jilcott Pitts et al., 2012; Ohri-Vachaspati, 2012)].

The modern history of governmental public health has demonstrated its capacity in the not-so-distant past to mobilize large-scale, multi-faceted solutions related to such issues as tobacco control, vaccine preventable diseases, and lead poisoning prevention (CDC, 2011b). If that capacity were similarly mobilized for obesity prevention on a population-wide basis, the resulting health and economic impact would be substantial. For example, reducing the prevalence of adult obesity by 50 percent—roughly the same relative reduction as was achieved through public health's multi-faceted attack on smoking prevalence during the latter decades of the 20th century—could produce a $58 billion reduction in annual U.S. medical care

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expenditures, according to estimates from a recent simulation study (Dall et al., 2009). That reduction would be sufficient to offset 50-65 percent of the total expected growth in medical care expenditures in a typical year, not to mention additional reductions in the indirect costs of obesity through gains in worker productivity. Achieving the necessary reduction in obesity prevalence would be challenging but feasible through a combination of behavioral, policy, and environmental changes that would see the average overweight adult reducing daily caloric intake or increasing daily caloric expenditure by a modest 100 calories per day over 4 years, equivalent to one less serving of sugar-sweetened beverages per day or an additional mile of walking per day. History demonstrates that such large-scale, high-impact changes in population health are possible through deliberately targeted and sufficiently resourced public health efforts.

SETTING A NATIONAL TARGET FOR IMPROVED HEALTH

There is a broad consensus among labor, business, and government that the U.S. health status and the health system are in urgent need of improvement. Improving U.S. health system performance requires clear overall system objectives, discrete quantifiable targets, effective and sustained leadership, and clear and unambiguous accountability for achieving targets and overall system performance. The locus of responsibility for U.S. health system performance is the office of the Secretary of Health and Human Services. The secretary of HHS is well-positioned to set national health performance targets for several reasons. HHS is responsible for some of the key guiding documents for the nation's health, such as the *Healthy People* initiatives. Also, because the National Prevention, Health Promotion and Public Health Council is convened under the aegis of the surgeon general of the U.S. Public Health Service, the committee believes that there is a greater likelihood than previously that at least the federal government will be able to coordinate its policies (in areas not limited to health) in ways that could benefit population health. The committee's report *For the Public's Health: Revitalizing Law and Policy to Meet New Challenges* provided examples of such "health in all policies" approaches, including the Department of Housing and Urban Development–Department of Transportation–Environmental Protection Agency Partnership for Sustainable Communities initiative (IOM, 2011a).

There is a need to consolidate the abundant health and health system targets to simplify and focus national efforts on the most essential health and health system outcomes (IOM, 2011b). The committee believes that measures of healthful longevity and per capita health expenditure are appropriate to address this need. In the absence of such clear health system performance targets, national efforts to remedy our health system preparedness

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to address the major contemporary national health threats will be diluted, inefficient, and incremental.

Health-adjusted life expectancy (HALEs) as an aggregate measure of health system performance were discussed in the committee's first report, *For the Public's Health: The Role of Measurement in Action and Accountability* (IOM, 2011b) and described as the best instrument for describing and monitoring population health. A consensus measure is still undergoing testing through the National Center for Health Statistics, and the committee found that an interim measure of aggregate health will continue to be required until a national approach is established (IOM, 2011b). The committee endorses using life expectancy as this interim measure. The measure is imperfect, but it has a demonstrated association with spending on healthcare and is used by other nations for this purpose (see Figure 1-2) (OECD, 2010a).[8] Figure 1-2 shows life expectancy vs. total expenditures on health in OECD countries. The lower left side of the curve shows largely middle-income nations, while the cluster near the center shows largely higher income nations, and the United States is the outlier at far right.

The committee reviewed evidence that other high income countries that have sophisticated medical care achieve better value for their health investments. This is shown in research and analyses of the OECD that built on a body of work involving multiple international organizations—including the World Bank, the World Health Organization, and the World Economic Forum—that measured system cost-effectiveness or assessed value per dollar spent by comparing health spending with life expectancy (see, for example, Anderson, 2008; Cutler and Lleras-Muney, 2006; Darzi et al., 2011; Murray and Frenk, 2010; Poullier et al., 2002; WHO, 2010).

Research suggests that one-third of all medical expenditures (which, given the insignificant spending on non-clinical health activities, this proportion, synonymous with one-third of all health expenditures) is wasted and thus does not lead to improvements in health outcomes (Bentley et al., 2008; Fineberg, 2012; IOM, 2010, 2011c; Joumard et al., 2010). In cases of misuse and overuse, such inefficient spending is actually harmful, and finding ways to remedy it could help the United States realize greater value for its investment. In sum, the solutions to achieving better value include

[8]In addition to summary measures of population health, the committee's report on measurement also recommended the development and implementation of measures of community health, to reflect not merely rates of death or disease in a community, but attributes of the community that contribute to or detract from its ability to promote health. Such measures could include metrics of a community's walkability and other aspects of the built environment, the food environment, and other features.

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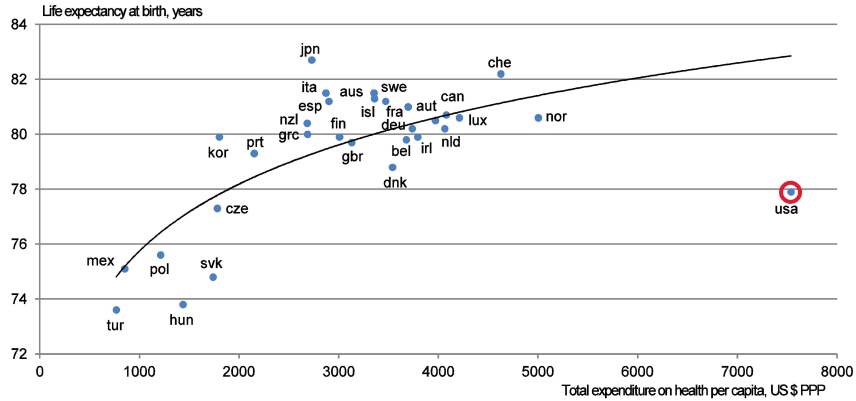

FIGURE 1-2 Health spending and life expectancy (2008* data).
NOTE: aus = Australia; aut = Austria; bel = Belgium; can = Canada; che = Switzerland; cze = Czech Republic; deu = Germany; dnk = Denmark; esp = Spain; fin = Finland; fra = France; gbr = United Kingdom; grc = Greece; hun = Hungary; irl = Ireland; isl = Iceland; ita = Italy; jpn = Japan; kor = Korea; lux = Luxembourg; mex = Mexico; nld = Netherlands; nor = Norway; nzl = New Zealand; pol = Poland; prt = Portugal; svk = Slovak Republic; tur = Turkey; swe = Sweden; usa = United States.
SOURCE: OECD Health Data, 2010.

1. controlling administrative waste;
2. eliminating sources of excess cost and other inefficiencies in clinical care, while improving quality;
3. achieving universal coverage (this involves increased cost for basic services, but also savings by intervening earlier and broadening coverage); and
4. implementing population-based health improvement strategies (including acting on non-health factors that are known to influence health outcomes).

The first three solutions have been discussed in detail by prior IOM committees, the IOM Roundtable on Value & Science-Driven Health Care, and many others (Berwick et al., 2003; CBO, 2011; CDC, 2011b,c; IOM, 2000, 2011c). The present committee has examined the fourth solution, although focusing mostly on the governmental public health enterprise and its contributions to population health. The evidence on the effectiveness of population-based interventions includes several pieces of information, beginning with a growing body of systematic reviews and recommendations (for example, from the CDC Community Preventive Services Task Force). Two-thirds of the increases in life expectancy observed in the United States

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in the 20th century predate 1950 and the major expansion in biomedical science and technology, and are attributed to basic public health strategies (clean water, sanitation, and infectious disease control) (CDC, 1999b). Moreover, the main causes of poor health (such as substance use, motor vehicle crashes, homicide, suicide, and cardiovascular disease) are not primarily solvable by clinical care but are amenable to population-based approaches. Finally, what could differentiate the United States from comparable nations falls outside the medical realm, and includes shortfalls in educational achievement, and lack of investment in and policy attention to other social factors known to have favorable effects on health (see, for example, Bradley and Taylor, 2011).

Comparing life expectancy and health spending sheds some light on value per dollar spent, but it has limitations. Life expectancy is only one of many measures of health status, and spending outside the health sector also influences health (Anderson, 2008). However, life expectancy has been shown to correlate with other indicators of health status (OECD, 2010a,b), and the fact that non-health spending can also influence health outcomes is itself informative. Recognizing this suggests the diminishing returns and opportunity costs of the high U.S. spending on medical care (Anderson, 2008; Darzi et al., 2011; WHO, 2010). The experience of many other high-income nations indicates that it is possible to achieve greater value, to obtain better results while spending less on health. The United States can move in that direction by implementing the four solutions outlined above, and its progress can be measured against benchmarks in cost savings, and in health outcomes. This leads to the following proposal of a two-part goal for the nation.

> **Recommendation 1: The Secretary of HHS should adopt an interim explicit life expectancy target, establish data systems for a permanent health-adjusted life expectancy target, and establish a specific per capita health expenditure target to be achieved by 2030. Reaching these targets should engage all health system stakeholders in actions intended to achieve parity with averages among comparable nations on healthy life expectancy and per capita health expenditures.**

The committee proposes a modest level of health improvement. According to the data in NRC, 2011 (Table 1-1), the 2006 life expectancy for U.S. women at the age of 50 years was 33.0 years. The mean in OECD countries was 34.5 years (standard deviation [SD],[9] 1.56 years; range, Denmark 31.9 years, to Japan 37.1 years). Assuming no additional secular improvements in

[9]SDs were derived from NRC, 2011.

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life expectancy the goal would require that the United States add an average of about 1.5 years to the life expectancy of 50-year-old women. Reaching the top ranking would require the far more ambitious addition of 4.1 years. The 2006 life expectancy for U.S. men at the age of 50 years was 29.2 years. The mean in OECD countries was 30.0 (SD, 0.95 years; range, Denmark, 28.2 years, to Australia, 31.5 years), and reaching that would require that the United States add 0.8 years to the life expectancy of 50-year-old men. Reaching the top-ranking nation would require a gain of 2.3 years. Those estimates, however, do not reflect the fact that comparable countries will continue to make gains; thus, the committee recognizes that the current gap in life expectancy that needs to be closed is less than the increase that will be needed to bring U.S. life expectancy to a level comparable with the average of its peers.

THE CENTRALITY OF PUBLIC HEALTH IN ACHIEVING HEALTH SYSTEM IMPROVEMENT

Governmental public health plays pivotal roles in a health system that comprises of multiple societal subsystems whose dynamic interactions create living conditions that determine health ("social determinants") (Braveman et al., 2011b; Marmot et al., 2008; WHO Commission on Social Determinants of Health, 2008; Wilkinson and Marmot, 2003). Public health is an essential component of a focused national strategy for improving health and health system performance. Its capabilities have been deployed against some past major health challenges that were complex and multi-sectoral, for example, lead toxicity, drinking water fluoridation, motor vehicle safety, and cigarette smoking. The reduction in lead toxicity in children and households during the last three decades is due largely to public health leadership in removing lead from paint and gasoline, screening children and remediating homes, surveillance, and engagement of the private sector and the medical care delivery system (Gold et al., 1994). In the case of motor vehicle and road safety, interventions affecting numerous reinforcing system sectors were undertaken. The interventions involved families, communities, schools, workplaces, governments, law enforcement, motor vehicle manufacturers, and transportation system designers. The systems approach precipitously reduced motor vehicle fatalities despite dramatic increases in motor vehicle density and vehicle miles traveled throughout the 20th century (CDC, 1999a). A third example of public health deployment on a major health challenge is cigarette smoking. Since the 1964 *Surgeon General's Report* on smoking, millions of productive lives have been saved as the prevalence of smoking among adults has declined (Gold et al., 1994). As in the case of motor vehicle safety, multi-sectoral interventions involving the mass media, legislation, employers, schools, health care providers and non-profit orga-

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nizations have been used to accomplish the reduction (CDC, 1996; Florida Department of Health, 2012).

Over the last century, governmental public health has been charged, organized and funded to convene, collaborate and act to control major health threats from infectious diseases; unsafe water, sanitation, housing, and transportation; occupation disease and injury; and smoking (CDC, 1999b). Current major health threats are the result of health system dynamics that have changed during the last 30 years, altered living conditions and led to a new constellation of population health challenges in the 21st century (Wahdan, 1996; WHO, 2012a). Chronic physical and behavioral health conditions are now the major health impediments to active living and personal fulfillment and to national economic competitiveness and productivity (Thorpe et al., 2010; WHO, 2012b). Those non-communicable conditions are downstream effects of social and physical environments and the personal behaviors that they influence (Candib, 2007; Gibson et al., 2011; McGinnis and Foege, 1993; Mokdad et al., 2004). These conditions are of particular consequence to people of lower income and low educational achievement. The well-known inequalities that class differences confer are important obstacles to achieving healthy life expectancy comparable with that of other wealthy nations.

Creating health more efficiently throughout the population will require both addressing the social and environmental determinants of health and taking a more systematic and concerted look at the clinical care delivery system's effectiveness in creating health through the services that it delivers. In contrast with the pivotal role occupied by the public health field in leading interventions directed at the major population health challenges of the last century, governmental public health departments have not been adequately funded to take on the complex tasks of designing and implementing strategies that can limit the burden of non-communicable diseases in the United States. Public health has also not been called on to exercise its data capacity and analytic skills to assist the medical care delivery system in evaluating the appropriateness (with respect to underuse and overuse of services) and success of the care that it furnishes. More rapid change is needed.

The committee views governmental public health as a key health system force in improving health outcomes and mitigating health expenditures. It will require a fundamental transformation of its mission (see Chapter 2) and organization and, adequate and stable funding for deploying public health experience and skill to meet pressing population health challenges (Bar-Yam, 2006; Lurie, 2002).

The urgency of a comprehensive national approach to the remediation of the "upstream" causes of non-communicable diseases, injuries and other contemporary health challenges, and the urgency of improving the functioning of the clinical care system could not be more pronounced. The nation's

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expenditures on medical care are grossly disproportionate to the quality, efficiency, and equity with which they being delivered (AHRQ, 2007; Commonwealth Fund Commision on a High Performance Health System, 2008, 2009; IOM, 2000, 2001; Leape and Berwick, 2000).

The Affordable Care Act was enacted to address this crisis in health and in health care costs. It seeks to provide access to care for 32 million uninsured Americans and to establish a framework of centers and authorities charged to improve quality and control costs by reducing variation in practice, implementing new models for care, and changing payment mechanisms and spending by Medicare (Patient Protection and Affordable Care Act, Public Law 111-148). The legislation recognizes the importance of public health and provides investments in population health initiatives, including the grants for community transformation and the prevention and public health trust fund (HHS, 2010a,b, 2011). However, the investment is small (and has already been substantially reduced) (Benjamin, 2012) compared with medical care interventions and no changes to federal incentives to states are made to reform the priorities, organization or funding of the public health infrastructure. The national strategy to address the health crisis is directed predominantly downstream at the locus of care delivery and only weakly upstream at the causes of poor health that continue to generate large volumes of new cases in the medical care delivery system.

CONCLUDING OBSERVATIONS

Beginning with its first report (IOM, 2011b), the present committee has discussed the evidence that some of the most powerful interventions to improve America's poor health performance are multi-sectoral public health interventions and other population-based approaches to health improvement. Such approaches are informed by high-quality population health and care delivery performance indicators as discussed in *For the Public's Health: The Role of Measurement in Action and Accountability* (IOM, 2011b). They will be facilitated by the use of powerful tools of law and public policy to transform conditions for living (such as education and the physical and social environment) that impact health, as discussed in the committee's second report, *For the Public's Health: Revitalizing Law and Policy to Meet New Challenges* (IOM, 2011a).

In this, its third report, the committee offers guidance for rebalancing the nation's portfolio of health investments by revitalizing governmental public health and, giving it the resources necessary to reign in preventable diseases, injuries, and their associated costs on a broad national scale. Public health funding for new mission support, re-organization, and information management will be essential for improving population health.

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REFERENCES

AHRQ (Agency for Healthcare Research and Quality). 2007. *National Healthcare Disparities Report*. Rockville, MD: HHS.

Anderson, G. F., and B. K. Frogner. 2008. Health spending in OECD countries: Obtaining value per dollar. *Health Affairs* 27(6):1718-1727.

Anderson, P. 2008. Reducing overweight and obesity: Closing the gap between primary care and public health. *Family Practice* 25(Suppl 1):10-16.

ASTHO (Association of State and Territorial Health Officials). 2012. *Budget Cuts Continue to Affect the Health of Americans: Update March 2012*. Arlington, VA: ASTHO.

Auerbach, D. I., and A. L. Kellermann. 2011. A decade of health care cost growth has wiped out real income gains for an average US family. *Health Affairs* 30(9):1630-1636.

Barnett, W. S., D. J. Epstein, M. E. Carolan, J. Fitzgerald, D. J. Ackerman, and A. H. Friedman. 2010. *The State of Preschool 2010*. New Brunswick, NJ: The National Institute for Early Education Research.

Bar-Yam, Y. 2006. Improving the effectiveness of health care and public health: A multiscale complex systems analysis. *American Journal of Public Health* 96(3):459-466.

Benjamin, G. 2012. *Prevention Funding: One Step Forward, Two Steps Back*. http://healthaffairs.org/blog/2012/03/01/prevention-funding-one-step-forward-two-steps-back/ (March 5, 2012).

Bentley, T. G. K., R. M. Effros, K. Palar, and E. B. Keeler. 2008. Waste in the U.S. health care system: A conceptual framework. *Milbank Quarterly* 86(4):629-659.

Berwick, D. M., N. A. DeParle, D. M. Eddy, P. M. Ellwood, A. C. Enthoven, G. C. Halvorson, K. W. Kizer, E. A. McGlynn, U. E. Reinhardt, R. D. Reischauer, W. L. Roper, J. W. Rowe, L. D. Schaeffer, J. E. Wennberg, and G. R. Wilensky. 2003. Paying for performance: Medicare should lead. *Health Affairs* 22(6):8-10.

Boyle, J., T. Thompson, E. Gregg, L. Barker, and D. Williamson. 2010. Projection of the year 2050 burden of diabetes in the US adult population: Dynamic modeling of incidence, mortality, and prediabetes prevalence. *Population Health Metrics* 8(1):29.

Bradley, E. H., and L. Taylor. 2011. To Fix Health, Help the Poor. *The New York Times*. http://www.nytimes.com/2011/12/09/opinion/to-fix-health-care-help-the-poor.html (December 12, 2011).

Bradley, E. H., B. R. Elkins, J. Herrin, and B. Elbel. 2011. Health and social services expenditures: Associations with health outcomes. *BMJ Quality & Safety* 20(10):826-831.

Braveman, P., S. Egerter, and D. R. Williams. 2011a. The social determinants of health: Coming of age. *Annual Review of Public Health* 32:381-398.

Braveman, P. A., S. A. Egerter, and R. E. Mockenhaupt. 2011b. Broadening the focus: The need to address the social determinants of health. *American Journal of Preventive Medicine* 40(1 Suppl 1):S4-S18.

Brownson, R. C., D. Haire-Joshu, and D. A. Luke. 2006. Shaping the context of health: A review of environmental and policy approaches in the prevention of chronic diseases. *Annual Review of Public Health* 27(1):341-370.

Bunker, J. P., H. S. Frazier, and F. Mosteller. 1994. Improving Health: Measuring Effects of Medical Care. *The Milbank Quarterly* 72(2).

California Department of Public Health. 2011. *California Smoking Rate Reaches Historic Low* (Press Release). http://www.cdph.ca.gov/Pages/NR11-031.aspx (July 13, 2011).

California Department of Public Health Tobacco Control Program. 2009. *California Tobacco Control Update 2009. 20 Years of Tobacco Control in California*. Sacramento: California Department of Public Health.

Campaign for Tobacco-Free Kids. 2011. *Comprehensive Tobacco Prevention and Cessation Programs Effectively Reduce Tobacco Use*. Washington, DC: Campaign for Tobacco-Free Kids.

Copyright © National Academy of Sciences. All rights reserved.

For the Public's Health: Investing in a Healthier Future

Candib, L. M. 2007. Obesity and diabetes in vulnerable populations: Reflection on proximal and distal causes. *The Annals of Family Medicine* 5(6):547-556.

CBO (Congressional Budget Office). 2011. *CBO's 2011 Long-term Budget Outlook*. Washington, DC: CBO.

CDC (Centers for Disease Control and Prevention). 1996. *State Tobacco Control Highlights—1996 (Publication No. 099-4895)*. Atlanta, GA: CDC, National Center for Chronic Disease Prevention and Health Promotion, and Office on Smoking and Health.

CDC. 1999a. Achievements in public health 1900-1999. Motor-Vehicle safety: A 20th century public health achievement. *Morbidity and Mortality Weekly Report* 48(12):369-374.

CDC. 1999b. Ten great public health achievements—United States, 1900-1999. *Morbidity and Mortality Weekly Report* 48(12):241-243.

CDC. 2004. *Sustaining State Funding for Tobacco Control: The Facts*. Atlanta, GA: CDC.

CDC. 2005. Annual Smoking-Attributable Mortality, Years of Potential Life Lost, and Productivity Losses—United States, 1997–2001. *Morbidity and Mortality Weekly Report* 54(25):625-628.

CDC. 2008. Smoking-attributable mortality, years of potential life lost, and productivity losses—United States, 2000-2004. *Morbidity and Mortality Weekly Report* 57(45):1226-1228.

CDC. 2011a. *Chronic Disease Prevention and Health Promotion. Preventive Health and Health Services Block Grant. A Critical Public Health Resource at a Glance 2011*. http://www.cdc.gov/chronicdisease/resources/publications/AAG/blockgrant.htm (January 3, 2012).

CDC. 2011b. Obesity in K-8 students—New York City, 2006-07 to 2010-11 School Years. *Morbidity and Mortality Weekly Report* 60:1673-1678.

CDC. 2011c. *Overweight and Obesity: Program Highlights*. http://www.cdc.gov/obesity/stateprograms/highlights.html (March 30, 2012).

CDC. 2011d. *Rising Health Care Costs are Unsustainable*. http://www.cdc.gov/workplacehealthpromotion/businesscase/reasons/rising.html (January 27, 2012).

CDC. 2011e. Ten great public health achievements—United States, 2001-2010. *Morbidity and Mortality Weekly Report* 60(19):619-623.

CDC. 2011f. Vital signs: Current cigarette smoking among adults aged ≥18 Years—United States, 2005-2010. *Morbidity and Mortality Weekly Report* 60(35):1207-1212.

Census Bureau. 2010. *National Longitudinal Mortality Study*. http://www.census.gov/did/www/nlms/publications/public.html.

CIA (Central Intelligence Agency). 2011. *World Factbook*. Washington, DC: CIA.

CMS (Centers for Medicare and Medicaid Services). 2010. *National Health Expenditure Projections 2009-2019. Forecast Summary*. Baltimore, MD: HHS.

CMS. 2011. *National Health Expenditures*. https://www.cms.gov/NationalHealthExpendData/downloads/tables.pdf (December 19, 2011).

Collins, J. J., C. M. Baase, C. E. Sharda, R. J. Ozminkowski, S. Nicholson, G. M. Billotti, R. S. Turpin, M. Olson, and M. L. Berger. 2005. The assessment of chronic health conditions on work performance, absence, and total economic impact for employers. *Journal of Occupational and Environmental Medicine* 47(6):547-557.

Commonwealth Fund Commision on a High Performance Health System. 2008. *Why Not the Best? Results from the National Score Card on U.S. Health System Performance, 2008*. NY, New York: The Commonwealth Fund.

Commonwealth Fund Commision on a High Performance Health System. 2009. *The Path to a High Performance U.S. Health System: A 2020 Vision and the Policies to Pave the Way*. Washington, DC: The Commonwealth Fund.

Cory, S., A. Ussery-Hall, S. Griffin-Blake, A. Easton, J. Vigeant, L. Balluz, W. Garvin, and K. Greenlund. 2010. Prevalence of selected risk behaviors and chronic diseases and conditions-steps communities, United States, 2006-2007. *Morbidity and Mortality Weekly Report. Surveillance Summaries* 59(8):1-37.

Copyright © National Academy of Sciences. All rights reserved.

For the Public's Health: Investing in a Healthier Future

Cubbin, C., V. Pedregon, S. Egerter, and P. Braveman. 2008. *Where We Live Matters for Our Health: Neighborhoods and Health*. Princeton, NJ: Robert Wood Johnson Foundation.

Cutler, D. M., and A. Lleras-Muney. 2006. *Education and Health: Evaluating Theories and Evidence*. NBER Working Paper Series (Working Paper 12352). Cambridge, MA: National Bureau of Economic Research.

Dall, T. M., V. L. Fulgoni, Y. Zhang, K. J. Reimers, P. T. Packard, and J. D. Astwood. 2009. Potential health benefits and medical cost savings from calorie, sodium, and saturated fat reductions in the American diet. *American Journal of Health Promotion* 23(6):412-422.

Darzi, A., S. Beales, M. Hallsworth, D. King, M. Macdonnell, and I. Vlaev. 2011. *The Five Bad Habits of Healthcare. How New Thinking About Behaviour Could Reduce Health Spending*. Geneva, Switzerland: World Economic Forum and Imperial College.

de la Plata, C. M., M. Hewlitt, A. de Oliveira, A. Hudak, C. Harper, S. Shafi, and R. Diaz-Arrastia. 2007. Ethnic differences in rehabilitation placement and outcome after TBI. *The Journal of Head Trauma Rehabilitation* 22(2):113-121.

DeVol, R., and A. Bedroussian. 2007. *An Unhealthy America: The Economic Burden of Chronic Disease. Charting a New Course to Save Lives and Increase Productivity and Econmic Growth*. Executive Summary and Research Findings. Santa Monica, CA: Milken Institute.

Dilley, J. A., J. R. Harris, M. J. Boysun, and T. R. Reid. 2011. Program, policy, and price interventions for tobacco control: Quantifying the return on investment of a state tobacco control program. *American Journal of Public Health* 102(2):22-28.

Edington, D. W. 2001. Emerging research: A view from one research center. *American Journal of Health Promotion* 15(5):341-349.

Eikemo, T. A., C. Bambra, K. Judge, and K. Ringdal. 2008. Welfare state regimes and differences in self-perceived health in Europe: A multilevel analysis. *Social Science & Medicine* 66(11):2281-2295.

Epstein, D. J., and W. S. Barnett. 2010. Early education in the United States: Programs and access. In *Handbook of Early Childhood Education* edited by R. C. Pianta, W. S. Barnett, L. M. Justice, and S. M. Sheridan. New York: The Guilford Press.

Ewing, R. 2005. Can the physical environment determine physical activity levels? *Exercise and Sport Sciences Reviews* 33(2):69-75.

Farrelly, M. C., T. F. Pechacek, and F. J. Chaloupka. 2003. The impact of tobacco control program expenditures on aggregate cigarette sales: 1981-2000. *Journal of Health Economics* 22(5):843-859.

Farrelly, M. C., T. F. Pechacek, K. Y. Thomas, and D. Nelson. 2008. The impact of tobacco control programs on adult smoking. *American Journal of Public Health* 98(2):304-309.

Fineberg, H. V. 2012. A successful and sustainable health system—how to get there from here. *New England Journal of Medicine* 366(11):1020-1027.

Finkelstein, E. A., J. G. Trogdon, J. W. Cohen, and W. Dietz. 2009. Annual medical spending attributable to obesity: Payer and service specific estimates. *Health Affairs* 28(5):822-831.

Florida Department of Health. 2012. *Tobacco Free Florida*. http://www.doh.state.fl.us/tobacco/tobacco_home.html (January 6, 2012).

Fronstin, P. 2011. 2011 Health confidence survey: Most Americans unfamiliar with key aspect of health reform. *Employee Benefit Research Institute* 32(9):2-12.

Garfinkel, I., T. M. Smeeding, and L. Rainwater. 2005. *Welfare State Expenditures and the Redistribution of Well-being: Children, Elders, and Others in Comparative Perspective. Working Paper.* Luxembourg: Luxembourg Income Study (LIS).

Garner, A. S., J. P. Shonkoff, B. S. Siegel, M. I. Dobbins, M. F. Earls, L. McGuinn, J. Pascoe, and D. L. Wood. 2012. Early childhood adversity, toxic stress, and the role of the pediatrician: Translating developmental science into lifelong health. *Pediatrics* 129(1):224-231.

Copyright © National Academy of Sciences. All rights reserved.

For the Public's Health: Investing in a Healthier Future

Gibson, M., M. Petticrew, C. Bambra, A. J. Sowden, K. E. Wright, and Whithead. 2011. Housing and health inequalities: A synthesis of systematic reviews of interventions aimed at different pathways linking housing and health. *Health & Place* 17(1):175-184.

Gilpin, E. A., S. L. Emery, A. J. Farkas, J. M. Distefan, M. M. White, J. P. Pierce. 2001. *The California Tobacco Control Program: A Decade of Progress, Results from the California Tobacco Surveys, 1990-1998*. La Jolla: University of California, San Diego.

Gold, M. R., S. Teutsch, K. McCoy, P. Shaffer, J. Siegel, P. Johnson, B. R. Luce, R. E. Brown, M. O. Butler, G. Lissovoy, M. T. Halpern, M. L. Hare, E. Hatziandreu, J. Hersey, R. P. Hertz, P. McMenamin, B. Rader, M. Rothman, and J. J. Stein. 1994. *For a Healthy Nation: Returns on Investment in Public Health*. Washington, DC: HHS, Office of Disease Prevention and Health Promotion, CDC, and Centers for Public Health Research and Evaluation.

Goldman, D. P., Y. Zheng, F. Girosi, P. C. Michaud, S. J. Olshansky, D. Cutler, and J. W. Rowe. 2009. The benefits of risk factor prevention in Americans aged 51 years and older. *American Journal of Public Health* 99(11):2096-2101.

Grogan, C. M. 2012. Behind the jargon: Prevention spending. *Journal of Health Politics, Policy and Law* 37(2):229-342.

Haider, A. H., D. C. Chang, D. T. Efron, E. R. Haut, M. Crandall, and E. E. Cornwell, III. 2008. Race and insurance status as risk factors for trauma mortality. *Archive of Surgery* 143(10):945-949.

Halpin, H. A., M. M. Morales-Suarez-Varela, and J. M. Martin-Moreno. 2010. Chronic disease prevention and the new public health. *Public Health Reviews* 32(1):120-154.

HHS (Department of Health and Human Services). 2010a. *HHS Awards $16.8 Million to Train Public Health Workforce: Grants Awarded to 27 Public Health Training Centers (News Release)*. http://www.hhs.gov/news/press/2010pres/09/20100913a.html (November 12, 2010).

HHS. 2010b. *Sebelius Announces New $250 Million Investment to Lay Foundation for Prevention and Public Health* (*News Release*). http://www.hhs.gov/news/press/2010pres/06/20100618g.html (June 22, 2010).

HHS. 2011. *Affordable Care Act Funds to Help Create Healthier U.S. Communities*. http://www.hhs.gov/news/press/2011pres/06/20110616b.html (June 20, 2011).

Himmelstein, D. U., D. Thorne, E. Warren, and S. Woolhandler. 2009. Medical bankruptcy in the United States, 2007: Results of a national study. *American Journal of Medicine* 122(8):741-746.

Homer, J. B., and G. B. Hirsch. 2006. System dynamics modeling for public health: Background and opportunities. *American Journal of Public Health* 96(3):452-458.

IOM (Intitute of Medicine). 1988. *The Future of Public Health*. Washington, DC: National Academy Press.

IOM. 2000. *To Err Is Human: Building a Safer Health System*. Washington, DC: National Academy Press.

IOM. 2001. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press.

IOM. 2003. *The Future of the Public's Health in the 21st Century*. Washington, DC: The National Academies Press.

IOM. 2007. *Ending the Tobacco Problem: A Blueprint for the Nation*. Washington, DC: The National Academies Press.

IOM. 2009. *Secondhand Smoke Exposure and Cardiovascular Effects: Making Sense of the Evidence*. Washington, DC: The National Academies Press.

IOM. 2010. *Healthcare Imperative: Lowering Costs and Improving Outcomes: Workshop Series Summary*. Washington, DC: The National Academies Press.

IOM. 2011a. *For the Public's Health: Revitalizing Law and Policy to Meet New Challenges*. Washington, DC: The National Academies Press.

Copyright © National Academy of Sciences. All rights reserved.

For the Public's Health: Investing in a Healthier Future

IOM. 2011b. *For the Public's Health: The Role of Measurement in Action and Accountability.* Washington, DC: The National Academies Press.

IOM. 2011c. *The Healthcare Imperative: Lowering Costs and Improving Outcomes—Workshop Series Summary.* Washington, DC: The National Academies Press.

Jilcott Pitts, J. S. B., L. M. Whetstone, J. R. Wilkerson, T. W. Smith, A. S. Ammerman. 2012. *A Community-Driven Approach to Identifying "Winnable" Policies Using the Centers for Disease Control and Prevention's Common Community Measures for Obesity Prevention.* http://www.cdc.gov/pcd/issues/2012/11_0195.htm (March 30, 2012).

Johnson, N., P. Oliff, and E. Williams. 2011. *An Update on State Budget Cuts. At Least 46 States Have Imposed Cuts That Hurt Vulnerable Residents and Cause Job Loss.* Washington, DC: Center on Budget and Policy Priorities.

Joumard, I., C. Andre, and C. Nicq. 2010. *Health Care Systems: Efficiency and Institutions, OECD Economics Department (Working Papers, No. 769).* Paris, France: OECD.

Kane, T. J., and P. R. Orszag. 2003. *Higher Education Spending: The Role of Medicaid and the Business Cycle. The Brookings Institution Policy Brief*, Vol. 24. Washington, DC: The Brookings Institution.

Kessler, R. C., P. E. Greenberg, K. D. Mickelson, L. M. Meneades, and P. S. Wang. 2001. The effects of chronic medical conditions on work loss and work cutback. *Journal of Occupational and Environmental Medicine* 43(3):218-225.

KFF (The Henry J. Kaiser Family Foundation). 2012. *U.S. Health Care Cost.* http://www.kaiseredu.org/Issue-Modules/US-Health-Care-Costs/Background-Brief.aspx#footnote7 (February 24, 2012).

Kumanyika, S., R. W. Jeffery, A. Morabia, C. Ritenbaugh, V. J. Antipatis, and P. W. Grp. 2002. Obesity prevention: The case for action. *International Journal of Obesity* 26(3):425-436.

Leape, L. L., and D. M. Berwick. 2000. Safe health care: Are we up to it? *British Medical Journal* 320(7237):725-726.

Lucas, F. L., T. A. Stukel, A. Morris, A. E. Siewers, and J. D. Birkmeyer. 2006. Race and surgical mortality in the United States. *Annals of Surgery* 243(2):281-286.

Lurie, N. 2002. The public helath infrastructure: Rebuild or redesign? *Health Affairs* 21(6): 28-30.

Marmot, M., S. Friel, R. Bell, T. A. J. Houweling, and S. Taylor. 2008. Closing the gap in a generation: Health equity through action on the social determinants of health. *The Lancet* 372(9650):1661-1669.

Matthews, T. J., M. F. MacDorman, and Division of Vital Statistics. 2008. Infant mortality statistics from the 2005 period linked birth/infant death data set. *National Vital Statistics Reports* 57(2):1-32.

Mays, G. P., and S. A. Smith. 2011. Evidence links increases in public health spending to declines in preventable deaths. *Health Affairs* 30(8):1585-1893.

McGinnis, J. M., and W. H. Foege. 1993. Actual causes of death in the United States. *Journal of the American Medical Association* 270(18):2007-2012.

McGinnis, J. M., J. A. Gootman, and V. I. Kraak, eds. 2006. *Food Marketing to Children and Youth: Threat or Opportunity.* Washington, DC: The National Academies Press.

Medicaid Redesign Team. 2011. *Basic Benefit Review Work Group. Final Recommendations on Redesigning the Medicaid Program.* New York: New York State Department of Health.

Miller, G., C. Roehrig, P. Hughes-Cromwick, and C. Lake. 2008. Quantifying national spending on wellness and prevention. In *Beyond Health Insurance: Public Policy to Improve Health Advances in Health Economics and Health Services Research.* Vol. 19: 1-24.

Mokdad, A. H., J. S. Marks, D. F. Stroup, and J. L. Gerberding. 2004. Actual causes of death in the United States, 2000. *Journal of the American Medical Association* 291(10):1238-1245.

Muntaner, C., C. Borrell, E. Ng, H. Chung, A. Espelt, M. Rodriguez-Sanz, J. Benach, and P. O'Campo. 2011. Politics, welfare regimes, and population health: Controversies and evidence. *Sociology of Health & Illness* 33(6):946-964.

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For the Public's Health: Investing in a Healthier Future

Murray, C. J., and J. Frenk. 2010. Ranking 37th—measuring the performance of the U.S. health care system. *New England Journal of Medicine* 362(2):98-99.

NACCHO (National Association of County and City Health Officials). 2011. *Local Health Department Job Losses and Program Cuts: Findings from January 2011 Survey and 2010 National Profile Study (Research Brief)*. Washington, DC: NACCHO.

NACCHO. 2012. *Local Health Department Job Losses and Program Cuts: Findings from January 2012 Survey.* Washington, DC. NACCHO.

NRC (National Research Council). 2011. *International Differences in Mortality at Older Ages: Dimensions and Sources*. Washington, DC: The National Academies Press.

NRC and IOM. 2012. *Panel on Understanding International Health Differences in High-Income Countries: Patterns, Puzzles, Paradoxes, and Public Health Opportunities*. http://www7.nationalacademies.org/cpop/Intl%20Health%20Differences%20Project.html (January 3, 2012).

OECD (Organisation for Economic Co-operation and Development). 2009. *Disparities in Health Expenditures Across OECD Countries: Why Does the United States Spend so Much More Than Other Countries?* A written statement to Senate Special Committee on Aging. Washington, DC: OECD.

OECD. 2010a. *Health Care Systems: Getting More Value for Money, OECD Economics Department Policy Notes No. 2*. Paris, France: OECD.

OECD. 2010b. OECD health data 2010: How does the United States compare? In *OECD Health Data 2010: Statistics and Indicators*. Paris, France: OECD.

OECD. 2011. Child outcomes. CO1.1: Infant mortality. In *OECD Family Database*. Paris, France: OECD.

OECD. 2012. *Members and Partners*. http://www.oecd.org/pages/0,3417,en_36734052_36761800_1_1_1_1_1,00.html (March 18, 2012).

Ohri-Vachaspati, P., L. Leviton, P. Bors, L. Brennan, R.C. Brownson, S. Strunk. 2012. Strategies proposed by Healthy Kids, Healthy Communities partnerships to prevent childhood obesity. *Preventing Chronic Disease* 9:100292, http://www.cdc.gov/pcd/issues/2012/10_0292.htm (March 30, 2012).

Olshansky, S. J., D. J. Passaro, R. C. Hershow, J. Layden, B. A. Carnes, J. Brody, L. Hayflick, R. N. Butler, D. B. Allison, and D. S. Ludwig. 2005. A potential decline in life expectancy in the United States in the 21st century. *New England Journal of Medicine* 352(11):1138-1145.

Oregon Health Authority. 2011. *Successes of Tobacco Control in Oregon: The 2009-2011 Tobacco Prevention and Education Program Report*. Portland, OR: Oregon Health Authority.

Orszag, P. 2010. A Health Care Plan for Colleges. *The New York Times*. http://www.nytimes.com/2010/09/19/opinion/19orszag.html?_r=2&ref=peter_orszag&pag (September 18).

Pierce, J. P., K. Messer, M. M. White, D. W. Cowling, and D. P. Thomas. 2011. Prevalence of heavy smoking in California and the United States, 1965-2007. *The Journal of the American Medical Association* 305(11):1106-1112.

Poullier, J., P. Hernandez, K. Kawabata, and W. D. Savedoff. 2002. *Patterns of Global Health Expenditures: Results for 191 Countries*. EIP/HFS/FAR Discussion Paper No. 51. Geneva, Switzerland: WHO.

Schoen, C., J. L. Nicholson, and S. Rustgi. 2009. *Paying the Price: How Health Insurance Premiums are Eating Up Middle-Class Incomes—State Health Insurance Premium Trends and the Potential of National Reform*. New York: The Commonwealth Fund.

Smeeding, T. 2005. *Government Programs and Social Outcomes: The United States in Comparative Perspective*. Luxembourg: Luxembourg Income Study.

Soni, A. 2011. *Top 10 Most Costly Conditions among Men and Women, 2008: Estimates for the U.S. Civilian Noninstitutionalized Adult Population, Age 18 and Older.* Statistical Brief # 331. Washington, DC: HHS.

Copyright © National Academy of Sciences. All rights reserved.

For the Public's Health: Investing in a Healthier Future

Sturm, R. 2002. The effects of obesity, smoking, and drinking on medical problems and costs. *Health Affairs* 21(2):245-253.

Tauras, J. A., F. J. Chaloupka, M. C. Farrelly, G. A. Giovino, M. Wakefield, L. D. Johnston, P. M. O'Malley, D. D. Kloska, and T. F. Pechacek. 2005. State tobacco control spending and youth smoking. *American Journal of Public Health* 95(2):338-334.

TFAH (Trust for America's Health). 2012. *A State-by-State Look at Public Health Funding and Key Health Facts*. Washington, DC: TFAH.

Thorpe, K. E., C. S. Florence, D. H. Howard, and P. Joski. 2004a. The impact of obesity on rising medical spending. *Health Affairs* (Suppl Web Exclusives):480-486.

Thorpe, K. E., C. S. Florence, and P. Joski. 2004b. Which medical conditions account for the rise in medical care spending? *Health Affairs* Web Exclusive:437-445, http://content.healthaffairs.org/cgi/content/abstract/hlthaff.w4.437v1 (August 25, 2004).

Thorpe, K. E., L. L. Ogden, and K. Galactionova. 2010. Chronic conditions account for rise in Medicare spending from 1987 to 2006. *Health Affairs* 29(4):1-7.

TRB (Transportation Research Board) and IOM. 2005. *Does the Built Environment Influence Physical Activity? Examining the Evidence—Special Report 282*. Washington, DC: The National Academies Press.

Truffer, C. J., S. Keehan, S. Smith, J. Cylus, A. Sisko, and J. A. Poisal. 2010. Health spending projections through 2019. The recession's impact continues. *Health Affairs* 29(3):522-529.

Turnock, B. J. 2009. *Public Health: What It Is and How It Works*. Sudbury, MA: Jones and Bartlett Publishers.

UN (United Nations), Department of Economic and Social Affairs, Population Division. 2009. *World Population Prospects: The 2008 Revision, Highlights*. Working Paper No. ESA/P/WP.210. Geneva, Switzerland: UN.

Ver Ploeg, M., V. Breneman, T. Farrigan, K. Hamrick, D. Hopkins, P. Kaufman, B. H. Lin, M. Nord, T. Smith, R. Williams, K. Kinnson, C. Olander, A. Singh, and E. Tuckermanty. 2009. *Access to Affordable Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences—Report to Congress*. Washington, DC: Department of Agriculture.

Wahdan, M. H. 1996. The epidemiological transition. *Eastern Mediterranean Health Journal* 2(1):8-20.

Wang, P. S., A. Beck, P. Berglund, J. A. Leutzinger, N. Pronk, D. Richling, T. W. Schenk, G. Simon, P. Stang, T. B. Ustun, and R. C. Kessler. 2003. Chronic medical conditions and work performance in the health and work performance questionnaire calibration surveys. *Journal of Occupational and Environmental Medicine* 45(12):1303-1311.

Weintraub, W. S., S. R. Daniels, L. E. Burke, B. A. Franklin, D. C. Goff, L. L. Hayman, D. Lloyd-Jones, D. K. Pandey, E. J. Sanchez, A. P. Schram, and L. P. Whitsel. 2011. Value of primordial and primary prevention for cardiovascular disease. *Circulation* 124(8):967-990.

WHO (World Health Organization). 2010. *Adelaide Statement on Health in All Policies*. Geneva, Switzerland: WHO.

WHO. 2012a. *Trade, Foreign Policy, Diplomacy, and Health: Health Transition*. http://www.who.int/trade/glossary/story050/en/index.html (January 30, 2012).

WHO. 2012b. *WHO NCD Surveillance Strategy*. http://www.who.int/ncd_surveillance/strategy/en/index.html (March 24, 2012).

WHO Commission on Social Determinants of Health. 2008. *Closing the Gap in a Generation*. Geneva, Switzerland: WHO.

Wilcox, B. L., D. Kunkel, J. Cantor, P. Dowrick, S. Linn, and E. Palmer. 2004. *Report of the APA Task Force on Advertising and Children*. Washington, DC: American Psychological Association.

Wilkinson, R., and M. Marmot, eds. 2003. *Social Determinants of Health: The Solid Facts*. 2 ed. Copenhagen, Denmark: WHO, Regional Office for Europe.

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For the Public's Health: Investing in a Healthier Future

Woolf, S. H., R. E. Johnson, R. L. Phillips, Jr., and M. Philipsen. 2007. Giving everyone the health of the educated: An examination of whether social change would save more lives than medical advances. *American Journal of Public Health* 97(4):679-683.

World Economic Forum. 2008. *Working Towards Wellness: The Business Rationale*. Geneva, Switzerland: World Economic Forum.

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2

Reforming Public Health and Its Financing

The strategies necessary to reach the national health target recommended by the committee in Chapter 1[1] depend on the implementation of population-based prevention and wellness initiatives. However, the vast majority of government health spending in the United States is for individual illness care and treatment for disease; a far smaller and inadequate proportion is provided, ineffectively, to support governmental public health's efforts to improve population health.[2] The current financing system for health in the United States is profoundly misaligned. The nation is not buying what is needed to produce the health outcomes that it seeks.[3] In this chapter, the committee examines the financing misalignment in more detail, focusing on the public health department capabilities that are needed for all or most programs (for example, in communication, information systems, and policy

[1]Recommendation 1: The secretary of health and human services should adopt an interim explicit life expectancy target, establish data systems for a permanent health-adjusted life expectancy target, and establish a specific per capita health expenditure target to be achieved by 2030. Reaching these targets should engage all health system stakeholders in actions intended to achieve parity with averages among comparable nations on healthy life expectancy and per capita health expenditures.

[2]As noted in Chapter 1, the committee has previously described a multisectoral health system that goes beyond governmental public health and targets a wide array of determinants of health (IOM, 2011a,b). But in the context of the current report, the committee found it challenging and nearly impossible to attempt a broader examination of the funding aspects of the system as a whole—both because of its great complexity and because of the extreme scarcity of data on system contributors other than governmental public health.

[3]As noted in Chapter 1, this refers only to spending that is specifically for health, not to spending on education, housing, or other social determinants of health.

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analysis) and reviewing limitations imposed on the current system that interfere with the efficient use of existing resources.

The national health target recommended in Chapter 1 is an ambitious one, but the committee believes that it is achievable because much of the current morbidity and mortality is preventable—half the deaths in the United States and more than half the morbidity (perhaps three-fourths) (CDC, 2005; Danaei et al., 2009; IOM, 2008; Woolf et al., 2007, 2010). The cost of the preventable disease burden makes it crucially important to seek, find, and implement solutions. According to federal estimates, "one year's worth of injuries has an estimated lifetime cost of $406 billion in medical expenses and lost productivity" (Foreman, 2009). In 2004, total Medicaid smoking-attributable expenditures amounted to $22 billion (Armour et al., 2009).

The core mission and unique competence of the governmental public health agencies (public health departments) are informed by their focus on wellness and prevention rather than illness care and treatment. Public health departments are statutorily charged with protecting and promoting population health, and they are uniquely positioned and qualified (through the science, tools, and skills of public health, including epidemiology and health planning) to take or support evidence-based action on many of the risk factors that lead to poor health. Although some clinical care interventions can help to prevent a disease process in an individual, they cannot be used efficiently throughout a population to address pressing community health challenges. Those challenges, such as growing rates of obesity and diabetes, increase health care costs, diminish American productivity and competitiveness, and probably limit the opportunities available to the next generation of Americans because of increasingly poor health. Taking action as early and at the level of population, long before diabetes is diagnosed in one obese person, or chronic bronchitis[4] is diagnosed in one smoker, is the most efficient and effective route to disease prevention.

The nation needs to rely on public health departments to lead the effort to reduce the burden of preventable morbidity and mortality. It is important to consider why public health has not already done more in this regard. A large part of the answer is that only a small proportion of current public health financing targets the major causes of preventable morbidity and mortality in the 21st century. Partly as a result of the historic successes of public health against infectious diseases, today's preventable disease burden is primarily the result of chronic disease, injury, and upstream social determinants. Although it is essential to ensure that funding continues to sustain hard-won public health achievements in maternal and child health, environmental sanitation and hygiene, and the prevention of infectious diseases, public health investments are needed to address the full array of high-

[4]A precursor of and part of chronic obstructive pulmonary disease.

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priority population health challenges, beginning with those most responsible for today's and tomorrow's preventable burden of disease.

The Centers for Disease Control and Prevention (CDC) has analyzed its spending on the preventable burden of disease (Curry et al., 2006) and has found, for example, that although cardiovascular disease was the leading disease category, only 1.9 percent of CDC's budget (allocated by Congress by specific categories) was spent on it. Table 2-1 illustrates the most recently available information on the misalignment between spending and disease burden.

Although there has been some improvement in funding for chronic disease prevention, there remain large categories of relative underfunding (for example, for injuries, environmental health, and mental health). Given Congress's budget compromise that removed $5 billion from the prevention and public health fund (Haberkorn, 2012) and the further reductions expected in authorizations, there is little hope that the funding problems will be resolved soon. An update of the work of Curry and colleagues would be an important contribution to ascertaining the extent to which public health funding (in CDC and preferably at all levels of government) is aligned with population health needs.

A survey of 17 of the largest metropolitan health departments in the United States conducted by Georgeson and colleagues (2005) found that although "[c]hronic diseases account for 70% of all deaths nationwide on average, . . . the health departments surveyed allocated an average of 1.85% of their budgets to chronic disease" (2005, p. 183). Frieden and colleagues found "a gross mismatch between funding levels for different categories of diseases and the number of premature deaths caused by those diseases"

TABLE 2-1 Funding Versus Preventable Burden of Disease, Ranked by Medical Cost

Disease Category	Rank (by cost[a] 1997)	Fraction of CDC 2003 Budget, %	Amount in CDC 2003 Budget, $
Cardiovascular, circulatory	1	1.89	~81.5 million
Cancer	2	9.88	~426.7 million
Injury	3	4.95	~213.9 million
Mental health	4	0.19	~8.4 million
Endocrine and metabolic disorders (such as diabetes)	5	4.77	~206.3 million
Disability	6	3.04	~131.2 million
Chronic lung disease	7	1.50	~64.8 million
Infectious disease	8	70.48	~3.0 billion

[a]Medical cost (see Cohen and Krauss, 2003).

SOURCE: 1997 and 2003 budget data from Curry et al., 2006.

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(2008, p. 974) in New York City. For example, emergency preparedness, tuberculosis, HIV, sexually transmitted infections, and vaccine-preventable diseases received various levels of federal funding, and diabetes, heart disease, cancer, and tobacco control received no federal funding. The former group caused no or few deaths, whereas heart disease, cancer, and tobacco use were responsible for high numbers of deaths. Frieden and colleagues concluded that although maintaining funding for communicable disease control is crucial, "federal, state and local governments should also provide the funds necessary to implement effective programmes to prevent and control chronic diseases" (2008, p. 974).

The failure of public health to tackle the health issues that are resulting in the relatively poor U.S. health rankings among comparable nations is primarily a financing failure. The United States gets the health outcomes that it chooses to pay for. The committee does not believe that the answer is simply to transfer resources from traditional public health domains to new programs. Although public health engagement in contemporary factors that contribute to health is essential, it should not occur at the expense of hard-won gains, such as victories over communicable diseases. Rather, the solution is more nuanced, involving a combination of efficiencies, financing reform and, ultimately, more resources. Before discussing those issues, however, an important next question to address is whether there is evidence that public health could address the current challenges successfully if adequate resources were available.

THE IMPACT OF PUBLIC HEALTH ACTION

The history of public health attests to its ability to achieve major improvements in population health. Historically, action on the leading causes of death and disability in the population has involved public health departments at all levels working in collaboration with researchers, communities, clinical care providers, and other partners to collect data, plan and implement programs, advocate for policy change, enforce laws, and ensure the delivery of services, such as immunizations and occupational safety. The public health infrastructure, including government agencies from CDC and the Food and Drug Administration to the local public health department, works to promote and protect the population against routine threats and to prepare against exceptional ones, such as bioterrorism and pandemics. As noted in earlier Institute of Medicine reports (IOM, 1988, 2003), state and local public health departments play special roles in ensuring that communities receive key public health services.

The power of public health action is evident in its record of successful interventions, including public policy, that have achieved change in health risks and health outcomes. Examples previously discussed in the committee's

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report on law and policy (IOM, 2011a) include the contributions of sanitation and universal childhood vaccination to improving child health and life expectancy; changes in social norms related to tobacco use and the decline in smoking rates; the effects of seatbelt, child restraint, and blood alcohol laws on motor vehicle injuries and fatalities; and the effect of fluoridation of drinking water on rates of tooth decay.[5] In many cases, a lack of funding has resulted in insufficiently robust strategies to protect the health of the population and has led to considerable human and economic losses, some of which are described below.

The committee was unable to find a comprehensive and detailed assessment of public health funding and the effects of fluctuations in it over the last few decades. But it did find evidence of the historical instability of public health funding and of the absence of a long-term commitment from Congress and state policymakers to sustain it. In their review of the history of public health policy and funding, Fee and Brown (2002) and Frist (2002) found it filled with ups and downs—fluctuations that reflect major health threats of the moment, political winds, and economic realities. The broader context of government finance, however, is also one of competing priorities, frequent budget deficits, and currently, a serious economic crisis. Sessions, in Appendix D, summarizes several of the social and political factors that have contributed to the government deficits that make it impossible to ensure adequate funding of public health, including globalization and increased competition for American business, political polarization, and the increasing economic and political influence of corporations. In the 1970s and 1980s, for example, public health suffered major cuts whose consequences were seen in part in an inability to mount an effective comprehensive response to the HIV/AIDS epidemic. Fee and Brown concluded that "we have not learned the lessons of our public health history. We continue to mobilize episodically in response to particular threats and then let our interest lapse when the immediate crisis seems to be over" (2002, pp. 41-42).

The defunding of public health tuberculosis control programs in the 1980s led to a resurgence of tuberculosis in 1985-1992 and cost New York City alone over $1 billion in 1991 dollars for efforts to control multiple-drug-resistant tuberculosis (Frieden et al., 1995; U.S. Congress, Office of Technology Assessment, 1993).[6] Another example is found in the history of

[5]Additional examples include safer work environments due to changes in occupational safety, the decline in cardiovascular disease rates (owing to interventions on smoking, blood pressure, and cholesterol), maternal and infant health, the decrease in cervical cancer deaths due to screening, and the decrease in lead poisoning due to the removal of lead from paint and gasoline.

[6]The example of tuberculosis (TB) also shows inefficiencies in public health side, such as needless TB screening for schools, and directly observed therapy for all cases, among others.

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measles vaccination. In the decade or two after a measles vaccine was first licensed in 1963, funding for measles immunization became a function of the measles rate—as disease rates dropped, funding was decreased on the false assumption that the work was completed (Orenstein, 2006). Even as funding of measles vaccination stabilized and vaccination rates increased, access to vaccine services became the next challenge. A major measles epidemic in 1989-1991 became a rallying point for ensuring that adequate funding was available both to provide a higher level of first-dose coverage and to provide a second dose (in addition to policies requiring a second dose of measles vaccine before school entry) (Orenstein, 2006). Researchers have assessed the likely impact of funding cuts in specific areas of public health, such as vectorborne disease control and other infectious and chronic disease control activities, and concluded that inadequate funding leaves public health departments ill equipped to prevent and control disease (LaBeaud and Aksoy, 2010; Meyer and Weiselberg, 2009).

Perhaps one of the starkest examples of the association between financing and public health success is the national experience with tobacco control, one of the most dramatic successes—and failures—of public health. In 2004, CDC published a report on funding for tobacco control activities and found that support for this fundamental public health action was meager: national spending on tobacco control averaged $1.22 per person, less than one-fourth of CDC's recommended minimum of $5.98 (CDC, 2004). Multiplying the nearly $6 per capita by the current population of the United States, about 311.6 million people, even without translating it into 2011 dollars, yields about $1.9 billion. That amount pales in light of the fact that tobacco use costs the United States $96 billion a year in direct medical expenses and $97 billion in lost productivity and is the largest preventable cause of death and disease (CDC, 2011b). Although the relationship between spending on tobacco control and smoking rates is complex—many factors are at work—there is no doubt that implementing multifaceted prevention efforts, as recommended by the U.S. Task Force on Community Preventive Services, requires adequate and sustained funding.

There is sufficient evidence that when public health is adequately funded, it is capable of protecting and improving population health (Binder et al., 1999; CDC, 1999; Handler and Turnock, 1996; IOM, 2003; Mays et al., 2004). To make progress in improving population health, the nation's health system needs to maximize the efficiency and effectiveness of the resources that are available for public health and recognize that the scope of the task is such that more resources will be needed. The remainder of this chapter will focus on the first of those two actions in the context of what is required for a strong public health infrastructure.

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DYSFUNCTION OF THE CURRENT PUBLIC HEALTH FUNDING SYSTEM

The U.S. public health financing structure is broken. Well-financed health departments compete more effectively for public health financing. Many of the health departments in the poorest communities and communities that have the poorest health outcomes are among the least-well-funded (Honoré and Schlechte, 2007; Mays and Smith, 2009; Meyer and Weiselberg, 2009; Rehkopf and Adler, 2011; TFAH, 2011).

Public health funding comes from separate appropriation processes at the federal, state, and local levels (Novick et al., 2008). There is little coordination among funders regarding the services and activities that are funded, and each funder has its own rules of accounting, performance, monitoring, and evaluation (Mays and Smith, 2009; Mays et al., 2004; Salinsky, 2010; Salinsky and Gursky, 2006). Little or no funding is available to advance the science base of public health service delivery or interventions (Brownson et al., 2009; Glasgow et al., 2003).

The organization of governmental public health has developed in ways that reflect funder dictates, the flows of money, tightly compartmentalized programmatic categories, and the skill of public health leaders in "braiding" together disparate funding streams and finding new funding sources more closely than the needs of localities, including priorities based on communities' disease burdens, interests, and capabilities.

Public health funding is a complex patchwork of funding streams, purposes, and funding mechanisms. Figure 2-1 and Appendix E illustrate public health funding in the United States; the structural issues are discussed in this chapter, and the specific financial aspects in Chapter 4.

The committee focuses below on two key consequences of the current funding system dysfunction that are particularly problematic because they occur in combination:

- Compartmentalized inflexible funding, often competitive, which leaves many health departments without financing for key priorities or for needed cross-cutting capabilities (such as information systems and policy analysis).
- Uncoordinated, usually discretionary funding from different levels of government with different rules for use. From a public health financing standpoint, there is no overall point of accountability and no agreement on or definition of a minimum package of services that all funders commit to ensuring in each state and locality.

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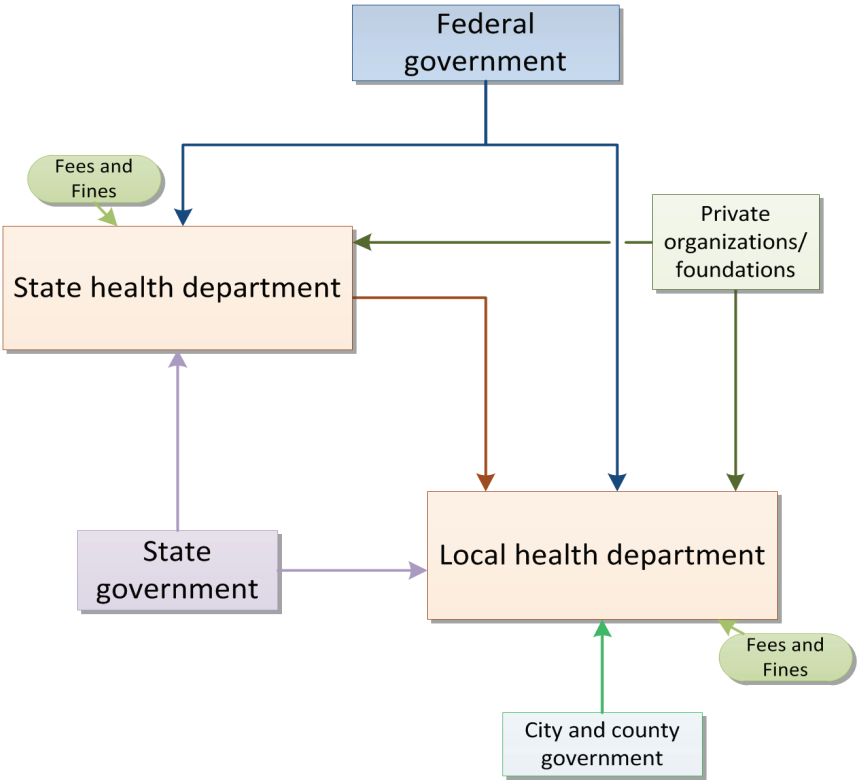

FIGURE 2-1 Public health funding flows.
NOTE: This diagram is a high-level, generalized view but illustrates the major and minor sources and types of revenue that state and local health departments may receive. The federal government disburses funds to state health departments through multiple agencies (such as CDC and the Health Resources and Services Administration) and avenues, including block grants, programmatic grants, and competitive grants, for instance, Title V/Maternal Child Health, Title X/Family Planning, Public Health Emergency Preparedness/Assistant Secretary for Preparedness and Response funds, and the Preventive Health and Health Services Block Grant. The federal government also disburses funds directly to local health departments—typically larger, urban health departments, for example, Ryan White dollars to highly affected HIV/AIDS jurisdictions—or rural health departments—for example, rural health grants to support practice-based research. State health departments are also supported by user fines and fees and by funds from state government. State funds vary widely by state but typically take the form of discretionary or general funds, mandated spending in programmatic areas, or dedicated revenue, for example, from a state tax on cigarettes. Many of the funds are sent on to local health departments as "pass-through" funds from private organizations or federal programs; funds are also often sent in the

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Compartmentalized, Inflexible Funding

A great deal of the funding received by public health departments is inflexible, and this precludes strategic alignment of funding from different sources and use of funds to establish or strengthen communication capabilities, information systems, and other elements that are needed in all or most programs (Salinsky and Gursky, 2006). The lack of flexibility is due in large part to the nature of much of public health funding—categorical, often competitive, funds that recipients must use for specified purposes and in prescribed fashions.

The federal government provides funding to states and local governments through two congressionally authorized approaches: (1) categorical grants, which cover a narrow array of eligible activities, and (2) block grants, which offer flexibility in the use of funds (Canada, 2002). In practice, categorical grants are the most widely used approach because Congress views block grants as lacking built-in accountability (Committee on Inspection and Evaluation, 1996). Block grants, for example, are not program-specific, lack oversight, and lack performance measures, all of which characteristics make them less attractive to Congress (OIG, 1995). However, one successful model of flexible funding streams is the Maternal and Child Health block grant. The primary purpose of categorical grants is to ensure that health departments allocate resources for specific activities and services. Categorical grants are thought to ensure recipient accountability to the federal government, to target federal money to defined national

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form of "core" support, as funding for specific programs at the local level, and as reimbursement for services performed by the local health departments on behalf of state health departments. Some local health departments also receive funds from other state or local agencies, for example, in states where Medicaid, substance abuse services, or environmental health services are separate from state health departments. Local health departments receive a substantial amount of their funding from city or county (or multicounty) governments. In addition to fees and fines, local health departments may contract out for services to other local agencies or provide services for which they bill other groups. As discussed in the committee's second report, on law and policy (IOM, 2011a), there is significant variation in organization (and hence funding) among states; therefore, all these mechanisms vary widely by jurisdiction, so the relative importance of each funding source also varies. Some, like private sources, are generally very small sources of revenue. (See Appendix E for a more detailed diagram and further discussion.)

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objectives, and to facilitate "nationwide adoption of innovative programs" (OIG, 1995, p. 6). Beginning in the 1950s, public health financing decisions became more regionally based, and the federal government started to fund public health more regularly on the basis of emerging needs (such as the emergence of HIV and influenza) according to the priorities of Congress (Novick et al., 2008). Congress tends to prefer categorical funding because it allows tighter control. Advocacy groups and other supporters of categorical funding value the fact that it allows them "to concentrate their efforts on lobbying Congress rather than 50 state legislatures" (OIG, 1995, p. 5).

Block grants are available to be administered directly at the state and local levels and therefore reduce some of the burdens of federal funding (such as administrative costs) and shift decision making to the states (CDC, 2011a; Kennan, 2008; OIG, 1995). However, block grants are unstable and vulnerable to decreases in funding and to elimination as a result of fiscal changes or shifts in political will. The president, the Senate, or Congress can call for their removal from the annual budget in attempts to cut costs (Kennan, 2008). Because block grants encompass a large number of combined programs and therefore do not include the specific ways in which the funds will be spent, it is easier for lawmakers to propose cuts in them without constituents' being able to attach a specific program to the reductions (Kennan, 2008). Funding of the Preventive Health and Health Services Block Grant has been stagnant or declining over the past two decades. It was funded at $87,047,000 in 1986, then had small increases until 1995 (topping off at $157,916,000), and has had small decreases in most years since then; 2010 funding was $102,034,000 (CDC, 2012b).

Categorical funding for public health has been championed by many in public health for its ability to protect resources by dedicating them to important public health issues that might otherwise lose funding. Disease-specific grants, for example, lead to the development of a constituency that would advocate for the dedicated funds if they came under threat. However, the rigidity of categorical funding often leads to the creation of what practitioners call programmatic "silos"—parallel activities and services that overlap, are duplicative and are inefficient (NACCHO, 2011b; Novick et al., 2008; OIG, 1995; PHI, 2010; Salinsky, 2012) and that reduce the ability to fund cross-cutting needs, such as information systems and communication or policy analysis capabilities (NACCHO, 2011b). Categorical funding may also limit the range of practice of public health departments; because categorical streams generally are not dedicated to the broader determinants of health, public health departments may not have funding to consider activities in this part of their purview (for example, gathering, analyzing, and disseminating information on transportation, housing, zoning, and other community factors that are known to be linked with health outcomes) (BARHII and PHLP, 2010).

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Funding strategies comparable with federal categorical funding are often used by state and local governments and present similar challenges. For example, studies of two large metropolitan health departments found that local government's categorical funding does not provide support for basic public health services or core capacities (PHANYC, 2002; PHIP Finance Committee, 2006). State categorical funding limits state and local health department flexibility to meet local needs and maximize impact and entails administrative burdens that require accountability as to how funds are spent and programs are structured rather than attempting to determine what outcomes and effects are achieved (LAO, 2010).

Uncoordinated, Fragmented Government Funding

Federal funds are the largest source of state health agency revenue (about 45 percent in FY 2009), about 60 percent of which goes to support local health departments and community-based organizations (ASTHO, 2011). In 2009, the remainder of funds came from state general funds (23 percent), other state funds (16 percent), fees and fines (7 percent), Medicaid and Medicare[7] reimbursement (4 percent), and other sources (5 percent) (ASTHO, 2011).

Federal funding for public health originates in congressional appropriations to the Department of Health and Human Services (HHS) (authorized by the Public Health Act, the Social Security Act, and other legislation) and the U.S. Department of Agriculture (USDA) (for the Women, Infants, and Children). HHS agencies—largely CDC, the Health Resources and Services Administration (HRSA), and the Substance Abuse and Mental Health Services Administration—direct funds to states and selected localities. Funding is overseen by individual program offices, and there are often distinct requirements from each office for use and reporting. In addition to the federal funding for states' use, some federal funds "pass through" states on their way to local public health departments.

At the local level funding is similarly complex. The National Association of County and City Health Officials (NACCHO) 2010 Profile of Local Health Departments estimates that the largest proportion of local public health department revenue (26 percent) comes from local government, 21 percent comes from state direct funding, and 14 percent from federal pass-through[8] funds. The remaining 39 percent is made up of federal direct funding, Medicaid and Medicare reimbursement, fees, and other sources (NACCHO, 2011a). The NACCHO Profile report also found that 40 per-

[7]Medicare reimbursement of health departments that operate nursing homes.

[8]Federal pass-through funding refers to funds that come from the federal agencies to the state health department and are then transferred to the local level.

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cent of local health departments have difficulty in distinguishing between state direct and federal pass-through funding.

The fragmented funding process hinders effective integration and coordination at the local level. As a consequence, some of the work of local and even state health departments is seemingly the result of an accretion of piecemeal activities that have taken place over the last two to three decades with inadequate attention to how the components fit together or whether they are optimized to meet the needs of the community. One state's report on its local health departments concluded that "[w]here the funding comes from significantly influences health department functions and focus" (New Jersey Department of Health and Senior Services, 2008, p. 5). CDC's organization also shows a historical proliferation of parallel programs that often have little interaction, integration, or coordination. A lack of coordination characterizes funding by different HHS agencies, such as CDC and HRSA, and funding by the Department of Homeland Security (Boufford and Lee, 2001; OIG, 1999; Salinsky and Gursky, 2006).

One example of suboptimal coordination occurs when state and local health departments receive federal funding for overlapping purposes or without adequate coordination (for example, the CDC Racial and Ethnic Approaches to Community Health program and the Community Transformation Grants program). A solution lies in enhancing collaboration between state and local health departments, perhaps by using existing organizations, that could lead to better coordination, greater efficiency, and taking advantage of economies of scale. The coordination and collaboration that occurred at the peak of bioterrorism funding offer some useful models.

Given the patchwork quilt of inadequate funding sources, public health departments find themselves trying to mesh federal, state, and local funding streams to cover their needs. For example, a health department may receive state discretionary funds, state consolidated and contract funds, fee and permit funds, general funds, Medicaid funds, and others, and each of those funding streams may have multiple sources (for example, different types of fees). The use of varied funds with varied requirements makes it difficult to manage a budget efficiently, because a health department is actually managing several hundred budgets rather than one overarching one. Changes in the funding practices of federal funders are needed to enable more flexible, rational, and efficient use of resources.

Recommendation 2: To ensure better use of funds needed to support the functioning of public health departments, the committee recommends that

(a) The Department of Health and Human Services (and other departments or agencies as appropriate) enable greater state and local flexibility in the use of grant funds to achieve state and local population health goals.

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(b) Congress adopt legislative changes, where necessary, to allow the Department of Health and Human Services and other agencies, such as the U.S. Department of Agriculture, the necessary funding authorities to provide that flexibility.

(c) Federal agencies design and implement funding opportunities in ways that incentivize coordination among public health system stakeholders.

Governmental public health has not clearly articulated in a unified voice what society should be investing in and why, and this has added to the rise of a patchwork and inadequate funding system. There is no agreement among jurisdictions or between policymakers about what capabilities and programs make up the basic level of services all people in the United States should have the right to expect from their health department. Only with such agreement can there be hope of using and integrating resources from disparate funders efficiently. A way forward is described below.

DEFINING THE MINIMUM PACKAGE OF PUBLIC HEALTH SERVICES

The Three Core Public Health Functions (of assessment, assurance, and policy development) and the 10 Essential Public Health Services[9] provide a well-known framework for categorizing activities of state and local health departments. They have been used to communicate with the public and with policymakers, and they form the basis of accreditation and other performance measurement and quality improvement efforts (such as those embodied in the National Public Health Performance Standards Program). Although they are useful for those purposes, they were designed as a framework for categorizing all possible health department activities, so they have not proved useful for planning and setting priorities for the use of limited public health funding. In 2005, NACCHO published a consensus operational definition of a local health department, which was built on the foundation of the Essential Public Health Services. The rationale behind the operational definition was that "everyone, no matter where they live,

[9]The 10 Essential Public Health Services are: (1) *Monitor* health status to identify and solve community health problems; (2) *Diagnose* and investigate health problems and health hazards in the community; (3) *Inform*, educate, and empower people about health issues; (4) *Mobilize* community partnerships and action to identify and solve health problems; (5) *Develop* policies and plans that support individual and community health efforts; (6) *Enforce* laws and regulations that protect health and ensure safety; (7) *Link* people to needed personal health services and assure the provision of healthcare when otherwise unavailable; (8) *Assure* competent public and personal health care workforce; (9) *Evaluate* effectiveness, accessibility, and quality of personal- and population-based health services; and (10) *Research* for new insights and innovative solutions to health problems (Public Health Functions Steering Committee, 1994).

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should reasonably expect the local health department to meet certain standards" (NACCHO, 2005, p. 2). Although broad agreement was achieved among NACCHO member jurisdictions on the elements included in the report, it was never formally adopted or implemented. It was, however, used to inform the accreditation process developed by the Public Health Accreditation Board (NACCHO, 2012). Like the essential services and core functions, however, the operational definition, although useful for other purposes, does not lend itself directly to use in planning, priority-setting, and in demonstrating accountability. A framework is needed for use in a comprehensive system of tracking and managing revenues and expenditures and showing how spending is related to outcomes. The committee believes that a new framework needs to be built on the foundation provided by the essential services, the core functions, and the operational definition of a local public health department—to be used for the purposes just described.

A Minimum Package of Public Health Services

The committee believes that it is critical to develop a detailed description of a basic set of public health services that must be made available in all jurisdictions. The basic set must be specifically defined in a manner that allows cost estimation to be used as a basis for an accounting and management framework and compared among revenues, activities, and outcomes of different departments. The committee developed the concept of a *minimum package of public health services*, which includes the *foundational capabilities* and an array of *basic programs* no health department can be without (see Figure 2-2).

There are no standards for public health services that should be available in every community. In fact, there is considerable variation from one jurisdiction to another in the array of services defined as public health. In some places, mental health (not just preventive services) and Medicaid might be included; other jurisdictions provide no direct care at all. Public health funding is also discretionary, and critical programs are being cut across the

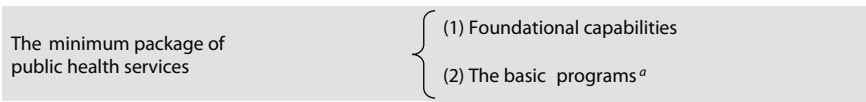

FIGURE 2-2 Components of the *minimum package of public health services*.
[a]Others have described something roughly equivalent. See for example NACCHO's 2011 profile of local health departments which provides the following list of "core public health activities that were to constitute the minimum services expected from the local units: vital statistics, sanitation, communicable disease control, maternal and child health, health education, and laboratory services" (NACCHO, 2011a, p. 2).

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country (Kuehn, 2011; Kurland et al., 2004; NACCHO, 2011c; TFAH, 2008, 2009). There is little or no dedicated funding to support basic public health capabilities needed for all or most programs (Salinsky, 2010). Instead, financing for those capabilities is subsidized by specialized categorical program funding streams, as described below (Salinsky, 2010).

All organizations, from industry to nonprofits, require capabilities, such as human resources and financing, to function. In the public health literature, some capabilities, such as information systems, are sometimes described as infrastructure, but this is a term also used to describe facilities and utilities. Human resources and other administrative capabilities are not peculiar to public health. In public health practice, there are public health-specific "*foundational capabilities*" that are required to support programs. For example, common surveillance capabilities are critical whether one is focused on communicable diseases, such as sexually transmitted infections, or on chronic diseases. Policy and other analytic capabilities are essential whether one is working on strengthening immunization uptake or taking steps to reduce childhood injuries. Such capabilities are needed across programs, and in general many of the same human and other resources can be shared among programs. However, current funding methods typically do not support the financing of what the committee considers *foundational capabilities* that are needed to support effective and efficient programs. Agencies therefore often rely on categorical funding to build such capabilities, which accordingly become program-specific—such as communication for the purpose of preventing and reducing smoking—and are generally inconsistent among programs or public health departments. Furthermore, federal funders, such as CDC, do not have standards pertaining to *foundational capabilities*.

To develop the concept of the *foundational public health capabilities*, the committee reviewed pertinent literature and with the help of a consultant gathered information from conversations with 19 public health leaders on several capability domains (see, for example, Bernet, 2007; Brownson et al., 2009; Honoré and Costich, 2009; Mays et al., 2004; Meier et al., 2009; Smith et al., 2007; the commissioned paper by Salinsky, 2012, see Appendix C).[10]

[10]The informal interviews focused on the level and type of funding available to support these areas and on the effects of inadequate funding on programmatic activities that depend on the foundational capabilities. The consensus was that most existing funding streams do not fund capabilities. Funders assume that basic capacity (such as for communication or information technology) is present and seldom allow grant funds to be used to establish or strengthen such capabilities. Public health leaders interviewed by Salinsky (see Appendix C) commented, for example, on the fact that categorical funding streams by their very nature do not generally encourage or support communication activities that extend across several program categories.

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Some *foundational public health capabilities* identified by the committee are

- information systems and resources, including surveillance and epidemiology,
- health planning (including community health improvement planning),
- partnership development and community mobilization,
- policy development, analysis, and decision support,
- communication (including health literacy and cultural competence), and
- public health research, evaluation, and quality improvement.[11]

In most sectors and government agencies outside public health, costs for *foundational capabilities* are built into the price of products, but there is no corollary for that strategy in public health. In practice, funders of categorical programs often assume some level of existing capacity in information systems or partnership development and are generally unwilling to provide funding to develop or maintain such capabilities. In the rare cases in which funding is provided, it is limited to specific programs, for example, funding to develop communication capacity for tobacco control or surveillance for infectious diseases. As a result, public health departments have developed *foundational capabilities* unevenly, inefficiently, and incompletely. Where capabilities are present, they often reside within specific programs and do not support a department as a whole (Salinsky, 2012, see Appendix C).

If one were to use a tree as a metaphor for a public health department, *foundational capabilities* are a major component of the trunk and support the programs and activities represented by the branches and leaves. Ideally, financing will create a strong, sturdy trunk. However, the present public health funding scheme consists primarily of categorical grant mechanisms that underfund *foundational capabilities* and instead focus on the branches (the programs). Financially, the contemporary health department commonly looks like a tree with heavy branches and a spindly trunk—an unsustainable state.

At the federal level, CDC would ideally take the lead in defining and establishing funding mechanisms to support public health foundational capabilities. The CDC unit that is best positioned to provide expert guid-

[11]Including review, synthesis, and adoption of evidence-based practices from existing research, performance measurement, evaluation and quality improvement, and participation in practice-based research to discover new and better public health strategies (see Brownson et al., 1999).

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ance on developing and strengthening these capabilities is the Office for State, Tribal, Local, and Territorial Support (OSTLTS) (CDC, 2012a), but it lacks adequate funding to support foundational capability building in public health departments. Mechanisms to facilitate such funding could involve placing a tap on each funding stream that CDC allocates to states or localities or giving grantees more flexibility by allowing the use of 15 percent (or a similar proportion) of each grant to establish or enhance *foundational capabilities* most relevant to the grant, such as information systems infrastructure. This roughly resembles the budgetary item of "indirect costs," which covers administrative expenses and other "overhead" costs. The National Public Health Improvement Initiative administered by the CDC OSTLTS also allocates resources specifically to improve broad-based public health infrastructure—including capacities for quality improvement, policy development, and analysis—and is not linked to categorical areas (CDC, 2010).

The *foundational capabilities* pertain to all basic program activities. Whether public health practitioners are working on chronic disease prevention or environmental health, communication capabilities are essential, and some of the same skills and tools are required, and information systems including the ability to conduct surveillance, are a crucial component that enables planning, measurement, and reporting. In addition to the examples of basic programs listed above, dedicated programs could be needed in areas such as healthcare-associated infections, food safety, and emergency preparedness. However, the committee did not provide a detailed discussion of the programs that should be part of the *minimum package*; rather, it believes that a more complete stakeholder discussion and development process are critical for the concept's acceptance. There are areas of overlap between some programs that will need to be addressed (e.g., some underlying causes of chronic disease stem from environmental factors, and chronic disease prevention is usually part of comprehensive maternal and child health programs). A related matter is the need for an analysis of the funds required to support the basic programs and the minimum package as a whole. In Chapter 4, the committee makes a recommendation to that end.

Basic programs are activities that no well-run public health department can be without—some are supported by categorical funds, but many are not mandated by federal, state, or local law, and there are no dedicated funds to support them. Without specific enumeration, any given program activity may appear "optional" and thus easier to cut when budgets are tight. A definition of *basic programs* would clarify what every health department needs to make available (for example, tobacco control programs could never be considered optional). It also would inform funding decisions by all governments. High-level categories of *basic programs* might include

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- Maternal and child health promotion.
- Injury control.
- Communicable disease control.
- Chronic disease prevention (including tobacco control).
- Environmental health.
- Mental health and substance abuse.

The committee envisions the use of a *minimum package of public health services* as the basis of a uniform system of tracking revenues and expenditures and of comparing investments with outcomes. (This approach is further described in Chapter 3.) The package could also be used as a component of performance measurement, quality assurance in public health, and public health accreditation. A public health department would be obliged to provide all the services in the package up to a uniform performance standard and additional activities and interventions that were based on needs of the community.

Recommendation 3: The public health agencies at all levels of government, the national public health professional associations, policymakers, and other stakeholders should endorse the need for a *minimum package of public health services*.

To provide support for the *minimum package*, the federal departments and agencies that fund state and local public health departments would take the steps described in Recommendation 2 earlier. HHS; USDA, which supports local Women, Infants, and Children Supplemental Nutrition Programs; the Environmental Protection Agency, which supports state air quality and other programs; and others could make administrative rule changes and procedural changes in the existing funding streams (such as contracts, grants, and cooperative agreements) to enable more flexible, rational, and efficient use of resources. In the context of "health in all policies" approaches, which the committee discussed in its report on law and policy (IOM, 2011a), similar strategies could be considered to enable other federal departments and agencies to make investments that are more explicitly oriented toward improving population health in addition to achieving their primary objectives, such as in transportation, education, or housing, for the respective departments.

Public health funding could also be structured in ways that emulate the Medicaid financing mechanism, which calls for sharing of responsibilities and cost between the federal and state (and in a few cases, local) levels of government. The federal government sets specific standards and requirements, but the states have additional discretionary authority that can be used to shape benefits in their jurisdictions. Federal agencies could also

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encourage state and local matching by creating funding mechanisms and processes by which recipients can get substantial funding by demonstrating capacity, including resource matching or co-financing. Special consideration will be needed to facilitate equity among health departments, inasmuch as smaller jurisdictions may have less access to funds that could be offered as a match. In its report on law and policy, the committee discussed the need to consider collaboration, consolidation, and other types of arrangements that improve the capacity of smaller health departments, and the same idea applies to funding. Matching or co-financing by the federal, state, and local levels is further discussed in Chapter 4.

Public health leaders need the ability to tailor the scope and intensity of their activities to community needs, priorities, and values. However, the structure and administrative requirements associated with categorical funding streams limit that flexibility. Just as patient-centered medical care requires flexibility and an ability to adapt actions to needs and values, so public health requires flexibility to implement population-centered practice to meet the needs of a given community (Honoré et al., 2011). Public health departments need the ability to shift funds between categories, whether the existing categories or the *foundational capabilities* and *basic program* activities. It is important to emphasize that what the committee is calling for is not the allocation of funding unencumbered by requirements but the transformation of how funding is allocated to remove barriers to the reasonable, efficient, and accountable use of funds (for example, to permit the sharing of equipment or staff resources between programs).

Faced with competing responsibilities and different priorities among decisionmakers, many health departments have played a smaller role in policy development than they should have. That role needs to expand so that public health departments not only disseminate information about a community's health and the factors that influence it, but develop the skills and knowledge needed to inform health-pertinent policymaking throughout different sectors (transportation, education, planning, and other elements of government) (Brooks et al., 2009; Honoré and Schlechte, 2007; Turnock et al., 1994). Public health departments could also expand their roles as conveners of relevant constituencies to promote action on high-priority health issues and as the definitive source of population health expertise in intersectoral collaborations (IOM, 2011b). As discussed at some length in the committee's first and second reports, there are multiple opportunities in government alone to align some of the resources, policies, and activities of non-health agencies so as to achieve population health objectives while meeting primary objectives in education, transportation, criminal justice, or housing. Several current efforts to do so are described in the committee's report on law and policy and in the National Prevention Council's 2011 annual report.

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USING FINANCING REFORM TO STRENGTHEN 21ST CENTURY PUBLIC HEALTH

Meeting the challenges that are endangering the health and economic competitiveness of the United States ultimately depends on the sufficiency of funding for new and necessary public health competences and programming. It is beyond the scope of this report to provide the entire blueprint for such a process (which would include steps described elsewhere, for example, nurturing public health leaders, developing workforce competences, and strengthening the quality of public health practice (Honoré and Scott, 2010; Honoré et al., 2011). However, the financing reforms recommended here are crucial for enabling the recommendations of the committee's two previous reports (IOM, 2011a,b) and the roles that public health departments play in improving the health of populations as

- A source of knowledge and analysis on community and population health (part of the assessment function).
- A convener, coalition-builder, and mobilizing force to build health considerations into all aspects of community planning and action (part of the policy development function).
- A steward of the community's health, assuring that policies and services needed for a healthy population are in place (part of the policy development function).
- A partner of the clinical care delivery system in developing information about effectiveness and appropriateness of service delivery (part of the assurance function).

Those roles of public health are not new, but the last item, referring to the relationship to clinical care, is an elaboration of work that public health departments have already undertaken to various degrees. This topic was introduced in the committee's report *For the Public's Health: The Role of Measurement in Action and Accountability*, and the discussion continues here. The last role has become more important and is a natural application of public health departments' abilities. The committee recognizes, however, that considerable time and effort (training, planning, and so on) will be needed to enable public health departments to begin to perform all those roles effectively, and it acknowledges that various barriers will need to be addressed, including organizational culture, funding issues, questions of authority, and the potential for adversarial interactions.

As outlined in the committee's report on measurement, transforming governmental public health departments requires greater and more granular data and information that can be used to implement the functions of assessment, policy development, and assurance. Key knowledge and analytic capabilities specific to public health professional training and background

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must be focused sharply on assessing the health of populations. Information derived from assessment needs to be integrated with data gathered from other sources to develop a new understanding of associations and causality (IOM, 2011b; see Chapter 3 for further discussion). Public health professionals must turn knowledge into interventions that maximize health promoting conditions and curtail interventions that detract from a community's health. Knowledge must be used to engage partners in influencing the actions and policies of private and public entities that are key to the health of communities (IOM, 2011a).

As discussed in the committee's report on law and policy, changes in regulations and in formal and informal policies in the public and private sectors all can be powerful tools for population health improvement (IOM, 2011a). Policy development requires an understanding of the political and social environment of a community and the contributions of community groups and organizations for policies to be built in a manner that is locally acceptable. Ideally, policies will be developed on the basis of empirical knowledge or strong theory of what approaches and interventions will be most successful in promoting and protecting health. Health departments need to be knowledgeable about evidence-based interventions and about how to adapt them appropriately to the needs of local communities. Public health departments as knowledge organizations also need capacity and skill in communication and mobilization, for example, to facilitate the development, enactment, and implementation of health-related policies that lead to behavior-oriented change (smoking bans, excise taxes intended to curb risky behaviors, such as smoking and alcohol abuse) and to more broad-based "health in all policy" efforts (such as altering the built environment to make neighborhoods more accessible to pedestrians and cyclists).

THE RELATIONSHIP BETWEEN PUBLIC HEALTH AND CLINICAL MEDICINE: A NEW PARTNERSHIP

The committee's charge in this report is to "make recommendations for funding state and local public health systems that support the needs of the public after health care reform." A central issue that the committee grappled with was its vision of the relationship between public health and the medical care delivery system in the context of health care reform (the implementation of the Affordable Care Act [ACA][12]).

In examining what is needed to produce an effective partnership between public health and clinical care, the committee found that the relationship requires both better integration and better differentiation. The committee's report on data and measurement (IOM, 2011b) recommended

[12]Public Law 111-148; Public Law 111-152.

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collaboration between the two sectors to draw on the data (such as indicators of a community's health) and expertise of public health to improve aspects of clinical care that are relevant to population health outcomes and to familiarize the public with the meaning of high-value (evidence-based, efficient, appropriate) care, in the form of local performance reports on the appropriateness, quality, safety, and efficiency of clinical care services delivered in their community.[13] Some health departments that serve small populations may never achieve local capacity, knowledge, and skills for collaborating with clinical care counterparts; in some states or territories, it may require a more centralized function, but governmental public health nevertheless needs to provide information to the medical care system and to the public it serves on the effectiveness and efficiency of its operation. Current examples of this sort of interaction or integration between the public health and clinical care systems include

- Reports of outlier rates of hospitalization for selected diseases.
- Use of procedures consistent with predicted prevalence of population need.
- Cancer and vaccine registries.
- Evidence-based guidelines.
- Health promotion and disease prevention for patients.

Health care reform, through the ACA, also provides an opportunity for health departments to reassess their need to provide clinical services directly to vulnerable populations in their communities. Debates over clinical care service delivery in public health departments have gone on for several decades. The 2003 IOM report on public health emphasized that "adequate population health cannot be achieved without making comprehensive and affordable health care available" to everyone (IOM, 2003, p. 12). Although the provision of clinical services by health departments has been in decline for many years (NACCHO, 2010), about half the local public health departments (NACCHO, 2011a) still provide a range of clinical services to uninsured and underinsured individuals and families through their clinics, through health department–operated community health centers and federally qualified health centers, and, less commonly, through health department–associated hospitals. In some departments, this activity accounts for the largest portion of the overall budget. In many localities, such a role is

[13]Recommendation 5 of that report (IOM, 2011b): "The committee recommends that state and local public health agencies in each state collaborate with clinical care delivery systems to assure that the public has greater awareness of the appropriateness, quality, safety, and efficiency of clinical care services delivered in their state and community. Local performance reports about overuse, underuse, and misuse should be made available for selected interventions (including preventive and diagnostic tests, procedures, and treatment)."

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viewed by the community and its decision makers as a central role of public health, and providing critical services for vulnerable populations in the community can be beneficial for local political support. In addition, some public health departments have been able to defray overall departmental overhead expenses or possibly even cross-subsidize (pay for) key population-based services through reimbursement or fees collected for clinical care services, although the evidence of this is sparse (Elster et al. 2003, p. 186;[14] OIG, 1999; Slifkin et al., 2001).

The ACA, signed into law in March 2010, includes provisions to expand health care coverage, and improve quality in the health care delivery system (by changing incentives to support quality, system integration, administrative standardization, and coordinated care) (KFF, 2011). ACA provisions are intended to be phased in over a period of several years, with the final provision of the law becoming effective in 2020. It is likely to have far-reaching ramifications for safety net providers, such as public health departments. Assuming full adoption, it is estimated that the ACA will expand health insurance coverage for as many as 32 million people (KFF, 2011), many through the mechanism of support for lower-income individuals. As the implementation of the ACA advances, the committee believes, other public and private providers will have increased capacity to provide care for formerly uninsured populations for whom governmental public health has served as a safety net provider.

There are, of course, several caveats. At the time of this writing, several provisions of the ACA face congressional challenges on political and fiscal grounds and challenges from 26 states' attorneys general (NCSL, 2012). The outcome of those challenges may affect the number of people who ultimately gain insurance. Even with full implementation of the ACA, 23 million people will remain uninsured (AcademyHealth, 2011; Hall, 2011; Herrick, 2011). In addition, in the short term, full implementation of the ACA will increase demand for primary care, and safety net capacity may be strained.

Some issues may make it more appropriate for public health departments to provide specific kinds of clinical services directly, for example, specialized programs that have a population health component, such as programs related to control of tuberculosis or sexually transmitted diseases,

[14]"Because public health departments do not have legally enforceable duties to individuals, they also have greater latitude to commingle funds and engage in cross-subsidization practices to keep their activities afloat. Thus, for example, a public health agency may pool revenues from grants, contracts, patient fees, and third party payments (most typically Medicaid) to support the provision of subsidized personal health-care activities for uninsured people. In this way, shortages in one area can be compensated for by budgetary reallocations of dollars where not prohibited by law. Because grant and contract funding for public health activities tends to be modest and because a large proportion of the patient population is poor, third party revenues, especially Medicaid, take on crucial importance" (Elster et al., 2003, p. 186).

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and specialized services delivered in community settings, such as nurse home visiting or community worker health promotion activities. In this context, the ACA provides an important opportunity for health departments to forge new and stronger partnerships with the health care delivery system.

The prominence of the focus on clinical care delivery was viewed by the committee as detracting from the ability of public health to take on other activities that are important for its mission and that others are less able to accomplish. However, the important and continued need for safety net services in many communities will require coordination between public health departments and public and private clinical care providers.[15]

Recommendation 4: The committee recommends that as clinical care provision in a community no longer requires financing by public health departments, public health departments should work with other public and private providers to develop adequate alternative capacity[16] in a community's clinical care delivery system.

FINANCING AND REFASHIONING PUBLIC HEALTH DEPARTMENTS

Reforms in public health financing—not levels of funding but how funds are disbursed and used—also require changes in public health department organization. The organization of public health departments is critical for their successful functioning. It was not in the committee's charge to explore organizational issues, but it notes that in a resource-constrained environment, efficiency is obligatory, not only for financial health but for the accountability that the committee outlined in its previous reports.

Many public health departments are too small to possess the *foundational capabilities* and to deliver the package of public health services needed for them to be fully operational and meet minimum performance measures or gain accreditation.[17] Moreover, state–local coordination will be needed in some spheres, such as information technology (this has been discussed

[15]The committee notes that in some jurisdictions, the public health department operates federally qualified health centers or community health centers.

[16]Adequate capacity refers not merely to the ability to provide services of similar breadth, quality and accessibility (e.g., cultural competence), but in the context of providing care to the overall community and not on a patient-by-patient basis.

[17]As the committee has noted previously, 33 percent of local public health departments are staffed by fewer than 10 full-time employees, and 63 percent of 2,565 health departments surveyed in 2010 serve populations of fewer than 50,000 people (NACCHO, 2011a). Santerre (2009) found that the "minimum efficient scale" (the level of population associated with minimum health department efficiency) for a local health department occurs at a population of about 100,000, but 77 percent of local health departments, which serve about 18 percent of the total U.S. population, serve smaller populations.

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extensively in the literature on immunization registries, surveillance systems, and other information system components). Arrangements that would leverage economies of scale for public health departments face multiple barriers, but there are various ways to help small departments to work with others to achieve greater capacity, such as consolidation and sharing resources (Kaufman, 2011; Libbey and Miyahara, 2011). As discussed in the committee's report on law and policy, some states have begun to implement or are considering such arrangements (see Bates et al., 2011; IOM, 2011a; Koh et al., 2008; New Jersey Department of Health and Senior Services, 2008; Stoto and Morse, 2008).

Reform of financing to support foundational capacities and provide programmatic flexibility is a critical early step in refashioning governmental public health to live up to its fundamental mission of "fulfilling society's interest in assuring conditions in which people can be healthy" (IOM, 1988). The approaches that the committee recommends for reforming current financing will likely foster organizational and infrastructure changes. Those changes alone, however, will not place governmental public health in a position to maximize its contribution to the efficient achievement of better health for the nation in the 21st century. Additional funding, to which the committee turns in Chapter 4, will also be required. In the next chapter, the committee describes tools needed to monitor and build organization and programmatic change and to assess the level of funding that will be required.

REFERENCES

Academy Health. 2011. *The Impact of the Affordable Care Act on the Safety Net*. Washington, DC: Academy Health.

Armour, B. S., E. A. Finkelstein, and I. C. Fiebelkorn. 2009. State-level Medicaid expenditures attributable to smoking. *Preventing Chronic Disease* 6(3):A84. http://www.cdc.gov/pcd/issues/2009/jul/08_0153.htm (January 6, 2012).

ASTHO (Association of State and Territorial Health Officials). 2011. *ASTHO Profile of State Public Health*. Vol. 2. Washington, DC: ASTHO.

BARHII (Bay Area Regional Health Inequities Initiative) and PHLP (Public Health Law and Policy). 2010. *Partners for Public Health: Working with Local, State, and Federal Agencies to Create Healthier Communities*. Oakland, CA: BARHII and PHLP.

Bates, L., B. Lafrancois, and R. Santerre. 2011. An empirical study of the consolidation of local public health services in Connecticut. *Public Choice* 147(1):107-121.

Bernet, P. M. 2007. Local public health agency funding: Money begets money. *Journal of Public Health Management & Practice* 13(2):188-193.

Binder, S., A. M. Levitt, J. J. Sacks, and J. M. Hughes. 1999. Emerging infectious diseases: Public health issues for the 21st century. *Science* 284(5418):1311-1313.

Boufford, J. I., and P. R. Lee. 2001. *Health Policies for the 21st Century: Challenges and Recommendations for the U.S. Department of Health and Human Services*. New York: Milbank Memorial Fund.

Brooks, R. G., L. M. Beitsch, P. Street, and A. Chukmaitov. 2009. Aligning public health financing with essential public health service functions and national public health performance standards. *Journal of Public Health Management and Practice* 15(4):299-306.

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For the Public's Health: Investing in a Healthier Future

Brownson, R. C., J. G. Gurney, and G. H. Land. 1999. Evidence-based decision making in public health. *Journal of Public Health Management & Practice* 5(5):86-97.

Brownson, R. C., J. E. Fielding, and C. M. Maylahn. 2009. Evidence-based public health: A fundamental concept for public health practice. *Annual Review of Public Health* 30:175-201.

Canada, B. 2002. *Federal Grants to State and Local Governments: Overview and Characteristics*. Washington, DC: CRS Report for Congress.

CDC (Centers for Disease Control and Prevention). 1999. Ten great public health achievements—United States, 1900-1999. *Morbidity and Mortality Weekly Report* 48(12):241-243.

CDC. 2004. *Sustaining State Funding for Tobacco Control: The Facts*. Atlanta, GA: CDC.

CDC. 2005. Annual smoking-attributable mortality, years of potential life lost, and productivity losses—United States, 1997-2001. *Morbidity and Mortality Weekly Report* 54(25):625-628.

CDC. 2010. *National Public Health Improvement Initiative (NPHII): About*. http://www.cdc.gov/stltpublichealth/nphii/about.html (March 30, 2012).

CDC. 2011a. *Chronic Disease Prevention and Health Promotion. Preventive Health and Health Services Block Grant. A Critical Public Health Resource at a Glance 2011*. http://www.cdc.gov/chronicdisease/resources/publications/AAG/blockgrant.htm (January 3, 2012).

CDC. 2011b. Vital signs: Current cigarette smoking among adults aged ≥18 Years—United States, 2005-2010. *Journal of the American Medical Association* 306(17):1857-1860.

CDC. 2012a. *About OSTLTS: State, Tribal, Local, and Territorial Public Health Professionals Gateway*. http://www.cdc.gov/stltpublichealth/AboutOSTLTS/index.html (March 15, 2012).

CDC. 2012b. *PHHS Block Grant Appropriations History*. http://www.cdc.gov/phhsblockgrant/history.htm (April 19, 2012).

Cohen, J. W., and N. A. Krauss. 2003. Spending and service use among people with the fifteen most costly medical conditions, 1997. *Health Affairs* 22(2):129-138.

Committee on Inspection and Evaluation. 1996. *Accountability for Block Grants*. Washington, DC: Council of the Inspectors General on Integrity and Efficacy.

Curry, C. W., A. K. De, R. M. Ikeda, and S. B. Thacker. 2006. Health burden and funding at the Centers for Disease Control and Prevention. *American Journal of Preventive Medicine* 30(3):269-276.

Danaei, G., E. L. Ding, D. Mozaffarian, B. Taylor, J. Rehm, C. J. L. Murray, and M. Ezzati. 2009. The preventable causes of death in the United States: Comparative risk assessment of dietary, lifestyle, and metabolic risk factors. *PLoS Medicine* 6(4):1-23.

Elster, N. R., R. E. Hoffman, and J. R. Livengood. 2003. Public health research and health information. In *Law in Public Health Practice*. 1st ed, edited by R. A. Goodman, M. A. Rothstein, R. E. Hoofman, W. Lopez, and G. W. Matthews. New York: Oxford University Press.

Fee, E., and T. M. Brown. 2002. The unfulfilled promise of public health: Deja vu all over again. *Health Affairs* 21(6):31-43.

Foreman, M. 2009. Preventable injuries burden state budgets. *Legisbrief—National Conference of State Legislatures* 17(3):1-2.

Frieden, T. R., P. I. Fujiwara, R. M. Washko, and M. A. Hamburg. 1995. Tuberculosis in New York City—turning the tide. *New England Journal of Medicine* 333(4):229-233.

Frieden, T. R., M. T. Bassett, L. E. Thorpe, and T. A. Farley. 2008. Public health in New York City, 2002-2007: Confronting epidemics of the modern era. *International Journal of Epidemiology* 37(5):966-977.

Frist, B. 2002. Public health and national security: The critical role of increased federal support. *Health Affairs* 21(6):117-130.

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For the Public's Health: Investing in a Healthier Future

Georgeson, M., L. E. Thorpe, M. Merlino, T. R. Frieden, J. E. Fielding, and The Big Cities Health Coalition. 2005. Shortchanged? An assesessment of chronic disease programming in major US city health departments. *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 28(2):183-190.

Glasgow, R. E., E. Lichtenstein, and A. C. Marcus. 2003. Why don't we see more translation of health promotion research to practice? Rethinking the efficacy-to-effectiveness transition. *American Journal of Public Health* 93(8):1261-1267.

Haberkorn, J. 2012. Health Policy Brief: The Prevention and Public Health Fund. *Health Affairs,* February 23.

Hall, M. A. 2011. Rethinking safety-net access for the uninsured. *New England Journal of Medicine* 364(1):7-9.

Handler, A. S., and B. J. Turnock. 1996. Local health departments effectiveness in addressing the core functions of public health: Essential ingredients. *Journal of Public Health Policy* 17(4):460-483.

Herrick, D. 2011. *Crisis of the Uninsured: 2010 and Beyond (Brief Analysis No 723)*. Dallas, Texas: National Center for Policy Analysis.

Honoré, P. A., and J. F. Costich. 2009. Public health financial management competencies. *Journal of Public Health Management & Practice* 15(4):311-318.

Honoré, P. A., and T. Schlechte. 2007. State public health agency expenditures: Categorizing and comparing to performance levels. *Journal of Public Health Management and Practice* 13(2):156-162.

Honoré, P. A., and W. Scott. 2010. *Priority Areas for Improvement of Quality in Public Health*. Washington, DC: HHS.

Honoré, P. A., D. Wright, D. M. Berwick, C. M. Clancy, P. Lee, J. Nowinski, and H. K. Koh. 2011. Creating a framework for getting quality into the public health system. *Health Affairs* 30(4):737-745.

IOM (Instititue of Medicine). 1988. *The Future of Public Health*. Washington, DC: National Academy Press.

IOM. 2003. *The Future of the Public's Health in the 21st Century.* Washington, DC: The National Academies Press.

IOM. 2008. Eight Americas: Investigating mortality disparities across races, counties, and race-counties in the United States. In *Challenges and Successes in Reducing Health Disparities: Workshop Summary*, edited by C. J. L. Murray, S. C. Kulkarnin, C. Michaud, N. Tomijima, M. T. Bulzacchelli, T. J. Iandiorio, and M. Ezzat. Washington, DC: The National Academies Press.

IOM. 2011a. *For the Public's Health: Revitalizing Law and Policy to Meet New Challenges.* Washington, DC: The National Academies Press.

IOM. 2011b. *For the Public's Health: The Role of Measurement in Action and Accountability.* Washington, DC: The National Academies Press.

Kaufman, N. 2011. *Summary: Regionalization of Government Services: Lessons Learned & Application for Public Health Service Delivery.* Robert Wood Johnson Foundation and The Strategic Vision Group.

Kennan, S. A. 2008. Legislative relations in public health. In *Public Health Administration. Principles for Population-Based Management*, edited by L. F. Novick, C. B. Morrow and G. P. Mays. Sudbury, MA: Jones and Bartlett Publishers.

KFF (The Henry J. Kaiser Family Foundation). 2011. *Summary of New Health Reform Law.* http://www.kff.org/healthreform/upload/8061.pdfs (December 27, 2011).

Koh, H. K., L. J. Elqura, C. M. Judge, and M. A. Stoto. 2008. Regionalization of local public health systems in the era of preparedness. *Annual Review of Public Health* 29:205-218.

Kuehn, B. M. 2011. Public health cuts threaten preparedness, preventive health services. *Journal of the Amercican Medical Association* 306(18):1965-1966.

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For the Public's Health: Investing in a Healthier Future

Kurland, J., D. K. Walker, and C. L. Hager. 2004. *Funding Cuts to Public Health in Massachusetts: Losses Over Gains*. Boston: Massachusetts Health Policy Forum.

LaBeaud, A. D., and S. Aksoy. 2010. Neglected funding for vector-borne diseases: A near miss this time, a possible disaster the next time. *Neglected and Tropical Diseases* 4(10):e847.

LAO (California Legislative Analyst's Office). 2010. *Health and Social Services: 2008-09 Analysis*. Sacramento, CA: Legislative Analyst's Office.

Libbey, P., and B. Miyahara. 2011. *Cross-Jurisdictional Relationship in Local Public Health: Preliminary Summary of an Environmental Scan*. Princeton, NJ: Robert Wood Johnson Foundation.

Mays, G. P., and S. A. Smith. 2009. Geographic variation in public health spending: Correlates and consequences. *Health Services Research* 44(5 Pt 2):1796-1817.

Mays, G. P., M. C. McHugh, K. Shim, D. Lenaway, P. K. Halverson, R. Moonesinghe, and P. Honoré. 2004. Getting what you pay for: Public health spending and the performance of essential public health services. *Journal of Public Health Management and Practice* 10(5):435-443.

Meier, B. M., J. Merrill, and K. Gebbie. 2009. Modernizing state public health enabling statues to reflect the mission and essential services of public health. *Journal of Health Management Practice* 15(2):112-119.

Meyer, J., and L. Weiselberg. 2009. *County and City Health Departments: The Need for Sustainable Funding and the Potential Effect of Health Care Reform on their Operations*. Princeton, NJ: Robert Wood Johnson Foundation and National Association of County and City Health Officials.

NACCHO (National Association of City and County Health Officials). 2005. *Operational Definitions of a Functional Local Health Department*. Washington, DC: NACCHO.

NACCHO. 2010. *Trends in Local Health Department Finances, Workforce, and Activities*. Washington, DC: NACCHO.

NACCHO. 2011a. *2010 National Profile of Local Health Departments*. Washington, DC: NACCHO.

NACCHO. 2011b. *Comments of the National Association of County and City Health Officials: On the Draft Vision, Goals, Strategic Directions, and Recommendations for the National Prevention and Health Promotion Strategy*. Washington, DC: NACCHO.

NACCHO. 2011c. *Local Health Department Job Losses and Program Cuts: State-Level Tables from the 2010 National Profile Study*. Washington, DC: NACCHO.

NACCHO. 2012. *Operational Definition of a Functional Local Health Department*. http://www.naccho.org/topics/infrastructure/accreditation/OpDef.cfm (March 30, 2012).

NCSL (National Conference of State Legislatures). 2012. *State Legislation and Actions Challenging Certain Health Reforms, 2011-2012*. http://www.ncsl.org/issues-research/health/state-laws-and-actions-challenging-aca.aspx (March 12, 2012).

New Jersey Department of Health and Senior Services. 2008. *A Study of New Jersey's Local Public Health System*. New Jersey: New Jersey Department of Health and Senior Services.

Novick, L. F., C. B. Morrow, and G. P. Mays. 2008. *Public Health Administration: Principles for Population-Based Management*. Sudbury, MA: Jones and Bartlett Publishers.

OIG (Office of the Inspector General). 1995. *Federal Approaches to Funding Public Health Programs*. Washington, DC: HHS.

OIG. 1999. *Public Health and Management Care: Opportunitiess for Collaboration*. Washington, DC: HHS.

Orenstein, D. M. 2006. The role of measles elimination in development of a national immunization program. *Pediatric Infectious Disease Journal* 25(12):1093-1101.

PHANYC (The Public Health Association of New York City). 2002. *Public Health at a Crossroads*. New York: The Public Health Association of New York City.

Copyright © National Academy of Sciences. All rights reserved.

For the Public's Health: Investing in a Healthier Future

PHI (Public Health Institute). 2010. *Health Reform and Local Health Departments: Opportunities for the Centers for Disease Control and Prevention*. Edited by E. Hall, R. Melton, A. Broderick, and A. Wang. Oakland, CA: Public Health Institute.

PHIP (Public Health Improvement Partners) Finance Committee. 2006. *Financing Local Public Health in Washington State: Challenges and Choices*. Tumwater, WA: Public Health Improvement Partners.

Public Health Functions Steering Committee. 1994. *The Public Health Workforce: An Agenda for the 21st Century. Full Report of the Public Health Functions Project*. Washington, DC: HHS.

Rehkopf, D. H., and N. Adler. 2011. *Review of Social Determinants of Health for Public Health Departments*. Oakland, CA: Public Health Institute and Bay Area Regional Health Inequities Initiative.

Salinsky, E. 2010. *Governmental Public Health: An Overview of State and Local Public Health Agencies*. Washington, DC: National Health Policy Forum.

Salinsky, E. 2012. *Financing Mission-Critical Investments in Public Health Capacity Development*. Commissioned Paper, Appendix C. Washington, DC: The National Academies Press.

Salinsky, E., and E. A. Gursky. 2006. The case for transforming governmental public health. *Health Affairs* 25(4):1017-1028.

Santerre, R. E. 2009. Jurisdiction size and local public health spending. *Health Services Research* 44(6):2148-2166.

Slifkin, R. T., P. Silberman, and S. Reif. 2001. The effect of Medicaid managed care on rural public health departments. *Journal of Rural Health* 17(3):187-196.

Smith, T. A., K. J. Minyard, C. A. Parker, R. F. Van Valkenburg, and J. A. Shoemaker. 2007. From theory to practice: What drives the core business of public health? *Journal of Public Health Management & Practice* 13(2):169-172.

Stoto, M. A., and L. Morse. 2008. Regionalization in local public health systems: Public health preparedness in the Washington metropolitan area. *Public Health Reports* 123(4):461-473.

TFAH (Trust for America's Health). 2008. *Blueprint for a Healthier America: Modernizing the Federal Public Health System to Focus on Prevention and Preparedness*. Washington, DC: TFAH.

TFAH. 2009. *Shortchanging America's Health: A State-By-State Look at How Federal Public Health Dollars are Spent and Key State Health Facts*. Washington, DC: TFAH.

TFAH. 2011. *Investing in America's Health: A State-By-State Look at Public Health Funding and Key Health Facts*. Washington, DC: TFAH and The Robert Wood Johnson Foundation.

Turnock, B., A. Handler, W. Hall, S. Potsic, R. Nalluri, and E. H. Vaughn. 1994. Local health department effectiveness in addressing the core functions of public health. *Public Health Reports* 109(5):654-660.

U.S. Congress Office of Technology Assessment. 1993. *The Continuing Challenge of Tuberculosis, OTA-H-574*. Washington, DC: Government Printing Office.

Woolf, S. H., R. E. Johnson, R. L. Phillips, Jr., and M. Philipsen. 2007. Giving everyone the health of the educated: An examination of whether social change would save more lives than medical advances. *American Journal of Public Health* 97(4):679-683.

Woolf, S. H., R. M. Jones, R. E. Johnson, R. L. Phillips, Jr., M. N. Oliver, A. Bazemore, and A. Vichare. 2010. Avertable deaths associated with household income in Virginia. *American Journal of Public Health* 100(4):750-755.

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3

Informing Investment in Health

Public health leaders have sufficient information to take action in important sectors of population health. However, the public health system at all levels of government requires better information about the level of resources expended and how they are being used, what system characteristics are most closely linked with achieving desired outcomes, and what methods are most effective and efficient in improving population health. In this chapter, the committee first discusses the administrative changes needed to support the uniform collection and reporting of public health financial information (revenues and expenditures). Better information will help government officials to make evidence-based management decisions to generate and allocate resources for public health activities that maximize population health gains and minimize the costs of treating preventable diseases and injuries. And improved information will allow leaders of public health agencies to make better management decisions about organizing, staffing, and implementing public health activities that maximize the efficiency, reach, and effects of their operations. Research is also needed to generate objective information about the costs and outcomes of public health activities—information that would facilitate assessments of the comparative effectiveness of public health and social interventions and medical approaches, and allow decision makers in government and the private sector to identify better ways of allocating limited resources across the spectrum of health-related investment (Teutsch and Fielding, 2011b).

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A NEED FOR FINANCIAL ANALYSIS AND RESEARCH

As mentioned in Chapter 1 and discussed in more detail in Chapter 4, the information available about public health funding has considerable limitations. Many governmental public health programs were established in response to specific health threats or as results of new interventions, such as the creation of a specific vaccine or the implementation of new smoking interventions to reduce cancer deaths. The collection of public health program activities has become what a governmental public health department does. But in many locales, public health departments have not been allowed the "luxury" of organizing activities into a coherent whole in which essential capabilities exist to support all programs or in which funding from one program is leveraged in a systematic manner to benefit other programs. The combination of that historical circumstance in funding, a lack of national standards in recording and reporting funding and expenditure data, and variations in the definitions of public health challenges any attempt to obtain accurate expenditure estimates.

Because financial information on public health is difficult to obtain at all levels of government, there is considerable uncertainty about current investment in public health activities in the United States and about the sources of revenue for this investment and the relative contributions of federal, state, local, and private bodies. It is also unclear what those sources purchase in terms of the spectrum of public health activities and infrastructure, how resources are allocated among different geographic areas and population groups, and, perhaps most important, how investment compares with the outcomes of public health activities. Poor financial information systems can breed poor performance because a lack of data and measurement makes it more difficult to evaluate, manage, and improve (Kaplan and Porter, 2011). Without better financial information, policymakers cannot assess the value realized from public health spending, nor can they clearly identify the health and economic consequences of underinvestment. Public health managers are unable to link cost data to their organizational structures, staffing patterns, and service delivery models. This limits their ability to enhance the productivity and efficiency of their operations. Because of a lack of adequate financial information, effective and efficient public health departments go unrewarded, and inefficient agencies face few incentives to improve (Honoré and Costich, 2009; Honoré et al., 2007).

In the United States, the Centers for Medicare and Medicaid Services Office of the Actuary develops the annual National Health Expenditure Accounts (NHEA) on the basis of data from federal and state governments and international standards. Some limitations of the NHEA, including definitional and methodological issues (Sensenig, 2011), are discussed in Chapter 4. Ballinger (2007) and Sensenig (2007, 2011) have shown that NHEA in Canada and the United States, respectively, do not usefully reflect the level of spending on public health, because there are no uniform,

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universally accepted definitions of public health activity across levels of government (or internationally). The Association of State and Territorial Health Officials (ASTHO) and the National Association of County and City Health Officials (NACCHO) attempt to bridge that gap by conducting periodic surveys and other kinds of data collection to measure and understand public health department revenues and expenditures at the state and local levels, respectively (see, for example, ASTHO and NACCHO 2011 profiles of state and local public health departments). The value of the data on state and local governmental public health revenues is greatly limited by the lack of a uniform chart of accounts used among health departments, which makes it impossible for health department personnel around the United States to report data on expenditures consistently (Gans et al., 2007). In addition, the variation in scope of work among public health agencies and the fragmented and idiosyncratic[1] nature of public health funding make it infeasible for the national associations to collect granular data on program-specific revenues and expenditures. Although knowing the level of funding by funding sources is a key to understanding the outcomes of investments in governmental public health programs, NACCHO found that "collecting these data nationally seems unrealistic given the difficulty of some [local health departments] in providing accurate data even on total revenues and expenditures" (NACCHO, 2011, p. 91).

Charts of Accounts

Honoré and colleagues observed that "[p]ublic health lacks an operational framework for basic levels of financial analysis and research" (2007, p. 121). The key element of such a framework is a standardized chart of accounts to enable public health to gather uniform data and conduct comparisons between jurisdictions. Charts of accounts are accounting records that organizations—including nonprofit organizations, health care entities, and universities—use to track expenditures and revenue (Honoré et al., 2007; see also University of Minnesota, 2010; Urban Institute National Center for Charitable Statistics, 2009). Charts of accounts generally match the financial structure of an organization and use categories or classifications for each type of expenditure. The information on a chart of accounts gives an organization an overview of financial activities and can be used for such purposes as fund accounting, reporting or demonstrating accountability to funders and stakeholders, development of financial reports, management, comparative analysis, and benchmarking. The lack of a uniform chart of accounts is a crucial gap for public health services research, in which a clear

[1]One reason for this is that there has never been a consistent federal funding stream for public health infrastructure as there has been for hospital infrastructure (the Hill–Burton Act of 1946 aimed to strengthen the nation's hospitals and to reach a specific ratio of hospital beds per population) and for the National Institutes of Health biomedical research enterprise.

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understanding of the effectiveness and efficiency of investment in programs, personnel, and interventions is a necessity. The adoption of a uniform chart of accounts would enable public health departments at all levels to better ensure accountability for resources and outcomes. Accountability would be facilitated through uniform reporting of revenue and expenditures, and ultimately through establishing how financial inputs and outputs are associated with long-term outcomes.

The financial accounting systems used by public health agencies are highly idiosyncratic, varying from one jurisdiction to another, and they are generally fashioned on a local or state government's template rather than being customized to meet the needs of public health departments.[2] They are designed for budget management and fund accounting rather than for overall financial and program management, that is, understanding the linkages between resources, processes, outputs, and outcomes (see Figure 3-1, a logic model first introduced in the committee's report *For the Public's Health: The Role of Measurement in Action and Accountability* and outlining the steps to population health improvement from inputs to outcomes[3]). Thus, there

[2]Several states have undertaken efforts to develop charts of accounts. Florida has a comprehensive public health dataset and has begun to develop a chart of accounts (Honoré, 2011). It has begun to tackle the difficult issues of definitions (What is core public health? What are clinical care services "alone"?) and has developed a financial information reporting system. The system can be used to compare staffing, workload, population, budget, and full-time employees and can provide revenues and expenditures by program. It can measure revenue per capita, expenditure per capita, and the ratio of revenue to expenditures. This program is still in its testing phase but aims to be used at the state and local levels (Dillion, 2010). According to a state health official, objectives include enabling comparisons among jurisdictions and informing "sound business decisions relative to public health." Georgia has also begun to develop local charts of accounts for its local governments that include some aspects of public health (categories include maternal and child health services, adult health services, health centers, and general clinics). However, each jurisdiction can adapt the template to its needs, and it is not a comprehensive uniform chart of accounts for public health. Other states have begun comprehensive cost analyses as part of a broader process of thinking about revenues, expenditures, and outcomes (Honoré, 2011).

[3]In its first report on population health measurement, "the committee adapted a simple structure–process–outcome logic model (Donabedian, 1988) to illustrate both the sequence of steps between inputs and outputs in population health and the multiple categories for measurement" (IOM, 2011, pp. 50-51). The figure was originally provided to help in thinking about the types of data and indicators available and needed at each step in the process. The figure ranges from resources and capabilities to intermediate outcomes and indicators and distal outcomes. The "determinants of health" box in the figure "is intended to refer largely to determinants that can be modified by the actions of various agencies and organizations in the health system" (IOM, 2011, p. 51). "Arrows between the determinants of health and many of the boxes represent the feedback loops between determinants and system inputs or outputs. For example, broader societal values and priorities influence the availability of resources for population health activities. Population health interventions, such as policy changes, are often designed to influence particular determinants of health. After evaluation and research to assess the effectiveness of an intervention on a given determinant, the intervention may be modified or replaced" (IOM, 2011, p. 51).

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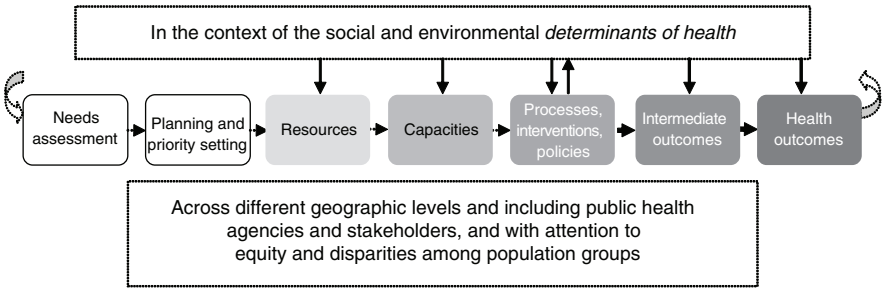

FIGURE 3-1 Logic model: from inputs to outputs and outcomes.
SOURCE: IOM, 2011.

is a dearth of comprehensive and consistent financial data on the nation's health departments. A standard chart of accounts would ensure that expenditures were recorded consistently among jurisdictions and would support management, permit comparisons between jurisdictions, and allow more accurate estimates of public health spending by states, regions, and the nation. A uniform chart of accounts would also provide a reliable basis for studying how variability in use of resources leads to differences in processes and interventions and how they lead to differences in outputs. It would help local health departments to make more informed decisions on allocating their resources. The *minimum package of public health services* introduced in Chapter 2 to ensure a standard level of capacity in all jurisdictions could also serve as a framework for developing a chart of accounts, that is, preparing sets of accounts for each domain of *foundational capabilities* and each basic program. Steps toward creating a unified chart of accounts would include

- Studying the accounting structures now in place.
- Building a model chart of accounts.
- Comparing the model with existing accounting practices used by local and state agencies.
- Examining how well accounting structures accommodate funding flows.

Once it were developed and endorsed, the Department of Health and Human Services (HHS) could require use of a chart of accounts for reporting as a condition of receipt of federal funds, as is the case with the Medicare Cost Report that all health care providers must submit.[4]

[4]See, for example, Hospital Cost Report (CMS, 2012).

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The characteristics of a useful chart of accounts include

- A mutually exclusive set of expense accounts to ensure that program expenses are not double-counted.
- A uniform record that captures all work activity that creates expenses.
- Sufficient detail to link resources to specific processes that affect intermediate and final outcomes.
- The management information needed to enable improvement of performance of public health systems on a local, statewide, and national basis.

A chart of accounts also needs to support management accounting of a specified set of items, beginning with the *minimum package of services* consisting of *foundational capability* domains and required programs; fund accounting; and financial reporting. And a process will be needed to ensure that the public health chart of accounts is not static but evolves to suit the financial reporting and management needs of the field.

Uniform charts of accounts have been used successfully in other sectors, including medical care and education. Examples in the medical care sector include those used by the Healthcare Financial Management Association (HFMA) and charts of accounts for hospitals (Nowicki and Berger, 2006). In the education sector, the National Center for Education Statistics Common Core of Data surveys administered to school districts and schools leads to the publication of an annual report on school revenues and expenditures. Financial reporting standards and frameworks also guide colleges and universities (Honoré et al., 2007).

Charts of accounts are linked with what Honoré and colleagues describe as "exemplary practices" used in the clinical care and educational sectors (2007). These practices include (1) uniform classifications for expenses and revenues, (2) infrastructures for electronic data reporting, (3) standardized system-wide financial analysis practices, (4) extensive reporting of financial results, and (5) professional associations for the accounting workforce. Implementation of these practices in some fields has been driven by private sector market forces that demand accountability, whereas in other fields it has evolved as a result of statutory mandates and stakeholder demands for information (Honoré et al., 2007, p. 125).

Over the last several years, NACCHO and the University of Southern Mississippi have partnered to develop a Web-based Public Health Uniform Data System for local health departments (a project funded by the Robert Wood Johnson Foundation). The system, projected to be available in 2012, is expected to have the capacity to collect data and provide immediate feedback to health departments on financial and operational performance,

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benchmarking, program sustainability, and other measures. Its purpose is to make available a uniform set of account definitions to promote the collection and analysis of valid, reliable, and uniform public health data. It will be the closest thing yet to a uniform chart of public health accounts.[5] The committee views the HHS and NACCHO effort as a step in the right direction. However, the committee notes that the type of classification described in the draft template appears to be based on the array of expense categories that are typically seen in health departments and does not appear to create mutually exclusive expense accounts as typical charts of accounts do. Additional work is needed to develop charts of accounts that fully meet the needs of public health departments.

Adopting a uniform chart of accounts in all public health departments will not be easy or rapid. An ideal chart of accounts would assign expenditure codes to a hierarchic cascade of activities that begins with the broad functions and the *minimum package of public health services*. Each broad category would divide into more granular categories, which would eventually lead to codes that describe discrete tasks associated with the broad category.

Several barriers potentially stand in the way of adoption of a uniform chart of accounts. For example, the committee acknowledges that it will be difficult to assign a uniform accounting code structure that all health departments would be required to adopt. However, if agreement can be reached on the highest levels of accounting aggregation, health departments could reshape their existing charts of accounts to align with the highest levels of definitions. In time, health departments could progressively refine their subcodes to comport with the national model chart of accounts. In the interval before an agency reaches complete compliance with the model chart of accounts, it could submit data to a nationally operated information utility that would translate local codes into nationally compliant codes. For example, a purpose of health information exchange organizations is to take health care encounter data encoded in a hospital or provider office idiosyncratically and translate them to nationally standardized codes that can be interpreted and used by other health care organizations. A similar translation process could serve as a transitional step for public health accounting data and lead to the development of a structure to which each public health department would "map," for example, its way of coding. The cost of adoption of a chart of accounts is another barrier. It includes investment needed to familiarize health department personnel with new systems and the cost of implementing a new infrastructure, which could be substantial.

As an example of how sets of accounts are developed, all immunization-

[5]Personal Communication, Peggy Honoré, December 1, 2011. For more information, see http://publichealthfinance.org/research-and-analysis/2292.

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related activities would be grouped in a set of immunization accounts. The generic "immunization" can be separated into codes for "routine vaccine clinic administration," "routine vaccine supply management," "emergency mass immunization clinic," and so on. During an influenza pandemic or other emergency mass immunization event, the codes for those activities would be linked to the "emergency preparedness" set of accounts. Staff conducting immunization activities would recognize the work as vaccination clinic work, and administrators may also need to define it as a component of a specific emergency response. A thorough chart of accounts would categorize program expenses to show actual expenditures involved in doing the work and offer the flexibility of associating expenses to lines of revenue (such as insurance or Medicaid reimbursement for vaccinations administered or funding from Section 317 of the Public Health Services Act, which provides support for vaccines and vaccination infrastructure). Once standard definitions and a uniform chart of accounts have been adopted, it will be possible to capture reliable specific data on public health spending patterns in existing federal surveys, such as the U.S. Census Bureau's periodic Census of Governments, which is the primary source of data used in NHEA. That survey currently asks state and local governments to report their public health expenditures in one large lump-sum category that is poorly defined. The Census Bureau could ask governments for much more detailed reporting on public health expenditures if it were assured that governments would provide this information in a consistent format. Table 3-1 shows a sample portion of a hypothetical and highly simplified chart of accounts.

> **Recommendation 5: The committee recommends that a technical expert panel be established through collaboration among government agencies and organizations[6] that have pertinent expertise to develop a model chart of accounts for use by public health agencies at all levels to enable better tracking of funding related to programmatic outputs and outcomes across agencies.**

The adoption of a uniform chart of accounts could be made a Public Health Accreditation Board (PHAB) requirement in addition to being made a prerequisite for federal and state funding. The process of developing a chart of accounts needs to take place with consideration of the broader management needs of public health departments and the more difficult work of measuring and accounting for nonclinical services.

[6]Agencies and organizations would include HHS, public health departments, ASTHO, NACCHO, PHAB, and the National Association of State Budget Officers.

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TABLE 3-1 Excerpt of a Hypothetical, Highly Simplified Public Health Chart of Accounts

Account Category (Programs)	Account Code	Account Title	Definition/Linked to
Immunization			All funds spent on immunizations
	3000	Routine vaccine clinic administration	
	3010	Routine vaccine supply management	
	3020	Emergency mass immunization clinic	Linked to preparedness category
	3030	Communication on immunization	
Environmental Health			
	6000	Healthy Homes and Lead Hazard Prevention Program	Linked to prevention programs category
	6000.1	Public service announcements	
	6000.2	Staff training	
	6010	Compliance and enforcement, Air	
	6010.1	Outreach and education	
	6010.2	Permits	
	6020	Compliance and enforcement, Water	
Chronic Disease			
	9000	Asthma	Linked to environmental health
Obesity Prevention and Control			Linked to chronic disease category
	9010.1	Data collection, obesity (all ages)	Linked to data collection category
	9010.2	Program evaluation, obesity	Linked to research and data collection categories
	9010.3	Mass media campaigns and social marketing	Linked to communication
	9010.4	Nutrition education and counseling	Linked to general education and counseling

continued

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TABLE 3-1 Continued

Account Category (Programs)	Account Code	Account Title	Definition/Linked to
	9010.5	Physical education and counseling	Linked to general education and counseling
	9010.6	Restaurant menu labeling inspection and enforcement	
	9010.7	Planning	
	9010.8	Policy development	
Asthma			
	9020.1	Data collection, asthma (all ages)	
	9020.2	Program evaluation, asthma	
Account Category (Administrative)			
Workforce	1000	Total salaries	
	1010	Total liability days for unused vacation	
	1020	Total fringe benefits	
	1030	Professional development	
Infrastructure			
	2000	Utilities	
	2010	Computers	
	2010.1	Information technology support	

DATA AND INFORMATION TO SUPPORT PRACTICE

This section discusses the research and evaluation needed to inform and support evidence-based and best practices in the funding of public health. Research, for example prevention-effectiveness and comparative-effectiveness research, and evaluation are relevant to funding because they inform the continuum of public health practice, including decisions about what population-based interventions are funded, and the field's knowledge about what works best in public health financing, administration, and organization (PHSSR, 2012). The committee outlines below the thin evidence base that supports many areas of public health practice, the funding imbalances and the siloed nature of health research and development, and some specific needs.

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The Evidence Base

The committee has noted before that the evidence base on the effectiveness of health interventions is growing, but it remains particularly sparse with respect to population-based interventions. The work of the Centers for Disease Control and Prevention Task Force on Community Preventive Services has led the way in establishing the effectiveness of interventions, but there are areas where much remains to be done to show what is effective.[7] Health systems research, including public health services and systems research, is an expanding field (AcademyHealth, 2012; RWJF, 2012). However, efforts to improve population health are hampered by the many uncertainties and evidence gaps concerning how to promote health and prevent disease and disability on a populationwide basis.

The nation's local, state, and federal public health agencies—with their peers and partners in the private and public sectors—constitute a vast but diffuse delivery system charged, to greater or smaller degrees, with implementing public health and prevention strategies (Teutsch and Fielding, 2011a). But evidence on the most effective and efficient ways of organizing, financing, and deploying the strategies through the delivery system is inadequate (Coffman, 2003/2004; IOM, 2011). Public health leaders have few research-tested guidelines, protocols, and decision supports to inform their choices about funding, staffing, and managing public health activities. Similarly, policy leaders have relatively little empirical guidance on the most effective ways to exercise taxing, spending, and regulatory authorities for the public's health. The dearth of evidence promotes wide variation in public health practices among communities, creating missed opportunities for improving population health, waste and inefficiencies in resource use, and inequities in health protection (Culyer and Lomas, 2006). The scientific fields of prevention research and, more recently, public health services and systems research (PHSSR) have mobilized to address those information needs and build the evidence needed for improved decisionmaking in public health practice. Thacker and colleagues (2005, p. 227) found that "[i]n addition to the relatively young state of the field, there is little funding for population-based effectiveness research in public health compared with basic and patient-oriented clinical research. This situation might reflect the analytic challenges of this kind of research or the absence of societal commitment to invest resources in such research." Expanded investments in the applied fields of research are needed to produce information with which policy officials and public health professionals can drive improvements in

[7]The Cochrane Collaboration, the Campbell Collaboration, and others are building the evidence base of systematic reviews of population-based interventions (Sweet and Moynihan, 2007).

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the nation's public health system (see Recommendation 6 toward the end of this chapter).

R&D Funding: Imbalance and Silos

In Chapter 1, the committee discussed the imbalance in health system funding, which is directed at clinical care and is inadequate to support an effective public health infrastructure. Similarly, congressional research appropriations favor biomedical science. Funding for health-related research and development is skewed toward discovery of therapeutic interventions and elucidating basic pathophysiologic mechanisms as opposed to prevention strategies and especially population-based prevention (Cook-Deegen, 2011; Crow, 2011; Miller et al., 2008; Moses et al., 2005; Scrimshaw et al., 2001). Similarly, little is spent on delivery research. The Coalition for Health Services Research estimated that just 0.19 percent of total federal spending on health care services is spent on health services research (CHSR, 2009) and Moses and colleagues (2005) estimated that a mere 0.1 percent of total U.S. health expenditures goes to health services research. The meager funding available for public health research is structured similarly, although there has recently been increased attention from foundation and government funders. Substantial research investments are needed to help public health agencies to be more operationally efficient and programmatically effective.

The heavy orientation toward therapeutics that forms the basic structure of U.S. health research and development is only the broadest example of the boundaries that separate research pertinent to clinical care and therapeutics from research on population health. The nation's health research enterprise is further segmented into silos that focus on specific disease processes and biomedical pathways, thereby reducing opportunities for research that examines cross-cutting social and environmental pathways and for research on prevention opportunities outside clinical care settings. One way to begin to break those silos would be to include population-based research in comparative effectiveness research (most of which is clinically oriented). The Affordable Care Act, 2010 (ACA) provisions calling for the establishment of the Patient-Centered Outcomes Research Institute (PCORI) excludes population-based preventive interventions from the institute's purview.[8] PHSSR researchers and others (e.g., Teutsch and Fielding, 2011a,b)

[8]From PL 111-148, 124 STAT. 727 "(2) COMPARATIVE CLINICAL EFFECTIVENESS RESEARCH;

RESEARCH.

"(A) IN GENERAL.—The terms 'comparative clinical effectiveness research' and 'research' mean research evaluating and comparing health outcomes and the clinical effectiveness, risks, and benefits of 2 or more medical treatments, services, and items described in subparagraph (B).

"(B) MEDICAL TREATMENTS, SERVICES, AND ITEMS DESCRIBED.—The medical

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have called for reconsideration. If, as the committee has observed in Chapter 1, public health is recognized as being on a continuum with clinical care, it follows that the preventive interventions being evaluated by PCORI ought to include the most broad-based types of interventions, that is, ones that aim to improve the health of entire populations. The committee concurs with the view that PCORI's comparative effectiveness analyses ought to include population-based interventions. However, even if PCORI's mission[9] is not interpreted more broadly, the public health research enterprise must be extended to support comparing the effectiveness of population-based interventions. A cost-effectiveness literature that has compared clinical with population-based interventions has suggested greater efficiencies associated with such population-based interventions from water fluoridation, antismoking policies, and fortification of the food supply to prevent neural tube defects than are associated with clinical approaches to preventing related conditions (Gaziano et al., 2007; Grosse et al., 2007; Halpin et al., 2010; Kelly et al., 1996; Weintraub et al., 2011). The committee's first report acknowledged the impact of social and environmental determinants of health—upstream determinants of health (such as urban planning and early childhood development and education)—on population-health outcomes (Garcia and White, 2006; Garcia et al., 2009; IOM, 2011; Karoly et al., 2005), and efforts of communities and foundations have begun to improve population health (e.g., Building a Healthier America funded by RWJF). Developing an understanding of where resources are best placed, whether clinical or population-based, is necessary for gaining value from investment in the health system.

Unmet Needs

Various public health research and development efforts are needed. The committee highlights here a subject that was first introduced by the committee in their report on data and measurement *For the Public's Health: The Role of Measurement in Action and Accountability* (see Box 3-1 for pertinent recommendations from the report). In that report, the committee identified substantial deficits in the nation's ability to collect and analyze

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treatments, services, and items described in this subparagraph are health care interventions, protocols for treatment, care management, and delivery, procedures, medical devices, diagnostic tools, pharmaceuticals (including drugs and biologicals), integrative health practices, and any other strategies or items being used in the treatment, management, and diagnosis of, or prevention of illness or injury in, individuals."

[9]In January 2012, PCORI released its draft research priorities for research that includes this: "Assessment of Prevention, Diagnosis, and Treatment Options. Research should focus on 1) clinical options with emphasis on patient preferences and decision-making, 2) biological, clinical, social, economic, and geographic factors that may affect patient outcomes" that are relevant to public health (PCORI, 2012, p. 4).

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BOX 3-1
Research-Related Recommendations from *For the Public's Health: The Role of Measurement in Action and Accountability*

Recommendation 1

The committee recommends that

a. The Secretary of Health and Human Services transform the mission of the National Center for Health Statistics to provide leadership to a renewed population health information system through enhanced coordination, new capacities, and better integration of the determinants of health.
b. That the National Prevention, Health Promotion, and Public Health Council include in its annual report to Congress on its national prevention and health-promotion strategy an update on the progress of the National Center for Health Statistics transformation.

Recommendation 2

The committee recommends that the Department of Health and Human Services support and implement the following to integrate, align, and standardize health data and health-outcome measurement at all geographic levels:

a. A core, standardized set of indicators that can be used to assess the health of communities.
b. A core, standardized set of health-outcome indicators for national, state, and local use.[a]
c. A summary measure of population health that can be used to estimate and track Health-Adjusted Life Expectancy for the United States.

Recommendation 6

The committee recommends that the Department of Health and Human Services coordinate the development and evaluation and advance the use of predictive and system-based simulation models to understand the health consequences of underlying determinants of health. HHS should also use modeling to assess intended and unintended outcomes associated with policy, funding, investment, and resource options.

data about the public's health at national, state, and community levels. Those deficits constrain the volume, quality, and pace of research that can be conducted to discover effective prevention strategies and delivery system approaches. Producing the evidence needed for informed public health decision making will require investment in targeted strategies to improve

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Recommendation 7

The committee recommends that the Department of Health and Human Services work with relevant federal, state, and local public-sector and private-sector partners and stakeholders to

1. Facilitate the development of a performance-measurement system that promotes accountability among governmental and private-sector organizations that have responsibilities for protecting and improving population health at local, state, and national levels. The system should include measures of the inputs contributed by those organizations (e.g., capabilities, resources, activities, and programs) and should allow tracking of impact on intermediate and population health outcomes.
2. Support the implementation of the performance measurement system by
   a. Educating and securing the acceptance of the system by policymakers and partners.
   b. Establishing data-collection mechanisms needed to construct accountability measures at appropriate intervals at local, state, and national levels.
   c. Encouraging early adoption of the system by key government and nongovernmental public health organizations and use of the system for performance reporting, quality improvement, planning, and policy development.
   d. Assessing and developing the necessary health-system capacity (e.g., personnel, training, technical resources, and organizational structures) for broader adoption of the framework, including specific strategies for steps to address nonperformance by accountable agencies and organizations.

[a]The conception of a community may differ from one context to another, and it could range from a neighborhood to a county. Local decisionmakers may include mayors, boards of supervisors, and public health officials. The notion of "local" may also vary (from census tract or ZIP code to city or county), depending on planning or research objectives and many other factors (IOM, 2011).

NOTE: Recommendations 3, 4, and 5 of the report are not related to research and are not included here.

SOURCE: IOM, 2011.

the nation's public health data, measurement, and analytic capacities, as articulated in the committee's report (IOM, 2011). The committee recommended strengthening the National Center for Health Statistics (NCHS) as part of a broader effort to transform the nation's population health information system. NCHS, which is a core component of the U.S. popu-

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lation health information system, conducts some of the nation's primary surveys on population health, including the Health Interview Survey and the National Health and Nutrition Examination Survey. However, the agency's role has been seriously limited by funding constraints, and the committee believes that NCHS can play a broader leadership role in the population health information system by expanding its analytic capabilities, its research activities, its ability to collaborate with those who use its data, and its ability to help to modernize and integrate the system. Doing so would increase the usefulness of NCHS data and facilitate and guide the "translation" of data into information and knowledge that decisionmakers and communities can use.

Public health organizations receive inadequate research support to address the leading causes of premature death and disease in American communities. Considerable uncertainty remains in the policy and practice domains about the array of public health services that every community should offer, the level of investment required to provide those services, and the health and economic benefits that can be expected from the investment over various timeframes—including the potential for downstream offsets in medical care spending. The nation's current public health knowledge and capabilities are inadequate to address some of the most pressing threats to population health, such as those related to obesity and social determinants of health. Where evidence-based strategies are lacking, the development of new knowledge and efficacious public health strategies is imperative. It takes a strong research infrastructure to produce the evidence needed for optimizing the nation's portfolio of investment in public health and the nation's health expenditures on health in general, but, as noted by an earlier Institute of Medicine (IOM) committee (IOM, 2003), there is still little infrastructure and support for this type of research.

The *Guide to Community Preventive Services* provides evidence-based recommendations and identifies important gaps in knowledge regarding the effectiveness of interventions and thus contributes to a research agenda (TFCPS et al., 2005). On the service delivery side, a research agenda for public health services research has recently been developed (PHSSR, 2011). More and better evidence is needed to inform policy and managerial decisions about resource allocation in public health and to ensure accountability for current and future investment in the public health system.

Types of Research Needed

The discovery of new and better prevention strategies and delivery system approaches requires a continuum of research activities, including

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- *Descriptive research* to understand the distribution of population health measures at national, state, and community levels; to detect variation in health measures among communities; and to detect changes in health measures.
- *Epidemiologic and etiologic research* to identify causal mechanisms and pathways that determine population health and explain why health varies among communities and why it changes.
- *Efficacy trials and effectiveness studies* to identify the prevention strategies (programs, policies, and interventions) that improve population health.
- *Economic studies* to determine the cost, efficiency, cost effectiveness, and economic impact of prevention strategies (such as those for obesity) and thus to inform the decisions of policymakers, communities, and individuals.
- *Dissemination and implementation research* to determine the best ways to organize, finance, and deliver effective prevention strategies to population groups that can benefit.
- *Comparative effectiveness research* and priority-setting studies to determine which prevention strategies work best in which community and institutional settings and in which population groups.

In addition to those traditional scientific approaches to learning what works, the public health field needs to seek knowledge from newly emerging avenues of inquiry, including the application of behavioral economics principles and complex systems analysis to study how environmental, social, and economic conditions and patterns of interaction combine to influence population health (see Box 3-2 for an example). Research in public health also needs to embrace "realistic" methods of inquiry that rely on cumulative, rapid-cycle learning from experience and that are designed to elucidate how complex, multicomponent public health strategies and prevention interventions interact with different social, environmental, and institutional contexts to produce community-level outcomes. The nontraditional approaches, termed realistic evaluation by Pawlson and Tilley in the social research literature and called the science of improvement by Berwick in the clinical research literature, offer methods that "are not compromises in learning how to improve; they are superior" (Berwick, 2008, p. 1183; Pawson and Tilley, 1997).

A strong infrastructure is needed to support each part of the research continuum described above. Specific needs include

- Robust data collection at state and community levels.
- Methods for constructing meaningful indicator sets—valid, reliable, sensitive, specific, and actionable.

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- Infrastructure for accessing and linking with new and diverse sources of data relevant to population health, including electronic health data, place-based data sources (such as the food environment and the physical environment), and commercial data on purchasing, consumption, travel, work, and recreational behavior (also discussed in IOM, 2011).
- Research on analytic methods and a variety of techniques, including complex system modeling, structural equation modeling, and qualitative methods to shed light on causal mechanisms and the effectiveness of interventions.
- Training and development for the public health research workforce.

According to a social scientist (Coffman, 2003/2004, p. 7), evaluation and research can be contrasted as follows: Evaluation "determines the merit, worth, or value of things" through a process that "identifies relevant values or standards that apply to what is being evaluated, performs empirical investigation using techniques from the social sciences, and then integrates conclusions with the standards into an overall evaluation or set of evaluations." Research does not seek to formulate evaluative conclusions but rather "is restricted to empirical (rather than evaluative) research, and bases

BOX 3-2
Obesity and Information Needs

In the case of obesity, little is known about the types of population-based interventions that can stem the tide of obesity that is leading to diabetes and other costly health conditions. As discussed in Chapter 1, complex adaptive systems are involved in causing obesity, and action on multiple levels is needed to solve this serious public health problem (Bar-Yam, 2006; Leischow and Milstein, 2006; Leischow et al., 2008). There are many gaps in public health knowledge about obesity. For example, although it is understood that obesity is in part the result of preventable risky behavior, such as inactivity and poor nutrition, there is not enough knowledge to guide the selection of interventions or combinations thereof. Is adding a supermarket a key requirement? What types of school-based interventions work? What about increasing the walkability of neighborhoods, and what elements of the built environment make the most difference? What combination of sidewalks, traffic lights, crosswalks, and bicycle and walking paths is needed? Little is known about how to select the best metrics to show improvement or to define what combination of individual-based and population-based interventions would make a difference. Food–environment data are becoming available, city planners are increasingly versed in public health, and several HHS agencies are targeting obesity, including through the study of policy interventions, but more research is needed, as is funding to support it.

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BOX 3-3
Examples of Where Research and Evaluation Can Help

Considerable uncertainty remains in the policy and practice communities about the basic package of critical public health services that are needed in every community, the level of investment that is required to support the availability of the package of services, and the health and economic benefits that can be expected from the investment and over what timeframe, including the potential for downstream savings in medical care spending.

More and better evidence is needed to inform policy and managerial decisions about resource allocation in public health and to ensure accountability for current and future investment in the public health system. Implementing a standard chart of accounts as recommended in this chapter is a prerequisite.

The nation's current public health knowledge and capabilities must be strengthened to address some of the most pressing threats to population health, such as those related to obesity and the effects of the social determinants of health. Where evidence-based strategies are lacking, the discovery of new knowledge and efficacious public health strategies is imperative. A robust research infrastructure is required to produce the evidence needed for optimizing the nation's portfolio of investment in public health, but, as noted in the 2003 IOM report, there is still little infrastructure and support for this type of research. Research on public health services and systems is still in its adolescence (Scutchfield and Ingram, 2011).

its conclusions only on factual results—that is, observed, measured, or calculated data" (Coffman, 2003/2004). In the field of public health, research has several different purposes: on a practice level,[10] to demonstrate the effectiveness and comparative effectiveness of population-based interventions; and on an administrative or management level, to inform the organization, administration, and financing of public health department activities. At each level, the committee has identified gaps in the knowledge available to inform decision making. That is pertinent to a report on funding both because of the need for research funding and because of the need for additional research on public health administration and financing (for example, research on the optimal size of a health department, discussed above; see also Box 3-3).

Not enough is known about how health departments can become learning organizations and acquire an adaptive systems perspective that would enable them to function productively in the self-organizing partnerships that

[10]Much public health research is not practice-oriented, such as etiologic research, behavioral science, and laboratory science; but little research is aimed at closing the gap between research and practice, for example, research useful to those in the field who need to implement the best intervention for a given issue (Glasgow and Emmons, 2007).

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are becoming the norm, as opposed to the traditional management setting (Leischow et al., 2008).

Translation of Research for Decisionmaking and Action

Building the research infrastructure that the committee proposes will allow policymakers to make informed resource allocation decisions that are based on societal or community values and on estimated health and economic impacts of prevention and public health strategies (including use by the National Prevention, Health Promotion, and Public Health Council as recommended in Chapter 2). It will help to develop evidence-based implementation strategies, guidelines, protocols, and checklists for use by the public health practice community. The evidence can be used to establish and update accreditation standards and performance expectations for public health agencies as accreditation becomes more widely adopted by public health agencies. Finally, the information that is generated would be used to support rapid-cycle innovation, quality improvement, and learning by public health agency administrators.

Cycle time in learning what works in public health needs to be reduced through research and development designed to "fail fast and often" to produce a steady stream of innovative results that do work well. Policymakers and public health decision makers need to be able to learn what works in public health, for what population, in what contexts, and at what cost. Whereas "steady-state" industries devote 2-3 percent to research and development, pharmaceutical, biotechnology and medical technology, and software industries all spend about 15 percent of their budgets on these endeavors (Cutler, 2011). Public health is most similar to industries that face pressures to grow, adapt, and improve and that rely heavily on research and development investments to generate the innovations that sustain them. Yet, of every $100 in federal health research spending, less than $1 is devoted to research on how to deliver (and finance) interventions, and most of that small amount is spent on delivery system research focused on medical care and only a minuscule portion on public health systems and services research (Woolf, 2007, 2008).

Public health has not been able to innovate, adapt, and respond quickly enough to contemporary health threats—particularly those associated with chronic disease. If it maintains a steady-state approach, public health and the larger health system will not be able to contain the rising health consequences and costs of chronic disease or address the changing needs of population health. With respect to large-scale chronic disease prevention, there are some good ideas but not a lot of evidence on whether and how they can be implemented effectively populationwide. Given the economic magnitude of the population health problem (75 percent of the nation's $2.6 trillion

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annual health care expenditures are due to chronic disease [CDC, 2011]), it seems prudent to invest in the research and development needed to learn how to avoid the preventable elements of that cost. For example, 15 percent of the current NHEA estimate of total federal public health spending ($11.5 billion) would be $1.7 billion. That amount, if devoted to public health research and development, would equal less than 0.1 percent of what the United States spends each year on health care for chronic disease treatment. If such an investment led to interventions that had only a modest impact on the growth of costs related to chronic disease, such as lowering the growth in cost by 1 percent as suggested by Roehrig and Rousseau (2011), it would yield a saving of more than $11 for every $1 invested—a highly favorable return on investment. The "value of information" associated with learning what works in public health seems to be very high according to its cost-saving potential.

The field must find ways to reach more of the populations that are at great risk for preventable disease and injury and must seek out new and more effective prevention strategies. The committee believes that knowing what works in population health is critical for the future of our nation, and the rate of spending on research and development in public health needs to be similar to that in the industries mentioned above—perhaps up to 15 percent of total public health expenditures. Funding of research, development, and dissemination in public health must be seen as a critical investment in the nation's economic growth and competitiveness.

The ACA authorized a program of research related to many of the issues raised in this chapter (Section 4301, "Research on Optimizing the Delivery of Public Health Services"), but funding and infrastructure development for this program are not yet available. The committee recommends steps to achieve the needed research infrastructure.

Recommendation 6: The committee recommends that Congress direct the Department of Health and Human Services to develop a robust research infrastructure for establishing the effectiveness and value of public health and prevention strategies, mechanisms for effective implementation of these strategies, the health and economic outcomes derived from this investment, and the comparative effectiveness and impact of this investment. The infrastructure should include

- **A dedicated stream of funding for research and evaluation.**
- **A national research agenda.**
- **Development of data systems and measures to capture research-quality information on key elements of public health delivery, including program implementation costs.**

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- **Development and validation of methodologies for comparing the benefits and costs of alternative strategies to improve population health.**

The recommended research infrastructure would be shared among three HHS agencies—the National Institutes of Health, the Agency for Healthcare Research and Quality, and the Centers for Disease Control and Prevention—and a national research agenda needs to include a priority-ordered list of topics to be addressed by the research. Development of data systems and measures to capture research-quality information (and training of needed staff) is needed at the national, state, and community levels and would include information on expenditures, workforce size and composition, and the volume, intensity, and mix of activities produced.[11]

There are many data systems for studying medical care delivery, such as the Medical Expenditure Panel Survey, the Healthcare Cost and Utilization Project with its National Inpatient Sample, and the National Ambulatory Medical Care Survey. Analogous data systems for public health delivery are needed. The development and validation of methods to improve population health need to include strategies from outside the health sector. The current research paradigm—randomized clinical trials as the gold standard for intervention research—needs to be expanded to include other empirical study designs and the use of modeling and microsimulation for comparing treatment strategies with prevention strategies, including strategies aimed at underlying determinants of health and combinations of strategies. As discussed in the committee's report on measurement, system dynamics and other types of modeling are useful in a context of great complexity, such as one in which health problems are caused by multiple, interacting factors and requiring action by multiple stakeholders on many dimensions (see, for example, Homer and Hirsch, 2006; Homer et al., 2007, 2010; Jones et al., 2006; Leischow and Milstein, 2006; Leischow et al., 2008; Milstein, 2008; Milstein et al., 2011). Enhancing the research capacity of public health departments is consistent with the idea of public health departments as knowledge organizations described in Chapter 2.

On the basis of what is known about what public health agencies can and cannot afford to do and in light of the imbalance in national spending on clinical care and on population-based health services, the committee believes that the nation does not invest sufficiently in public health. The information available, however, does not allow the committee to determine with any precision what proportion of the nation's health spending is needed to support population-based public health efforts. Improvements in the

[11]This research model should reflect a desire for real progress by using traditional and nontraditional methods.

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tracking of revenues and expenditures in public health and the enhancements in research and evaluation described in this chapter would no doubt inform the determination of public health funding needs, but a national effort is needed to begin to ascertain this and to make recommendations for an optimal balance. As the *minimum package of public health services* is established and the resources required to deliver them are ascertained, the public health field will gain a deeper understanding of the relative values of public health and clinical services. That understanding will inform investment in the public health system and the appropriate allocation between clinical care and population health.

Defining the *minimum package of public health services* will require the attention of a dedicated group that is knowledgeable about public health and population-based prevention, the economic impact of public health activities, and the value that could be realized by investment in clinical, nonclinical, and population-based efforts.

Recommendation 7: Expert panels should be convened by the National Prevention, Health Promotion, and Public Health Council to determine

- **The components and cost of the *minimum package of public health services* at local and state and the cost of main federal functions.**
- **The proportions of federal health spending that need to be invested in the medical care and public health systems.**

The information developed by the panels should be included in the council's annual report to Congress.

Public health is dynamic, and there are always new challenges and the need to maintain progress in meeting old challenges. The recommended expert panels would anticipate future needs and capacities and adapt to changing circumstances.

CONCLUDING OBSERVATIONS

This chapter has described two kinds of efforts needed to revitalize the public health infrastructure by clarifying how public health funding is used: standardizing financial information, which will require the development and adoption of a uniform chart of accounts, and expanding public health research to improve public health effectiveness and make the best use of resources. Earlier in this report, the committee described categories of public health knowledge that are adequate to inform action. Research and tools for disciplined management (given performance objectives and real world resource constraints) are needed to help public health professionals to do

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their work better and more efficiently and to identify effective strategies and appropriate interventions. At the national level, expert guidance will fulfill two purposes: describing the governmental public health services that every community needs and determining the magnitude of funding necessary to accomplish them.

REFERENCES

AcademyHealth. 2012. *Public Health Services and Systems Research, 2003-2011*. http://www.academyhealth.org/files/FileDownloads/HSRProjUpdate2012.pdf (December 12, 2011).

Ballinger, G. 2007. Refining estimates of public health spending as measured in national health expenditure accounts: The Canadian experience. *Journal of Public Health Management & Practice* 13(2):115-120.

Bar-Yam, Y. 2006. Improving the effectiveness of health care and public health: A multiscale complex systems analysis. *American Journal of Public Health* 96(3):459-466.

Berwick, D. M. 2008. The science of improvement. *Journal of the American Medical Association* 299(10):1182-1184.

CDC (Centers for Disease Control and Prevention). 2011. *Rising Health Care Costs Are Unsustainable*. http://www.cdc.gov/workplacehealthpromotion/businesscase/reasons/rising.html (January 27, 2012).

CHSR (Coalition for Health Services Research). 2009. *Federal Funding for Health Services Research: Nominal Spending Increases Does Not Compensate for Years of Real Declines*. Washington, DC: Academy Health.

CMS (Centers for Medicare and Medicaid Services). 2012. *Hospital Cost Report*. Washington, DC: CMS.

Coffman, J. 2003/2004. Michael Scriven on the differences between evaluation and social science research. *Harvard Family Research Project* 9(4):7.

Cook-Deegen, R. 2011. Boosting health services research. *Science* 333:1384-1385.

Crow, M. M. 2011. A radical restructure is the only way to solve the systemic problems of the world's biggest funder of biomedical research. *Nature* 471:569-571.

Culyer, A. J., and J. Lomas. 2006. Deliberative processes and evidence-informed decision making in healthcare: Do they work and how might we know? *Evidence & Policy: A Journal of Research, Debate and Practice* 2(3):357-371.

Cutler, D. 2011 (March 3). *Transcript, Eighth Meeting of the IOM Committee on Public Health Strategies to Improve Public Health*. Washington, DC: IOM.

Donabedian, A. 1988. The quality of care: How can it be assessed? *Journal of the American Medical Association* 260 (12):1743-1748.

Dillion, A. 2010. *Viewing Public Health Financial Information from a Different Perspective: Financial Ratio Analysis in Florida County Health Departments*. http://www.publichealthsystems.org/media/file/Dillon2D.pdf (December 12, 2011).

Gans, D. N., N. F. Piland, and P. A. Honoré. 2007. Developing a chart of accounts: Historical perspective of the medical group management association. *Journal of Public Health Management & Practice* 13(2):130-132.

Garcia, R., and A. White. 2006. *Healthy Parks, Schools, and Communities: Mapping Green Access and Equity for the Los Angeles Region*. Los Angeles, CA: The City Project.

Garcia, R., Z. Rawson, M. Yellott, and C. Zaldana. 2009. *Economic Stimulus, Green Space, and Equal Justice: Policy Report*. Los Angeles, CA: The City Project.

Gaziano, T. A., G. Galea, and K. S. Reddy. 2007. Scaling up interventions for chronic disease prevention: The evidence. *The Lancet* 370:1939-1946.

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For the Public's Health: Investing in a Healthier Future

Glasgow, R. E., and K. M. Emmons. 2007. How can we increase translation of research into practice? Types of evidence needed. *Annual Review of Public Health* 28:413-433.

Grosse, S. D., S. M. Teutsch, and A. C. Haddix. 2007. Lessons from cost-effectiveness research for United States public health policy. *Annual Review of Public Health* 28(1):365-391.

Halpin, H. A., M. M. Morales-Suarez-Varela, and J. M. Martin-Moreno. 2010. Chronic disease prevention and the new public health. *Public Health Reviews* 32(1):120-154.

Homer, J. B., and G. B. Hirsch. 2006. System dynamics modeling for public health: Background and opportunities. *American Journal of Public Health* 96(3):452-458.

Homer, J., G. Hirsch, and B. Milstein. 2007. Chronic illness in a complex health economy: The perils and promises of downstream and upstream reforms. *System Dynamics Review* 23(2-3):313-343.

Homer, J., B. Milstein, K. Wile, J. Trogdon, P. Huang, D. Labarthe, and D. Orenstein. 2010. Simulating and evaluating local interventions to improve cardiovascular health. *Preventing Chronic Disease Public Health Research, Practice and Policy* 7(1). http://www.cdc.gov/pcd/issues/2010/jan/08_0231.htm (January 3, 2012).

Honoré, P. A. 2011 (March 3). *Financing Mechanisms & Models for a Public Health System of Accounts. Presentation to the IOM Committee on Public Health Strategies to Improve Public Health.* Washington, DC: IOM.

Honoré, P. A., and J. F. Costich. 2009. Public health financial management competencies. *Journal of Public Health Management & Practice* 15(4):311-318.

Honoré, P. A., R. L. Clarke, D. M. Mead, and S. M. Menditto. 2007. Creating financial transparency in public health: Examining best practices of system partners. *Journal of Public Health Management & Practice* 13(2):121-129.

IOM (Institute of Medicine). 2003. The governmental public health infrastructure. In *The Future of the Public's Health*. Washington, DC: The National Academies Press. Pp. 96-177.

IOM. 2011. *For the Public's Health: The Role of Measurement in Action and Accountability.* Washington, DC: The National Academies Press.

Jones, A. P., J. B. Homer, D. L. Murphy, J. D. K. Essien, B. Milstein, and D. A. Seville. 2006. Understanding diabetes population dynamics through simulation modeling and experimentation. *American Journal of Public Health* 96(3):488-494.

Kaplan, R. S., and M. E. Porter. 2011. How to solve the cost crisis in health care. *Harvard Business Review* 89(9):47-64.

Karoly, L. A., M. R. Kilburn, and J. S. Cannon. 2005. *Early Childhood Interventions: Proven Results, Future Promise*. Santa Monica, CA: RAND.

Kelly, A. E., A. C. Haddix, K. S. Scanlon, C. G. Helmick, and J. Mulinare. 1996. Cost effectiveness of strategies to prevent neural tube defects. In *Cost Effectiveness in Health and Medicine*. New York: Oxford University Press. Pp. 312-349.

Leischow, S. J., and B. Milstein. 2006. Systems thinking and modeling for public health practice. *American Journal of Public Health* 96(3):403-405.

Leischow, S. J., A. Best, W. M. Trochim, P. I. Clark, R. S. Gallagher, S. E. Marcus, and E. Matthews. 2008. Systems thinking to improve the public's health. *American Journal of Preventative Medicine* 35(2 Suppl):s196-s203.

Miller, G., C. Roehrig, P. Hughes-Cromwick, and C. Lake. 2008. Quantifying national spending on wellenss and prevention. In *Beyond Health Insurance: Public Policy to Improve Health Advances in Health Economics and Health Services Research*. Vol. 19. Pp. 1-24.

Milstein, B. 2008. *Hygeia's Constellation: Navigating Health Futures in a Dynamic and Democratic World*. Atlanta, GA: CDC, Syndemics Prevention Network.

Milstein, B., J. Homer, P. Briss, D. Burton, and T. Pechacek. 2011. Why behavioral and environmental interventions are needed to improve health at lower cost. *Health Affairs* 30(5):823-832.

Moses, H., E. R. Dorsey, D. H. M. Matheson, and S. O. Thier. 2005. Financial anatomy of biomedical research. *Journal of the American Medical Association* 294(11):1333-1342.

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For the Public's Health: Investing in a Healthier Future

NACCHO (National Association of City and County Health Officials). 2011. *2010 National Profile of Local Health Departments*. Washington, DC: NACCHO.

Nowicki, M., and S. H. Berger. 2006. *HFMA's Introduction to Hospital Accounting, Fifth Edition*. Chicago, IL: Health Administration Press.

Pawson, R., and N. Tilley. 1997. *Realistic Evaluation*. London, England: Sage Publications Ltd.

PCORI (Patient-Centered Outcomes Research Institute). 2012. *Draft National Priorities for Research and Research Agenda (Version 1)*. Washington, DC: PCORI.

PHSSR (Public Health Services and Systems Reserch). 2011. *Public Health Services and Systems Research: Setting the Research Agenda*. Lexington, Kentucky: PHSSR.

PHSSR. 2012. PHSSR Research Agenda. http://www.publichealthsystems.org/cphssr/Research/PHSSR_Research_Agenda (December 12, 2011).

Roehrig, C. S., and D. M. Rousseau. 2011. The growth in cost per case explains far more of US health spending increases than rising disease prevalence. *Health Affairs* 30(9):1657-1663.

RWJF (Robert Wood Johnson Foundation). 2012. *Public Health Services and Systems Research: Building Evidence for Decision-Making*. http://www.rwjf.org/files/applications/cfp/cfp_phssr2012.pdf (April 2, 1012).

Scrimshaw S. C., White L., Koplan J. 2001. The meaning and value of prevention research. *Public Health Reports* 116(Suppl. 1):4-9.

Scutchfield, F. D., and R. Ingram. 2011. *Issue Brief: Setting the Agenda for Public Health Services & Systems Research*. Lexington, Kentucky: National Coordinating Center for Public Health Services & Systems Research.

Sensenig, A. L. 2007. Refining estimates of public health spending as measured in National Health Expenditures Accounts: The United States experience. *Journal of Public Health Management Practice* 13 (2):103-14.

Sensenig, A. L. 2011 (March 3). *Measuring Spending on Public Health Activity in National Health Accounts. Presentation to the IOM Committee on Public Health Strategies to Improve Public Health*. Washington, DC: IOM.

Sweet and Moynihan, 2007. *Improving Population Health: The Uses of Systematic Reviews*. New York: Milbank Memorial Fund and CDC.

Teutsch, S. M., and J. E. Fielding. 2011a. Applying comparative effectiveness research to public and population health initiatives. *Health Affairs* 30(2):349-355.

Teutsch, S. M., and J. E. Fielding. 2011b. Comparative effectiveness—looking under the lamppost. *Journal of the American Medical Association* 305(21):2225-2226.

TFCPS (Task Force on Community Preventive Services), S. Zara, P. A. Briss, and K. W. Harris, eds. 2005. *The Guide to Community Preventive Services. What Works to Promote Health?* New York: Oxford University Press.

Thacker, S. B., R. M. Ikeda, K. E. Gieseker, A. B. Mendelsohn, S. H. Saydah, C. W. Curry, and J. W. Yuan. 2005. The evidence base for public health informing policy at the Centers for Disease Control and Prevention. *American Journal of Preventive Medicine* 29(3):227-233.

University of Minnesota. 2010. *Charts of Accounts*. Minneapolis: Regents of the University of Minnesota.

Urban Institute National Center for Charitable Statistics. 2009. *Unified Charts of Accounts*. http://nccs.urban.org/projects/ucoa.cfm (December 29, 2011).

Weintraub, W. S., S. R. Daniels, L. E. Burke, B. A. Franklin, D. C. Goff, L. L. Hayman, D. Lloyd-Jones, D. K. Pandey, E. J. Sanchez, A. P. Schram, and L. P. Whitsel. 2011. Value of primordial and primary prevention for cardiovascular disease. *Circulation* 124(8):967-990.

Woolf, S. H. 2007. Potential health and economic consequences of misplaced priorities. *Journal of the American Medical Association* 297(5):523-526.

Woolf, S. H. 2008. The meaning of translational research and why it matters. *Journal of the American Medical Association* 299(2):211-213.

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4

Funding Sources and Structures to Build Public Health

In 1914, New York City's Commissioner of Health Herman M. Biggs remarked that "public health is purchasable" and that "within natural limitations, a community can determine its own death rate." That powerful idea resonates today—a community's or a nation's inhabitants (or their elected representatives) will decide their health status by how they allocate funding. The poor performance of the United States compared with its global peers in life expectancy and other outcomes described in Chapter 1 reflects what this nation chooses to purchase; clinical care has far greater spending priority than population-based prevention and, more broadly, than social investments, such as in child well-being. As described in this report, changes are needed in the public health infrastructure—specifically in how funding is allocated, used, and tracked—to support greater effectiveness in population health improvement. However, changes also are needed in how the United States purchases health if the nation is to support more balanced investment in population-based strategies and in a public health infrastructure that can support them.

Well-functioning public health departments are central to building a healthy population. However, estimating with precision the level of funding needed to support public health adequately is difficult for several reasons. First, the variation in definitions of public health (see Box 4-1) poses a challenge. Second, better coordination and less service fragmentation are likely to yield economies of scale for health departments, but the evidence base is not yet available that will allow a forecast of the magnitude of savings. Third, as described in Chapter 2, there is not yet a framework, nor are there tools, for tracking expenditures and revenues. Fourth, projecting

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BOX 4-1
A Fundamental Challenge to Estimating Financing Needs: How to Define Public Health

Many organizations and researchers have attempted to determine how much money is spent on all public health activities combined and how much money public health needs to address its charge successfully. One factor that reduces the ability to interpret the estimates is the lack of common definitions. International entities (such as the Organisation for Economic Co-operation and Development [OECD] and the World Health Organization [WHO]), national entities (such as the CMS Office of the Actuary and the Centers for Disease Control and Prevention [CDC]), state entities, and local entities define public health (and its overlap with prevention) in different ways. Some include only population-based health services, others take a broader look and include personal healthcare delivered by governments in the category of public health. Other domains in which different inclusions exist are environmental monitoring by government agencies, food and drug safety, mental health, medical transportation, and emergency disaster services. The lack of consistency in the scope of public health and its role and even in which federal agencies to include within the boundaries of public health (such as the Environmental Protection Agency and the National Highway Traffic Safety Administration, which have important public health roles) add to the difficulty of providing reliable estimates.[a]

The NHEA is limited in its measurement of U.S. spending on public health because there is no universally accepted definition of what constitutes public health activity and no uniformity in existing public health classifications (Honoré, 2011; Sensenig, 2007). For example, Honoré (2011) noted that different states classified tobacco control activities under primary care, under "enhanced public health services," and under "health promotion."

Public health data in NHEA include epidemiologic surveillance, immunization

the cost of a defined "package" of public health services for every state and locality requires both an agreement on what the package is and a better understanding of how the governmental public health infrastructure will shape itself to deliver the package. Some of those difficulties were described by the committee that authored the 2003 Institute of Medicine report *The Future of the Public's Health in the 21st Century*.

Efforts are being made to address these difficulties. The National Association of County and City Health Officials (NACCHO) and the Association of State and Territorial Health Officials (ASTHO) produce periodic reports that include financial information from local and state public health departments, and a continuous data harmonization activity could improve the quality and standardization of the survey data collected (Jones, 2011). In addition, an expanding public health systems and services research agenda and endeavor is under way. However, more effort is needed to facilitate stan-

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and vaccination,[b] disease prevention programs, public health laboratories, and similar population-based health services (Catlin, 2011). NHEA does not include the following in the definition of public health: publicly financed personal health care services, government-funded health research, government investment in medical structures and equipment, public works, environmental protection, sanitation and sewage treatment, and emergency planning (Catlin, 2011). Therefore, spending on nonclinical, prevention, and health promotion–oriented services (that could be classified as public health activities) by the Substance Abuse and Mental Health Services Administration and spending on environmental health services and on maternal and child health services by any level of government are not counted in the public health expenditure category in NHEA.

The International Classification for Health Accounts does not distinguish between personal health care services provided by governments and population-based health services (Sensenig, 2011). And the OECD's System of Health Accounts category of "prevention and public health services" does not distinguish between population-based and individual-based preventive activities. At the local level, nurse home visiting programs illustrate one definitional challenge: whether they are population-based services or individual-based services.

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[a]For example, the National Association of State Budget Officials report on 2002 and 2003 state health spending contained a definition of population health services as including "promotion of chronic disease control and encouragement of healthy behavior and the protection against environmental hazards" (NASBO, 2005). The CMS Office of the Actuary classification system defines a roughly but not completely equivalent budget category of "governmental public health activity" as "publicly provided health services such as epidemiological surveillance, inoculations, immunization/vaccination services, disease prevention programs, the operation of public health laboratories, and other such functions" (CMS, 2011).

[b]Immunizations given in a physician's office are not included in public health data; if they are administered through a public health department, they are included. However, this is complicated by the fact that some of the vaccines given in non–public health facilities may be government-funded, and this could distort the cost data.

dardization in data collection and in the current definitions of public health and related activities at all levels of government in which public health financial data are collected. That would enable the Centers for Medicare and Medicaid Services (CMS) Office of the Actuary National Health Expenditure Accounts (NHEA) to provide a more accurate and uniform picture of governmental public health spending (Catlin, 2011; Sensenig, 2011).

This chapter discusses current public health funding, estimates of the level of funding that public health needs, and some potential sources of adequate, stable, sustainable, and dedicated funding for public health.

CURRENT PUBLIC HEALTH FUNDING

Public health spending may be reported as a percentage of national health spending (used by NHEA), as a percentage of national gross do-

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mestic product (used by OECD and WHO), as total dollars spent (used by OECD,[1] WHO, NHEA, ASTHO, and NACCHO), or as per capita spending (used by all the above). The few available sources of information on public health funding listed above provide several estimates. However, interpreting all the estimates[2] presents challenges related to the variation in how public health expenditures are defined, to the gaps in data reported by public health departments, to administrative differences in how data are collected or reported, and to methodological limitations, such as in how data are aggregated.

Several sources have estimated that 3 percent of total national health spending goes to support nonclinical health or "public health" improvement efforts (Brooks et al., 2009; CMS, 2011; Miller, 2011; Miller et al., 2008). Turnock (2009) notes that 2 percent of Department of Health and Human Services (HHS) funding goes to CDC and the Health Resources and Services Administration (HRSA), the primary federal sources of funding for local public health activities.[3] The bulk of HHS funding goes to publicly funded clinical care (through Medicaid and Medicare) and to the National Institutes of Health (NIH), largely for clinical care research, little for primary prevention, and even less for population-based interventions.

The CMS Office of the Actuary has historically provided measures and estimates of annual health spending in the United States by type of service delivered. CMS uses an economic accounting system—the NHEA—that measures health spending in the United States by the goods and services that are purchased and by the programs, payers, and sponsors that finance care. NHEA provides analytic information about the health sector and includes federal, state, and local governments that fund clinical care provided to individual citizens ("personal health care"), population-based services ("government public health activities"), health care investment ("research" and "structures and equipment"), and administrative costs associated with publicly financed healthcare ("government administration" and "net cost of health" insurance) (Catlin, 2011).[4]

In 2009, according to NHEA, 3.1 percent of the nation's nearly $2.5 trillion spent on health, or $77.2 billion, was spent on government public health activities (the NHEA definition of what is included in public health is described in Box 4-1) (CMS, 2011).[5] In per capita terms, of $8,086 in total

[1]Discussed in Chapter 1.

[2]Including the estimates developed by OECD, which takes the best available data from member nations but acknowledges variations in how public health activity is defined.

[3]HRSA also has additional funding responsibilities.

[4]See also the National Health Expenditure Web tables at http://www.cms.gov/NationalHealthExpendData/downloads/tables.pdf (accessed January 9, 2012).

[5]The NHEA describes four categories of spending: three kinds of health consumption expenditures—personal healthcare, government administration and net cost of health insurance, and government public health activity—and investment.

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health expenditures per person, about $251 was spent on public health by federal, state, and local governments.

National calculations of per capita spending mask a great deal of variation from one state to another and from one locality to another. The Trust for America's Health (TFAH) estimates of spending on public health by state governments for 2009-2010 range from a low of $3.40 per capita in Nevada to a high of $171.30 per capita in Hawaii, with a median of $30.61 per capita (TFAH, 2011). At the local level, the median in 2005 was $29.57 per capita, and "spending in the lowest 20 percent of communities averaged only around $8 per person, while the top 20 percent spent an average of $102 per person" which is 12.75 times as high as the lowest quintile (TFAH, 2010b).

Cost-Sharing Among Levels of Government

The differing definitions and accounting methods complicate attempts to provide a detailed, accurate, and complete apples-to-apples breakdown of public health funding at different levels of government. For example, of the $77.2 billion that NHEA classifies as public health spending, 14.9 percent is attributed to the federal government and 85.1 percent to state and local governments—a large change from the 44 percent federal and 56 percent state and local share in 1970 (Catlin, 2011). It is unclear whether the 14.9 percent accurately reflects federal contributions to public health funding. Fiscal year 2010 NACCHO data show that combined federal funding (including funds passed through to states) accounts for about 23 percent of overall local public health agency revenues—a relatively small portion that the federal government contributes to local public health activities. NACCHO and NHEA appear to capture similar but not equivalent information: public health revenues for the former, and public health spending at all levels of government for the latter. Beitsch and colleagues estimated the total state and local share of governmental public health spending on the basis of data that they aggregated from ASTHO and NACCHO reports. They calculated that "spending of state and local public health agencies constituted 2.37 percent of all U.S. health spending for 2004" and 2.32 percent for 2005[6] (Beitsch et al., 2006, pp. 917-918). The 2004 and 2005 CMS Office of the Actuary data indicated that federal government public health activity accounted for 2.8 percent of total national health expenditure in both years. If one compares those figures with the state and local totals that Beitsch and colleagues calculated and assumes a level of concurrence in how the two sources defined public health activity, the state and local share for those years appears to be close to the current CMS figure: about 82 percent in

[6]2005 data from the Office of the Actuary reported by Heffler et al. (2005).

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2004 and 2005 compared with the current figure of 85 percent. These figures offer another data point to document the growing imbalance between state and local funding and federal funding of public health.

Both NHEA and NACCHO sources document that states and localities shoulder a greater share of the financial burden for public health compared with their federal counterparts. The federal contribution is certainly lower than the federal contribution to governmental medical care cost (Medicaid and Medicare), which is 83 percent federal compared with 17 percent state and local funding, and 66 percent federal to 33 percent state and local funding for Medicaid alone.[7] The differential support of health-related programs, whether their emphasis is on individual services (clinical care) or population-based strategies (public health), bears consideration in determining what constitutes an appropriate contribution to health by different levels of government and what explains the variation. The committee found no discernible rationale for a smaller federal interest in the support of population health, and it viewed a more equitable federal sharing of responsibility with states and localities as having a salutary effect on the stability, equitability, and adequacy of funding, which would benefit the nation's health.

Pressures on Current Funding

Public health departments have a history of chronic underfunding and unstable budgets (Baker et al., 2005; HHS et al., 1994; TFAH, 2008; Sessions, 2012). Recent declines in funding have been punctuated by temporary federal infusions for emergency preparedness and economic stimulus (see, for example, TFAH, 2008). Federal funds for public health are allocated on an annual basis (as is much nonentitlement spending), so it is nearly impossible for states and localities to plan strategically, and the near horizon makes it extremely difficult to show results of newer programs. Newly funded programs often have the least stable funding and, in many cases, such as obesity control, take many years to demonstrate impact. In contrast with the case of hospital infrastructure, supported in a stable manner beginning with the Hill–Burton Act of 1946 (which aimed to strengthen the nation's hospitals and to reach a specified ratio of hospital beds per unit of population), and the NIH biomedical research enterprise, supported by fairly stable and ample congressional appropriations, there has never been a consistent stream of federal funding for public health. The current economic downturn has placed additional financial strain on state and local jurisdictions and deeply affected public health and other government agen-

[7]It should be noted that out-of-pocket costs for Medicare beneficiaries are substantial and that not all costs are paid by government, whereas government pays essentially all Medicaid costs.

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cies, forcing staffing cuts, furloughs, and cuts in programs, including such essential programs as immunization and tobacco control activities (ASTHO, 2011; NACCHO, 2011b). Since 2008, 34,400 jobs in local health departments (about one-fifth of the local public health workforce) have been lost to layoffs and attrition (TFAH, 2011), and over 52,200 combined state and local public health jobs have been lost since 2008 (17 percent of the state and territorial public health workforce and 22 percent of the local public health workforce; ASTHO, 2012).

In 2010, the Affordable Care Act (ACA) established the Prevention and Public Health Fund to promote public health, particularly through control of chronic diseases (TFAH, 2011). Its budget of $15 billion over more than a decade, beginning with $1.25 billion in 2013 and increasing to $2 billion per year, is modest relative to the $2.5 trillion spent annually on health. In its first year, $500 million of the fund was spent in large part to support the primary care workforce and to replace other public health funding that had been cut. The president's 2013 budget includes a $4.5 billion cut in the fund and transfers to fill deep cuts in the CDC budget. Moreover, in February 2012, Congress passed and the president signed an act that includes a $6.25 billion cut in the fund. Among the reasons for the cut was the intention to use the funds to protect physicians from large cuts in Medicare reimbursement fees. However justified and health-relevant the purposes of such cuts, they detract from the broader prevention and public health agenda for which the fund was originally intended.

ESTIMATES OF NEED

The level of spending needed for public health agencies to maintain necessary activities and expand to other population health challenges can be estimated with a top-down or a bottom-up approach. The top-down approach estimates the funds needed on the basis of an existing number or benchmark that is considered adequate. Bottom-up figures are based on estimating the costs of major components of the system and summing them to obtain a total.

TFAH in collaboration with the New York Academy of Medicine (NYAM) used different approaches to estimate the shortfall in public health funding. Using a top-down approach, they developed an estimate based on NACCHO data on local public health department revenues and federal budget data for CDC, HRSA, SAMHSA, the Substance Abuse and Mental Health Services Administration, the Food and Drug Administration, and the Indian Health Service. The TFAH–NYAM analysis gives an estimate of $20 billion for the shortfall in public health support. In a second analysis, TFAH–NYAM determined that if the average OECD public health spending level were used as a benchmark, the United States would need to spend an

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additional $24 billion. The study acknowledged the limitations inherent in any international comparison of public health expenditures, including the fact that OECD averages (and other averages) compare estimates that were based on different definitions of the scope of public health.

Extrapolating a bottom-up study of public health funding needs for Washington state to a national level, TFAH–NYAM estimated that an additional $18 billion would be needed for U.S. public health. TFAH also noted that the Washington state model "uses a default population without defined demographic characteristics" and "may understate or overstate the necessary increase in public health investment when extrapolated nationwide" (TFAH, 2008). Despite the limitations of the data and the use of different ways of deriving the estimates, the three TFAH–NYAM estimates of funding needed on a national level are in a relatively small range.

In its thinking about approaches to determining the level of funding required, the committee used a bottom-up approach. It reviewed available data on state public health spending, comparing per capita spending by states. The average state public health spending for the nation is $38.06 per capita (calculated from TFAH 2010 state data) (TFAH, 2010b). Multiplied by 311.6 million inhabitants of the United States, that amounts to a total of about $12 billion at the national level (as expected, the same as the figure obtained from summing all state public health spending) (TFAH, 2010a).[8] The two jurisdictions that rank at the top of state public health spending and are outliers are Hawaii and Washington, DC, which spend $171.3 and $111, respectively, per capita. Once those two outliers are disregarded, the other states that have high per capita spending form a cluster, beginning with Idaho at $76.60 per capita, followed by other states that spend $75.42, $71.61, $70.57, and so on. On the basis of the chronic underfunding of public health, the committee concluded that, at a minimum, federal funding that would move the low-funded states up to the level of the higher-funded states (minus the outliers) would bring public health funding much closer to meeting national needs. Multiplying Idaho's per capita expenditure by the population of the United States (311.6 million) would bring total state public health spending to $23.9 billion, nearly $12 billion more than (or twice as much as) the total current state spending on public health. The committee found it reasonable to use state data to derive an estimate for an increase in the federal contribution for the following reason: Given the historical decline in the federal share of public health funding and the threats to the nation's health from inadequate public health action, the federal government has an important role and needs to increase its spending. An increase of $12 billion over the current federal share—in effect, a doubling—could

[8]The 311.6 million figure rounds up the 2011 estimate of the Census Bureau (311,591,917).

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be thought of as bringing states to the per capita spending level of the third-most generous state.

The committee also considered another possibility for arriving at a bottom-up estimate: identifying some of the largest system components and providing cost estimates for them. "Costing out" some components of the *minimum package of public health services* may provide an idea of the main needs for additional public health funding. For example, the committee identified tobacco control as an essential program—a program that no public health department could be without, given the enormous deleterious impact of smoking on both health and medical care cost. The national average spending on tobacco control was $1.22 per capita in 2004, less than one-fourth of CDC's recommended minimum of $5.98[9] (CDC, 2004). Multiplying the nearly $6 per capita by the population of the United States, even without translating it into 2011 dollars, yields $1.9 billion needed annually for adequate tobacco control alone. Costing out additional components of the public health infrastructure would be made easier by the improvements recommended in the present report, such as more standardized financial data and agreement on a *minimum package of public health services* and their costs. Additional examples could include determining the cost of operating complex, multipurpose public health information and surveillance systems, the cost of developing or acquiring policy analysis expertise at the local public health department level, and the cost of developing sophisticated and multifaceted communication capabilities that are shared among a department's programs.

Although data on public health spending are scarce and there is not enough information for precise estimates of what is needed to finance population health activities, it is evident from the figures and needs described earlier that the funding of the nation's public health infrastructure is inadequate. The problem is even worse when one looks beyond total funding at the disproportionately low levels of funds dedicated to the leading causes of death or the preventable disease burden. Sufficient, stable, and dedicated funding is needed to help public health agencies to perform the core public health functions of assessment, policy development, and assurance and to ensure that all communities have access to the *minimum package of public health services*—the array of foundational capabilities and basic program areas described in Chapter 2. To reach that goal, funders will need to ensure that funding streams are coordinated, that there is flexible support for

[9]In its 1999 report, *Best Practices for Comprehensive Tobacco Control Programs*, CDC outlined formulas for its per capita spending recommendation, using nine elements of a comprehensive program. "These formulas were based on evidence from the scientific literature and the experience of large-scale and sustained efforts of state programs in California and Massachusetts" (CDC, 2007, p. 111). In 2006, a technical review panel updated the costs and kept the formulas from the 1999 estimates after adjusting some variables.

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foundational capabilities, and that categorical grants are designed to fund an agreed-on list of basic programs (based on the preventable burden of disease) and not merely continue traditional patterns of funding, which are based primarily on stakeholder advocacy or decision-maker support.

The committee has identified two types of models to describe funding roles and responsibilities of federal, state, and local governments to ensure that every jurisdiction provides the *minimum package of public health services*. Because the failure of a jurisdiction to provide that package of services may present a threat to the nation's health, a national top-down model is based on the federal responsibility to ensure that every jurisdiction has the resources to establish the foundational capabilities and deliver the basic programs with a trust fund or other unified source. In a second, bottom-up model, foundational capabilities are a decentralized responsibility of states and localities, and funding is obtained through a matching mechanism whereby states and localities demonstrate that they have the foundational capabilities in place to get additional funds to provide the basic programs. Federal funding is needed both to augment services provided by state and local public health agencies and to add additional services where the *minimum package* is not provided. Every public health department has some foundational capabilities, but some public health departments lack some capabilities (such as policy analysis or communication), and many others have inadequate capacity in one or more areas. Regardless of model, the committee believes that federal agreement with the *minimum package* is important, as is its incorporation into federal financing mechanisms.

The many gaps in information that have been described in this report prevent the committee from offering a firm estimate of the additional funds needed to provide the *minimum package of public health services* in all localities. However, on the basis of its review of the work of others and its own formulation of approaches, the committee provides an estimate of $24 billion for the total federal investment to build a governmental public health infrastructure that will be able support the type of population health strategies that are needed to improve the health of Americans and limit the growth of expenditures on medical care services. The estimate is developed on the basis of weak and limited data, but the committee looked at available data in several ways to converge on a plausible estimate. The number is roughly twice the current $11.6 billion that is the federal portion of NHEA spending on public health (roughly equivalent to the CDC and HRSA budgets). In the committee's opinion, the amount is suggestive of what might be immediately needed from the federal level to support public health departments' population-based strategies and interventions to protect and promote health. The 2008 TFAH estimate of the total shortfall in public health spending (federal, state, and local) is $20 billion (TFAH, 2008). The committee's more conservative estimate entails a doubling of the

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federal contribution (from $11.6 billion to $24 billion) narrowly defined according to the NHEA classification, but it is meant to be a starting point for discussion (for example, about how public health is defined for funding purposes) and research toward the development of a more precise estimate.

> **Recommendation 8: To enable the delivery of the *minimum package of public health services* in every community in the nation, the committee recommends that Congress double the current federal appropriation for public health and periodically adjust the appropriation on the basis of the estimated cost of delivering the *minimum package of public health services*.**

The cost of delivering the *minimum package* would be obtained from the National Prevention, Health Promotion, and Public Health Council's annual report to Congress (see Recommendation 7).

The annual appropriation process and frequent fluctuations in funding (for example, funding cuts interspersed with occasional increases, such as from bioterrorism legislation [NASBO, 2005] and stimulus legislation) are impeding the ability of public health departments to prevent disease, promote health, and protect the health of their communities in the face of a wide array of threats (Fee and Brown, 2002; TFAH, 2011; Kurland et al., 2004; Schultz, 2009).[10] Given the ideally supportive role of the federal government in the process of building up funding for public health, it seems appropriate to increase federal contributions first, to lead the way for state and local participation.

NEW FUNDING SOURCES

Reallocation of State and Local Funds Now Used for Clinical Care

As discussed in Chapter 2, public health agencies will continue to play a role in assuring access to and quality of clinical care in their communities, but as insurance becomes more widely available and clinical care more accessible, the role of governmental public health as a direct service provider is likely to diminish. As recommended in the committee's first report (IOM, 2011c) and described in Chapter 2, public health departments of the future must be positioned to form partnerships with medical care entities and to share information derived from clinical data sources to identify health priorities in their communities. Accountable care organizations and

[10]Adding to the fluctuations is that an influx of federal funds has been seen to lead to a cutback in state funding, as was the case with the funding added in the years after 1989-1991 measles outbreak (IOM, 2003).

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the patient-centered medical home model for clinical care delivery are examples of where clinical care and public health share interests (IOM, 2012). Governmental public health could contribute to the quality of the health system by collaborating with clinical care systems to provide information to those systems and the public about the appropriateness, quality, safety, and efficiency of services delivered in the community. A diminished role in direct clinical service delivery by governmental public health could reasonably be projected to free up state or local general revenue funding[11] in public health budgets that had formerly been allocated to provision of care. Those resources could be used to build data capacity and other essential public health services in localities. Although the savings in clinical care delivery could plausibly be claimed for other government services or for reduction in taxes, redirecting the savings to provide additional resources for the public health departments' population health mission will pay health and economic dividends in the long term.

Recommendation 9: The committee recommends that state and local public health funds 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 public health departments.

New Potential Sources of Funding

In considering potential sources of funding for public health activities, the committee identified and applied three criteria:

1. There should be a relationship between the sources and public health use.
2. The amount of funds that could be raised should be large enough (that is, commensurate with the magnitude of the preventable disease burden that the activities are designed to address) and sustainable.
3. Allocation from any given source should not have substantial deleterious economic effects.

The committee reviewed a wide array of potential sources and discussed their advantages and disadvantages and barriers to their use (see Table 4-1 and Sessions, 2012, Appendix D for additional discussion of revenue

[11]This does not refer to funding streams, such as state Medicaid, that are intended specifically for clinical care.

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TABLE 4-1 Options for Funding Public Health[a]

Mechanism or Source	Fundraising Potential	Advantages (Including Meeting the Criteria Outlined Above) and Disadvantages or Barriers
Estate tax—a tax imposed on the transfer of the estate of a deceased person	$70 billion in 2020 (and $50 billion annually by 2020) if extended in its current form (according to a Congressional Budget Office estimate)	Stable and could support education or other factors known to contribute to better health outcomes; would not have a large negative effect on the economy
Excise taxes—paid at the time of purchase of specific goods	$0.01 per ounce of sugar-sweetened beverage would raise $1.8 billion annually in California and $1 billion in New York, Florida, and Texas A national excise tax of $0.03 per 12 ounces of sugary beverage would yield $50 billion over 10 years (Sussman, 2011) Standardizing federal taxes on alcoholic beverages to $0.25 per ounce of alcohol would increase revenue by $60 billion over 10 years	Could be linked explicitly to public health and may have additional effects on risk behaviors Although alcohol and other "sin" taxes may affect particular vulnerable populations disproportionately (Commonwealth Fund, 2007), some of those groups often bear the heaviest burden of the adverse effects of the product being taxed
Value-added tax—a form of consumption tax (common in other industrialized countries); similar to a sales tax but paid at all levels of production on the value added at each level	Wide-ranging	See Appendix D for additional discussion
Sales taxes	Taxes imposed by states and localities may range from 1 to 10 percent Tax on remote sales (such as through the Internet) could raise as much as $22 billion annually in funds currently owed but not collected Another source provides an estimate of $33.7 billion in revenues lost as a result of online sales taxes' not being collected (Brunori, 2007)	See Appendix D for additional discussion

continued

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TABLE 4-1 Continued

Mechanism or Source	Fundraising Potential	Advantages (Including Meeting the Criteria Outlined Above) and Disadvantages or Barriers
Taxes on medical care, including a transaction tax on health care services and surcharges on health insurance (health care transaction tax)	About $50 billion could be raised with a 2 percent transaction tax	This is a broad-based tax to benefit a common good—the services of public health departments; small increases can generate substantial revenue (Wicks, 2008). While there could be objections that the tax increases health care costs, it has the potential to reduce the need for clinical care
Property tax	Property tax is levied in all 50 states (at a rate ranging from 0.65 percent in Alabama to 2.57 percent in Texas in 2007); it is a large source of local government revenue (generating about 72 percent of local tax revenues or 26 percent of total local government revenue) The per capita property tax in the United States in 2007 was $42.21 at the state level and $1,236.00 at the local level (Tax Foundation, 2009a,b); if the local per capita tax were increased by 5.25 percent (by $65), that could help to raise $20 billion for public health	Highly visible tax; not related to public health; funds are already allocated otherwise, so tax would have to be increased to avoid adverse effects
Big spenders' or luxury goods taxes—higher taxes on items not considered essential or on purchases over a specified dollar amount	As an example, the luxury tax applied in Arizona on tobacco and liquor yielded $477 million in FY 2007-2008 (Arizona Department of Revenue, 2011)	A national luxury tax was implemented in 1990 but was not successful and was repealed 2 years later because revenues were disappointing; buyers of luxury items with higher taxes looked to purchase other items instead; the tax also had a negative effect on sales of luxury items

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TABLE 4-1 Continued

Mechanism or Source	Fundraising Potential	Advantages (Including Meeting the Criteria Outlined Above) and Disadvantages or Barriers
Industry taxes for externalities (for example, forcing market participants to pay the additional social costs of their products)	A 2010 National Research Council report (NRC, 2010) stated that the following social costs were imposed by externalities related to power generation: • Coal—70 percent of its market price • Petroleum—one-fourth of the cost of gasoline	Taxing gasoline for pollutants emitted, sugar for related health care costs, and firearm manufacturers for the cost that violent crime imposes on society
Tax on life insurance proceeds and other things that transfer at death (at state level)	In 2010, $58 billion was paid to life insurance beneficiaries (ACLI, 2012); a 1 percent tax would yield $580 million, a 1.5 percent tax $870 million, and a 2 percent tax $1.16 billion annually	Related to health in that the funds would be used for population health interventions to prolong and improve quality of life
Intangibles tax—a tax imposed by states or localities on the value of such assets as stocks, bonds, money market funds, and annuities	Varies by state; only 10 states implement an intangible property tax;[b] only four have an intangibles tax on business and personal property that also applies to intangible property (such as funds on deposit, promissory notes, rights of court judgments, stock certificates, and bonds) (Tax Foundation, 2008)	Not related to public health and not widely used in the United States; some consider this an "antigrowth" tax because of its effect on businesses if they hold large amounts of their own or other companies' stock

continued

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TABLE 4-1 Continued

Mechanism or Source	Fundraising Potential	Advantages (Including Meeting the Criteria Outlined Above) and Disadvantages or Barriers
Hospital community benefit (recently updated Internal Revenue Service requirement that nonprofit hospitals use their tax exemption to return benefit to their communities)[c]	This could raise up to $13 billion (Goodman, 2009) "A 2009 IRS study showed that not-for-profit hospitals spent an average of 9% of their total revenues on community benefits." "The study also found that 58% of the not-for-profit hospitals spent 5% or less of their total revenues on charity care and that slightly more than one-fifth of the hospitals spent less than 2% of their total revenues on community benefits" (IRS, 2009) Uncompensated care was the largest spending category; hospital annual revenues in the study range from under $25 million to over $500 million (IRS, 2009)	Community-based; could serve as basis of linkages between public health and clinical care; hospitals can reap benefits from investing in healthier communities; hospitals may prefer to use the funds differently IRS does not require that hospitals partner with public health departments (only that they receive a public health input), but final IRS guidance on community benefit has yet to be published; see Appendix B for discussion of potential implications of the community benefit provision for public health practice (Rosenbaum, 2012) The considerable strength of this potential funding source is its close relevance and relationship to population health; local support of public health as part of an accountable care organization or "health home" (KFF, 2011) is one of the options being discussed for channeling community benefit funds
Social investment bonds (SIBs)—a new tool through which government pays after results are achieved by collaborating public and private actors (including investors)	Wide range is possible; for the 2012 budget, the White House proposed up to $100 million in SIB pilots	Addresses political challenge of government investments with long-term yields (hard for Congressional Budget Office to calculate) and leverages resources of philanthropies and other private sector investors[d]

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TABLE 4-1 Continued

Mechanism or Source	Fundraising Potential	Advantages (Including Meeting the Criteria Outlined Above) and Disadvantages or Barriers
Community Development Financial Institutions (CDFIs)	In 2007, CDFIs leveraged $621 million in private investments that led to the creation of jobs, development of livable housing, etc. and so on	By definition, CDFIs focus on disparities and disadvantaged communities, which are typically at greater health risk; dependent on multisector collaboration; can be used to advance health in all policies initiatives

[a]This table is not comprehensive inasmuch as other funding options are possible (see Appendix D). For example, using general tax revenues to finance government services allows the government to raise money efficiently (while minimizing distortions caused by taxes). The government could use funds raised by Medicare payroll taxes to support public health activities, particularly those aimed at preventing chronic diseases that will cost Medicare billions of dollars to treat in the future (this would require congressional action and clear evidence of potential savings but does meet the committee's criteria).

[b]Padgitt, 2010. Index, pp. 27-28.

[c]"Community benefit" refers to the Internal Revenue Service (IRS) requirement—dating back to 1969 (amended in 1983 and updated by the Affordable Care Act [ACA])—that not-for-profit hospitals provide services to benefit the communities that they serve (such as emergency room care for everyone—even those who cannot pay) and in return receive tax exemption from the federal government. Hospitals are expected to provide to their communities benefits commensurate with the tax exemption that they enjoy. The IRS has not detailed the specific composition of what constitutes community benefits and what a hospital must provide to maintain its tax-exempt status (CBO, 2006), but states can develop their own standards. The ACA (Section 9007) expanded and clarified what is required of hospitals to maintain their tax-exempt status: "give increased attention to working with others to determine community health needs and take action to meet those needs" and "implement financial assistance and billing and collection policies that protect consumers" (Folkemer et al., 2011). Under the new requirements, hospitals are obliged to collaborate with public health agencies and align payment requirements with patient financial capacity. The IRS has published draft guidelines to be implemented in 2012 and requested public comment. The importance to hospitals of community benefit funds may increase as Medicaid Disproportionate Share Hospital (DSH) funding currently allocated to hospitals for services to uninsured and Medicaid patients is phased out beginning in 2014 (Academy Health, 2011). DSH funding totaled $17.15 billion, including $7.5 billion in state and local government funds (NAPH, 2009). That may make it more difficult for public health to claim some of the funds.

[d]Social Investment Bonds (SIBs) are an innovative instrument developed and implemented in the UK, "allowing government to engage private capital to fund . . . preventive programs and incur public benefit" (Greenblatt, 2011). In addition to garnering investment in social outcomes, SIBs require success for there to be a return on shareholder investment. The federal government is pilot-testing SIBs under a $100 million program, and Massachusetts has released a request for information on its own SIB program. SIBs may be one cure for the political process's aversion to or impatience with investments that yield fruit in the long term, such as prevention programs in different areas of society, ranging from health to criminal justice.

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sources). Although a single funding source was viewed by the committee as desirable in that it would reduce the complexity involved in establishing a funding mechanism and structures for accountability, the combination of several funding sources may, for pragmatic reasons, merit consideration.

As discussed in the committee's report on law and policy (IOM, 2011b), such policy tools as taxes and fees may be formulated to serve dual purposes, for example, to raise funds and to spur more health-promoting behavior (such as decreasing consumption of alcohol or sugar-sweetened beverages). Options differ widely in how they fulfill the above criteria and in their political palatability and other aspects of feasibility.

The last three of the potential funding sources described in Table 4-1 are somewhat different from the rest in that they represent public–private funding mechanisms and leverage government funding or government's financial interest to raise private sector funds or bring other private sector resources to bear on population health improvement. See Box 4-2 for a discussion of an international public–private model of funding public health, in this case specifically health promotion.

BOX 4-2
A Different Model for Funding Public Health and Health Promotion

An additional model to fund population health activities is found in the not-for-profit or quasigovernment health promotion foundations formed by several countries, including Australia (in the states of Victoria and Western Australia), Canada, Switzerland, Thailand, Scotland, and France (the Chagnon Foundation). The mechanisms used by those countries include

- Government-based approach within ministry.
- Public bodies closely linked to government.
- Health promotion foundations.
- Private foundations (International Network of Health Promotion Foundations, 2011).

Extrapolated to the population of the United States, the funding raised by the Australian states or Switzerland, which are comparable with the United States in wealth and development, amounts to only a few billion dollars. However, the activities of the health promotion foundations represent a fairly narrow set of population-based interventions rather than the full gamut of public health activities in a country. The fundraising models provided by health promotion foundations include dedicated excise taxes on alcohol or tobacco (ThaiHealth), a value-added tax (Austria), specific appropriations from treasury budgets (Australian health promotion foundations and the Malaysian Health Promotion Board), and a levy on health insurance (Switzerland).

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Having considered such an extensive array of options, the committee favors a transaction tax on all clinical services because of its pertinence to population health, its ability to raise adequate funds, and the low likelihood of deleterious economic effects (i.e., it meets all criteria). The feasibility of the tax has been demonstrated in Minnesota and Vermont, where funds raised by the tax are used to expand access to medical care (PHPG, 2012; Wicks, 2008). The tax is known as a "provider tax," "a fee," or an "assessment" and is implemented through "a state law that authorizes collecting revenue from specified categories of providers" (NCSL, 2011). In fact, federal law allows the collection of "health care–related taxes" from 19 classes of health care providers or services (PHPG, 2012, p. 1). Such taxes have been used to generate state funds for federal Medicaid matching, but states may "designate or earmark the revenue for any state purpose" (NCSL, 2011). They have been used to "raise provider rates, fund other costs of the Medicaid program or be used for other non-Medicaid purposes, such as depositing the funds into the state's general treasury" (PHPG, 2012, p. 1).

Among other public health purposes, the tax could be used to strengthen the efforts of public health departments to support their clinical care counterparts in becoming more efficient and effective and to further public understanding of and expectations for clinical care. Most states have some type of provider tax, and 30 states tax more than one category of providers (Wicks, 2008), generally to raise provider reimbursement rates (by adding to funds available for this purpose) or to expand coverage. The committee believes that using such a tax to raise funds to support public health is reasonable given the need to improve the balance of spending, especially by government, on clinical care and public health.

According to the Minnesota Department of Management and Budget, the state was expected to raise $512.1 million in revenues from its 2 percent transaction tax (Michael, 2011; Wicks, 2008). Extrapolating from Minnesota's population of 5.34 million to the U.S. population of 311.6 million, one could expect to raise approximately $29.9 billion.[12] In Vermont, the tax—which ranges from 0.14 to 6 percent depending on the provider class—is expected to raise $129.7 million in 2012 (Pacific Health Policy Group, 2012).[13,14] Extrapolated to the current population of the United States and assuming similarly tiered assessments, one could expect to raise about $64

[12]The estimates extrapolating from Minnesota's revenues are based entirely on population and do not consider how they might differ from the "average state" on factors that affect revenue—such as health care use, quality, and funding of the public health department.

[13]PHPG (2012) calculated that if the 6 percent tax were assessed on all classes of providers, nearly $178 million could be raised in 2013, $40 million more than the estimated $137 million expected in 2013.

[14]The estimates extrapolating from Vermont's revenues are based entirely on population and do not consider how they might differ from the "average state" on factors that affect revenue—such as health care use, quality, and funding of the public health department.

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billion. A different way to estimate the total funds that could be raised by the tax is to calculate an assessment of 2 percent on the $2.05 trillion personal health care line item of the nearly $2.5 trillion in total national health expenditures (CMS, 2011), which would yield approximately $40 billion.

Although it imposes a small amount of financial burden on the clinical encounter, a tax on medical care transactions is unlikely to have a substantial deleterious economic effect. And from the perspective of developing a health system that links its activities in clinical care and population-based strategies, a tax in the clinical care setting is a coherent approach for aligning the shared end goal of better health.

Access to medical care is one of the determinants of health. Expanding access is contributing to better population health in Minnesota and Vermont, but population-based efforts have the potential to do so more powerfully. For example, through the implementation of a variety of effective tobacco control policies, new generations of Americans are born into a society where norms about smoking and the environmental conditions that surround that behavior have changed dramatically over nearly five decades.

The critical goal for both the public and private sectors is to bend the curve on the burden of preventable disease experienced by Americans. A tax that is designed to assist in doing so could seem sensible to employers and health plans that stand to reap the benefits of and savings realized from a healthier population. The funds raised by the tax would be used to meet health needs that clinical care alone cannot meet (prevention, especially primordial prevention), and the tax therefore has the potential to be a win–win for insurers and payers. The clinical care system would benefit from contributing to the funding of population-based interventions. Improving the healthfulness of physical and social environments is likely to have effects at different levels of prevention. Fewer people would enter the clinical care delivery system to receive care for preventable conditions. Transformed community conditions could also contribute to adherence to lifestyle and other factors that are linked to the environment, which could mitigate such illnesses as hypertension and diabetes. Policies and other interventions could also alter environmental factors to discourage distracted driving and thus affect a growing cause of injuries and fatalities related to motor vehicles.

The committee believes that new and reliable sources of funding to support public health are needed. The nation's priorities regarding the financing of clinical care are crystal clear—there is a dedicated, stable, long-term, and vast outlay of funds. Public health practice and population health improvement activities deserve similarly adequate and dedicated funding to help meet the nation's pressing health challenges.

Recommendation 10: The committee recommends that Congress authorize a dedicated, stable, and long-term financing structure

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to generate the enhanced federal revenue required to deliver the *minimum package of public health services* in every community (see Recommendation 8).

Such a financing structure should be established by enacting a national tax on all medical care transactions to close the gap between currently available and needed federal funds. For optimal use of new funds, the secretary of the Department of Health and Human Services should administer and be accountable for the federal share to increase the coherence of the public health system, support the establishment of accountability throughout the system, and ensure state and local cofinancing.

The ACA mandates that only 15-20 percent of every premium dollar can be retained by an insurer to cover administrative, sales, marketing, profit, and other costs (HHS, 2010). One way to minimize potential adverse effects of the recommended tax for population health would be to consider it an allowable "care" expense included among expenditures that qualify toward medical loss ratio mandates. That would be similar to wellness and disease management and other clinical care initiatives that can be part of the $0.80-0.85 of each dollar of premium collected by insurers or health plans. By supporting more robust public health action to prevent disease and disability in the population, the tax would deliver health value to beneficiaries.

CONCLUDING OBSERVATIONS

In this chapter, the committee attempted to provide an answer to the report's central question: How much? Estimating the needs of U.S. public health is a challenging and, today, uncertain endeavor. Financial data on the U.S. public health infrastructure, whether measured as revenues or as expenditures, are incomplete and fragmentary at best. Changes are needed in public health agencies (such as development and implementation of charts of accounts to permit accurate tracking and reporting of financial data in addition to more effective management), in funding mechanisms (such as greater flexibility and greater coordination), and in how the scope of public health practice is defined and bounded.[15] A great deal of public health activity and even organization has emerged in response to parallel streams of funding generated by interested constituencies, rather than becoming available to meet specific needs in coordinated and coherent ways.

[15]Comparisons with other nations' public health spending are similarly difficult because each country has its own definition of public health. The international efforts to standardize systems of health accounts appear to have been focused on the delivery of clinical care and much less on public health activities.

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The committee's conclusion, based on information gathered from a variety of sources, is that public health funding is inadequate to meet current and future needs. Multiple sources—CDC, NACCHO, ASTHO, the work of Novick et al. (2008), Turnock (2009), and many others—attest to the fact that public health agencies are engaged in a constant struggle to make ends meet; they are trying to develop foundational capabilities needed among programs on a shoestring budget, deciding what essential programs are less essential when times are lean, and making do with less—and less. For example, while funding for public health preparedness has decreased, the threat of pandemics or bioterror attacks has not evaporated. Cuts in staffing and resources leave public health departments unable to respond to crises (NACCHO, 2011a). In 2011, 18 percent of local public health departments reduced or eliminated maternal and child health services programs (NACCHO, 2011a).

These are economically challenging times for localities, states, the nation, and the world, but the importance of population-based public health interventions and the need for a vibrant public health enterprise to undertake them have not lessened and may well have increased. Governments are well versed in making tough choices and tradeoffs, but as a nation, the United States cannot afford to continue to defer the needs of its public health infrastructure while national expenditures on clinical care escalate. Underfunding of public health is far too costly in lives and dollars.

REFERENCES

Academy Health. 2011. *The Impact of the Affordable Care Act on the Safety Net*. Washington, DC: Academy Health.

ACLI. 2012. *Benefits Paid*. http://www.acli.com/Tools/Industry%20Facts/Benefits%20Paid/Pages/Default.aspx (January 10, 2012).

Arizona Department of Revenue. 2011. *Arizona Department of Revenue FY 2008 Annual Report*. Phoenix: Arizona Department of Revenue. http://www.azdor.gov/Portals/0/AnnualReports/FY08%20Annual%20Report_web.pdf.

ASTHO (Association of State and Territorial Health Officials). 2011. *Budget Cuts Continue to Affect the Health of Americans: Update May 2011*. Washington, DC: ASTHO.

ASTHO. 2012. *Budget Cuts Continue to Affect the Health of Americans: Update March 2012*. Arlington, VA: ASTHO.

Baker, E. L., M. A. Potter, D. L. Jones, S. L. Mercer, J. P. Cioffi, L. W. Green, P. K. Halverson, M. Y. Lichtveld, and D. W. Fleming. 2005. The public health infrastructure and our nation's health. *Annual Review of Public Health* 26:303-318.

Beitsch, L. M., R. G. Brooks, N. Menachemi, and P. M. Libbey. 2006. Public health at center stage: New roles, old props. *Health Affairs (Millwood)* 25(4):911-922.

Brooks, R. G., L. M. Beitsch, P. Street, and A. Chukmaitov. 2009. Aligning public health financing with essential public health service functions and national public health performance standards. *Journal of Public Health Management and Practice* 15(4):299-306.

Brunori, D. 2007. *State Tax Policy: A Political Perspective* 2nd ed. Washington, DC: Urban Institute Press.

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Catlin, A. 2011. *Public Health Spending in the National Health Expenditure Accounts. Presentation to the IOM Committee on Public Health Strategies to Improve Health.* Washington, DC: Venable Conference Center.

CBO (Congressional Budget Office). 2006. *Nonprofit Hosptials and Tax Arbitrage.* Washington, DC: The Congress of the United States, Congressional Budget Office.

CDC (Centers for Disease Control and Prevention). 2004. *Sustaining State Funding for Tobacco Control: The Facts.* Atlanta, GA: CDC.

CDC. 2007. Best practices for comprehensive tobacco control programs. Atlanta, GA: CDC.

CMS (Centers for Medicare and Medicaid Services). 2011. *National Health Expenditures.* https://www.cms.gov/NationalHealthExpendData/downloads/tables.pdf (December 19, 2011).

Commonwealth Fund. 2007. *Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Spending.* New York: The Commonwealth Fund.

Fee, E., and T. M. Brown. 2002. The unfulfilled promise of public health: Deja vu all over again. *Health Affairs* 21(6):31-43.

Folkemer, D. C., L. A. Spicer, C. H. Mueller, M. H. Somerville, A. L. R. Brow, C. J. Milligran, and C. L. Boddie-Willis. 2011. *Hospital Community Benefits After the ACA: The Emerging Federal Framework.* (January Issue Brief). The Hilltop Institute.

Goodman, M. R. 2009. Putting the community back in community benefit: Proposed state tax exemption standard for nonprofit hospitals. *Indiana Law Journal* 84(2):713-742.

Greenblatt, J. 2011. Social impact bonds bring social innovation to the Bay State. *Huffington Post.* http://www.huffingtonpost.com/jonathan-greenblatt/shot-heard-round-the-worl_b_858961.html (accessed January 4, 2012).

Heffler, S., S. S. Smith, S. Keehan, C. Borger, M. K. Clemens, C. Truffer. 2005. U.S. health spending projections for 2004–2014. *Health Affairs* 24 (Suppl 1):w74-w86.

HHS (Department of Health and Human Services). 2010. *New Affordable Care Act Rules Give Consumers Better Value for Insurance Premiums.* http://www.hhs.gov/news/press/2010pres/11/20101122a.html (accessed March 15, 2012).

HHS, Public Health Services, and CDC. 1994. *For the Health of a Nation: Returns on Investment in Public Health.* Washington, DC: U.S. Department of Health and Human Services.

Honoré, P. A. 2011 (March 3). *Financing Mechanisms & Models for a Public Health System of Accounts. Presentation to the IOM Committee on Public Health Strategies to Improve Public Health.* Institute of Medicine, Washington, DC.

International Network Health Promotion Foundations. 2011. *Key features of health promotion foundations.* http://www.hpfoundations.net/about-hp-foundations/key-features-of-hpf (April 19, 2011).

IOM (Institute of Medicine). 2003. The governmental public health infrastructure. *In The Future of the Public's Health.* Washington, DC: The National Academies Press. Pp. 96-177.

IOM. 2011a. *Essential Health Benefits: Balancing Coverage and Costs.* Washington, DC: The National Academies Press.

IOM. 2011b. *For the Public's Health: Revitalizing Law and Policy to Meet New Challenges.* Washington: The National Academies Press.

IOM. 2011c. *For the Public's Health: The Role of Measurement in Action and Accountability.* Washington, DC: The National Academies Press.

IOM. 2012. *Primary Care and Public Health: Exploring Integration to Improve Population Health.* Washington, DC: The National Academies Press.

IRS (Internal Revenue Service). 2009. *Exempt Organizations Hospital Study: Executive Summary of Final Report.* http://www.irs.gov/pub/irs-tege/execsum_hospprojrept.pdf.

Jones, J. A. 2011. *Harmonizing Data: The Synthesis of Knowledge.* Presented at the Keeneland Conference, April 12, 2011, Lexington, KY.

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For the Public's Health: Investing in a Healthier Future

KFF (The Henry J. Kaiser Family Foundation). 2011. *Medicaid's New "Health Home" Option.* Menlo Park, CA: The Henry J. Kaiser Family Foundation http://www.kff.org/medicaid/upload/8136.pdf (accessed March 8, 2012).

Kurland, J., D. K. Walker, and C. L. Hager. 2004. *Funding Cuts to Public Health in Massachusetts: Losses Over Gains*. Boston: Massachusetts Health Policy Forum.

Michael, J. 2011. *MinnesotaCare Provider Taxes*. House Research Department.

Miller, E. 2011. *House Defunds ObamaCare and Planned Parenthood, Senate Kills Both*. http://www.humanevents.com/article.php?print=yes&id=42947 (October, 6, 2011).

Miller, G., C. Roehrig, P. Hughes-Cromwick, and C. Lake. 2008. Quantifying national spending on wellenss and prevention. In *Beyond Health Insurance: Public Policy to Improve Health Advances in Health Economics and Health Services Research*. Vol. 19. Pp. 1-24.

NACCHO (National Association of City and County Health Officials). 2011a. *Local Health Department Job Losses and Program Cuts: Findings from January 2011 Survey and 2010 National Profile Study (Research Brief)*. Washington, DC: NACCHO.

NACCHO. 2011b. *Local Health Department Job Losses and Program Cuts: State-Level Tables from the 2010 National Profile Study.* Washington, DC: NACCHO.

NAPH (National Association of Public Hospitals and Health Systems). 2009. *Medicaid DSH Funds: Essential Support for the Nation's Health Safety Net. (March Issue Brief)*. Washington, DC: NAPH.

NCSL (National Conference of State Legislatures). 2011. *Health Care Provider and Industry Taxes/Fees*. Washington, DC: National Conference of State Legislatures. http://www.ncsl.org/issues-research/health/health-provider-and-industry-state-taxes-and-fees.aspx.

NASBO (National Association of State Budget Officers). 2005. 2002–2003 State health expenditure report. New York: Milbank Memorial Fund.

Novick, L. F., C. B. Morrow, and G. P. Mays. 2008. *Public Health Administration: Principles for Population-Based Management.* Sudbury, MA: Jones and Bartlett Publishers.

NRC (National Research Council). 2010. *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use*. Washington, DC: The National Academies Press.

PHPG (Pacific Health Policy Group). 2012. Health care-related tax study report. Prepared for the Department of Vermont Health Access. Waterbury: Department of Vermont Health Access.

Rosenbaum, S. 2012. The Patient Protection and Affordable Care Act: Opportunities for Public Health Agencies and Population Health. Appendix B. Washington, DC: The National Academies Press.

Schultz, S. 2009. *The Impact of Budget Cuts on Public Health*. Seattle, WA: Washington State Budget & Policy Center.

Sensenig, A. L. 2007. Refining estimates of public health spending as measured in National Health Expenditures Accounts: The United States experience. *Journal of Public Health Management Practice* 13(2):103-114.

Sensenig, A. L. 2011 (March 3). *Measuring Spending on Public Health Activity in National Health Accounts. Presentation to the IOM Committee on Public Health Strategies to Improve Public Health*. Washington, DC: Venable Conference Center.

Sessions, S.Y. 2012. Financing State and Local Public Health Departments: A Problem of Chronic Illness. Commissioned Paper, Appendix D. Washington, DC: The National Academies Press.

Sussman, B. 2011. Sugary Beverage And Alcohol Tax. *National Journal Live*. http://www.nationaljournal.com/njonline/sugary-beverage-and-alcohol-tax-20090723 (accessed January 3, 2012).

Tax Foundation. 2008. *Economic Growth Requires Bold Steps: Mississippi Should Consider Tax Reform Recommendations*. http://taxfoundation.org/article/economic-growth-requires-bold-steps-mississippi-should-consider-tax-reform-recommendations (January 10, 2012).

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For the Public's Health: Investing in a Healthier Future

Tax Foundation. 2009a. *Local Property Tax Collections Per Capita, Fiscal Year 2007*. http://taxfoundation.org/article/local-property-tax-collections-capita-fiscal-year-2007 (January 10, 2012).

Tax Foundation. 2009b. *State Property Tax Collections Per Capita, Fiscal Year 2007*. http://taxfoundation.org/article/state-property-tax-collections-capita-fiscal-year-2007 (January 10, 2012).

TFAH (Trust for America's Health). 2008. *Blueprint for a Healthier America: Modernizing the Federal Public Health System to Focus on Prevention and Preparedness*. Washington, DC: Trust for America's Health.

TFAH. 2010a. *Table 1. Annual Estimates of the Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2011*. http://www.census.gov/popest/data/state/totals/2011/tables/NST-EST2011-01.xls.

TFAH. 2010b. *State Data*. http://healthyamericans.org/states/ (October 15, 2010).

TFAH. 2011. *Prevention and Public Health Fund: Reducing Long-Term Health Costs*. Washington, DC: TFAH.

Turnock, B. J. 2009. *Public Health: What Is It and How It Works*. Sudbury, MA: Jones and Bartlett Publishers.

Wicks, E. K. 2008. *State Coverage Initiatives: Can a Sales Tax on Medicaid Serivices Help Fund State Coverage Expansions?* Princeton, NJ: Robert Wood Johnson Foundation.

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Appendix A

Acronyms

ACA	Affordable Care Act, 2010
ACIP	Advisory Committee on Immunization Practices
AHRQ	Agency for Healthcare Research and Quality
ARRA	American Recovery and Reinvestment Act
ASTHO	Association of State and Territorial Health Officials
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention
CHIP	Children's Health Insurance Plan
CHNA	community health needs assessment
CMMI	Center for Medicare and Medicaid Innovation
CMS	Centers for Medicare and Medicaid Services
CSTE	Council of State and Territorial Epidemiologists
CTG	Community Transformation Grants
EHR	electronic health record
EPA	Environmental Protection Agency
EPSDT	Early and Periodic Screening, Diagnosis, and Treatment
FDA	U.S. Food and Drug Administration
FMAP	Federal Medical Assistance Percentages
GAO	Government Accountability Office
GASB	Government Accounting Standards Board

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GDP	gross domestic product
HALE	health-adjusted life expectancy
HALY	health-adjusted life year
HHS	Department of Health and Human Services
HIA	health impact assessment
HiAP	Health in All Policies
HIT	Health Information Technology
HITECH	Health Information Technology for Economic and Clinical Health
HRSA	Health Resources and Services Administration
IOM	Institute of Medicine
IRC	Internal Revenue Code
IRS	Internal Revenue Service
NACCHO	National Association of County and City Health Officials
NASBO	National Association of State Budget Officers
NCHS	National Center for Health Statistics
NHEA	National Health Expenditure Accounts
NIH	National Institutes of Health
OECD	Organisation for Economic Co-operation and Development
PHAB	Public Health Accreditation Board
PHSSR	Public Health Systems & Services Research
PPACA	Patient Protection and Affordable Care Act, 2010
QI	quality improvement
R & D	Research and Development
SIB	social investment bond
TFAH	Trust for America's Health
USPSTF	U.S. Preventive Services Task Force
WIC	The Special Supplemental Nutrition Program for Women, Infants, and Children

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Appendix B

The Patient Protection and Affordable Care Act: Opportunities for Public Health Agencies and Population Health

Sara Rosenbaum, JD

INTRODUCTION

This analysis, prepared for the Institute of Medicine (IOM) Committee on Public Health Strategies to Improve Health, examines provisions in the Affordable Care Act (ACA) that present opportunities for public health agencies to support their activities to improve population health.

While insurance reform is the centerpiece of the ACA, in fact these provisions, along with many others, can be understood as a national blueprint for reorienting Americans toward a broader and deeper vision of health. No single section of the ACA holds all of the population health elements of the law; instead, the goal of improved health for all Americans pervades the legislation through an exceptionally wide range of strategies. Some of these strategies are aimed at infusing a greater prevention orientation into health care itself. Others represent policies that over time have the potential to improve health itself, empowering individuals and communities to make healthier choices and lead healthier lives. The *National Prevention Strategy*, whose creation was a requirement of the ACA (HHS, 2011a; National Prevention Health Promotion and Public Health Council, 2011), reflects this aim, and public health agencies have an important role to play in its realization.

Resources are key to public health agencies' ability to play a central implementation role. Some of these resources may entail direct financial support for agency activities. Others can be thought of as derivative resources—that is, resources that will ultimately enable public health agencies to achieve the aim of population health, even if they do not flow directly through

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agencies themselves. Because empowerment and regulation represent key functions of public health, it is important that public health agencies define what it means to receive support for their activities to include many support pathways, both direct and indirect. Doing so means that public health agencies must create seats at many tables, including tables involving the allocation of resources under the ostensible control of the private sector or other agencies. But because the ACA is prevention oriented, opening doors related to system design, oversight, and accountability may be easier than it has been in the past.

This analysis emphasizes certain provisions that have the potential to yield resources for population health goals and for public health agencies. Of special interest are provisions with implications for populations and communities that by virtue of income, age, place, disability, race, ethnicity, or language face an elevated risk for health disparities and poor health outcomes.

The first section reviews ACA provisions related to both health insurance coverage and care and identifies key implementation decisions that have the potential to yield public health resources (including a resource flow directly to public health agencies depending on how they are structured and operated). The resource flow from these provisions often may be indirect, since advances in the public's health depend on empowerment, advocacy, and regulatory intervention (IOM, 2003a), it is important to identify these flows of funds whenever possible as strategic opportunities for public health. Indeed, how actively public health agencies are able to use these tools to reach beyond their own jurisdictional borders (that may be broad or narrow depending on the state) will help determine the full realization of the law's preventive vision.

The second section focuses on two ACA provisions that bear more directly perhaps on financial support for public health agencies. The first is Community Transformation Grants. The second is the community benefit reforms to the Internal Revenue Code that apply to nonprofit hospitals that seek federal tax exempt status and that have implications for state tax exempt policy as well. These reforms should be considered as a pair because of their potential to strengthen and reinforce one another.

PUBLIC HEALTH AGENCIES AND ACA PROVISIONS RELATED TO COVERAGE AND CARE

The establishment of a national system of health insurance lies at the heart of the ACA. When fully implemented, the law's reform provisions are expected to result in coverage to between 92 and 94 percent of the

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nonelderly population.[1] The ACA's protections are universal in nature. Nonetheless, it is fair to observe that the principal beneficiaries are both individuals and rural and urban communities[2] facing an elevated risk of poor health outcomes, health disparities, and medical underservice. The ACA's investment in these communities and populations is considerable: of the 32 million individuals expected to gain coverage under the act, 16 million are expected to qualify for Medicaid (CBO, 2010),[3] while an estimated 80 percent of the 24 million individuals are qualified to purchase coverage through state health insurance exchanges also are expected to be eligible for premium tax credits (KFF, 2011b). In addition, the ACA makes direct investments through a major expansion of programs targeted directly into these communities such as the National Health Service Corps and community health centers (PPACA §§5207 and 5601; Health Care and Education Reconciliation Act [PL 111-152, 111th Cong. 2d sess.] §2303), two investments discussed at greater length below.

Given the relationship between health insurance resources and health system financing, the question of how this expanded coverage is implemented is a matter of critical importance to public health. In this regard, the ACA orients insurance reforms in a decidedly public health direction, with an emphasis on prevention and more effective and efficient management of serious and chronic conditions that affect population health. Under the ACA, certain clinical preventive services without cost-sharing must be made available on a population-wide basis.[4] Furthermore, embedded in the definition of "essential health benefits"—which will define the scope of coverage in the individual and small group market, as well as for newly eligible Medicaid beneficiaries—is a strengthened orientation toward coverage for the management of serious conditions associated with health disparities (see Box B-1).

[1]The penetration rises if only citizens and legally present aliens are considered (see Letter from Douglas Elmsdorf to the Honorable Nancy Pelosi [CBO, 2010]).

[2]Nearly 100 million persons are residents of communities designated as medically underserved, while over 67 million live in areas designated as experiencing a shortage of primary health care professionals (Rosenbaum et al., 2009). Within these populations, 28 percent (a rate that exceeds twice the national average for the U.S. population) are uninsured. Being uninsured is closely associated with low family income and elevated risk for reduced health. The community health impact of an extensive lack of coverage has been documented by the IOM (2003b).

[3]See letter from Douglas Elmsdorf to the Honorable Nancy Pelosi (CBO, 2010).

[4]PPACA §1001 adding PHSA §2713; PPACA §1563(e) adding ERISA §715 and extending preventive provisions to all employer-sponsored health plans governed by Employee Retirement Income Security Act (ERISA), whether insured or self-insured. Grandfathered plans satisfying federal standards applicable to the preservation of grandfathered status are exempt. PPACA §1251.

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BOX B-1
ACA Coverage: Provisions Related to Public Health Agency Activities

Preventive and wellness services (no cost-sharing)

- Evidence-based items and services with an "A" or "B" rating from the U.S. Preventive Services Task Force
- Immunizations recommended by the Advisory Committee on Immunization Practices
- Evidence-informed preventive care and screenings for infants, children, and adolescents recommended in Health Resources and Services Administration (HRSA) screening guidelines
- Preventive care and screenings for women recommended in comprehensive HRSA guidelines

Public health-related diagnostic and treatment services included in the essential health benefit package (cost-sharing support for low-income individuals and families)

- Chronic disease management
- Pediatric services including oral and vision care
- Maternity and newborn care
- Mental health and substance abuse disorder services

Health Insurance Exchanges

States are in the process of establishing health insurance exchanges that will serve as a central entry point into coverage for individuals eligible for Medicaid, the Children's Health Insurance Program (CHIP), and tax credits, as well as small employers. How states design their exchanges, how exchanges are governed, the ground rules set by states for qualified health plans, and the steps states take to prevent adverse selection against the exchange market will determine the quality and affordability of coverage for low- and moderate-income families as well as small employers. In short, establishing and operating an exchange raises a broad array of policy considerations for public health agencies.

Exchange Governance

An exchange can be a governmental or nonprofit entity, and the expectation is that governance and advisement will be provided by a broad representative body. Because exchange design and operations will have a

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significant impact on accessibility to historically underserved populations with elevated health risks, an important issue will be whether public health agencies can bring their expertise to bear through exchange governance and oversight activities. Governance of the exchange will reach all of the major decisions that ultimately determine the accessibility, quality, continuity, and stability of coverage

- Population outreach,
- Simplified enrollment into health plans in a culturally appropriate manner,
- The accessibility of health information in the range of languages that are spoken,
- Ease of access to subsidy determinations and a simplified determination process,
- Standards for qualified health plans,
- Health plan performance and oversight and monitoring, and
- The availability of public information about plan performance.

As of June 2010, 10 states had enacted exchange legislation,[5] with legislation pending in 12 additional states (CBPP, 2011).[6] An important step is the involvement of public health agencies in exchange governance, as well as service on committees established by an exchange to tackle critical implementation matters. Public health agencies also will be important sources of technical support for exchange regulatory and oversight operations, particularly in the design of qualified health plan certification standards, standards governing exchange navigator programs, the identification of key population health issues of special importance to an exchange when evaluating the capabilities of qualified plans, and the analysis of performance data across multiple plans.

Certification Standards for Qualified Health Plans

Exchanges may make health plans available only if certified as "qualified health plans" (PPACA §1311[d][4]). Federal law establishes basic standards for qualified health plans (e.g., coverage of essential health benefits, state licensure, offering both silver and gold levels of coverage in the exchange, and uniform cross-market pricing) (PPACA §1302[a][1]). But state exchanges may establish additional certification standards and furthermore may select among qualified health plans rather than allowing participation

[5]California, Colorado, Connecticut, Hawaii, Maryland, Nevada, Oregon, Vermont, Washington, and West Virginia.

[6]Alabama, Illinois, Indiana, Maine, Minnesota, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, and Washington, DC.

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by all plans that technically qualify (PPACA §1311[d][2]). Given their expertise in clinical preventive care for at risk populations and chronic disease management, public health agencies play a potentially important role in helping shape qualified health plan certification standards in seven key areas

1. The evidence-based practice guidelines for prevention and wellness services that plans will be expected to use,
2. Whether plans make available enabling services such as translation and transportation,
3. The composition and capabilities of plans' provider networks, particularly in the case of plans operating in medically underserved communities,
4. The network incorporation of "essential community providers" (PPACA §1311 [c][1][C]),[7]
5. Making available to public health agencies clinical data as well as the results of performance measurement activities so quality can be measured and population health can be monitored on a cross-plan basis,
6. Plans' use of value-based coverage design,[8] and
7. Provider performance payment incentives that encourage providers to practice in the most efficient manner possible.

An additional and important area of public health focus would be participation of qualified health plans across all markets in which subsidies (e.g., Medicaid, CHIP, and premium tax credits), in order to ensure that income fluctuation does not result in forced disenrollment from a health plan and interruption in continuity of care. (Over the course of a year, 50 percent of nonelderly adults with incomes under 200 percent of the federal poverty level can be expected to shift between Medicaid subsidies and exchange premium tax credits and back again [Sommers and Rosenbaum, 2011].)

State Benefit Mandates

Under the ACA, states may require qualified health plans to offer benefits required under state benefit mandates that fall outside of the federal

[7]Federal law defines essential community providers as providers that serve "predominantly" low-income medically underserved individuals and requires the secretary, in implementing rules, to establish basic network inclusion standards. A state may add to these standards, which are framed as "minimum" standards. At a minimum, essential community providers include providers that are recognized under the Section 340(B) discount prescription drug program (Section 340B[a][4]) of the Public Health Service Act and Medicaid's drug rebate discount program.

[8]Of particular importance will be nominal cost-sharing for health maintenance activities such as medication adherence.

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essential health benefit categories. States that elect to require these additional benefits will be required to subsidize their incremental premium cost (PPACA §1311[d][3]). An important implementation question will be determining whether certain state-mandated benefits fall outside the scope of essential health benefits (once federal regulations are issued) and yet are of sufficient importance to merit coverage and additional supplementation as a population health matter. Given their preventive and chronic care expertise, as well as their knowledge of health disparities, public health agencies bring important expertise to bear on the question of whether certain additional state benefits should be incorporated into qualified health plan benefit design.

Navigators

The ACA requires states to finance navigators as part of their exchange operations (PPACA §1311[i]) in order to assure that eligible individuals and families are linked to coverage and empowered in its appropriate use. Public health agencies, using their expertise in population health and health disparities and their knowledge of health and risk communication, can play an important navigation role at several critical junctures. The first is outreach to eligible families and individuals and enrollment assistance in the appropriate form of financial assistance in relation to family income (e.g., exchange advance premium credits, Medicaid, CHIP, and other state subsidy programs). The second is providing ongoing support to assure that individuals and families promptly report changes in income that might affect the source or level of subsidy they receive in order to avert the loss or reduction in subsidies and the possibility of recoupment liability for improperly paid premium credits, which can be as high as $600 for a low-income family.[9]

A third support activity focuses on selection of a health plan and counseling on the effective use of coverage related to wellness, preventive clinical care, and disease management. A fourth is member and patient education regarding the development of strong and stable relationships with network primary health care providers, effective care-seeking practices, avoidance of medical emergencies in the case of ambulatory care-sensitive conditions, and self-empowerment health practices such as diet and exercise. (Patient education practices might be funded through navigation support as well as through health plan payments to health agencies for health education services.)

[9]The maximum recoupment amount for persons with family incomes under 200 percent of the federal poverty level was increased to $600 by PL 112-9, the Comprehensive 1099 Taxpayer Protection and Repayment of Exchange Subsidy Overpayments Act of 2011 (112th Cong., 1st sess.).

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Internet Portal Design and Operation

All health insurance exchanges will be required to maintain Internet portals (PPACA §1311[d][4][C]) that offer standardized information about health plan offerings. Public health agencies potentially play a significant collaborative role in the portal design and content, particularly in the range of consumer and patient information to be made available through a portal. An important focus would be the development of guidance for individuals and families on preventive and health management considerations in plan selection and additional guidance in plan selection for consumers with elevated health risks. Similarly, health agencies possess expertise in assuring that health information is presented in a culturally appropriate manner and with due consideration regarding consumers' level of health literacy.

Health Plan Network Adequacy and Use of Essential Community Providers

Qualified health plans must be able to demonstrate the accessibility of their provider networks as well as their use of essential community providers (in accordance with federal standards that will govern the inclusion of such providers in plan networks) (PPACA §1311[c]). Because of their familiarity with community health systems and health care seeking patterns among the population, health plans' consultation to exchanges on how to measure plan network adequacy can be crucial. For reasons related to both moral hazard and adverse risk selection, health plans may resist inclusion of certain crucial providers such as family planning programs, school-based clinics, clinics operating mobile homeless units, clinics serving migrant farmworkers, and clinics located in public housing projects, to name only a few such examples. Without clear anchoring in community health systems, it is possible that coverage will translate into very little in the way of care improvement. In the same vein, public health agencies may play an important role in identifying such providers and working with them to enable their readiness to be network participants.

Medicaid Reforms

Preventive Care for Traditional Beneficiaries

In a preventive benefits context, the ACA creates two groups of adult beneficiaries: (1) newly eligible beneficiaries whose coverage consists of "essential health benefits" encompassing preventive services enumerated under the Public Health Service Act (PPACA §1001 adding PHSA §2713) (i.e., the U.S. Preventive Services Task Force [USPSTF] A and B benefits; Advisory Committee on Immunization Practices [ACIP]-recommended im-

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munizations; and HRSA-recommended screening and preventive services for women, infants, children and adolescents); and (2) traditional Medicaid beneficiaries (i.e., those eligible for coverage prior to the ACA expansion) who remain entitled to Medicaid's traditional benefit package. Preventive services are a federal requirement in the case of traditional beneficiaries under age 21 as a result of Medicaid's Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) benefit but prevention is an option for traditional beneficiaries ages 21 and older (42 U.S.C. §§1396a[a][10(A) and (a)(13)]).

The ACA incentivizes but does not mandate the addition of preventive services for the traditional adult Medicaid population; instead, the law authorizes a one-point Federal Medical Assistance Percentages (FMAP) increase for states that elect to cover USPSTF A and B procedures or ACIP-recommended vaccines (PPACA §4106).[10] (No comprehensive study compares current state Medicaid practice against USPSTF A and B rated items or ACIP-recommended immunization services for adults.) However, anecdotal evidence suggests that important preventive procedures and immunization services may be lacking in some states. Upgrading Medicaid preventive services for adults is an area in which public health agencies might play an important technical support role, evaluating existing coverage and payment practices within their states, proposing modifications and prioritization recommended, and recommending the use of modified clinical practice guidelines in the case of patients at risk for medical underservice (for example, allowing payment for preventive services furnished in certain community settings such as group homes for persons with mental disabilities). Under existing Medicaid policy related to payment for administrative services of skilled medical professionals, this type of activity presumably would qualify for enhanced federal payment at a 75 percent federal contribution level.

Tobacco Cessation for Pregnant Women

Effective October 1, 2010, the ACA makes tobacco cessation services a required benefit for pregnant women,[11] defining such services as diagnostic, therapy, and counseling and pharmacotherapy (both prescription and nonprescription treatments approved by the Food and Drug Administration [FDA] for use with pregnant women) in accordance with Public Health Service guidelines. Services can be furnished by or under the supervision of

[10]The special Medicaid incentive does not reach HRSA-recommended child and adolescent services or women's health services, presumably because EPSDT and family planning benefits (including preventive exams) already are required services for all traditional children and pregnant women.

[11]PPACA §4107 adding SSA §§1905(a)(4)(D) and ACA §4108.

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a physician or by any other health care professional authorized to furnish such care and receive payment, and cost-sharing prohibitions apply.

Health departments can play an important role in benefit design and implementation, both through direct services to women as well as in counseling and supporting obstetrical care providers in the adoption of such coverage. Health departments might also carry out data collection activities for Medicaid agencies aimed at documenting participation by women, adherence of providers to prescribed treatment regimens and guidelines, and measuring and linking participation to health outcomes through vital statistics data.

Incentives for Preventing Chronic Disease

The ACA authorizes the secretary of HHS to award grants to states to develop chronic disease initiatives for Medicaid beneficiaries (ACA §4108). Section 4108 of the ACA authorizes the secretary to extend grants to states for incentives aimed at motivating Medicaid beneficiaries to successfully participate in chronic disease prevention initiatives. The grant program began January 1, 2011, or whenever the secretary develops program guidelines, and allows support to states for 3 years (SAMHSA, 2010). Programs developed under the initiative must be "comprehensive, evidence-based, widely available, and easily accessible" and must be "designed and uniquely suited to address the needs of Medicaid beneficiaries" with a "demonstrated success in helping individuals achieve" tobacco cessation, weight control, lowering cholesterol and blood pressure, and avoiding diabetes onset or managing diabetes (PPACA §4108 [a][3][A]). Programs also may address related co-morbidities. Statewideness requirements normally applicable to Medicaid can be waived. In establishing such a program, states may "enter into arrangements with providers participating in Medicaid, community-based organizations, faith-based organizations, public–private partnerships, Indian tribes, or similar entities" (PPACA §4108 [a][3][D]).

States awarded grants must conduct outreach and education campaigns to raise beneficiary awareness and must develop and implement systems for tracking participation and measuring changes in health risk and outcomes using clinical data as well as validated evidence of changes in beneficiary behavior and risk. States also are expected to "establish standards and health status targets" (PPACA §4108 [d][2][2]) for participants and measure whether their programs meet such targets and standards. States are further required to submit semi-annual reports regarding use of grant funds, assessment of "program implementation and lessons learned," (PPACA §4108 [2][B]) assessment of "quality improvements and clinical outcomes," (PPACA §4108 [2][C]) and cost-savings estimates. Incentives furnished to participating beneficiaries cannot affect their entitlement to coverage or eligibility for benefits.

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The incentives program represents an important opportunity for partnership between public health agencies and Medicaid programs. This partnership can take a limited form (e.g., evaluation only) or can be more comprehensive, including the design of the program, selection of participating providers and entities, program administration, and collection, analysis, and reporting of results, including analysis of important longer-term policy implications for coverage of preventive interventions as a general Medicaid benefit at the end of the demonstration period.

Family Planning Coverage

The ACA creates a new state eligibility option related to coverage for family planning services and supplies.[12] Under this option, states may extend coverage to certain individuals who otherwise are ineligible for Medicaid for categorical reasons, financial reasons, or both. Because a number of states have experimented with this eligibility option under special §1115 demonstration authority and the coverage has been found to be cost-effective, the ACA amends the law to permit states to proceed to implement such coverage as a matter of state plan discretion and without federal demonstration waiver authority. The new eligibile group consists of men and women who are not pregnant and whose income does not exceed a state's established eligibility level (the highest income level for pregnant women under Medicaid and CHIP in the state). To the extent that this group includes women and men who will become eligible for more comprehensive Medicaid coverage in 2014, taking this option will not affect a state's eligibility for the higher federal Medicaid payments that come with the expanded Medicaid eligibility standards that are mandatory under the ACA as of January 2014.

Benefits under this option consist of family planning services and supplies (for which the special family planning 90 percent federal payment rate is available) as well as "family planning related services," which consist of diagnosis and treatment services that are provided pursuant to a family planning service and in a family planning setting. Examples would be

- Drugs to treat sexually transmitted diseases (STDs)[13] discovered during a routine visit;
- Follow-up rescreening visits;
- Drugs to treat lower genital tract disorders and skin infections, as well as urinary tract infections discovered during a routine family planning visit;
- Immunizations to prevent cervical cancer; and

[12]PPACA §2303 amending Social Security Act §§1902 and 1905.
[13]Excluding HIV/AIDS and hepatitis.

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- Other medical diagnosis, treatment, and preventive services routinely provided during a family planning visit and in a family planning setting.

Because family planning visits take place in clinics that specialize in family planning as well as clinics that may offer a more comprehensive range of primary health care services (e.g., a community health center) the concept of what is "routinely" provided during a visit and in a family planning setting may vary with the setting.

The family planning option offers public health agencies the opportunity to reach a far greater proportion of the low-income and at-risk population, extending Medicaid coverage to men and women with incomes well above standard eligibility levels or who otherwise would not fall into a Medicaid coverage category. A public health agency might collaborate with a Medicaid agency in numerous ways: the development and submission of the state plan option, the design of the special benefit package, the identification of family planning providers that might participate in an expanded program, outreach to eligible populations and enrollment,[14] the dissemination of practice guidelines, the performance measurement and monitoring, the design of payment incentives to promote evidence-driven practices, and the collection and publication of performance information and information on health outcomes.

Patient Safety, Health Care Quality, and Population Access

The ACA contains extensive provisions aimed at nudging the health care system toward prevention and efficiency. Multiple provisions building on an array of federal laws under the Public Health Service Act and the Social Security Act aim to improve patient safety by using multiple techniques:

- Increased standardization of patient care through development and dissemination of practice guidelines,
- Greater transparency and accountability through expanded reporting and disclosure of performance and adverse events,
- An investment in safer practice through comparative effectiveness research,
- Performance-based payment, and
- Greater coordination and integration of care (Furrow, 2011).

These incentives show up in portions of the law amending Medicare

[14]Presumptive eligibility is also a state option, permitting enrollment at the site of care while a full application is pending.

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and Medicaid, as well as in legislative provisions establishing state health insurance exchanges and setting forth minimum standards for qualified health plans. These changes are in addition to the health information technology reforms contained in the American Recovery and Reinvestment Act (PL 111-5, Title XIII), which incentivize the adoption and meaningful use of health information technology and electronic health records.

A key question is how public health agencies might best position themselves to play an integral role in such change. Agencies could seek to establish themselves as a multipayer source of information on best practices in patient safety and system transformation, playing a type of clearinghouse and technical support function for both public and private payers and community health practices. Health agencies might receive financial support from state Medicaid agencies to provide assistance to clinicians transitioning to the adoption of health information technology (HIT) and meaningful use of HIT. Similarly, health agencies might collect, synthesize, and report on information reported to Medicaid agencies by meaningful users. Public health agencies might develop reporting systems that compile and present publicly available health care performance and patient safety information related to Medicare and Medicaid, with links to performance information made available at exchange websites when functional. Public health agencies might collaborate with community providers to develop medical and health home capabilities and could provide data warehousing and analytic capabilities. Agencies also could disseminate practice guidelines as they emerge, particularly guidelines of special relevance to high-risk populations.

A related question is how public health agencies align their own patient care activities and practices with this deep health system transformation while continuing to play their central role in assuring care on a population-wide basis. Even in the wake of health care reform, an estimated 8 percent of the population (approximately 24 million people) will remain uninsured and in need of affordable and continuous health care (Hall, 2011). In addition, the expansion of health insurance cannot alone remedy the extensive problem of medical underservice, a reality underscored by Massachusetts' primary health care shortage experience in the wake of its enactment of universal insurance.[15]

Dual enrollees (elderly and disabled persons eligible for both Medicare and Medicaid) represent a group deserving of special attention by public health agencies and community partners engaged in broad health system reform. More than half the dual enrollee population lives in poverty and is in fair to poor health, figures twice as high as beneficiaries enrolled in Medicare alone (KFF, 2011a). This population bears a particularly high burden

[15]See, e.g., Massachusetts Medical Society (2010) noting intensification of shortages in preceding 3-5 years, particularly in the primary care fields, and Ku et al. (2011) reporting on nationwide shortages of primary health care, including Massachusetts.

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of poor health, and the health and social risks they face are considerable. The ACA offers tools of great importance for this population, including an expansion of preventive services,[16] new tools and strategies for better organizing systems of care for this population through Medicaid (PPACA §§2703 [health homes] and PPACA §§2704 [integrated health care around hospitalization]), and through new pilots developed by the Center for Medicare and Medicaid Innovation (CMMI) (PPACA §3021). A focus on access, equity, and safety for this population goes beyond being a matter of patient-focused health quality and rises to the level of a population health imperative because of the disproportionate levels of illness and disability concentrated within the dual enrollee population and also because of the enormous costs associated with their care.

Of particular importance in resolving issues of access, quality, safety, efficiency, and system transparency for medically underserved populations will be public health agency leadership and collaboration with entities that share their broad mission: community health centers; public hospitals; family planning agencies; teaching health centers created by the ACA and eligible for grants and subsidies to train primary health care professionals in community settings (PPACA §5508)[17]; and nonprofit hospitals with community benefit obligations (discussed at greater length below) and at financial risk for avoidable readmissions. These organized systems may also be designed to incorporate other specialized activities made possible through special grant funding, such as personal responsibility education, maternal and infant home visiting, and services for women experiencing postpartum depression (PPACA §§2951-2953 [maternal and infant home visiting, services for postpartum depression, and personal responsibility education]).

Through joint planning along with a strategic approach to resource

[16]PPACA §4103 (annual wellness visit and personalized prevention plan); PPACA §4104 (removal of cost-sharing barriers to preventive services under Medicare); PPACA §3111 (payment for bone density tests); Health Care and Education Reconciliation Act of 2010 (HCERA) §1101 (closing Medicare "donut hole").

[17]PPACA §5508 authorizes the establishment of teaching health centers. HRSA guidance provides that eligible entities include community-based ambulatory patient care settings that operate (as opposed to simply participate in) primary care residency programs. While the operational requirement acts as a limiting factor on broad community-based care involvement, numerous community-based care programs partner with residency training programs, and partnerships (in HRSA's words, "central" partnership) are essential to qualification for designation as a teaching health center. The training site must be "the primary recipient" of the graduate medical education payments made available under the law. The community program also must maintain operational responsibility over the program. Payments for this special graduate training activity initially are set at $150,000 per resident annually, including both direct and indirect funds. As used under the law, entities eligible for partnership with residency programs include (but are not limited to) federally qualified health centers, community mental health centers, rural health clinics, and family planning agencies receiving funding under Title X of the Public Health Service Act (HHS, 2011b).

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deployment, public health agencies might assume a leadership position in the alignment and integration of available resources (including their own prevention, treatment, and health education grant funding) into more comprehensive health care enterprises capable of reaching uninsured and underserved patients with elevated health risks and designed to emphasize practice efficiency and prevention, evidence-based performance, the full integration of electronic health records with public health agency reporting capabilities, and public reporting capabilities. Community benefit funding as well as health center expansion funds for affiliation activities represent potential sources of investment to help build these advanced practice models of care and public health accountability. Many of the patients served in such settings ultimately will be eligible for Medicaid or exchange coverage; and other sources of public funding and community benefit resources may help defray the cost of care for the uninsured.

In sum, public health agencies are positioned to play a central role in the translation of health system reform and patient safety into integrated delivery systems serving medically underserved populations.

COMMUNITY TRANSFORMATION GRANTS AND TAX-EXEMPT HOSPITAL POLICY

Two population health-related reforms are of special interest because of their potential to yield important investments in broader population health activities. The first is community transformation grants; the second is reforms in federal tax law aimed at generating greater community-wide accountability on the part of nonprofit hospitals.

Community Transformation Grants

The ACA establishes the Community Transformation Grant (CTG) Program (PPACA §4002), which has been implemented by the Department of Health and Human Services (HHS) in two parts: Community Transformation Grants and a National Network.

Community Transformation Grants are to be awarded to state and local governmental agencies, tribes and territories, and national- and community-based organizations. The purpose of the program is to "support the implementation, evaluation, and dissemination of evidence-based community preventive health activities to reduce chronic disease rates, prevent the development of secondary conditions, address health disparities, and develop a stronger evidence base for effective prevention programming" (CDC, 2011a). As implemented by the Centers for Disease Control and Prevention (CDC), the program will support up to 75 communities across the country over a 5-year time period, with projects increasingly expanding

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their scope and reach "as federal resources permit." Funding is available for "capacity building" or implementation awards, and activities must grow out of an area health assessment.

Under CDC guidelines, the CTG program focuses on (1) tobacco control; (2) active living and healthy eating; (3) evidence-based quality clinical and other preventive health services, specifically the prevention and control of high cholesterol and high blood pressure; (4) social and emotional wellness and mental health care access, especially for persons with chronic conditions; and (5) healthy and safe physical environments.[18] Priority is placed on the prevention and reduction of type 2 diabetes and the control of high blood pressure and cholesterol. Clinical preventive services are embedded in the basic structure of the CTG program, making health care providers a core partner in the types of broad-based coalitions whose involvement is essential to the program. All applicants are expected to focus on tobacco-free living, active living and healthy eating, and increased use of high-impact quality clinical preventive services. Applicants also may choose to address social and emotional wellness and a healthy and safe physical environment.

The National Network is aimed at community-based organizations that are positioned to accelerate the speed with which communities adopt promising approaches to health transformation. Under the award program, National Network members can carry out this dissemination activity in two ways: first, by disseminating "CTG strategies to their partners and affiliates;" and second, by supporting and funding subrecipients "to initiate change and implement CTG strategies at the local level" (CDC, 2011b). Recipients of awards that include a subrecipient component are expected to support their subrecipients by helping them create leadership teams, identify "1-3 targeted policy, environmental, programmatic, and infrastructure strategies," create and participate in a "structured Action Institute," and provide technical assistance and guidance (CDC, 2011b).

Together, the CTG program and its National Network companion share a set of simple yet profound purposes

- To launch multiple interventions whose goal is to make fundamental improvements in population health,
- To lessen the burden on the health care system while achieving its central involvement in the effort,
- To develop a new approach to the collection and use of public health information in order to bring an immediacy and action orientation to longstanding surveillance practices, and

[18]Under the statute, worksite wellness promotion activities also are identified, but this is not listed as a CDC priority (42 USC §300g-13[c] as added by PPACA §4201).

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- To speed the rate at which public health innovations are replicated nationally, regardless of whether the replication sites receive CTG support.

In this sense, the CTG program can be thought of as the public health counterpart to the CMMI, whose mission is to test and speed the acceleration of health care system transformation. As with the CMMI, the CTG program has been conceptualized as an incubator whose sum is larger than its parts. The CMMI is structured to stimulate transformational activities on a multipayer basis; similarly, the CTG program is intended to stimulate multisector population health investments that take direct aim at the risk factors most responsible for death and disability in the United States: weight, poor nutrition, inadequate physical activity, use of tobacco, and emotional well-being and mental health.

Paradoxically, but not surprisingly given the ACA's length and complexity neither incubator program references the other, although one can imagine numerous types of interactions. For example, CMMI pilots to bring greater efficiency and quality to health care might be launched in communities that have received CTG awards and in which the National Network activities are strong. In this way, patients receiving care through a funded CMMI[19] innovation site (such as team-based care for persons with serious and chronic illness and disability) might also participate in CTG initiatives in the community that are designed to improve overall mental health and wellness by promoting healthy eating and physical activity for persons with disabilities. National Network partners focused on the health and well-being of persons with disabilities could, in turn, disseminate the "twinned" model to other communities.

Given the ambitious reach of the CTG program, its long-term success depends on more than a successful effort on the part of public health agencies and their partners to conceptualize and undertake a successful intervention in a single community. Rather, success in this context depends on the ability of public health agencies to build partnership coalitions that include all of the system stakeholders (including health care providers) essential to a level of social transformation that alters how people think about their own health and health care and use community resources. Furthermore, success in this case will be driven significantly by the ability of local CTG awardees as well as National Network partners to communicate activities and results in a manner that lends itself to broad understanding, acceptance, and replication.

[19]Examples of innovative patient care models in the law include patient-centered medical homes, programs addressing the "unique needs" of women, care coordination for individuals with multiple chronic conditions, and establishment of community-based health care teams (PPACA §3021).

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As visionary as the CTG program might be, it also suffers from an obvious limitation: the modest federal investment in pump-priming efforts that in turn can be reinforced and strengthened through a companion series of translational activities aimed at accelerating the pace of innovation. The Prevention and Public Health Fund has an Achilles' heel in its financial structure. From a national policy perspective, the fund represents a breakthrough: a broad reframing of public health investment strategy so as to depart from the old pattern of specific and targeted categorical awards and move toward a more community-driven and integrated approach. But the fund rests on capped mandatory spending. Although out-year growth is possible, funding may fall well below the amount of pump-priming resources that will be essential to public health transformation, especially given the extraordinary constraints that now confront direct public spending on the social welfare reforms.

At current levels, the CTG funding can reach only 75 communities, far fewer than the number of pump-priming sites that ideally would be in operation. Some sites may fail or never reach their full potential. Moreover, in a nation of 300 million people living in thousands of communities, it may take hundreds of launches to yield sufficient examples of what works across the priority areas to in turn create a "back end" yield in terms of adoption sites. And of course, the entire goal of acceleration through incubators and networks may be inhibited by the reality that all federal capital investment funds have been committed, with communities eager to follow suit but potentially without the resources to get started.

Stated simply, in order to fully realize the potential of the CTG's transformational aims, it is important to locate additional sources of funding to launch new interventions and expand the reach of existing activities.

Reforming Federal Standards for Tax-Exempt Charitable Hospitals

Background[20]

Section 501(c)(3) of the Internal Revenue Code (26 USC 501[c][3]) establishes the legal standard for determining whether nonprofit hospitals will be treated as tax-exempt for federal income tax purposes. Historically this standard has turned on a facts-and-circumstances approach, which assesses the activities of individual hospitals to determine their tax-exempt worthiness (IRS, 2011).

Until the late 1960s, the Internal Revenue Service (IRS) required hos-

[20]This background discussion is based in part on an earlier analysis by the author and colleagues (Burke, 2012, a project funded by the Robert Wood Johnson Foundation and a joint project of the Foundation and the Hirsch Health Law and Policy Program at The George Washington University).

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pitals seeking tax-exempt status to provide, to the extent of their financial ability, free or reduced-cost care to patients unable to afford it. Under Revenue Ruling 69-545,[21] issued in 1969, the requirement for discounted care (charged at rates below cost) disappeared, replaced by a so-called "community benefit standard." Under the community benefit standard, the IRS in theory evaluates hospitals based on whether they promote the health of a broad class of individuals in the community. IRS enforcement, however, has been "in theory" only; not only did the 1969 ruling make the standard more nebulous, but government enforcement has, until recently, been virtually nonexistent. Private legal challenges to this policy shift failed under a landmark U.S. Supreme Court decision holding that only Congress can alter overturn IRS policy, and that individual taxpayers have no standing to sue (Simon v EKWRO 426 U.S. 26 [1976]). Certain states have been more aggressive in enforcing their own charitable conduct standards in relation to property tax exemption policies, but the federal government has remained essentially a passive onlooker.

In recent years, nonprofit hospitals came under increasing congressional[22] and IRS (2011) scrutiny, following numerous reports of failure to discount or forgive bills in the case of indigent persons and the use of harsh collection practices. A 2008 U.S. Government Accountability Office (GAO) report valued the federal tax exemption alone at nearly $13 billion in 2002 (a figure that does not include the total value of the exemption to hospitals when state tax laws also are considered) while noting the nonenforceability of the 1969 standard. Prodded by Congress, the IRS conducted an assessment and noted in a 2009 report that there existed "considerable diversity" in hospitals' community benefit activities. In 2008, the IRS required nonprofit hospitals to file supplemental information describing their community benefit-related spending (IRS, 2007). However, given the limited nature of the supplemental data collection, and the difficulties inherent in attempting to measure expenditures against what it means to provide community benefit (Gray and Palmer, 2010), enforcement continued to lag.

Federal legislative proposals to tighten the standard were introduced but went nowhere. In addition, over 45 class action lawsuits aimed directly at hospitals rather than the IRS and challenging their federal tax exempt status based on billing practices and harassment of the poor also were brought. Virtually all of these suits failed because of questions related either to standing (similar to the problems that arose with earlier litigation) or the vagaries of the standard itself. In sum, until enactment of the ACA, hospitals' com-

[21]Rev. Rul. 69-545, 1969-2 C.B. 117. In the IRS's words, Revenue Ruling 69-545 "remove[d] the requirements relating to caring for patients without charge or at rates below cost" (Rev. Rul. 69-5454, 1969-2 C.B. 117).

[22]Letter from Senator Chuck Grassley, Chairman of the Committee on Finance, to the Honorable Donald L. Korb, Chief Counsel, Internal Revenue Service. June 1, 2006.

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munity benefit activities remained largely a matter of individual hospital discretion, state law requirements, and informal IRS guidance.

The Affordable Care Act (ACA)

The ACA amends the Internal Revenue Code (IRC) by adding a new section 501(r), innocuously titled "Additional requirements for certain hospitals" (PPACA §9007 adding IRC §501[r], 26 USC §501[r]). The new requirements apply to all facilities licensed as hospitals as well as organizations recognized by the treasury secretary as hospitals (IRC §501[r][2]). In the case of multihospital chains, each separate facility is independently held to the new requirements (IRC §501[r][2][C]). Hospitals failing to meet their obligations are subject to an excise tax of $50,000 for any taxable year in which they are not in compliance (IRC §4959, added by PPACA §9007); in addition, of course, they would experience the adverse publicity of being found out of compliance, in a manner not dissimilar to the adverse publicity that surrounds accusations of violations of the Medicare Emergency Medical Treatment and Labor Act.

The amendments impose new standards designed to assure financial assistance to indigent persons, curb excessive charges on medically indigent patients, bar aggressive collection tactics, and assure compliance with federal emergency care requirements (IRC §501[r][3]). Of greatest interest in the context of this analysis, however, is the obligation to undertake a community health needs assessment and adopt an implementation strategy that grows out of the needs assessment process.

The community health needs assessment (CHNA) process is a triennial one (IRC §501[r][3]) that must commence not later than the taxable year 2 years after enactment. The CHNA must be accompanied by an implementation strategy that grows out of the needs assessment. The process thus is dynamic, evolving, and action oriented. It occurs not once, but every 3 years; furthermore the CHNA must be accompanied by an implementation strategy and, as noted below, ongoing reporting regarding implementation efforts.

The ACA also establishes minimum requirements for the assessment itself. Under the law, an assessment must "take into account" "input" from persons who "represent" the "broad interests" of the "community served by the hospital facility." It is important to emphasize that the term used is "community" and not the specific patients served by the hospitals. That is, the statute appears to require that hospitals assess the needs of the entire community covered by their service areas, including members of the community who may, for a variety of reasons, receive care elsewhere. Furthermore, where a hospital is a specialty hospital with a large geographic reach (e.g., a children's hospital or a hospital with a regional shock trauma unit),

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the needs assessment presumably will need to cover a community that is coextensive with this larger service area.

The CHNA must include "those" with "special knowledge or expertise in public health" (IRC § 501[r][3][B]) thereby underscoring the obligation of facilities to involve knowledgeable individuals, not merely to use public health data. In other words, the law emphasizes an assessment process that, with respect to both content and process, is inclusive of public health practice and expertise. Even the term *community health needs assessment* is one drawn from the public health literature (Robinson and Elkan, 1996; Wright et al., 1998), further drawing the connection between hospital obligations and public health practice. While the legislative history refers to hospitals' ability to use public health information (Joint Committee on Taxation, 2010), the text itself underscores the inclusive nature of the obligation.

In addition, hospital assessments must be made "widely available" to the "public." The term *public* could denote the general public or public within the hospital's service area. The term *available* is not defined, but given its overall goal of community health needs assessment, the text suggests not only geographic availability but potentially availability in a cultural and linguistic sense, as well as accessibility in a manner that complies with federal laws aimed at assuring equal access (e.g., Title VI of the 1964 Civil Rights Act, §504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act).

Furthermore, covered hospitals must adopt an "implementation strategy." The term *adopted* is not defined, nor is the term *implementation strategy*. The term *adopted* suggests in the context of hospital organizations, a formal activity, while the term *implementation strategy* may or may not mean the actual implementation of the plan or more simply, a strategy for implementing the plan.

The secretary of the treasury (or delegate) is tasked with reviewing the community benefit standard "at least once every 3 years" to ensure compliance (PL 111-146 §9007). Furthermore, the law requires that hospitals covered by the new reporting requirements must for each taxable year provide their audited financial statements as well as a description of how needs identified in the assessment are being addressed and which needs are not being addressed and why (PL 111-146 §9007).

Formal IRS guidance describing the CHNA has not yet been issued, but the needs assessment and implementation strategy elements already have attracted the attention of senior HHS officials. CDC, with the active involvement of IRS, has undertaken a significant initiative to convene public health agencies, community partners, and hospitals to advance joint planning and implementation strategy efforts.

CDC's interest in section 501(r) makes enormous sense given the relatively modest size of the CTG program and the magnitude of hospitals'

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community benefit obligations. The potential dollar value of the law is of considerable magnitude given the link between federal and state tax exemption policy. Furthermore, without the active involvement of public health at federal, state, and community levels, hospitals may be inclined to reinvest their obligation in their own direct patient care services. Furthermore, hospitals may be inclined to plan and implement alone and in isolation rather than through an integrated community effort.

This natural inclination to both act alone and to reinvest community benefits back into the hospital's direct care activities reflects the history of hospital claims about how community benefits are invested (i.e., in discounted care and contractual allowances). Furthermore, this fractured approach to community benefit activities on the part of individual hospitals and hospital chains may follow from the greater robustness and clarity that section 501(r) has brought to hospitals' uncompensated and discounted care and to their obligation to provide emergency care.

It is possible, with active public health agency involvement, for a different model to emerge around the considerable community benefit investment that hospitals will be expected to make. This new model might be thought of as a public health innovation in its own right, one that is as transformative to the health of a population as a more traditional intervention, as well as one that is totally consistent with both section 501(r) and the broad policy aims of the CTG program. As in the creation of the CMMI, the CTG and the Prevention and Public Health Fund reflect a fundamental congressional desire to improve the health of the population through community-wide interventions and act to reduce the burden on the health care system. The purpose of the CTG program is to hasten the pace at which innovations in public health policy are planned, designed, launched, conducted, evaluated, and diffused. This cycle obviously takes money: money to convene stakeholders, assess community need, and reach consensus; money to plan and design the intervention; pilot funding to launch innovations such as worksite wellness programs, accessible clinical preventive services in targeted communities and neighborhoods, safer and attractive destination points for active living, new approaches to healthier nutrition such as community and school food gardens, and services that promote emotional and mental health; and money to support evaluation, diffusion, and public health policy translation.

The challenge for public health agencies is to rapidly put these tools to work, both the funds that are clearly and directly earmarked for public health activities through the CTG program, as well as the resources that are held in trust by hospitals on their communities' behalf. One way to approach the task might be to build hospitals into CTG partnerships in the initial capacity-building phase of any project and then to carry these partnerships into implementation, when resources can be combined and augmented to fund robust pilots and evaluations that are capable of taking root over the

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long run (hospitals' community benefit obligations are perpetual and unlike the Fund, section 501(r) obligations do not expire in 2015). Another strategy for public health agencies not pursuing CTG funding directly is to use the CTG model itself to develop community coalitions involving agencies, hospitals, and the full range of stakeholders to convene, plan, implement, evaluate, replicate, and diffuse. In this context, CTG can be thought of as a template rather than a funding source.

CONCLUSION

The ACA offers a broad array of intervention points for public health, in both a clinical prevention and community health sense. How health agencies pursue these opportunities will help determine not only the achievement of the ACA's considerable public health aims but also the transformation of public health agency policy making and practice.

REFERENCES

Burke, T. 2012. *Update to Consumer Operated and Oriented Plan (CO-OP) Program: Final Rule*. Washington, DC: The George Washington School of Public Health and Health Services and Robert Wood Johnson Foundation.

CBO (Congressional Budget Office). 2010. *Selected CBO Publications Related to Health Care Legislation, 2009-2010*. Washington, DC: CBO.

CBPP (Center on Budget and Policy Priorities). 2011. *Analysis of State Health Insurance Exchange Legislation: Establishment Status and Governance Issues*. Washington, DC: Center on Budget and Policy Priorities.

CDC (Centers for Disease Control and Prevention). 2011a. *Community Transformation Grants*. http://www.cdc.gov/communitytransformation/index.htm (June 24, 2011).

CDC. 2011b. *CTG Network Frequently Asked Questions (FAQs)*. http://www.cdc.gov/communitytransformation/network/faq/index.htm#pa1 (June 24, 2011).

Furrow, B. R. 2011. Regulating patient safety: The Patient Protection and Affordable Care Act. *University of Pennsylvania Law Review* 159:101-149.

GAO (Government Accountability Office). 2008. *Nonprofit Hospitals: Variation in Standards and Guidance Limits Comparison of How Hospitals Meet Community Benefit Requirements. Report to the Ranking Member, Committee on Finance, U.S. Senate (GAO-08-880)*. Washington, DC: GAO.

Gray, B. N., and A. Palmer. 2010. Fix Schedule H shortcomings. *Hospitals & Health Networks* 84(3):54-54.

Hall, M. A. 2011. Rethinking safety-net access for the uninsured. *New England Journal of Medicine* 364(1):7-9.

HHS (Department of Health and Human Services). 2011a. *Affordable Care Act Funds to Help Create Healthier U.S. Communities*. http://www.hhs.gov/news/press/2011pres/06/20110616b.html (June 20, 2011).

HHS. 2011b. *HHS Announces New Teaching Health Centers Graduate Medical Education Program*. http://www.hrsa.gov/about/news/pressreleases/110125teachinghealthcenters.html (June 24, 2011).

IOM (Institute of Medicine). 2003a. *The Future of the Public's Health in the 21st Century*. Washington, DC: The National Academies Press.

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For the Public's Health: Investing in a Healthier Future

IOM. 2003b. *A Shared Destiny: Community Effects of Uninsurance*. Washington, DC: The National Academies Press.

IRS (Internal Revenue Service). 2007. *Form 990 Redesign for Tax Year 2008 Schedule H, Hospitals—Highlights, December 20, 2007*. Washington, DC: IRS.

IRS. 2011. *IRS Exempt Organizations (TE/GE) Hospital Compliance Project Final Report*. Washington, DC: IRS.

Joint Committee on Taxation. 2010. *Technical Explanation of the Revenue Provisions of the "Reconciliation Act of 2010," as Amended, in Combination with the "Patient Protection and Affordable Care Act."* JCX-18-10. Washington, DC: U.S. Congress.

KFF (The Henry J. Kaiser Family Foundation). 2011a. *Caring for People Covered by Both Medicare and Medicaid: A Primer on Dually Eligible Beneficiaries*. http://www.kff.org/medicaid/ahr060311video.cfm (June 24, 2011).

KFF. 2011b. *A Profile of Health Insurance Exchange Enrollees*. Washington, DC: KFF.

Ku, L., K. Jones, P. Shin, B. Bruen, and K. Hayes. 2011. The states' next challenge—Securing primary care for expanded Medicaid populations. *New England Journal of Medicine* 364(6):493-495.

MMS (Massachusetts Medical Society). 2010. *Physician Workforce Study*. Boston: Massachusetts Medical Society.

National Prevention Health Promotion and Public Health Council. 2011. *National Prevention Strategy. America's Plan for Better Health and Wellness*. Rockville, MD: Office of the Surgeon General.

Robinson, J., and R. Elkan. 1996. *Health Needs Assessment: Theory and Practice*. New York: Churchill Livingstone.

Rosenbaum, S., E. Jones, P. Shin, and L. Ku. 2009. *National Health Reform: How Will Medically Underserved Communities Fare?* Washington, DC: The George Washington University School of Public Health and Health Services.

SAMHSA (Substance Abuse and Mental Health Services Administration). 2010. *Incentives for Prevention of Chronic Disease in Medicaid (Sec. 4108)*. Washington, DC: HHS.

Sommers, B. D., and S. Rosenbaum. 2011. Issues in health reform: How changes in eligibility may move millions back and forth between Medicaid and insurance exchanges. *Health Affairs* 30(2):228-236.

Wright, J., R. Williams, and J. R. Wilkinson. 1998. Development and importance of health needs assessment. *British Medical Journa*l 316(7140):1310-1313.

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Appendix C

Financing Mission-Critical Investments in Public Health Capacity Development

Eileen Salinsky, MBA

INTRODUCTION

The Institute of Medicine (IOM) committee on Public Health Strategies to Improve Health is charged with examining ways to strengthen the public health system in three separate but related areas: measurement, the law, and funding. The committee commissioned this paper to inform its deliberations regarding optimal mechanisms for financing the governmental public health infrastructure in a manner that will best support the needs of the public during and after health care reform. Based on guidance from the committee, this paper seeks to

- identify and describe priority investments in public health capacity that promise to strengthen the ability of state and local public health agencies to adopt an ecologically oriented, population-based approach to disease prevention and health promotion that addresses the broad socioenvironmental determinants of health;
- explore the extent to which categorical financing mechanisms have influenced the capacity deficits observed in these mission-critical areas; and
- examine the funding sources that have been successfully used by innovative public health agencies at the state and local level to finance these capacity-development priorities.

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DEFINITIONS AND METHODS

For the purposes of this effort, the term *capacity* conveys a deliberately broad and flexible concept—the various attributes that enable the governmental public health infrastructure to pursue its mission of promoting physical and mental health and preventing disease, injury, and disability. As described in the committee's first report, *For the Public's Health: The Role of Measurement in Action and Accountability*, the governmental public health infrastructure comprises public health agencies at local, state, and federal levels and represents a relatively small—yet integral—component of the overall health system (see Figure C-1). This infrastructure is composed of three major components: (1) the public health workforce, (2) data and information systems, and (3) organizational capabilities to assess and respond to public health needs (Baker et al., 2005).

Capacities lie at the heart of the logic model the committee has developed to illustrate the series of steps linking inputs to outcomes in population health and represent the critical link between resources and processes (see Figure C-2). As such, the term *capacity* may be used to signify system attributes necessary to successfully implement particular actions in order to achieve particular goals (optimal capacity), or the term may be used to describe the manner in which resources are actually deployed and aligned (existing capacity). This paper focuses specifically on capacity within governmental public health agencies at the state and local level, while recogniz-

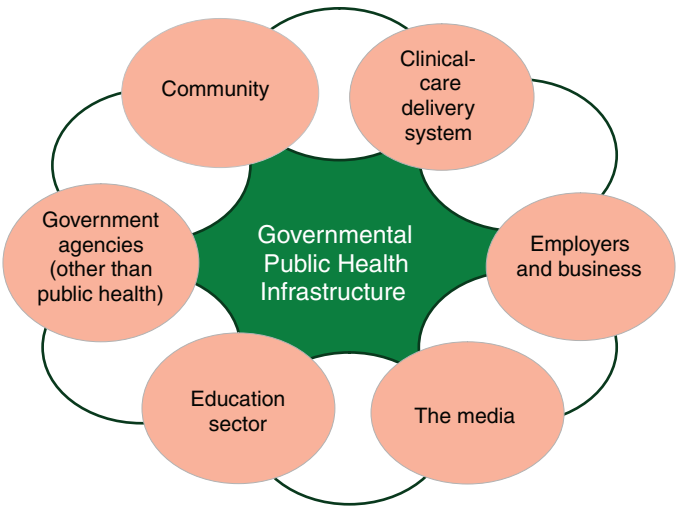

FIGURE C-1 The health system.
SOURCE: IOM, 2011.

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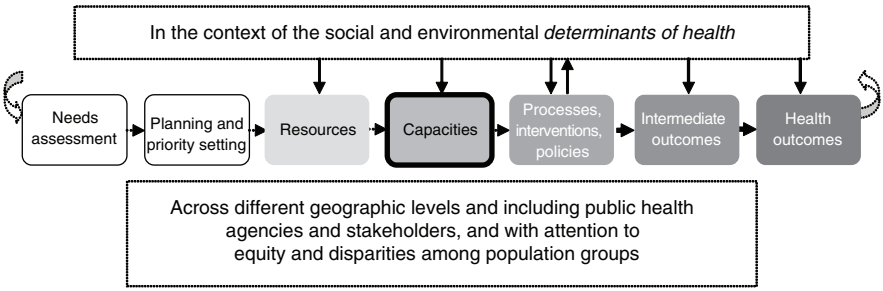

FIGURE C-2 Logic model.
SOURCE: IOM, 2011.

ing the broader systemic context in which these public-sector organizations operate. In light of the interstitial role played by governmental public health, the specific capacities needed for optimal performance of public-sector agencies are somewhat contingent on the nature and contributions of other health system partners, as well as population health needs.

The term *capacity-development needs* or *capacity deficits* represent those attributes of optimal capacity determined to be inadequate in, or missing from, the existing capacity. The evidence base surrounding both the definition of optimal public health capacity and documentation of existing capacity levels is extremely limited (Beitsch et al., 2006; Bhandari et al., 2010; Erwin, 2008; Mays et al., 2009; Scutchfield et al., 2004, 2009). Therefore capacity-development needs are most commonly identified through subjective assessments by public health practitioners and other experts. These needs are often characterized by insufficient resources (human, technological, or financial); inadequate capabilities, tools, or methods; or deficits in the scale, scope, or intensity of the activities through which these inputs are applied.

The content of this paper is based on telephone interviews with members of a committee workgroup[1] and other public health leaders,[2] as well as an extensive literature review. Findings based purely on the views of the public health leaders interviewed are clearly identified as expert opinion or perceptions. Respondents were selected based on their broad expertise in public health agency capacity, performance, and financing, as well as their experiences implementing innovative practices. Many interview respondents were directly identified by workgroup members, and additional respondents were identified during initial interviews with these public health leaders.

[1]Leslie Beitsch, David Fleming, Glen Mays, David Ross, and Steven Teutsch.
[2]A complete list of interview respondents can be found following the reference list.

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Limitations in the scale and scope of this effort prevented a more inclusive sample of respondents; therefore, respondents selected were not intended to be representative of public health officials nationally. However, efforts were made to ensure geographic diversity and a mix of perspectives across local and state agencies. Interviews were conducted by either the author or Alina Baciu (IOM Study Director) using a semistructured protocol, and each averaged approximately 1 hour in duration. Background materials (e.g., information on respondent's organization, published research) were reviewed prior to the interviews in order to customize questions and prepare tailored probes.

Preparatory interviews with workgroup members identified a draft set of mission-critical capacity-development priorities that were shared with other interview respondents in order to stimulate discussion. Respondents were asked to (1) comment on and suggest revisions to the capacity-development priorities identified in the discussion draft, (2) describe the effect of categorical funding on capacity development in these areas, (3) identify financing strategies that have been used successfully to build these capacities, and (4) share insights on alternative financing strategies that could be used to support these capacities in the future. Respondents were not asked to rank or prioritize among the capacity-development needs identified, but to the extent that particular issues were consistently highlighted or emphasized, these concerns are noted in the following narrative.

Results from the interviews and literature review were synthesized to develop the findings summarized in the remainder of this paper. These findings are organized in three main areas

- Capacity-Development Priorities,
- Impact of Categorical Funding on Gaps in Mission-Critical Capacities, and
- Strategies for Financing Mission-Critical Capacities.

CAPACITY-DEVELOPMENT PRIORITIES

Addressing public health capacity-development needs has the potential to catalyze and accelerate broader reform in the health system. Because the governmental public health infrastructure serves as the nexus of the entire health system, deficits in the mission-critical capacities of state and local agencies are likely to have a rate-limiting effect on systemwide effectiveness and efficiency. Conversely, strengthening these capacities can create a pace-setting effect for overall improvements in health system performance.

The following identifies capacity-development priorities for state and local public health agencies based on the expert opinion of committee

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members and input from other leaders in public health, as well as supporting evidence drawn from a review of the literature. These priorities are not intended to represent an exhaustive compilation of all capacity gaps within the field of public health. Rather, this summary is meant to highlight a mission-critical subset of public health capacities that appear to be (1) necessary for mounting an effective response to the broad determinants of health, (2) underdeveloped in many, if not most, state and local health agencies, and (3) difficult to develop adequately given the current level and structure of public health funding.

The capacity-development priorities described below are informed by and grounded in the

- Core functions and 10 essential services of public health,
- *Operational Definition of a Local Health Department* developed by the National Association of County and City Health Officials (NACCHO),
- State and local public health practice standards established by the Public Health Accreditation Board (PHAB),
- Core competencies for public health professionals established by the Council on Linkages between Academia and Public Health Practice, and
- *Priority Areas for Improvement of Quality in Public Health* identified by the U.S. Department of Health and Human Services.

These references broadly define the general functions, services, capacities, competencies, and quality improvements needed to support public health practice (Council on Linkages, 2010; Honoré and Scott, 2010; NACCHO, 2005; PHAB, 2009; Public Health Functions Steering Committee, 1995).

In contrast to these inclusive frameworks, the capacity-development priorities identified here are intended to emphasize specific high-yield opportunities for strategic investments in public health capacity. In essence, the priorities described in this paper highlight those aspects of the governmental public health infrastructure believed to be particularly nascent, fragile, or efficacious.

Mission-critical capacity-development needs appear pronounced in five general areas or domains

- Surveillance and epidemiology,
- Community health improvement planning,
- Partnership development,
- Policy decision support, and
- Public communications.

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In general, interview respondents expressed a high degree of consensus regarding these capacity-development priorities. However, individual respondents often focused their remarks on specific aspects of these investment opportunities depending on the respondent's unique experiences and areas of expertise. The few issues characterized by explicitly divergent viewpoints are noted in the following narrative.

Surveillance and Epidemiology

Surveillance and epidemiology are the foundation of public health practice, and deficits in this capacity domain can fundamentally undermine the effectiveness of governmental public health agencies. The type and magnitude of these capacity deficits appear to vary among states and localities depending on the specific public health surveillance systems, analytic tools, and epidemiologic workforce deployed in each jurisdiction (CSTE, 2009b). Despite these variations, the public health leaders interviewed for this paper strongly concurred that capacity-development needs related to surveillance and epidemiology are widespread and represent significant opportunities for improving performance at both the state and local level.

As described more fully in *For the Public's Health: The Role of Measurement in Action and Accountability* (IOM, 2011), existing public health information systems and related analytic activities do not adequately support decision makers confronting important choices regarding the health of their communities. Although public health agencies at all levels of government engage in a broad variety of valuable activities to collect, analyze, and disseminate health information, these efforts often have limited relevance for decision makers seeking to intervene at the community level owing to critical deficiencies in the accuracy, breadth, and timeliness of information (Livingood et al., 2010; Luck et al., 2006).

Respondents believed that additional investments are critically needed to enhance governmental public health's capacity to perform the following

- Conduct timely, community-level surveillance on disability, injury, behavioral health risks, and chronic diseases (including mental and oral health).
- Monitor the accessibility and quality of health care services.
- Measure important community characteristics, such as environmental health risks (e.g., infectious disease vectors, air and water quality) and other contextual factors that contribute to population health outcomes (e.g., community walkability, liquor store outlet density, and access to healthy foods).

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These perceived gaps in surveillance and epidemiology capacity reflect limitations that have been widely documented in the peer-reviewed and grey literature (Ali et al., 2007; ASPHL, 2007; CDC, 2006, 2010; CSTE, 2009b; Malvitz et al., 2009; Mokdad, 2009).

Taken collectively, research findings and respondent perceptions yield generally consistent conclusions regarding the need for additional investments in surveillance and epidemiology capacity to address the deficits identified. Specific capacity-development needs vary somewhat depending on surveillance topic and jurisdiction. In general, investment opportunities include improvements to existing surveillance systems, the design and implementation of innovative surveillance methods, and workforce development.

Improved Relevance and Timeliness of Existing Surveillance Systems

With the exceptions of reportable disease surveillance for specific communicable diseases and disease registries for a limited number of conditions, public health surveillance is heavily reliant on either sample-based population surveys (e.g., Behavioral Risk Factor Surveillance System [BRFSS]) or administrative databases (e.g., vital statistics, hospital discharge data) that are not primarily designed for surveillance purposes (Love et al., 2008; Mokdad, 2009). Survey data are typically not valid at the community level and usually cannot be used to monitor racial and ethnic disparities or geographic variation within communities. Administrative data often lack relevant content and may be extremely dated. In both cases, the usefulness of these surveillance data sources could be improved through modifications in data variables, improved adherence to coding conventions, and enhanced data collection methods.

Some states and communities have invested in enhancements to existing population health surveys and conducted community-specific survey efforts in order to develop valid, timely community-level estimates for a wide range of noncommunicable conditions and risk factors. These investments have included additions to survey instruments and increased sample sizes for BRFSS or other population health surveys (Drewnowski et al., 2007; Livingood et al., 2010). Others have proposed the use of improved small-area estimation techniques to develop community-level data (Congdon, 2009, 2010; Zhang et al., 2011).

Addressing deficiencies within administrative datasets raises somewhat different challenges. A wide variety of data sources administered by state health agencies (e.g., claims data for public health insurance programs, hospital discharge databases, emergency department data, vital statistics, and disease and immunization registries) can be used to monitor rates of disease, injury, and health care utilization. However, access to these datasets

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for public health surveillance purposes is often hindered by organizational and financial barriers. When these datasets can be accessed, data are often at least 1 to 2 years out of date upon release (Friedman, 2007).

In a survey of state chronic disease epidemiologists conducted by the Council of State and Territorial Epidemiologists (CSTE), a substantial number of respondents reported problems in gaining access to Medicare and Medicaid claims data (97 percent and 82 percent of states, respectively), state emergency department data (56 percent of states), hospital discharge data (59 percent of states), and state mortality data (63 percent of states). For those state chronic disease epidemiologists able to gain access to these health datasets, problems regarding data timeliness were frequently reported. Timely access to mortality data from state vital statistics systems appears particularly problematic (CSTE, 2009a). Interview respondents noted that local health officials face similar (and perhaps more daunting) challenges in accessing health datasets maintained by state health agencies.

Anecdotal accounts suggest that sources of nonhealth data that could be used to monitor environmental risks and other community characteristics related to health (e.g., traffic accident reports, liquor store license records) may be even more inaccessible than traditional health datasets. Whereas most health data are in electronic formats, data from other potentially relevant sources may not be digitized or stored in a manner that facilitates analysis. Also, state and local health officials are generally less familiar with these potential datasets and may not be experienced in the procedures needed to obtain and analyze this information. Additional training may be needed to help public health officials identify and access these potential sources of environmental and contextual surveillance data.

Streamlined data reporting, processing, and release protocols, as well as improved intergovernmental coordination, could reduce the time lags and access barriers observed in the use of administrative datasets for surveillance purposes. Wider adoption of data standards and coding conventions (such as geocoding data with spatial references, accurate and complete inclusion of external cause of injury codes) could further enhance the analytic applications of administrative data at the community level and facilitate linkages across datasets (CSTE, 2009b,c; Grigg et al., 2006; Krieger et al., 2002; Miner et al., 2005; Miranda et al., 2005).

Accelerated Development of Interoperable Public Health Information Systems

Public health surveillance is highly dependent on information reported by the clinical care delivery system. Yet public health surveillance systems have not adequately adapted to technological advances in the way that clinical health information is collected, processed, and stored (Public Health

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Data Standards Consortium, 2007). Progress has been made in public health informatics, such as increased electronic reporting of communicable diseases and improved integration of child health data (CSTE, 2009b; Fehrenbach et al., 2004; Overhage et al., 2008; Public Health Informatics Institute, 2003). However, many public health information systems continue to rely on antiqued, "stove-piped" mechanisms to both collect data from health care providers and to store data for analytic use (Public Health Data Standards Consortium, 2007; Staes et al., 2009). For example, CSTE reports that 47 percent of states have not yet implemented fully automated electronic laboratory reporting for reportable infectious diseases, and 59 percent have not developed web-based reporting for physicians and other providers (CSTE, 2009b).

Broader dissemination of electronic health records (EHR) and significant investments in health information technology by hospitals and other health care facilities offer promising opportunities to strengthen public health surveillance (Birkhead, 2010; Cossman et al., 2008; Klompas and Yokoe, 2009; Lazarus et al., 2009; Magruder et al., 2004). Meaningful use criteria established by the EHR Incentive program sponsored by the Centers for Medicare and Medicaid Services (CMS) create additional incentives for the electronic exchange of public health information (Blavin and Ormond, 2011). However, state and local public health agencies have struggled to adapt public health surveillance systems to leverage these advances in health information technology and do not appear to have the capacity necessary to shape the development of EHRs in clinical settings to optimize their potential for surveillance purposes.

Capacity developments needed to accelerate the design and implementation of innovative public health surveillance methods include augmenting the number and skills of public health workers with specialized expertise in health informatics; investing in the design and implementation of new, interoperable public health information systems; and expanding the use of mobile communication technologies to facilitate electronic data capture and transfer (Kukafka et al., 2007; Magruder et al., 2005; Turner et al., 2008; Yasnoff et al., 2001). Several interview respondents indicated that the financial cost of these capacity improvements has hindered development in this area. Information systems development represents a significant investment with costs associated with design, capital acquisition, training, and lost productivity during transition from the legacy system. Similarly, the labor market for skilled informatics personnel is highly competitive, resulting in salary levels that cannot typically be offered in public health agencies.

Interview respondents noted, however, that both organizational and financial barriers block the development of more rational, sophisticated public health information systems. The business case for informatics developments may be difficult to justify given that the benefits of these investments

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are likely to accrue to organizational units that are not directly responsible for maintaining surveillance systems and are unlikely to bear the costs of upgrades. Several respondents also raised concerns that the policies and procedures imposed by centralized agencies within state government responsible for overseeing information systems often slow or prevent innovation by public health agencies. Absent a dedicated source of funding to catalyze public health information systems development, these organizational barriers can be difficult to overcome.

Increased Number and Competencies of Epidemiologists

Workforce deficiencies related to epidemiology capacity compound the surveillance-related capacity-development needs described above. CSTE estimates that approximately 1,500 additional epidemiologists are needed nationwide for optimal surveillance and epidemiology capacity in all program areas at the state level (CSTE, 2009b). In addition to the need for more staff dedicated to epidemiological analyses, CSTE cites the need for more extensive training of epidemiology personnel,[3] expanded consultative support for epidemiology at the state level to meet local needs, increased use of analytic tools (such as cluster detection software and geographic information systems), and better coordination of epidemiology resources across program areas.

Categorical funding appears to encourage a distributed model for epidemiology capacity wherein states embed epidemiology capacity within discrete programs, rather than developing a centralized epidemiology unit to serve as a cross-cutting resource. Program-based epidemiology personnel often dedicate only a portion of their time to epidemiology activities and typically have limited epidemiological training and expertise. This type of distributed model may deter integrated analyses and can hinder the development of more sophisticated epidemiology capacity if robust coordinating mechanisms are not implemented (CSTE, 2009b; Duffy and Siegel, 2009).

Although similar epidemiology workforce requirements are not available for local health agencies, NACCHO reports that a minority of local health departments engages in surveillance and epidemiology activities for noninfectious diseases. Agencies serving populations under 100,000 rarely employ professionals occupationally classified as epidemiologists (NACCHO, 2009).[4]

[3]Respondents noted that substantial on-the-job training is often needed for new staff (even those with academic training in epidemiology) owing to inadequate experience in descriptive epidemiology, practical surveillance, and investigation techniques.

[4]Staff classified as epidemiologists may not have graduate level training in epidemiology.

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COMMUNITY HEALTH IMPROVEMENT PLANNING

For surveillance and epidemiology capacity to have a meaningful effect on population health outcomes, the information gleaned through these activities must be interpreted and translated into actionable interventions. Historically this decision making and response has occurred within programmatic silos and has sometimes resulted in a failure to intervene, duplication of efforts across programs, or a suboptimal alignment of public health resources relative to community need. Comprehensive community health improvement planning is widely viewed as a more effective approach to the assessment of health needs across a broad range of outcomes and detriments and the allocation of resources to address these needs.

Community health improvement planning has been conceptualized and implemented in a variety of ways. Typically these strategic planning activities include at least three distinct phases: the completion of a community health assessment,[5] the identification of health priorities, and the development of an action plan to respond to priorities identified (Jacobs and Elligers, 2009). The evidence base regarding the optimal nature and scale of investments in each of these phases is underdeveloped (Friedman and Parrish, 2009; Myers and Stoto, 2006). However, the need for some level of capacity in community health assessment and related health improvement planning is widely recognized. Because these activities are often viewed as fundamental elements of public health practice, PHAB will not consider a health agency for national accreditation if the organization has not developed a community health assessment, a community health improvement plan, and an agency strategic plan.

The public health leaders interviewed for this paper believe that additional capacity development is needed to ensure that community health improvement planning efforts are effective in improving community health outcomes. Deficits were observed in all three stages of community health improvement planning identified above, with development needs cited related to public health agencies' capacity to

- conduct comprehensive community health assessments (CHAs),
- facilitate participatory priority setting involving multiple stakeholders, and
- identify cost-effective, community-based interventions to prevent disease, injury, and disability.

These perceived gaps in capacity for community health improvement

[5]While a variety of formal definitions have been developed, the term *community health assessment* typically refers to a systemic effort to collect, analyze, and disseminate information on the health of a community (Friedman, 2010; Myers and Stoto, 2006).

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planning are supported by findings in the literature. However, the status of, and development needs related to, community health assessment activities have been more extensively documented than those regarding the latter stages of the planning process.

Over the past two decades, many states have enacted policies that mandate the completion of community health assessments by local health agencies, and a variety of trainings and tools have been developed to assist these efforts.[6] These activities have supported the implementation of community health assessments throughout the country and facilitated the use of health data in planning and policy development. In 2008, NACCHO found that the majority of local health agencies led or contributed to a collaborative process to conduct a community health assessment at some point within the prior 3-year period (NACCHO, 2009).

Yet, despite this progress, substantial opportunities exist for expanding the implementation of community assessments. A significant proportion of local health agencies (37 percent) report that no community assessment had been conducted for the jurisdictions served within the 3 years prior to 2008, and 31 percent did not have plans to conduct a community health assessment in the immediate future.[7] Agencies serving populations of less than 25,000 were most likely (47 percent) to report the absence of a community health assessment. Among local health agencies that have completed assessments, variations exist with respect to methods used, reflecting varying levels of quality, scope, and utility (Stoto et al., 2009).

Most CHAs are designed to support the development of community health improvement plans, and the vast majority of community health improvements plans (92 percent) are based on formal community health assessments (NACCHO, 2009). While CHAs provide an objective fact base for priority setting, ultimately this information must be assessed and interpreted through a subjective process to establish community health improvement priorities. Public health agencies have the potential to play a leadership role in this priority setting process, but capacity deficits may limit the extent and effect of public-sector contributions.

Some studies indicate that the involvement of governmental public health agencies in community health improvement planning tends to diminish as the processes moves from assessment to priority setting and action planning (Abarca et al., 2009; Fielding et al., 1999). These findings suggest that the latter stages of planning fall outside the "comfort zone" of many governmental public health agencies. Other researchers have found that

[6]Such as MAPP (Mobilizing for Action through Planning and Partnerships), APEX (Assessment Protocol for Excellence in Public Health), CDC's Assessment Initiative, and NACCHO's CHA/CHIP (Community Health Assessment/Community Health Improvement Plan) project.

[7]Within the next 3 years.

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community assessments that focus narrowly on specific health issues or populations are somewhat more likely to be viewed as impactful than more comprehensive efforts (Spice and Snyder, 2009). This finding may reflect, in part, the challenges of interpreting a diverse array of community health indicators and prioritizing among different types of disease threats and vulnerable populations.

Capacity-development investments that promise to advance the implementation and broaden the impact of community health improvement planning include dedicating resources to support all phases of these planning efforts, improving the scope and integration of surveillance data in CHAs, enhancing leadership skills to facilitate priority setting and conflict resolution, and improving awareness and adoption of evidence-based practices.

Dedicated Resources in Terms of Both Financing and Staff Time Availability

Community health assessment and related planning activities are time intensive and demand a significant staffing commitment (Abarca et al., 2009; Curtis, 2002; Paul-Shaheen et al., 1997). One study found that on average, CHAs require nearly 12 person-months of personnel time and cost over $60,000 to complete (Fielding et al., 1999). The establishment of dedicated units adequately staffed by personnel with analytic, policy, and technical expertise appears to promote the successful completion of CHAs (Paul-Shaheen et al., 1997). Conversely, lack of time, insufficient funding, and low levels of interest have been reported as the most significant barriers preventing the completion of community health assessment and planning (Curtis, 2002).

Although private-sector, community-based organizations frequently contribute significant amounts of both paid and in-kind staff resources to community health improvement planning, local and state health agencies often play pivotal roles (Fielding et al., 1999; NACCHO, 2009). CHAs typically rely on datasets maintained by the state health agencies, and planning efforts commonly depend on local health agencies to coordinate and mediate diverse community interests (see Box C-1). Absent the active engagement of governmental public health, efforts initiated solely by private-sector stakeholders may result in duplicative efforts and the creation of multiple (possibly conflicting) assessments and plans for a given community.

Recent, substantial reductions in the public health workforce may hinder a robust public-sector coordinating role in community health assessments sponsored by hospitals and other private entities (ASTHO, 2011; NACCHO, 2011). These staffing constraints within state and local health agencies decrease the likelihood that actionable health improvement plans will emerge from these assessment efforts.

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BOX C-1
Role of Hospitals in Community Health Assessments

Not-for-profit hospitals are often active collaborators on community health assessments as state law in multiple jurisdictions requires tax-exempt hospitals to complete such assessments. The Patient Protection and Affordable Care Act creates a similar national mandate beginning in 2012 and promises to significantly increase hospitals' investments in community health assessments. While these private-sector efforts promise to support improvements in the reach and quality of community health assessments, this growth may increase, rather than diminish, the need for additional public-sector involvement. Many state and local health agencies are working proactively to ensure appropriate public–private partnerships. For example, the Kansas Hospital Association and the Kansas Association of Local Health Directors have issued a joint resolution encouraging collaborative partnerships for community health assessments.

Improved Ability to Integrate Information from a Wide Variety of Sources

The breadth and depth of CHAs vary, and this variation is undoubtedly influenced by differences in epidemiology and surveillance capacity described in the preceding section of this paper. Community health assessments typically include indicators of health status, risk behaviors, and access to health care and other services. Measures regarding environmental health (e.g., air quality) and other community characteristics that influence population health (e.g., walkability, access to healthy food, local public health capacity, and health care provider supply) are featured in some CHAs, but the range of "contextual" indicators included may differ significantly across assessments (Myers and Stoto, 2006).

Ideally, CHAs provide a comprehensive understanding of community health status, the various factors that contribute to the health outcomes observed, and community perceptions of priority needs (Irani et al., 2006; Spice and Snyder, 2009). Developing this broad perspective requires the use of indicators drawn from a wide variety of datasets (e.g., BRFSS, hospital discharge data, vital statistics), linking records across datasets, epidemiological analyses to identify relationships between and among different data variables, and surveys to elicit community input. The data gathering and analytic challenges associated with these integrative efforts represent major barriers to successful community health assessments (Byrne et al., 2002; Stoto et al., 2009).

Many states have developed data warehouses, web-based query systems, training and technical assistance resources, and other mechanisms to improve the ability of local health agencies to access and use a wide array of

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datasets for CHAs (Asaro et al., 2001; Friedman and Parrish, 2006; Love and Shah, 2006; Rooney and Thompson, 2009).[8] Despite this progress, additional capacity enhancements are needed to enhance data dissemination tools (e.g., better trend analyses, benchmark support), improve the timeliness of available data, expand epidemiology-support capacity provided at the state level, and augment the analytic skills of local health officials (Friedman and Parrish, 2006; Love and Shah, 2006).

Improved Community Outreach and Engagement

Ideally, CHAs provide an initial basis for broad community involvement and sets the stage for the active participation of community residents and partner organizations throughout the course of the community health improvement planning process (CDC, 2010; Jacobs and Elligers, 2009). Significant community outreach, local data collection to assess perceived community health needs, and a participatory assessment process facilitate the engagement of residents and other stakeholders in the community health assessment (Cheadle et al., 2008; Kegler et al., 2009; Keller et al., 2002; Parker et al., 2003; Running et al., 2007; Spice and Snyder, 2009). These interactive activities also increase the staff time commitments and other costs associated with conducting CHAs and may demand an orientation and set of skills not commonly found within public health agencies. Additional investments are needed to identify effective techniques for outreach and engagement, disseminate this evidence, and train public health personnel in the application of these methods.

Enhanced Leadership and Communication Skills to Support Priority Setting

Priority setting requires a special set of skills and competencies related to the interactive nature of group facilitation and consensus building. The literature surrounding these capacity requirements is less robust than that pertaining to community assessment, which may further substantiate the extent to which community priority setting falls outside of conventional public health practice.

Public health lacks clear, widely accepted criteria for prioritizing community health needs (Michaelis, 2002). A variety of factors may be considered when establishing community health priorities, including the number of people affected, severity of the problem, perceived urgency of issue, efficacy

[8]Since 1992, funding through CDC's Assessment Initiative has supported 19 states (Arkansas, Florida, Illinois, Iowa, Maine, Massachusetts, Minnesota, Missouri, New Hampshire, New Mexico, New York, North Carolina, Ohio, Oregon, Rhode Island, Texas, Utah, Virginia, and Washington) to improve state and local capacity for conducting community health assessments.

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of interventions, political will to address health threats identified, and the cost, feasibility, and sustainability of response efforts (Anderson et al., 2005; Finison, 2007). Priority setting is an inherently value laden and subjective activity. Facilitating a prioritization process that engages a broad variety of stakeholders with diverse interests and perspectives will almost certainly lead to some degree of conflict and disagreement.

Public health leaders interviewed for this paper identified a number of underdeveloped capacities related to priority setting in the context of community health improvement planning, including the need for improved leadership skills related to conflict mediation and group facilitation, more and better models for communicating community health assessment findings in actionable formats that can be easily understood by a lay audience, and additional evaluation and research related to effective methods for priority setting in a community context.

Increased Awareness and Adoption of Evidence-Based Practices

The ultimate purpose of community health improvement planning is to identify, select, and plan for the implementation of interventions that can effectively address community health priorities. These decisions should be based on the best available evidence regarding health detriments and effective public health practice. However, a variety of barriers hinder evidence-based decision making in community health planning (Braveman et al., 2011). The evidence base for effective public health practices is growing, but remains limited, particularly with respect to effective community-based interventions (Anderson et al., 2005). Suboptimal use of available evidence by public health practitioners further undermines the inclusion of effective inventions in community health plans (Brownson et al., 2009).

Evidence-based practice guidelines (such as those identified in CDC's *Guide to Community Preventive Services*) and systematic evidence reviews (such as those developed by the Cochrane Collaboration and the Canadian Institutes of Health Research) support the dissemination of research findings to public health practitioners. However, available tools and resources do not fully support the information needs of state and local officials (LaPelle et al., 2006; Rockoff et al., 2007; Twose et al., 2008).

LaPelle et al. (2006) identified a continuum of information resources required to support evidence-based public health practice, including (1) early reports on newly identified health risks and preventive behaviors; (2) early reports on emerging practices and programs; (3) information on evaluated new interventions known to be effective; (4) syntheses of knowledge on established public health threats and practices; (5) published research reports, including meta-analyses and systematic reviews as found in peer-reviewed journals; and (6) evidence-based guidelines. For all these types of

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information resources, concerns have been raised related to ease of access by public health practitioners and inadequate customization of existing search and retrieval tools for public health purposes.

Researchers have suggested numerous proposals to improve access to information regarding evidence based public health practices including expanded access to full-text journal articles, automated notifications regarding new research findings, greater standardization of public health-related keywords, tailored search filters, better access to relevant research from other disciplines (e.g., urban planning), and streamlined mechanisms for searching the grey literature produced by credible sources (such as professional associations) (LaPelle et al., 2006). Several interview respondents voiced similar concerns about the need for better information retrieval mechanisms and also noted that more training and consultative assistance may be required to help public health workers select appropriate evidence-based practices.

Additional analytic support may be needed to assist local health officials in appropriately targeting interventions to address the specific manner in which community health risks are exhibited. The evidence base surrounding the various factors that influence health outcomes and practitioners' awareness of this evidence are strong relative to evidence regarding the effectiveness of interventions. However, most noncommunicable diseases have a complex etiology, and the relative contribution of discrete causal factors is likely to vary across communities, as well as across population groups within communities. Second-order "drill down" analyses may be needed to determine which evidence-based interventions are likely to yield the greatest health improvements and where these interventions should be implemented.

Partnership Building

Community health improvement plans often feature ecologically oriented public health interventions that must be implemented through intersectoral partnerships. Traditionally, state and local public health agencies have focused on the implementation of disease prevention and health promotion activities that these agencies have direct responsibility and operational control over (e.g., lead abatement, vector control, sanitation, food service inspections, and health education). Transforming the primary prevention role of state and local public health agencies to one that mobilizes multiple community stakeholders in order to facilitate broad societal change will require significant investments in partnership-building capacities. State and local public health agencies are being called on to cultivate strong relationships with a variety of health system partners, including

- clinical care providers (e.g., physicians, hospitals, laboratories, pharmacies, and insurers),

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- child care providers,
- primary and secondary schools,
- colleges and universities,
- businesses,
- community-based organizations,
- media organizations,
- other government agencies,
- public health agencies in other jurisdictions (local-local; state-state),
- public health agencies in other levels of government (federal-state-local),
- governance bodies, and
- intra-agency partners (e.g., coordination of multiple programs, divisions within state and local health agencies).

Local health agencies do engage in a variety of collaborative relationships, although the nature and strength of these relationships appear to vary by jurisdiction and partner type (Cheadle et al., 2008; Lovelace, 2000; Mays and Scutchfield, 2010; NACCHO, 2009; Zahner, 2005). Strong partnerships with schools, health care providers, nonprofit community organizations, and state health agencies appear most common. Some partnerships represent bi-lateral coordination of routine activities (which are sometimes mandated by law), while others represent voluntary collaborative initiatives involving multiple stakeholders. Local health agencies may play a central role in these collaborative networks or may act in a supportive capacity (Kassler and Goldsberry, 2005; Mays and Scutchfield, 2010; Wholey et al., 2009).

A limited but growing evidence base supports the belief that community partnerships improve the reach and performance of governmental public health agencies, facilitate system change, reduce health risks, and improve health outcomes (Cheadle et al., 2008; Mays and Scutchfield, 2010; Roussos and Fawcett, 2000; Scutchfield et al., 2004). Effective partnerships are characterized by committed leadership, high frequency of interaction, clear definition and high concordance of goals, adaptability to change, and ability to communicate value and benefits to the community (Bazzoli et al., 2003; Cheadle et al., 2008; Easterling, 2003; Lovelace, 2000; Roussos and Fawcett, 2000). However, significant investments of time and resources are required to create and sustain effective collaboration (Mays and Scutchfield, 2010; Woolf et al., 2011).

Interview respondents cited a variety of capacity deficits that currently limit the ability of state and local health agencies to build effective partnerships, including the capacity to

- assess the interests, priorities, culture, and operating processes of partner organizations,

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- adapt and coordinate programmatic activities to seamlessly interface with partner organizations and advance cross-cutting, strategic goals,
- provide training, technical assistance, and other forms of support to partners,
- implement and sustain collaborative interventions involving multiple stakeholders (including individual citizens and grassroots organizations), and
- encourage financial contributions to fund community health improvement plan implementation and galvanize support for investments in the governmental public health infrastructure.

Priority opportunities for capacity development in this domain include improved leadership skills and commitment, enhanced communication and coordination with strategic partners, improved ability to align agency activities with community health improvement goals, and increased clarity and accountability regarding partner roles and contributions.

Improved Leadership and Commitment to Collaboration

Leadership commitment and skills have been consistently identified as key predictors of success in collaborative endeavors. Agency directors and senior management staff influence the nature and quality of interorganizational relationships directly through their personal interactions and engagement with potential partners and indirectly through the way the value and importance of collaboration is conveyed to the broader agency. In many traditional organizational structures, building external relationships (with governance bodies and strategic partners) is often seen as a primary responsibility of leadership personnel. Agency leaders frequently serve as the "public face" of state and local health departments, presenting at governance functions, participating in intergovernmental cabinets and workgroups, serving as the main liaison to private-sector groups, and engaging with media outlets. These interactions can profoundly shape the tenor and tone of partnerships and are deeply affected by leaders' convictions regarding both the appropriate role of governmental public health in addressing the broad determinants of health and the usefulness of partner contributions. The nature and effectiveness of partnerships are also influenced by the interpersonal skills, communication abilities, and tolerance for risk further exhibited by public health leadership.

While direct leadership roles are critical in cultivating collaborative relationships, indirect influences may have even farther reaching, longer-term effects on agency capacity. Because the time and attentions of leadership staff are finite, collaborative partnerships are best advanced if more broadly supported through agency policies and operations. Agency

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culture regarding the perceived need for and benefits of collaboration is shaped over time by the attitudes and behaviors of agency leadership as expressed by informal and formal management practices and policies (e.g., staff meeting agendas, performance review procedures, and promotion criteria). Relative to unilateral activities, collaborative efforts require greater investments of staff time to support communication, coordination, and negotiations with external organizations. Staff are unlikely to assume these short-term costs without strong leadership commitment to the long-term vision of a more efficient and effective health system and some form of reward or recognition for their efforts to be supportive partners (Mays and Scutchfield, 2010).

In addressing capacity-development needs related to leadership, interview respondents cited the need for more leadership-development opportunities, peer-to-peer sharing about promising approaches to partnership development, and more formal evaluations of the communication mechanisms and management techniques that foster a collaborative culture. However, several respondents also raised more fundamental concerns that prevailing salary levels combined with limited autonomy in resource allocation decisions may discourage the retention and recruitment of high-caliber leaders capable of building constructive relationships with health system partners. Short tenures of agency directors, particularly at the state level, were also cited as a barrier to the development of stable partnerships. Some respondents felt that structural changes in compensation, budgetary authority, and employment terms would be necessary to attract and retain innovative public leaders capable of establishing and sustaining strategic partnerships.

Interview respondents generally concurred that while the vision of a collaborative, ecologically oriented health system is widespread among local and state health officials, current leadership capacity to advance this model is highly variable. A few respondents were somewhat more pessimistic and expressed concern that leaders in many public health agencies have not yet embraced a more expansive, collaborative role.

Limited political support for public health efforts to promote social and environmental change was cited as a major factor discouraging public health leaders from pursuing innovative forms of partnership (Libbey and Miyahara, 2011). Several respondents indicated that additional evidence regarding the feasibility and effectiveness of collaborative partnerships would be needed to increase policymakers' support for public health officials implementing or considering these interventions. Some respondents suggested that concrete financial incentives for collaboration would encourage public health leaders, policymakers, and partner organizations to invest in these strategic relationships (Mays and Scutchfield, 2010).

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Enhanced Communication and Coordination with Strategic Partners

Although leadership commitment and involvement were seen as essential to establishing an organizational culture conducive to collaborative partnerships, interview respondents also identified a range of structural characteristics and operating practices that appear to influence the effectiveness of communication and coordination with health system partners. Several respondents noted the level of staff time and skill involved in engaging partners and cited the need for personnel who are explicitly tasked with coordinating strategic relationships and are trained for and evaluated on these duties.

A dedicated liaison or partner relations function may facilitate regular interaction with partner organizations, enhance efforts to monitor the implementation of strategic plans, and promote the active identification and mediation of any conflicts or problems that may arise. Liaisons are likely to be most effective in translating public health objectives, identifying mutually efficient processes, and resolving unproductive tensions if they understand the various ways the agency interacts with the partner organization, have some level of authority to shape these interactions, and are highly familiar with the business practices and operating procedures of partner organizations. Ideally, partner liaisons have had prior professional experience working in these settings and maintain close relationships with their former colleagues.

Liaisons may also be effective in minimizing problems associated with *intra*-agency fragmentation. Public health agencies can devolve into information silos with limited coordination across programs (Merrill et al., 2008). Absent proactive management, such fragmentation can significantly increase the burden experienced by partners and decrease the coherence and productivity of collaborative relationships. Many partnerships are complex and reflect relationships with and among a variety of programmatic areas. In addition to undermining trust and goodwill through inefficiencies, intra-agency fragmentation can also erode the cumulative effect of the various routine interactions that occur at the program level, particularly if these programmatic interactions fail to align with broader strategic goals.

Improved Flexibility to Align Agency Activities with Community Health Improvement Goals

Achieving meaningful improvements in community health will typically require health system partners to change their operating practices in some way—conducting existing activities more effectively, taking on new roles and responsibilities, or discontinuing practices that fail to contribute to improvements in community health. Each of these options represents dif-

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ficult strategic decisions with concrete implications for staffing levels and skill mix, management practices, and capital needs. Ideally such strategic realignments are made in a coordinated fashion with a systemic perspective of the relative strengths and weaknesses of all health system partners.

To optimize partner contributions and model collaborative action, local and state health agencies may need to revisit their own strategic position within the broader health system and restructure governmental activities and service offerings accordingly. Interview respondents raised concerns regarding the ability of state and local health agencies to significantly reorient their operational activities in order to support strategic goals. Categorical funding appears to limit public health officials' flexibility in resource allocation decisions and reduces the availability of "venture capital" that could be used to develop new activities or services in response to unmet needs (Baum et al., 2011). For example, several respondents noted that local public health agencies could be playing a stronger role in providing training and technical assistance to health system partners (e.g., facilitating quality-improvement efforts in clinical settings, informing policy development in nonhealth sectors, providing health consultations to schools and child care facilities).

Similar concerns were voiced regarding the ability of public health agencies to relinquish or transfer certain operational responsibilities to partners who might be better positioned to carry out these activities. For example, implementation of health reform has reopened a longstanding debate in the field of public health regarding the appropriate role of governmental public health agencies in the delivery of clinical services. Some argue that the direct provision of clinical services distracts governmental public health agencies from their core mission of promoting population health and may engender pernicious competitive tensions with private-sector providers. Others believe that public health agencies cannot relinquish their clinical service responsibilities because the private-sector health care delivery system fails to provide adequate access to care (Keane et al., 2003).

Although relatively few local health agencies provide comprehensive primary care, the vast majority offer some type of clinical or personal care service (e.g., immunizations, case management, Women, Infants, and Children [WIC] services, family planning, TB treatment) (NACCHO, 2009). A substantial proportion of local health department budgets are devoted to these personal services, although the extent of this commitment depends on the nature and range of services provided (Brooks et al., 2009; Plough, 2004; Santerre, 2009). The scope of personal services provided by local health departments also significantly influences total funding levels and accounts for much of the wide variation in revenue per capita observed among agencies (Mays and Smith, 2009).

As discussed earlier in this paper, public health agencies generally lack the ability to assess access to care and, apart from the direct provision of

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services, appear to have limited legal authority or operational capacity to assure access (CSTE, 2009b; Keane et al., 2003; Scutchfield et al., 2004). Demands on governmental public health agencies for clinical services are unlikely to decrease substantially in the short term (Meyer and Weiselberg, 2009). However, as reforms (such as Medicaid eligibility changes and the formation of accountable care organizations and state-based insurance exchanges) continue to evolve and mature it will be critically important for public health agencies to improve their ability to monitor access and carefully consider the benefits and disadvantages of transferring responsibility for personal care services to private-sector providers. If officials determine that community health interests are best served by a given public health agency's continued involvement in personal services, improvements in third-party billing capabilities may be required.

Despite the importance and visibility of public health agencies' role in the direct provision of clinical services, interview respondents did not focus narrowly on these issues. The perceived need to realign roles and responsibilities relative to the clinical sector was typically framed around broader questions related to how public health agencies could better support clinical providers in the development of a patient-centered, prevention-oriented system of care. Concerns were raised regarding limitations in expertise, resources, and expectations that could prevent public health agencies from taking a proactive role in delivery system reform.

Other opportunities for strategic realignment were frequently cited, as respondents collectively referred to untapped promise in each of the potential partnerships identified above. In addition to calls for refocusing relationships with the clinical sector, respondents most commonly discussed needs related to strengthening collaboration among public health agencies. Many respondents indicated that relationships between public health agencies at the state and local levels could be improved and were at times adversarial rather than cooperative. States have established a variety of approaches to organizing public health activities and distributing operational responsibilities among state agencies, local health departments, and health system partners (Mays et al., 2010). Recognizing this diversity, respondents generally did not offer specific recommendations for intergovernmental realignment of responsibilities and resources, but they suggested that states and localities need to carefully reconsider existing structural conventions and coordination mechanisms.

Similarly, several respondents emphasized the need for improved regional collaboration among public agencies at the local level, particularly among agencies serving small populations. These small local health departments often have limited staff capacity and face efficiency challenges related to economies of small size (NACCHO, 2009). Research by Santerre (2009) has suggested that a population base of approximately 100,000 may rep-

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resent the minimum size needed to support efficient operations. Currently, over three-quarters of local health departments serve populations smaller than this minimally efficient scale (NACCHO, 2009). Regional collaboration among local health departments may take many forms, including full organizational consolidation, shared services, and cooperative activities (Libbey and Miyahara, 2011).

Increased Clarity and Accountability Regarding Partner Roles and Contributions

Sustained implementation of community health improvement plans involving multiple stakeholders requires ongoing efforts to ensure responsible parties are fulfilling their respective commitments (Woolf et al., 2011). Clearly defined roles and measurable, incremental objectives coupled with public reporting and nonpunitive, transparent recognition of implementation obstacles appear to support the long-term success of collaborative initiatives. Public health officials are typically unaccustomed to ensuring accountability in a voluntary context and may lack the skills necessary to monitor and maintain progress toward established goals. Model action plans and accountability mechanisms, along with additional opportunities for training and peer-to-peer learning, may be needed to enhance public health agencies' ability to monitor and sustain community partnerships.

Policy Decision Support

State and local public health agencies have the potential to play a stronger role in informing public policy decisions that influence community health outcomes—including policies focused specifically on public health and health care services, as well as those in other policy sectors (e.g., urban planning, transportation, criminal justice, education, and agriculture). As described in the National Prevention Strategy and a variety of other international and state-level plans that articulate a "health in all policies" framework, there is widespread recognition that policies made outside of the traditional health policy domain have a powerful impact on the health of communities (National Prevention Council, 2011; Rudolph et al., 2010; Ståhl et al., 2006; WHO, 2010).

Interview respondents noted several underdeveloped capacities that may hinder state and local health agencies' ability inform the broad range of legislative, regulatory, and administrative policies that affect community health, including deficits in the capacity to

- identify policy change opportunities in nonhealth sectors,
- anticipate the information needs of policymakers,

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- provide timely analytic support to policy deliberations in a wide variety of sectors,
- monitor the performance of public health agencies to both inform internal quality improvement policies and influence governance decisions related to public health authorities and funding, and
- increase public awareness of health-promoting policies.

A variety of capacity-development investments are needed to address these deficits. They are discussed in the following sections.

Improved Ability to Monitor Agency Performance and Implement Quality Improvement Processes

Robust performance assessment and related quality improvement (QI) efforts are viewed as key ingredients for improving community health, demonstrating accountability, and securing policy makers' support for the governmental infrastructure. Although most state and local public health agencies engage in some type of performance monitoring and quality improvement, the nature and scope of these activities appear to vary substantially (Beitsch et al., 2010; Madamala et al., 2010). Inconsistent definitions of quality improvement in public health have hindered efforts to document the uptake of, and barriers to, metrics-based performance improvement processes (Beitsch et al., 2010; Leep et al., 2009; Riley et al., 2010).

Despite recent momentum to expand the use of QI techniques[9] (both agency-wide and within individual program areas), interview respondents felt that additional investments are needed to increase the use and improve the consistency of performance monitoring and QI methods in public health agencies. While constraints related to funding and training were acknowledged as significant barriers to broader adoption of performance monitoring and QI, perceived needs related to the methods and information supporting performance measures were also cited. For example, modifications to existing public health information systems (such as time stamps on data in reportable disease surveillance records) may be needed to improve the usefulness of these systems for performance-monitoring purposes.

Efficiency and cost-effectiveness were also considered critical aspects of performance. Expanded use of financial measures in performance assessment and more consistent methods for documenting the financial status of public health agencies (e.g., financial ratios, recording resource allocations using a standard chart of accounts) were viewed as important to both establishing comparative benchmarks for public health finance and demon-

[9]Such as NACCHO's Accreditation and Quality Improvement Demonstration Site Project and the CDC's National Public Health Improvement Initiative.

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strating the cost-effectiveness of public health interventions (Costich et al., 2009; Honoré and Costich, 2009; Honoré and Schlechte, 2007; Honoré et al., 2004, 2007; Suarez et al., 2011).

Several respondents also noted that public health agencies often lack the analytic capacity necessary to develop and implement decision support tools that address financial management decisions. Honoré et al. (2010) have documented the benefits of integrating budgeting and strategic planning through formal, evidence-based decision analyses. Yet the structured application of cost-effectiveness analyses to resource allocation decisions is relatively rare in public health agencies (Baum et al., 2011).

Increased Participation in Practice-Based Research

Respondents raised concerns about the lack of a robust evidence base linking agency performance to community health outcomes (Bender and Halverson, 2010; Erwin et al., 2011). Policy support for public health is compromised by gaps in the evidence base related to both the cost-effectiveness of public health interventions and optimal approaches to the organization and management of public health agencies. Scientific study in these areas is commonly referred to as public health services and systems research (PHSSR) (Scutchfield et al., 2007). Although the field of PHSSR has grown considerably in recent years, myriad opportunities exist for additional scientific inquiry (Bales et al., 2011; Council on Linkages, 2005; Harris et al., 2011; Merrill et al., 2011).

Funding limitations have perhaps been the dominant factor hindering growth of PHSSR, but interview respondents also noted the need to promote academic partnerships in order to more actively engage public health agencies in practice-based research. Innovative efforts, such as the Public Health Practice-Based Research Networks Program funded by the Robert Wood Johnson Foundation, have incubated these types of research partnerships and demonstrate the potential of such collaboration. Yet a broad range of challenges, including constraints related to funding, personnel, cultural tensions, and ethical considerations, jeopardize broader implementation of practice-based research (Potter et al., 2006). Additional investments are needed to overcome these challenges to ensure that PHSSR addresses the practical information needs of public health officials and policymakers.

Increased Adoption and Further Development of Analytic Tools to Assess the Health Impact of Policies (Existing and Proposed) in a Wide Variety of Policy Sectors

Multiple mechanisms exist to ensure health effects are considered in the policies promulgated by nonhealth sectors, but health impact assessments

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(HIAs) are emerging as a particularly pragmatic tool (Koivusalo, 2010; Wernham, 2011). Wernham defines a health impact assessment as a "structured process that brings together scientific data, public health expertise and principles, and stakeholder input to identify the potential health effects of a proposed policy, program, project or plan and to craft health-based recommendations" (Wernham, 2011, p. 947-948).

Although application of HIAs is growing, use of this analytic approach in the United States is not yet widespread (Wernham, 2011). Lack of funds and limited training opportunities have slowed the adoption of HIAs in conventional public health practice. Additional legal requirements and methodological development may also be required to ensure the spread and utility of HIAs (Dannenberg et al., 2006; Lhachimi et al., 2010; Rajotte et al., 2011). For example, continued development of accessible, reliable microsimulation models is needed to create standard tools for quantifying health impacts in both biological and economic terms (Lhachimi et al., 2010).

Public Communications

Communication capacity represents a specialized area of expertise, as well as a complex, evolving science. Corporations invest billions in marketing (typically ranging from 1 to 20 percent of revenues depending on industry) in order to persuade consumers to purchase goods and services (CMO Council, 2010). As a result, consumers are inundated by information emanating from an ever-expanding variety of media outlets. Public health messages must compete for attention in this crowded, highly stylized, and sophisticated information landscape.

Many public health practitioners have recognized the magnitude of this challenge and are increasingly using social marketing techniques to educate the public about health risks and promote healthy behaviors (Grier and Bryant, 2005). Social marketing borrows commercial marketing principles and methods to reach the public and influence behaviors in a manner that benefits individual and collective interests. Like commercial marketing, social marketing is a consumer-focused endeavor that includes a sophisticated approach to (1) audience segmentation; (2) market research to clarify the target audiences' beliefs, values, and attitudes; (3) the cost/benefit trade-offs associated with the promoted behavior; (4) competing behaviors that the audience may prefer to the promoted behavior; and (5) the development of a comprehensive marketing strategy based on these considerations (Pirani and Reizes, 2005). Application of these principles in a public health context can significantly improve the effectiveness of public campaigns to increase awareness of health risks and behavioral norms (Brooks and Deshpande, 2003).

Despite the potential benefits of social marketing to the success of public health interventions, capacity in this area is perceived to be undervalued and

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underresourced within public health agencies. Anecdotal accounts suggest that preparedness funding has helped to build media communication capabilities within state and local health agencies. However, these efforts have rarely supported broader development in the social marketing capacity need to promote behavior change.

Interview respondents described deficits related to public health agencies' capacity to do the following

- Use mass media (both paid and earned) to increase public awareness of health risks and promote healthy behaviors.
- Leverage innovative mechanisms (such as social media, text messaging, and "message placement" in entertainment programming) to create synergistic, multimedia communication platforms.
- Conduct formative research to guide the development of comprehensive social marketing campaigns.

Investment priorities related to these underdeveloped areas are discussed in the following sections.

Expanded Support for Mass Media Communications

Funding for mass media communications appears extremely limited and constrains the ability of state and local agencies to develop comprehensive social marketing campaigns. CDC has invested in some highly effective, media-based social marketing efforts (such as the VERB campaign) and has developed a variety of technical assistance resources related to social marketing. However, federal grants offer very limited direct financial support to state and local agencies' health communications and social marketing activities.

Mass media communications represent an extremely powerful—and potentially cost-prohibitive—component of social marketing (Randolph and Viswanath, 2004). A few respondents emphasized the high costs associated with media buys, particularly in highly competitive, urban media markets. Although respondents generally concurred that capacity for paid media communications is underdeveloped in state and local public health agencies, some expressed skepticism that political support for capacity development in this area could be mustered.

Improved Ability to Customize Health Messages to Specific Target Audiences

Despite funding limitations, public health agencies are increasingly using mass media to promote healthy behaviors, sometimes in partnership

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with private-sector funders (Cousins et al., 2011; Grier and Bryant, 2005; Maibach et al., 2007). Unfortunately, such efforts may lack adequate investments in formative market research and message development, undermining the reach and effectiveness of public health campaigns (Grier and Bryant, 2005; Whittingham et al., 2008). Additional financial support appears needed for qualitative and quantitative market research, message testing, evaluation of social marketing interventions, and media consultation.

IMPACT OF CATEGORICAL FUNDING ON DEVELOPMENT OF MISSION-CRITICAL CAPACITIES

Most governmental public health agencies appear to be heavily reliant on categorical funding, although the degree of this dependence seems to vary across jurisdictions. Categorical financing mechanisms support important programmatic activities, but such funding also imposes restrictions on the use of funds and can constrain the potential for strategic investments. However, interview respondents expressed some differences of opinion regarding the extent to which categorical funding has limited investments in the capacity-development priorities described in the preceding section of this paper.

Respondents generally agreed that categorical funding discourages coordination across programs; fosters a fragmented, inefficient deployment of public health resources; perpetuates a narrow view of the role of public health agencies; and hinders adaptation to changing population health needs and scientific advancements. However, respondents did not express consistent views on the extent to which categorical funding actually *prevents* the development of cross-cutting, mission-critical capacities.

The various perceptions of interview respondents suggest that the degree to which categorical funding hinders capacity development in mission-critical areas is somewhat contingent on several intersecting factors including the attitudes of public health officials; the nature and rigidity of formal and informal categorical restrictions imposed at the federal, state, and local levels; and the burden associated with categorical program requirements and deliverables. These variables and their potential influence on capacity development are explored in more detail below. However, a more rigorous, systematic study of the categorical funding mechanisms used at all levels of government may be needed to test the validity of these impressions.

Leadership Attitudes

Most respondents believe that proactive public health leaders are able to overcome the barriers imposed by categorical mechanisms. Such leaders are reportedly able to find innovative ways to align categorical resources and

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effectively manage agency activities to ensure coordination across program areas. Some respondents emphasized that categorical restrictions leading to program silos are more a function of perception than reality. Others indicated that the design and administration of categorical funding streams create a variety of management challenges that demand an extraordinary level of creativity to overcome. These respondents felt it was both unreasonable and unproductive to expect the average state or local health official to put forth this amount of proactive effort. Some commentators have suggested that the contortions required of public health officials to navigate categorical obstacles can border on misrepresentation and raise ethical concerns (St. Luke's Health Initiative, 2002).

Some respondents emphasized that the ability of public health agencies to attract and retain high-caliber leaders is severely constrained by heavy reliance on categorical funding. Because health officials have very limited discretion in resource allocation and other managerial decisions, creative, innovative leaders are discouraged from accepting or continuing in leadership positions within public health agencies.

Nature of Categorical Restrictions

Differences in respondent views may also relate to variations in their personal experiences and differences in the mix of categorical programs encountered. Several respondents noted that the rigidity of categorical restrictions can vary significantly depending on funding mechanism and administering agency. For example, categorical funding provided by the U.S. Department of Agriculture (USDA) to state and local health agencies for information system development related to the WIC program was frequently cited as particularly restrictive. Respondents indicated that formal guidance explicitly prohibited agencies from using grant-funded computer hardware and software for purposes other than the support of WIC services.

It is worth noting that respondents held inconsistent views with respect to the limitations imposed by specific categorical programs administered by the federal government. For example, some respondents felt that CDC preparedness grants offered a practical model for how a categorical mechanism could allow, and even encourage, the development of cross-cutting capacities. Others indicated that federal restrictions related to preparedness funding have evolved since the program's inception and became significantly more permissive and flexible over time.

Concerns were also raised that while the policies of some federal categorical grants might permit a reasonable level of shared functionality across programs, the policies of other federal categorical programs could hinder state and local officials from taking full advantage of such flexibility. For example, one federal grant might allow personnel employed in other pro-

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gram areas to cross-train in order to expand agency capacity for a particular activity. However, the "host" program for those staff might prohibit the allocation of personnel time outside of that program area.

Significant variations were also observed in state policies related to categorical funds provided to local agencies. Some states appear to be more restrictive than others based on several factors including the extent to which categorical mechanisms are used to distribute state funds, the rigidity of limitations defined for state categorical programs, the extent to which the state is reliant on federal categorical programs, and the manner in which federal guidance is interpreted and, in turn, conveyed to local agencies. These state-level variations appear to result in significant differences in the way that categorical restrictions are perceived at the local level.

Other respondents observed that some of the more explicitly restrictive language limiting resource sharing across programs is often imposed by project staff within federal and state agencies and is not embedded in statute or regulation. Explicit restrictions may be incorporated into formal grant guidance or contractual agreements, but less formal program management practices may also constrain the use of program funds. For example, contentious negotiations surrounding the establishment of agreements and contracts, as well as a difficult history of expenditure disallowances after a grant has been awarded, may dissuade public health agencies from investing categorical funds in cross-cutting capacities that could benefit other program areas.

Burden of Categorical Program Requirements

Categorical funding may also undermine the development of mission-critical capacities in more subtle, indirect ways owing to the programmatic, management, and reporting burdens associated with these funding streams. For example, some respondents indicated that the deliverables required for some categorical programs require a level of investment that exceeds the resources awarded for those purposes, requiring grantees to deplete more flexible sources of state or local funding in order to support categorical objectives. Other program requirements, such as the mandated establishment of program-specific community advisory boards and assessments, can conflict or interfere with broader community health planning efforts. Some respondents indicated that the timing and nature of these program-specific requirements often create insurmountable obstacles to integrated community outreach and planning.

The consuming demands of program-specific activities, along with extensive financial reporting requirements related to staff time allocations and other categorical program costs, also contribute to the formation of intra-agency silos (Slonim et al., 2007). The divisive influence of categori-

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cal funding creates significant management challenges and discourages the development of centralized or shared functional capacity capable of serving broad organizational needs (ASTHO, 2009). The negative impact of this fragmentation appears particularly acute in highly specialized functional areas (e.g., informatics, communications, and epidemiology) that require significant expertise and often demand more highly compensated personnel. Individual programs often lack sufficient funding to support these functions independently, yet the organizational cultures and management practices that have evolved in response to categorical incentives frequently deter a more efficient pooling of resources to develop adequate capacity in these areas.

FINANCING STRATEGIES USED TO BUILD MISSION-CRITICAL CAPACITIES

Agencies that have made progress building mission-critical capacities in the priority areas described above appear to use a wide variety of funding sources to support these investments, including

- flexible funds from local government,
- flexible funds from state government,
- cross-subsidization from reimbursement- and fee-based services,
- categorical program funds, and
- private-sector grants from philanthropic organizations, health system partners, and corporate foundations.

In most instances, capacity development relied on two or more of these various funding sources. However, few clear patterns emerged regarding the financing strategies most commonly pursued or the relative importance of each type of funding source. The lack of a clear typology for these financing strategies likely reflects the diverse fiscal policies that characterize public health finance across the nation, differences in the nature and level of the development investments described by interview respondents, and, to some degree, limitations in the qualitative methods used to gather information for this paper.

Relatively few respondents had made substantial investments in all of the mission-critical capacity-development needs identified, and most focused their remarks on strategies used to finance development in one or two major capacity domains. To the extent that capacity-development investments had been made in multiple areas, respondents typically described their financing strategies in broad terms and were not asked to supply detailed budgets or revenue allocations for specific activities. Because of the informal qualitative nature of these interviews, it is difficult to form conclusions.

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Interview respondents typically used the terms "piecing," "stitching," "cobbling," or "crocheting" funding together to support capacity development in cross-cutting mission-critical areas. These capacities are viewed as investment priorities by innovative leaders who "find ways" to fund their development—in whatever manner is most feasible given the idiosyncratic funding opportunities and obstacles experienced. In light of these variations, the following narrative provides a general description of each major type of funding source used to build mission-critical capacities and summarizes salient issues regarding the perceived availability and usefulness of each. To the extent clear differences of opinion were expressed by respondents, alternative perspectives are noted.

Flexible Funds from Local Government

Funds provided to local health departments by local governments were frequently cited as an important source of flexible dollars that can be invested in mission-critical capacities. Relative to state and federal funding sources, local health officials appear to have more discretion over the use of local funds and may be able to use this flexibility to address priority capacity-development needs. However, respondents cautioned that the usefulness of local funding to enhance public health capacity and performance is likely contingent on the level of local funding available, the extent to which categorical restrictions are imposed by local governance bodies, and the motivation of local health officials to make strategic investments. These issues have not been studied widely.

Although the evidence base is limited, research findings support the notion that the availability of funding from *local* sources may be a particularly important predictor of local health departments' ability to perform the essential services of public health. A sample-based study conducted by Honoré et al. (2004) revealed a positive association between self-assessed agency performance and the per capita amount of local tax revenue dedicated to public health, yet found no significant correlation between performance and total per capita public health funding. The authors postulated that "the ability to determine the use of revenues at the local level is a factor to increasing performance" (Honoré et al., 2004, p. 449). This conclusion is consistent with findings of other researchers who have demonstrated that agency performance is positively associated with the presence of a local board of health *if* that board has policy-making authority (Bhandari et al., 2010). Strong financial support from local government also appears to improve the likelihood that a local health agency will attract state and federal funds (Bernet, 2007). But this causal relationship is not clearly established; it is also possible that state and federal funding encourage local investments.

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Nationally, the level of locally financed funding for local health departments has not been fully documented. In 2008, local health departments received an average of 25 percent of total funding from local government sources, and expenditures averaged $64 per capita, suggesting that local funds provided approximately $16 per capita.[10] However, the contribution of locally financed funds varies widely by state, ranging from 61 percent of total spending (New Jersey) to 2 percent of total funding (South Carolina) (NACCHO, 2009). These differences in the proportion of local agency budgets derived from local funding sources are difficult to interpret in light of wide variations in agencies' total per capita spending (Mays and Smith, 2009). More specific data on per capita spending of local funds by local health departments have not been reported publicly.

The extent to which local public health funds are restricted to specific categorical purposes is somewhat unclear, as the nature and prevalence of locally imposed categorical restrictions have not been well studied. Respondents believed that the flexibility of local funding is highly variable across jurisdictions and may depend, in part, on the financing mechanism used to distribute local tax dollars. Like most activities of local government, local funding for public health is largely drawn from property taxes (Honoré et al., 2011). Funding levels may be determined through either (1) an annual appropriations process during which general fund dollars are allocated by a governing body (such as a county board of commissioners) for public health and other local government purposes, or (2) a dedicated property tax that levies a legally specified tax millage rate against assessed property values to raise revenues expressly for public health agency operations.

Although the relative merits of these alternative mechanisms are not well established, dedicated taxes are often perceived as a more stable, flexible financing strategy than yearly budget negotiations. Revenues raised through dedicated taxes are subject to fluctuation owing to changes in local property values,[11] and local policy makers may impose conditions on a public health agency's use of dedicated revenues. However, resource allocations established through a yearly, politically charged budget process are likely to be even less predictable and more restrictive than those determined through a dedicated millage rate.

The adoption of dedicated property taxes for public health, the millage rates applied for these purposes, and the impact of these policies have not been fully documented.[12] Limited evidence indicates that dedicated public

[10]Assumes revenues are roughly equal to expenditures.

[11]These fluctuations tend to be modest and somewhat predictable as assessed property values are less volatile than market prices (Lutz et al., 2011).

[12]Local governments have the authority to levy dedicated taxes for public health in approximately 10 states, but the extent to which these authorities have been exercised in these states is unclear (Personal communication with Peggy Honoré, June 30, 2011).

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health tax mechanisms are associated with improved community health outcomes except in low-income communities (Honoré et al., 2011). Honoré and colleagues suggest that policy debates surrounding the establishment or retention of a dedicated local tax can provide a powerful opportunity for engaging the public in the role and contributions of the governmental public health infrastructure (Honoré et al., 2011). Respondents echoed the recommendations of these researchers in advocating for additional scientific study to explore the causal relationships between local funding policies and the capacity and performance of public health agencies.

Despite the positive effect local funding appears to have on capacity development, an overreliance on local funds can be detrimental to community health and public health performance. As demonstrated by recent budget cuts, the fiscal solvency of local government is very sensitive to economic downturns owing in part to prohibitions against deficit spending (CBO, 2010). Politically based resource allocation decisions often disregarded evidence from objective analyses in response to budgetary pressure (Honoré et al., 2010). Funding for public health purposes (both appropriated and dedicated) may be particularly vulnerable to cuts given limitations in policy makers' understanding of population-based services (Berk & Associates, 2006; Libbey and Miyahara, 2011). Perhaps more importantly, a community's health needs and financial resources are often asymmetric, further validating the need for the diversification of revenue streams beyond local sources (Honoré et al., 2011).

Flexible Funds from State Government

The nature of community health promotion inherently involves interventions focused at the local level, but this focus does not diminish the potential role for investment by state government. Several interview respondents indicated that state funds have been used to build the capacity of state health agencies, particularly in development related to innovative surveillance and epidemiology capabilities. State-sponsored training, technical assistance, and analytic support designed to strengthen and augment local capacity were also referenced as valuable resources to address capacity-development priorities.

Respondents with current or prior experience working in local health agencies generally acknowledged the broad systemic benefits of investments in state health agency capacity, but they often focused their remarks on the usefulness of direct financial support from state government. Several respondents indicated that state funding had been used to build local capacity in mission-critical areas, using both categorical and noncategorical funds.

Several states use terms like *base funding*, *core services*, or *general aid* to describe certain contractual or grant mechanisms used to distribute funds to

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local health departments. The nature of these generic funding mechanisms appears to vary widely. In a few states (e.g., Washington,[13] New York, and Florida) these general mechanisms provide flexible, noncategorical funds that local officials may use to deliver core services (Livingood et al., 2011; NYSACHO, 2001; Washington State Department of Health, 2008). In other states, "base" funding mechanisms may be used to bundle federal categorical dollars with associated categorical restrictions and programmatic requirements applied to the use of these dollars. Mechanisms financed solely or primarily with state general fund dollars may be less restrictive than those funded by state and federal categorical programs, but these issues have not been well studied.

The provision of noncategorical funds by state government to local health departments does not appear to be widespread, and the funding levels offered may be modest. However, even when funds are limited and do not fully cover related capacity-development costs, flexible state dollars may assist local health departments in securing other sources of flexible funding. State funding may cultivate some level of foundational capacity that can then be leveraged to attract competitive grants offered by the federal government and the private sector. This "seeding" effect appears most evident in localities that have benefited from long-standing, flexible core support from states.

Flexible state funding also has the potential to encourage local investments in local health departments. In some cases, states may require local governments to provide matching funds in order to draw-down state dollars. Although opinions were mixed regarding the merits of local match requirements, some respondents indicated that these types of mandates can protect local funds from budget cuts as local policymakers seek to avoid sacrificing revenue from external sources.

Respondents cautioned, however, that that noncategorical support provided to local health departments by state government has been significantly reduced in recent years due to both the fiscal pressures facing states and increased adoption of performance-based budgeting. These anecdotal reports are difficult to document nationally given limited information regarding state investments in local health agencies specifically and in public health more broadly. The complexity and variability of financial relationships between state and local governments compound the challenges of fully characterizing the nature and availability of flexible public health funding provided by states to localities. The extent to which local health departments actually use flexible state funding to develop the mission-critical capacities identified in this paper is also unclear.

[13]In Washington flexible funding is distributed to local health departments through three mechanisms financed by the state's General Fund that together provided approximately $84 million in the 2007-2009 biennium period.

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The proportion of state-financed investments expended at the local level and the extent to which these funds are offered through noncategorical mechanisms are not well documented. NACCHO reports significant variations in local health departments' reliance on state funding. Nationwide, approximately 20 percent of local health department revenue was derived from state sources in 2008 (excluding federal pass-through), reflecting roughly $13 per capita in state-financed expenditures by local health departments. State-specific contributions ranged from median levels of 55 percent in Pennsylvania[14] to 5 percent in neighboring Ohio. However, revenue sources used to finance state aid may not be transparent to local health officials, suggesting that revenue attributed to state sources may be overestimated.

Numerous issues surrounding state financing for public health are not well documented, including

- the level of resources invested by states in the public health infrastructure,
- the proportion of state investments distributed respectively to local health departments, state agencies, and private-sector organizations,
- the nature of the mechanisms used to distribute these funds,
- the source of revenue used to fund these investments, and
- the financing mechanisms used to generate these revenues.

Preliminary data from the ASTHO 2010 Profile indicates that in 2009 state health agencies' total expenditures averaged $98 per capita in 2009, and approximately 40 percent of total agency revenues were derived from state general funds or other state-financed funds[15] (Sellers, 2011). Taken together these data suggest that state governments contributed an average of roughly $39 per capita to state and local public health activities in 2009.

Interview respondents generally agreed that public health capacity at both the state and local level would benefit from additional funding from states, particularly in states that currently contribute minimal revenue to public health efforts. Significant variation in state support for public health is widely acknowledged, but available evidence lacks precision regarding the nature, magnitude, cause, and effect of these differences. The Trust for America's Health (TFAH) reports that in fiscal years 2009-2010, state contributions[16] ranged from $3.40 per capita in Nevada to $171.30 in Hawaii

[14]Most county health departments in Pennsylvania are fully funded by the state and offer limited services. Only 10 local jurisdictions (six county, four municipal) have established independent local health departments. Also, NACCHO notes low response rates from local health units in Pennsylvania, raising questions about data accuracy for this state.

[15]Federal funds represented 45 percent of total state health agency revenues in FY 2009.

[16]TFAH estimates the median value of state government investment in public health (excluding federal pass-through) at $30.61 per capita in FY 2009-2010.

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(TFAH, 2011). Despite efforts by TFAH to minimize inconsistencies resulting from state-level variability in both organizational structure and financial reporting, data limitations[17] undermine the comparability of per capita state spending estimates. While data artifacts compromise the accuracy of state-specific estimates, it is not likely that these structural factors fully account for the wide disparities observed in state revenue devoted to public health.

"Braided" Funding from Categorical Programs

As described in above, respondents indicated that categorical funds are being used to support the development of mission-critical capacities despite the challenges associated with these funding streams. The magnitude of these challenges appears to be strongly influenced by the degree to which an agency relies on categorical dollars, as well as the specific nature of the restrictions and requirements associated with those categorical programs. These dynamics appear to play out differently across jurisdictions.

Unfortunately, the scale and scope of this effort did not allow an in-depth exploration of these issues. The experiences of respondents may not be representative, and detailed information was not gathered regarding either the specific categorical funds leveraged or the management techniques used to coordinate across program areas. However, the interviews did yield some interesting observations that may be valuable in identifying issues for future study.

Some agencies have benefited from federal grants and cooperative agreements specifically focused on capacity development in the mission-critical areas identified, such as CDC's Assessment Initiative and more recently the National Public Health Improvement Initiative. These types of targeted categorical programs are expressly designed to support capacity development in one or more of the priority areas identified. However, awards are often made on a competitive basis or, if non-competitive, offer limited financial support. Such programs focused on public health capacity development appear to represent a relatively small proportion of categorical funding.

More traditional programmatic funds, such as CDC's Public Health Emergency Preparedness cooperative agreements and the Health Resources and Services Administration's Rural Health Network Development grants, have also contributed to capacity development in mission-critical areas. Though focused more narrowly on specific programmatic goals, these

[17]For example, Hawaii's highly centralized public health structure (common to states with relatively compact geography) explains, in part, the high level of per capita funding reported as expenditures include investments at both the state and local level. Conversely, in other states detailed budgets are not publicly available so spending estimates are based solely on allocations from state General Funds (as noted in TFAH's reports) and funding from alternative revenue sources (such as trusts established with tobacco settlement funds) may be excluded.

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categorical funds support activities, such as partnership development and community outreach, which have a "spill-over" effect on other program areas and create a foundation for cross-cutting capacity. A wide variety of state and federal categorical programs appear to fund narrowly defined aspects of the mission-critical capacities identified. As described in the preceding section, the various activities of these funded programs can often be successfully coordinated to build more generalized cross-cutting capacity. Yet, numerous management challenges often hinder this type of integrated approach, and tactical shifts within categorical programs can undermine the sustainability of core capacities.

Respondents also expressed concerns that federal categorical programs largely target funds at the state level, and because of the modest size of these awards, limited amounts of federal categorical funding trickle down to local agencies. ASTHO reports that of the $14 billion in federal funds received by state health agencies in fiscal year 2009, approximately 60 percent was directly distributed to local and regional health departments (Sellers, 2011). However, this statistic is significantly influenced by WIC funding, which accounts for roughly half of federal funds provided to state health agencies.

Cross-Subsidization from Reimbursement-Based and Fee-Based Services

Respondents offered mixed perspectives regarding the extent to which revenues generated from reimbursement- and fee-based services support capacity development. Revenue generating activities include the provision of clinical services, regulatory functions (e.g., restaurant inspections), and record management services (e.g., birth certificates). Although no respondents suggested that this type of revenue was the sole or dominant contributor to mission-critical capacities, several respondents did indicate that excess revenues from other service areas were used to fund development efforts. Others indicated that fee- and reimbursement-based activities were barely self-sustaining or even dependent on other sources of resource and did not offer a viable source of funds for capacity development.

The amount of revenue available for intra-agency redistribution appears to be influenced by a variety of factors including the extent to which an agency engages in revenue-generating services, the payment rates associated with these services, the efficiency of service providers, and policies toward resource sharing among organizational units. Variation in these characteristics has not been well documented.

Approximately 11 percent of state health agency revenue and 26 percent of local health department revenue were derived from fee- and reimbursement-based activities in fiscal year 2009 (NACCHO, 2009; Sellers, 2011). For state agencies, fees and fines represented a larger proportion of total

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revenue (7 percent) than reimbursement through Medicare and Medicaid (4 percent). For local health departments, reimbursement (15 percent) provided a larger proportion of revenue than fees (11 percent). However, these relative proportions vary widely by agency and are significantly influenced by the role a public health agency plays in health care service delivery.

Public health agencies' ability to influence payment rates for revenue-generating services appears limited. Local health departments have little influence in setting reimbursement rates for Medicaid and Medicare. The adequacy of these reimbursement rates relative to costs is likely to vary among agencies. Theoretically local health departments exert more control over the payment rates associated with regulatory and other fee-based services. However, fees may be dictated by state law and, even if determined locally, are often constrained by political pressure from the regulated industries that bear the cost of public health fees. Rate increases intended to finance general capacity, rather than the direct costs of providing fee-based services, are likely to face especially vocal opposition.

A few respondents specifically commented on the usefulness of Medicaid Management Information Systems (MMIS) funding for developing interoperable public health information systems. CMS offers an enhanced match for MMIS improvements, and under certain conditions this funding may be used to develop public health information systems (Blavin and Ormond, 2011).

Private-Sector Grants from Philanthropic Organizations, Health System Partners, and Corporate Foundations

Most respondents cited the use and importance of private-sector funds in building mission-critical capacity, particularly during the early stages of development. The Turning Point Initiative, sponsored by the W.K. Kellogg Foundation and the Robert Wood Johnson Foundation (RWJF) was frequently acknowledged as an important catalyst for reorienting state and local public health agencies. Although funds are no longer being distributed through this philanthropic program, several respondents believe that these investments are yielding lasting capacity improvements that are now being sustained through the other financing mechanisms described above. Funding through the RWJF Multi-State Learning Collaborative was also credited as important source of revenue for stimulating further advances in capacity development.

Contributions of private-sector funders do not appear to be limited to large national health foundations. Respondents frequently cited support from smaller state, regional, and local philanthropies and also described both direct financial and in-kind support provided by health system partners. Support from hospitals was often cited as particularly important. As

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the commissioned paper prepared by Sara Rosenbaum explores in additional detail, new community benefit requirements under federal law may be encouraging increased support for public health agencies by tax-exempt hospitals (see Appendix B).

Grants from locally based private-sector funders appear to represent ongoing sources of support for sustaining mission-critical capacity, as well as point-in-time investments to kick-start or accelerate specific development activities. The use of fiscal intermediaries, such as Public Health Institutes, was cited as a useful strategy for securing and using private-sector funds (ASTHO, 2009).

Policy Change Proposals

Based on their experiences using existing funding opportunities to finance capacity development in mission-critical areas, respondents were asked to share suggestions for policy changes that would enhance the ability of public health agencies to adopt an ecologically oriented, population-based approach to disease prevention and health promotion that addresses the broad socioenvironmental determinants of health. While suggestions varied somewhat by respondent, proposals tended to cluster around the need to do the following

- **Create dedicated, stable funding for the development of mission-critical capacity.** Many respondents indicated that existing funding streams, both categorical and noncategorical in nature, were insufficient to adequately support the development of mission-critical capacities in state and local agencies. Although most acknowledged the benefits of flexible financing, many questioned the political defensibility of noncategorical funding. Many respondents believed that categorical program expressly dedicated to capacity development offered a more viable option for investment and would allow for better accountability in both characterizing existing capacity levels and documenting progress made moving forward. A few respondents did advocate for flexible funding, arguing that a noncategorical approach would allow public health officials to adapt to changing needs and technologies. Some believed that funding for public health capacity development, whether categorical or flexible in nature, should be financed through a predictable, dedicated revenue stream (e.g., property tax mill rate, a motor vehicle excise tax, a tax on health insurance premiums, a tax on sweetened carbonated beverages, or another type of dedicated tax).
- **Reduce barriers to cross-cutting capacity development in existing categorical programs.** Many respondents indicated that changes in

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existing categorical programs were necessary to minimize the obstacles hindering the development of cross-cutting capacity. While most focused on reducing or eliminating categorical restrictions, others emphasized the need for explicit guidance encouraging the coordination of resources across programs and incentivizing the development of shared capacities. These respondents felt that clear guidance on permissible or preferred approaches to resource allocation would be necessary, given the long history of categorical restrictions. For example, some respondents suggested categorical programs should allow higher indirect cost rates in order to recognize and fund the core capacities upon which programmatic activities rely.

- **Establish incentives that promote diversified funding for strategic investments.** Many respondents indicated that increased support from local, state, federal, and private sources would be needed to build robust capacity in state and local health agencies. Several respondents suggested that financing policies should create incentives for additional investments by each of these stakeholder groups and promote a more efficient alignment of public health resources.

A few respondents focused specifically on the creation of either federal matching grants for state investment in local health department capacity or state matching grants for local investments in public health capacity. Proponents of matching grants suggested that these types of funding mechanisms would promote a shared commitment to capacity investments across multiple levels of government. Requiring local, state, and federal partners to have "skin in the game" was viewed as a necessary ingredient for diversifying funding, and perhaps more importantly, for establishing a shared vision regarding performance expectations and accountability processes. Respondents recognized that match-based funding would need to be carefully structured to both achieve these goals and protect against potential drawbacks. For example, some respondents suggested that match rates could be customized to accommodate the relative affluence of individual states or localities, and preferential rates could be used to create incentives for specific types of investments, regional collaboration, agency accreditation, or other desired practices.

CONCLUSION

A clear consensus emerged from the respondent interviews regarding the need for improved and expanded capacity in state and local health agencies related to surveillance and epidemiology, community health improvement

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planning, partnership development, policy decision support, and public communication. Respondents indicated that additional investments are needed to increase the number and skills of the public health workforce (particularly for personnel with expertise in informatics, communications, financial management, epidemiology, and other analytic competencies), to develop interoperable surveillance systems, and to improve the evidence base surrounding public health interventions and management best practices.

Historically categorical funding mechanisms have created obstacles to the development of cross-cutting capacities and have often fostered a fragmented, inefficient alignment of public health resources. Categorical funding streams have also contributed to ossification within the governmental public health infrastructure, limiting agencies' ability to use scientific advancements and adapt to evolving population health needs. Perhaps most importantly, the dominance of these restrictive funding mechanisms has perpetuated a narrow vision for the potential role and contributions of state and local public health agencies—implying that their mission is merely the sum of categorical parts, rather than a comprehensive, holistic strategy to prevent disease and promote health.

Despite these challenges, innovative public health leaders have successfully used categorical funding in tandem with more flexible funding from local, state, and private sources to build capacity in mission-critical areas. These exploratory findings suggest that diversified funding is needed to support strategic investments in public health capacity development. Additional study may be needed to fully characterize the existing portfolio of funding mechanisms currently supporting state and local agencies and to identify the optimal level, mix, and structure of financing needed to ensure adequate capacity development in mission-critical areas.

Respondents suggested that public health finance policy should be refocused to encourage additional investments across all levels of government and to promote a more efficient coordination of public health resources. Finance policies should reduce categorical restrictions that hinder the development of cross-cutting capacity, dedicate funds to capacity-development priorities, and create financial incentives for rational investments.

REFERENCES

Abarca, C., C. M. Grigg, J. A. Steele, L. Osgood, and H. Keating. 2009. Building and measuring infrastructure and capacity for community health assessment and health improvement planning in Florida. *Journal of Public Health Management & Practice* 15(1):54-58.

Ali, R., D. Wheitner, E. O. Talbott, and J. V. Zborowski. 2007. Connecting environmental health data to people and policy: Integrating information and mobilizing communities for environmental public health tracking. *Journal of Community Health* 32(5):357-374.

Anderson, L. M., R. C. Brownson, M. T. Fullilove, S. M. Teutsch, L. F. Novick, J. Fielding, and G. H. Land. 2005. Evidence-based public health policy and practice: Promises and limits. *American Journal of Preventive Medicine* (5 Suppl):226-230.

Copyright © National Academy of Sciences. All rights reserved.

For the Public's Health: Investing in a Healthier Future

Asaro, P. V., G. H. Land, and J. W. Hales. 2001. Making public health data available to community-level decision makers—Goals, issues, and a case report. *Journal of Public Health Management & Practice* 7(5):58-63.

ASPHL (Alaska State Public Health Laboratory). 2007. *State Environmental Health Laboratories: Capabilities and Capacity.* Silver Spring, MD: ASPHL.

ASTHO (Association of State and Territorial Health Officials). 2009. *State Perspectives on the Use of Fiscal Intermediaries*. Washington, DC: ASTHO.

ASTHO. 2011. *Budget Cuts Continue to Affect the Health of Americans: Update May 2011*. Washington, DC: ASTHO.

Baker, E. L., M. A. Potter, D. L. Jones, S. L. Mercer, J. P. Cioffi, L. W. Green, P. K. Halverson, M. Y. Lichtveld, and D. W. Fleming. 2005. The public health infrastructure and our nation's health. *Annual Review of Public Health* 26:303-318.

Bales, M. E., S. B. Johnson, J. W. Keeling, K. M. Carley, F. Kunkel, and J. A. Merrill. 2011. Evolution of coauthorship in public health services and systems research. *American Journal of Preventive Medicine* 41(1):112-117.

Baum, N. M., C. DesRoches, E. G. Campbell, and S. D. Goold. 2011. Resource allocation in public health practice: A national survey of local public health officials. *Journal of Public Health Management & Practice* 17(3):265-274.

Bazzoli, G. J., E. Casey, J. A. Alexander, D. A. Conrad, S. M. Shortell, S. Sofaer, R. Hasnain-Wynia, and A. P. Zukoski. 2003. Collaborative initiatives: Where the rubber meets the road in community partnerships. *Medical Care Research Review* 60(4 Suppl):S63-S94.

Beitsch, L. M., R. G. Brooks, M. Grigg, and N. Menachemi. 2006. Structure and functions of state public health agencies. *American Journal of Public Health* 96(1):167-172.

Beitsch, L. M., C. Leep, G. Shah, R. G. Brooks, and R. M. Pestronk. 2010. Quality improvement in local health departments: Results of the NACCHO 2008 survey. *Journal of Public Health Management & Practice* 16(1):49-54.

Bender, K., and P. K. Halverson. 2010. Quality improvement and accreditation: What might it look like? *Journal of Public Health Management & Practice January/February* 16(1):79-82.

Berk & Associates. 2006. *Financing Local Public Health in Washington State: Challenges and Choices*. Report to the Public Health Improvement Plan Finance Committee. Seattle, WA: Berk & Associates.

Bernet, P. 2007. Local public health agency funding: Money begets money. *Journal of Public Health Management & Practice* 13(2):188-193.

Bhandari, M. W., F. D. Scutchfield, R. Charnigo, M. C. Riddell, and G. P. Mays. 2010. New data, same story? Revisiting studies on the relationship of local public health systems characteristics to public health performance. *Journal of Public Health Management & Practice* 16(2):110-117.

Birkhead, G. S., and HHS. 2010. *Achieving Population Health Through Meaningful Use: How Do Governmental Public Health Agencies View the Process to Date?* HIT Policy Committee Meaningful Use Workgroup. Washington, DC: HHS, Office of the National Coordinator for Health Information Technology.

Blavin, F., and B. Ormond. 2011. *HITECH, Meaningful Use, and Public Health: Funding Opportunities for State Immunization Registries*. Washington, DC: Urban Institute.

Braveman, P. A., S. A. Egerter, S. H. Woolf, and J. S. Marks. 2011. When do we know enough to recommend action on the social determinants of health? *American Journal of Preventive Medicine* 40(1 Suppl 1):S58-S66.

Brooks, R., and S. Deshpande. 2003. *Social Marketing and Public Health Lessons from the Field*. Seattle, WA: Turning Point National Program Office at the University of Washington.

Copyright © National Academy of Sciences. All rights reserved.

Brooks, R. G., L. M. Beitsch, P. Street, and A. Chukmaitov. 2009. Aligning public health financing with essential public health service functions and National Public Health Performance Standards. *Journal of Public Health Management & Practice* 15(4):299-306.

Brownson, R. C., J. E. Fielding, and C. M. Maylahn. 2009. Evidence-based public health: A fundamental concept for public health practice. *Annual Review of Public Health* 30:175-201.

Byrne, C., J. B. Crucetti, M. G. Medvesky, M. D. Miller, S. J. Pirani, and P. R. Irani. 2002. The process to develop a meaningful community health assessment in New York State. *Journal of Public Health Management & Practice* 8(4):45-53.

CBO (Congressional Budget Office). 2010. *Fiscal Stress Faced by Local Governments*. Washington, DC: CBO.

CDC (Centers for Disease Control and Prevention). 2006. *Recommendations for Future Efforts in Community Health Promotion*. Atlanta, GA: CDC.

CDC. 2010. *Community Health Assessment and Group Evaluation (CHANGE): Building a Foundation of Knowledge to Prioritize Community Health Needs*. Atlanta, GA: CDC.

Cheadle, A., C. Hsu, P. M. Schwartz, D. Pearson, H. P. Greenwald, W. L. Beery, G. Flores, and M. C. Casey. 2008. Involving local health departments in community health partnerships: Evaluation results from the Partnership for the Public's Health Initiative. *Journal of Urban Health* 85(2):162-177.

CMO (Chief Marketing Officer) Council. 2010. *State of Marketing: Outlook, Intentions and Investments for 2010*. Palo Alto, CA: CMO Council.

Congdon, P. 2009. A multilevel model for cardiovascular disease prevalence in the U.S. and its application to micro area prevalence estimates. *International Journal of Health Geographics* 8:6.

Congdon, P. 2010. A multilevel model for comorbid outcomes: Obesity and diabetes in the United States. *International Journal of Environmental Research and Public Health* 7(2):333-352.

Cossman, R. E., J. S. Cossman, W. L. James, T. Blanchard, R. K. Thomas, L. G. Pol, A. G. Cosby, and D. M. Mirvis. 2008. Evaluating heart disease prescriptions-filled as a proxy for heart disease prevalence rates. *Journal of Health Human Services Administration* 30(4):503-528.

Costich, J. F., P. A. Honoré, and F. D. Scutchfield. 2009. Public health financial management needs: Report of a national survey. *Journal of Public Health Management & Practice* 15(4):307-310.

Council on Linkages. 2005. *Public Health Systems Research: Summary of Research Needs*. Council on Linkages between Academia and Public Health Practice. Washington, DC: Public Health Foundation.

Council on Linkages. 2010. *Core Competencies for Public Health Professionals*. Council on Linkages Between Academia and Public Health Practice. Washington, DC: Public Health Foundation.

Cousins, J. M., S. M. Langer, L. K. Rhew, and C. Thomas. 2011. The role of state health departments in supporting community-based obesity prevention. *Preventing Chronic Disease* 8(4):A87. http://www.cdc.gov/pcd/issues/2011/jul/10_0181.htm (accessed August 12, 2011).

CSTE (Council of State and Territorial Epidemiologists). 2009a. *National Assessment of Epidemiology Capacity: Supplemental Report on Chronic Disease Epidemiology Capacity*. Atlanta, GA: CSTE.

CSTE. 2009b. *National Assessment of Epidemiology Capacity*. Atlanta, GA: CSTE.

CSTE. 2009c. *State Injury Indicators Report, Fourth Edition—2005 Data*. Atlanta, GA: CSTE.

Curtis, D. C. 2002. Evaluation of community health assessment in Kansas. *Journal of Public Health Management & Practice* 8(4):20-25.

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For the Public's Health: Investing in a Healthier Future

Dannenberg, A. L., R. Bhatia, B. L. Cole, C. Dora, J. E. Fielding, K. Kraft, D. McClymont-Peace, J. Mindell, C. Onyekere, J. A. Roberts, C. L. Ross, C. D. Rutt, A. Scott-Samuel, and H. H. Tilson. 2006. Growing the field of health impact assessment in the United States: An agenda for research and practice. *American Journal of Public Health* 96(2):262-270.

Drewnowski, A., C. D. Rehm, and D. Solet. 2007. Disparities in obesity rates: Analysis by ZIP code area. *Social Science & Medicine* 65(12):2458-2463.

Duffy, R. E., and P. Z. Siegel. 2009. Increasing chronic disease epidemiology capacity without increasing workforce: A success story in Ohio. *Journal of Public Health Management & Practice* 15(2):123-126.

Easterling, D. 2003. What have we learned about community partnerships? *Medical Care Research and Review* 60(4 Suppl):S161-S166.

Erwin, P. C. 2008. The performance of local health departments: A review of the literature. *Journal of Public Health Management & Practice* 14(2):E9-E18.

Erwin, P. C., S. B. Greene, G. P. Mays, T. C. Ricketts, and M. V. Davis. 2011. The association of changes in local health department resources with changes in state-level health outcomes. *American Journal of Public Health* 101(4):609-615.

Fehrenbach, S. N., J. C. Kelly, and C. Vu. 2004. Integration of child health information systems: Current state and local health department efforts. *Journal of Public Health Management and Practice* Suppl(Nov):S30-S35.

Fielding, J. E., C. E. Sutherland, and N. Halfon. 1999. Community health report cards. Results of a national survey. *American Journal of Preventive Medicine* 17(1):79-86.

Finison, L. J. 2007. *Community Health Data Scan for Connecticut*. New Britain: Connecticut Health Foundation.

Friedman, D. J. 2007. *Assessing Changes in the Vital Records and Statistics Infrastructure*. Silver Spring, MD: National Association for Public Health Statistics and Information Systems.

Friedman, D. J., and R. G. Parrish, 2nd. 2006. Characteristics, desired functionalities, and datasets of state web-based data query systems. *Journal of Public Health Management & Practice* 12(2):119-129.

Friedman, D. J., and R. G. Parrish. 2009. Is community health assessment worthwhile? *Journal of Public Health Management & Practice* 15(1):3-9.

Friedman, D. J., and R. G. Parrish. 2010. The population health record: Concepts, definition, design, and implementation. *Journal of the American Medical Informatics Association* 17:359-366.

Grier, S., and C. A. Bryant. 2005. Social marketing in public health. *Annual Review of Public Health* 26:319-339.

Grigg, M., B. Alfred, C. Keller, and J. A. Steele. 2006. Implementation of an Internet-based geographic information system: The Florida experience. *Journal of Public Health Management & Practice* 12(2):139-145.

Harris, J. K., K. E. Beatty, J. D. Lecy, J. M. Cyr, and R. M. Shapiro, 2nd. 2011. Mapping the multidisciplinary field of public health services and systems research. *American Journal of Preventive Medicine* 41(1):105-111.

Honoré, P. A., and J. F. Costich. 2009. Public health financial management competencies. *Journal of Public Health Management & Practice* 15(4):311-318.

Honoré, P. A., and T. Schlechte. 2007. State public health agency expenditures: Categorizing and comparing to performance levels. *Journal of Public Health Management & Practice* 13(2):156-162.

Honoré, P. A., and W. Scott. 2010. *Priority Areas for Improvement of Quality in Public Health*. Washington, DC: HHS.

Honoré, P. A., E. J. Simoes, W. J. Jones, and R. Moonesinghe. 2004. Practices in public health finance: An investigation of jurisdiction funding patterns and performance. *Journal of Public Health Management & Practice* 10(5):444-450.

Copyright © National Academy of Sciences. All rights reserved.

Honoré, P. A., R. L. Clarke, D. M. Mead, and S. M. Menditto. 2007. Creating financial transparency in public health: Examining best practices of system partners. *Journal of Public Health Management & Practice* 13(2):121-129.

Honoré, P. A., P. J. Fos, T. Smith, M. Riley, and K. Kramarz. 2010. Decision science: A scientific approach to enhance public health budgeting. *Journal of Public Health Management & Practice* 16(2):98-103.

Honoré, P. A., P. J. Fos, X. Wang, and R. Moonesinghe. 2011. The effects on population health status of using dedicated property taxes to fund local public health agencies. *BMC Public Health* 11(1):471-480.

IOM (Institute of Medicine). 2011. *For the Public's Health: The Role of Measurement in Action and Accountability*. Washington, DC: The National Academies Press.

Irani, P., C. Bohn, C. Halasan, M. Landen, and D. McCusker. 2006. Community health assessment: Driving the need for current, easily accessible population health data. *Journal of Public Health Management & Practice* 12(2):113-118.

Jacobs, L. M., and J. J. Elligers. 2009. The MAPP approach: Using community health status assessment for performance improvement. *Journal of Public Health Management & Practice* 15(1):79-81.

Kassler, W. J., and Y. P. Goldsberry. 2005. The New Hampshire public health network: Creating local public health infrastructure through community-driven partnerships. *Journal of Public Health Management & Practice* 11(2):150-157.

Keane, C., J. Marx, and E. Ricci. 2003. Local health departments' mission to the uninsured. *Journal of Public Health Management & Practice* 24(2):130-149.

Kegler, M. C., J. E. Painter, J. M. Twiss, R. Aronson, and B. L. Norton. 2009. Evaluation findings on community participation in the California Healthy Cities and Communities program. *Health Promotion International* 24(4):300-310.

Keller, L. O., M. A. Schaffer, B. Lia-Hoagberg, and S. Strohschein. 2002. Assessment, program planning, and evaluation in population-based public health practice. *Journal of Public Health Management & Practice* 8(5):30-43.

Klompas, M., and D. S. Yokoe. 2009. Automated surveillance of health care-associated infections. *Clinical Infectious Diseases* 48(9):1268-1275.

Koivusalo, M. 2010. The state of Health in All Policies (HiAP) in the European Union: Potential and pitfalls. *Journal of Epidemiology and Community Health* 64(6):500-503.

Krieger, N., J. T. Chen, P. D. Waterman, M. J. Soobader, S. V. Subramanian, and R. Carson. 2002. Geocoding and monitoring of U.S. socioeconomic inequalities in mortality and cancer incidence: Does the choice of area-based measure and geographic level matter? The Public Health Disparities Geocoding Project. *American Journal of Epidemiology* 156(5):471-482.

Kukafka, R., J. S. Ancker, C. Chan, J. Chelico, S. Khan, S. Mortoti, K. Natarajan, K. Presley, and K. Stephens. 2007. Redesigning electronic health record systems to support public health. *Journal of Biomedical Informatics* 40(4):398-409.

LaPelle, N. R., R. Luckmann, E. H. Simpson, and E. R. Martin. 2006. Identifying strategies to improve access to credible and relevant information for public health professionals: A qualitative study. *BMC Public Health* 6:89-102.

Lazarus, R., M. Klompas, F. X. Campion, S. J. McNabb, X. Hou, J. Daniel, G. Haney, A. DeMaria, L. Lenert, and R. Platt. 2009. Electronic support for public health: Validated case finding and reporting for notifiable diseases using electronic medical data. *Journal of the American Medical Informatics Association* 16(1):18-24.

Leep, C., L. M. Beitsch, G. Gorenflo, J. Solomon, and R. G. Brooks. 2009. Quality improvement in local health departments: Progress, pitfalls, and potential. *Journal of Public Health Management & Practice* 15(6):494-502.

Copyright © National Academy of Sciences. All rights reserved.

For the Public's Health: Investing in a Healthier Future

Lhachimi, S. K., W. J. Nusselder, H. C. Boshuizen, and J. P. Mackenbach. 2010. Standard tool for quantification in health impact assessment: A review. *American Journal of Preventive Medicine* 38(1):78-84.

Libbey, P., and B. Miyahara. 2011. *Cross-Jurisdictional Relationships in Local Public Health: Preliminary Summary of an Environmental Scan*. Princeton, NJ: RWJF.

Livingood, W. C., L. Razaila, E. Reuter, R. Filipowicz, R. C. Butterfield, K. Lukens-Bull, L. Edwards, C. Palacio, and D. L. Wood. 2010. Using multiple sources of data to assess the prevalence of diabetes at the subcounty level, Duval County, Florida, 2007. *Preventing Chronic Disease* 7(5):A108.

Livingood, W. C., M. Morris, B. Sorensen, K. Chapman, L. Rivera, P. Street, L. M. Beitsch, S. Coughlin, N. Winterbauer, C. Iusan, and D. Wood. 2011. *Funding of Essential Services for Local Public Health*. Paper read at PHSSR Keeneland Conference, April 12-14, Lexington, Kentucky. http://www.cdc.gov/pcd/issues/2010/sep/09_0197.htm (accessed August 12, 2011).

Love, D., and G. H. Shah. 2006. Reflections on organizational issues in developing, implementing, and maintaining state web-based data query systems. *Journal of Public Health Management & Practice* 12(2):184-188.

Love, D., B. Rudolph, and G. H. Shah. 2008. Lessons learned in using hospital discharge data for state and national public health surveillance: Implications for Centers for Disease Control and Prevention tracking program. *Journal of Public Health Management & Practice* 14(6):533-542.

Lovelace, K. 2000. External collaboration and performance: North Carolina local public health departments, 1996. *Public Health Reports* 115(4):350-357.

Luck, J., C. Chang, E. R. Brown, and J. Lumpkin. 2006. Using local health information to promote public health. *Health Affairs* 25(4):979-991.

Lutz, B., R. Molloy, and H. Shan. 2011. The housing crisis and state and local government tax revenue: Five channels. *Regional Science and Urban Economics* 41(4):306-319.

Madamala, K., K. Sellers, J. Pearsol, M. Dickey, and P. E. Jarris. 2010. State landscape in public health planning and quality improvement: Results of the ASTHO survey. *Journal of Public Health Management & Practice* 16(1):32-38.

Magruder, S. F., S. H. Lewis, A. Najmi, and E. Florio. 2004. Progress in understanding and using over-the-counter pharmaceuticals for syndromic surveillance. *Morbidity and Mortality Weekly Report* 53(Suppl):117-122.

Magruder, C., M. Burke, N. E. Hann, and J. A. Ludovic. 2005. Using information technology to improve the public health system. *Journal of Public Health Management & Practice* 11(2):123-130.

Maibach, E. W., L. C. Abroms, and M. Marosits. 2007. Communication and marketing as tools to cultivate the public's health: A proposed "people and places" framework. *BMC Public Health* 7:88.

Malvitz, D. M., L. K. Barker, and K. R. Phipps. 2009. Development and status of the National Oral Health Surveillance System. *Preventing Chronic Disease* 6(2):A66. http://www.cdc.gov/pcd/issues/2009/apr/08_0108.htm (accessed August 12, 2011).

Mays, G. P., and F. D. Scutchfield. 2010. Improving public health system performance through multiorganizational partnerships. *Preventing Chronic Disease* 7(6):A116. http://www.cdc.gov/pcd/issues/2010/nov/10_0088 (accessed March 1, 2011).

Mays, G. P., and S. A. Smith. 2009. Geographic variation in public health spending: Correlates and consequences. *Health Services Research* 44(5 Pt 2):1796-1817.

Mays, G. P., S. A. Smith, R. C. Ingram, L. J. Racster, C. D. Lamberth, and E. S. Lovely. 2009. Public health delivery systems: Evidence, uncertainty, and emerging research needs. *American Journal Preventive Medicine* 36(3):256-265.

Copyright © National Academy of Sciences. All rights reserved.

Mays, G. P., F. D. Scutchfield, M. W. Bhandari, and S. A. Smith. 2010. Understanding the organization of public health delivery systems: An empirical typology. *Milbank Quarterly* 88(1):81-111.

Merrill, J., M. Caldwell, M. L. Rockoff, K. Gebbie, K. M. Carley, and S. Bakken. 2008. Findings from an organizational network analysis to support local public health management. *Journal of Urban Health* 85(4):572-584.

Merrill, J. A., J. W. Keeling, R. V. Wilson, and T. V. Chen. 2011. Growth of a scientific community of practice public health services and systems research. *American Journal of Preventive Medicine* 41(1):100-104.

Meyer, J., and L. Weiselberg. 2009. *County and City Health Departments: The Need for Sustainable Funding and the Potential Effect of Health Care Reform on Their Operations*. Princeton, NJ: RWJF and NACCHO.

Michaelis, A. P. 2002. Priority-setting ethics in public health. *Journal of Public Health Policy* 23(4):399-412.

Miner, J. W., A. White, A. E. Lubenow, and S. Palmer. 2005. Geocoding and social marketing in Alabama's cancer prevention programs. *Preventing Chronic Disease* 2(Spec no):A17. http://www.cdc.gov/pcd/issues/2005/nov/05_0073.htm (accessed August 12, 2011).

Miranda, M. L., J. M. Silva, M. A. Overstreet Galeano, J. P. Brown, D. S. Campbell, E. Coley, C. S. Cowan, D. Harvell, J. Lassiter, J. L. Parks, and W. Sandele. 2005. Building geographic information system capacity in local health departments: Lessons from a North Carolina project. *American Journal of Public Health* 95(12):2180-2185.

Mokdad, A. H. 2009. The Behavioral Risk Factors Surveillance System: Past, present, and future. *Annual Review of Public Health* 30:43-54.

Myers, S., and M. Stoto. 2006. *Criteria for Assessing the Usefulness of Community Health Assessments: A Review of the Literature*. Santa Monica, CA: RAND.

NACCHO (National Association of County and City Health Officials). 2005. *Operational Definition of a Functional Local Health Department*. Washington, DC: NACCHO.

NACCHO. 2009. *2008 National Profile of Local Health Departments*. Washington, DC: NACCHO.

NACCHO. 2011. *Local Health Department Job Losses and Program Cuts: State-Level Tables from the 2010 National Profile Study*. Washington, DC: NACCHO.

National Prevention Council. 2011. *National Prevention Strategy*. Washington, DC: National Prevention Council.

NYSACHO (New York State Association of County Health Officials). 2001. *Preserve Article Six State Aid and State Grant Funding for Local Public Health Activities*. Albany: NYSACHO.

Overhage, J. M., S. Grannis, and C. J. McDonald. 2008. A comparison of the completeness and timeliness of automated electronic laboratory reporting and spontaneous reporting of notifiable conditions. *American Journal of Public Health* 98(2):344-350.

Parker, E., L. H. Margolis, E. Eng, and C. Henriquez-Roldan. 2003. Assessing the capacity of health departments to engage in community-based participatory public health. *American Journal of Public Health* 93(3):472-476.

Paul-Shaheen, P. A., B. A. Schillo, G. E. Beane, and E. F. Kleinau. 1997. The challenge of developing community profiles for use in community health assessment: Lessons from Michigan's experience. *Journal of Public Health Management & Practice* 3(3):16-28.

PHAB (Public Health Accreditation Board). 2009. *Proposed Local Standards and Measures: For PHAB Beta Test*. Alexandria, VA: PHAB.

Pirani, S., and T. Reizes. 2005. The Turning Point Social Marketing National Excellence Collaborative: Integrating social marketing into routine public health practice. *Journal of Public Health Management & Practice* 11(2):131-138.

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For the Public's Health: Investing in a Healthier Future

Plough, A. 2004. Understanding the financing and functions of metropolitan health departments: A key to improved public health response. *Journal of Public Health Management & Practice* 10(5):421-427.

Potter, M. A., B. E. Quill, G. S. Aglipay, E. Anderson, L. Rowitz, L. U. Smith, J. Telfair, and C. Whittaker. 2006. *Demonstrating Excellence in Practice-Based Research for Public Health*. Washington, DC: Association of Schools of Public Health.

Public Health Data Standards Consortium. 2007. *Building a Roadmap for Health Information Systems Interoperability for Public Health: Public Health Uses of Electronic Health Record Data*. Baltimore, MD: Public Health Data Standards Consortium.

Public Health Functions Steering Committee. 1995. *Public Health in America*. http://www.health.gov/phfunctions/public.htm (March 17, 2012).

Public Health Informatics Institute. 2003. *Integration of Newborn Screening and Genetic Service Systems with Other Maternal & Child Health Systems: A Sourcebook for Planning and Development*. Decatur, GA: Public Health Informatics Institute.

Rajotte, B. R., C. L. Ross, C. O. Ekechi, and V. N. Cadet. 2011. Health in All Policies: Addressing the legal and policy foundations of Health Impact Assessment. *Journal of Law, Medicine & Ethics* 39(Suppl 1):27-29.

Randolph, W., and K. Viswanath. 2004. Lessons learned from public health mass media campaigns: Marketing health in a crowded media world. *Annual Review of Public Health* 25:419-437.

Riley, W. J., J. W. Moran, L. C. Corso, L. M. Beitsch, R. Bialek, and A. Cofsky. 2010. Defining quality improvement in public health. *Journal of Public Health Management & Practice* 16(1):5-7.

Rockoff, M. L., D. J. Cunningham, M. T. Ascher, and J. Merrill. 2007. Information outreach to a local public health department: A case study in collaboration. *Journal of the Medical Library Association* 95(3):355-357.

Rooney, B. L., and J. E. Thompson. 2009. The value of a web-based interactive regional health scorecard in setting public health priorities. *Wisconsin Medical Journal* 108(8):403-406.

Roussos, S. T., and S. B. Fawcett. 2000. A review of collaborative partnerships as a strategy for improving community health. *Annual Review of Public Health* 21:369-402.

Rudolph, L., A. Sisson, J. Caplan, L. Dillon, K. Ben-Moshe, M. Mohammadi, S. Sattelmeyer, and M. Walker. 2010. *Health in All Policies Task Force: Report to the Strategic Growth Council*. Sacramento: California Department of Public Health and University of California, San Francisco.

Running, A., K. Martin, and L. W. Tolle. 2007. An innovative model for conducting a participatory community health assessment. *Journal of Community Health Nursing* 24(4):203-213.

Santerre, R. E. 2009. Jurisdiction size and local public health spending. *Health Services Research* 44(6):2148-2166.

Scutchfield, F. D., E. A. Knight, A. V. Kelly, M. W. Bhandari, and I. P. Vasilescu. 2004. Local public health agency capacity and its relationship to public health system performance. *Journal of Public Health Management & Practice* 10(3):204-215.

Scutchfield, F. D., J. S. Marks, D. J. Perez, and G. P. Mays. 2007. Public health services and systems research. *American Journal of Preventive Medicine* 33(2):169-171.

Scutchfield, F. D., M. W. Bhandari, N. A. Lawhorn, C. D. Lamberth, and R. C. Ingram. 2009. Public health performance. *American Journal of Preventive Medicine* 36(3):266-272.

Sellers, K. 2011. *State Public Health Finance: Results of the ASTHO 2010 Profile Survey*. Washington, DC: ASTHO.

Slonim, A. B., C. Callaghan, L. Daily, B. A. Leonard, F. C. Wheeler, C. W. Gollmar, and W. F. Young. 2007. Recommendations for integration of chronic disease programs: Are your programs linked? *Preventing Chronic Disease* 4(2):A34. http://www.cdc.gov/pcd/issues/2007/apr/06_0163.htm (accessed August, 12, 2011).

Copyright © National Academy of Sciences. All rights reserved.

For the Public's Health: Investing in a Healthier Future

Spice, C., and K. Snyder. 2009. Reviewing self-reported impacts of community health assessment in local health jurisdictions. *Journal of Public Health Management & Practice* 15(1):18-23.

St. Luke's Health Initiative. 2002. *Building a Public Health Movement in Arizona*. Phoenix, AZ: SLHI.

Staes, C. J., W. Xu, S. D. LeFevre, R. C. Price, S. P. Narus, A. Gundlapalli, R. Rolfs, B. Nangle, M. Samore, and J. C. Facelli. 2009. A case for using grid architecture for state public health informatics: The Utah perspective. *BMC Medical Informatics and Decision Making* 9:32-41.

Ståhl, T., M. Wismar, E. Ollila, E. Lahtinen, and K. Leppo. 2006. *Health in All Policies: Prospects and Potentials*. Brussels, Belgium: European Observatory on Health Systems and Policies.

Stoto, M. A., S. G. Straus, C. Bohn, and P. Irani. 2009. A web-based tool for assessing and improving the usefulness of community health assessments. *Journal of Public Health Management & Practice* 15(1):10-17.

Suarez, V., C. Lesneski, and D. Denison. 2011. Making the case for using financial indicators in local public health agencies. *American Journal of Public Health* 101(3):419-425.

TFAH (Trust for America's Health). 2011. *Investing in America's Health: A State-by-State Look at Public Health Funding and Key Facts*. Washington, DC: TFAH.

Turner, A. M., J. Ramey, and S. Lee. 2008. Connecting public health IT systems with enacted work: Report of an ethnographic study. *AMIA Annual Symposium Proceedings,* 2008:737-741.

Twose, C., P. Swartz, E. Bunker, N. K. Roderer, and K. B. Oliver. 2008. Public health practitioners' information access and use patterns in the Maryland (USA) public health departments of Anne Arundel and Wicomico Counties. *Health Information & Libraries Journal* 25(1):13-22.

Washington State Department of Health. 2008. *2008 Public Health Improvement Plan: Building Strength and Performance*. Olympia: Washington State Department of Health.

Wernham, A. 2011. Health impact assessments are needed in decision making about environmental and land-use policy. *Health Affairs* 30(5):947-956.

Whittingham, J., R. A. Ruiter, F. Zimbile, and G. Kok. 2008. Experimental pretesting of public health campaigns: A case study. *Journal of Health Communication* 13(3):216-229.

WHO (World Health Organization). 2010. *Adelaide Statement on Health in All Policies*. Geneva, Switzerland: WHO.

Wholey, D. R., W. Gregg, and I. Moscovice. 2009. Public health systems: A social networks perspective. *Health Services Research* 44(5 Pt 2):1842-1862.

Woolf, S. H., M. M. Dekker, F. R. Byrne, and W. D. Miller. 2011. Citizen-centered health promotion: Building collaborations to facilitate healthy living. *American Journal of Preventive Medicine* 40(1 Suppl 1):S38-S47.

Yasnoff, W. A., M. J. Overhage, B. L. Humphreys, M. LaVenture, K. W. Goodman, L. Gatewood, D. A. Ross, J. Reid, E. W. Hammond, D. Dwyer, S. M. Huff, I. Gotham, R. Kukafka, J. W. Loonsk, and M. M. Wagner. 2001. A national agenda for public health informatics. *Journal of Public Health Management and Practice* 7(6):1-21.

Zahner, S. J. 2005. Local public health system partnerships. *Public Health Reports* 120(1):76-83.

Zhang, Z., L. Zhang, A. Penman, and W. May. 2011. Using small-area estimation method to calculate county-level prevalence of obesity in Mississippi, 2007-2009. *Preventing Chronic Disease* 8(4):A85.

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ADDENDUM: INTERVIEW RESPONDENTS

Name and Title	Organization/Prior Experience
Susan Allan, Director	Northwest Center for Public Health Practice, former Public Health Director, State of Oregon; and Health Director, Arlington County, Virginia
Kaye Bender, President	Public Health Accreditation Board
Bobbie Berkowitz, Dean	Columbia School of Nursing, former Deputy Director, WA State Department of Health; and Chief of Public Health Nursing, Seattle & King County Public Health
Gus Birkhead, Deputy Commissioner	Office of Public Health, NY State Department of Health
Leah Devlin	Former Director, NC Division of Public Health
Paul Halverson, Director	Arkansas Department of Health
Peggy Honoré, Director	Public Health System, Finance, and Quality Program, OASH, HHS
Paul Kuehnert, Director	Kane County (IL) Department of Health
Pat Libbey	University of WA School of Public Health, former NACCHO Director
Pat McConnon	Council of State and Territorial Epidemiologists
Michael Meit	Walsh Center for Rural Analysis/NORC
Tom Milne	Milne and Associates, former Director of NACCHO
Bruce Miyahara	Miyahara and Associates, former Director WA State Department of Health; and Director Seattle & King County Public Health
Herminia Palacios, Executive Director	Harris County Public Health & Environmental Services, Texas
Bobby Pestronk, Executive Director	NACCHO, former director Genesee County Health Department (Flint, MI)
Phred Pilkington, Director	Cabarrus Health Alliance (NC)
Doug Scutchfield	University of Kentucky School of Public Health
Kathy Vincent	Former Staff Assistant to the State Health Officer, Alabama Department of Public Health

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Appendix D

Financing State and Local Public Health Departments: A Problem of Chronic Illness

Samuel Y. Sessions, MD, JD

INTRODUCTION

A commentary on the field of public health finance in 2004 begins with these sobering observations:

> Public health finance is practiced in thousands of public- and private-sector settings every day, yet has little practical or theoretical literature, hardly any research or teaching, and no systematic means for public health leaders, elected officials, and finance professionals to communicate about innovations and best practices....
>
> Public health finance ... is an embryonic field that lacks basic concepts, data, measures, and practice guidelines, as well as terminological, conceptual, and methodological consensus. (Moulton et al., 2004, p. 377)

The field has advanced in the intervening 7 years, but it remains at a relatively early stage of development. In the meantime, the financial challenges faced by virtually all government functions, including public health, have grown substantially. The fiscal posture of federal, state, and local governments has deteriorated as a result of the worldwide economic downturn. Pressure to reduce spending at all levels of government, and for any purpose, is severe. Powerful long-term trends in public finance attributable to demographics and fundamental changes in the economy have had no meaningful response. Even if the economy experiences a more robust recovery in the near term than is now anticipated, these structural problems will persist

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unless corrective action is taken. The prospects for the future look no better and may well be worse.

Thus, while public health finance has suffered from neglect for years (Honoré et al., 2004), the need for greater attention to financial considerations in public health has become especially urgent. Previous studies have called for increased funding for public health, but accomplishing this goal, or merely ensuring greater stability for funding at existing levels, requires negotiating a formidable array of political, legal, and other challenges. This paper analyzes these challenges and describes both a general strategy and more specific proposals designed to meet them. This paper is commissioned by the Institute of Medicine (IOM) Committee on Public Health Strategies to Improve Health and is intended to assist the committee in developing recommendations for funding state and local public health systems after health care reform.

The essay from 2004 quoted earlier describes a framework for public health finance that divides it into four possible categories, based on the source and use of funds, and whether they are controlled by government or the private sector. In the first, most traditional category, government controls both the sources (e.g., taxes) and uses (e.g., spending by state and local public health departments) of funds. In the second, government controls the sources, but the private sector controls the uses. This category consists primarily of tax expenditures. The third category involves private control of sources and government control of uses, as in the case of charitable services required of nonprofit hospitals to qualify for nonprofit tax status. In the final category, private entities control both the sources and uses of funds. Health promotion benefits provided by businesses to their employees but not due to tax savings are an example of this category (Patient Protection and Affordable Care Act (ACA), Public Law PL 111-148, as amended by Health Care and Education Reconciliation Act of 2010, PL 111-52. 111th Cong., 2nd Sess., 2010).

Funding of state and local public health departments, the committee's concern, lies primarily within the first of these four categories of public health finance. For this reason, and because of its intrinsic importance, this paper focuses primarily though not exclusively on this category. State and local health department spending is financed in part by the federal government (including under the ACA [PL 111-52]), and local health department spending is in turn financed in part by state governments. This paper thus discusses public health finance at all three levels of U.S. government. It examines how funding of public health is and should be allocated within the federal system, and how it can be stabilized and, if possible, increased at a time when there are strong pressures in the opposite direction.

Governments at all three levels and in all regions of the country face similar problems: revenue bases that are eroding (Brunori, 2007a,b) and

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long-term commitments, such as state and local pension obligations and Medicare, that are growing (CBO, 2011b; Davey, 2011; Elliott, 2010; Novy-Marx and Rauh, 2011; Paletta, 2011; TFAH, 2009; *The Economist*, 2011b,c; *The New York Times*, 2011a). There is a limited number of ways in which public health can increase the amount and improve the stability of its financing by government: identifying or expanding revenue sources that can be dedicated to public health, increasing public health's share of general government revenues, increasing or stabilizing the total amount of government revenues, or some combination of these options.

In addition to agencies of the federal government, the 50 states and the District of Columbia, there are approximately 2,800 local health departments, some serving fewer than 1,000 residents, others as many as 8 million (Mays et al., 2009). For this and other reasons, much less is known than would be desirable about the financial and economic characteristics of public health systems (Hook and Boles, 2011). From the standpoint of funding rather than provision of services, however, there are important similarities in the fundamental problems confronted at all levels of government and in the options available to them. These similarities make it possible to reach some general conclusions regarding the financing of state and local health departments despite their wide variety in size, services provided, and other circumstances.

As an early draft of this paper was being written, Congress and the White House were engaged in budget negotiations concerning how to achieve large budgetary savings as part of an agreement to raise the federal debt ceiling and avoid default by the United States on its debt (Sack, 2011). The state of Minnesota was undergoing a government shutdown as a result of a standoff between its governor and legislature over how to close a $5 billion state budget deficit (Mays et al., 2009). The city of Detroit had decided to close half of its schools, and Camden, New Jersey, laid off half of its police force this year because of budget problems (Appelbaum, 2011). Legislation was enacted in early August 2011 that enabled the federal government to avoid technical default, but few economists believe it is sufficient to provide long-term financial stability for the federal government (*The New York Times*, 2011b), and critics argue that in the near term it will worsen the budgetary position of state and local governments (Sensenig, 2007).

Budgetary issues at all levels of government are thus literally headline news to a degree that is rare if not unprecedented in this country. The problems are in many respects decades in the making, and they result from changes in the economy, demographic factors, long-standing political trends, and interactions among them. The challenges that state and local public health agencies face in financing their services are part of and entangled with these broad economic and political developments. Accordingly, they must be taken into account in efforts to address them.

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This paper is divided into six sections. The first section examines the current status of public health finance in the United States and the limitations of existing data. The second section discusses literature that has emerged in recent years concerning how public health is most effectively financed by government and at which level. The third section describes the budgetary problems afflicting the three levels of U.S. government, that is, the setting within which public health finance must operate, and the fourth section analyzes the forces that account for these problems. The fifth section presents some possible solutions for public health finance. The solutions are not intended to be exhaustive or complete, but they do illustrate a larger strategy that builds upon the previous analysis and which is itself intended as part of the solution.

There are many important unanswered questions about the effectiveness and efficiency of public health service delivery (*The New York Times*, 2011b), including uncertainties in determining the appropriate amount that state and local governments should spend on public health. In view of the difficulty that public health is likely to experience even to maintain spending at current levels, these uncertainties are set aside in the first five parts of the paper, but they are addressed in the sixth section. The principal themes of the paper are summarized in a conclusion.

The problems affecting public finance in general, and public health finance in particular, constitute a form of chronic illness at the policy level. They are long in the making, and they will not be quickly solved. Difficulty in funding public health is a symptom, not a diagnosis. Only with an accurate diagnosis can the disease be effectively treated.

THE CURRENT STATUS OF U.S. PUBLIC HEALTH FINANCE

Shortcomings in the current state of knowledge concerning U.S. public health finance are not merely the result of inattention, but they also reflect the complexity of the U.S. federal system and of the field of public health itself. In addition to the federal government, the 50 states, and the District of Columbia, there is a staggering number of local jurisdictions. The Census of Governments prepared by the U.S. Census Bureau every 5 years is compiled from a universe of more than 87,000 local independent governments, including more than 39,000 state, county, municipal, and township governments and more than 48,000 special-purpose governments (IOM, 1988). The legal powers and jurisdictional boundaries of governmental public health systems are extremely diverse, particularly at the local level, making it difficult to generalize findings across apparently similar jurisdictions (Sensenig, 2007; *The New York Times*, 2011b). This creates a considerable challenge even to estimating the amount of government public health expenditures.

Much of the information needed to do so can be found only in the

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administrative files of these individual entities, which are poorly accessible and are neither prepared nor organized to facilitate comparison with other jurisdictions or tracking of national data. Even if the data were more readily available, however, there is no universally accepted definition of "public health" (IOM, 1988). Under one definition, it includes much more than services provided by public health agencies and encompasses such activities as (1) prevention-oriented spending of nonpublic health departments of government (e.g., environmental protection, highway safety agencies), (2) similar spending of health care providers, (3) tax expenditures, and (4) private-sector spending directed at health promotion. While this more expansive definition offers advantages in designing and evaluating public health initiatives (IOM, 2003; Mays et al., 2003), it complicates determining what constitutes public health spending and comparing jurisdictions (CMS, 2011; Moulton et al., 2004). Thus, of seven studies reporting on public health expenditures by selected state and local health departments between 1994 and 2002, no two used the same operational definition to develop or report their findings (Moulton et al., 2004).

Not only is information concerning the amount of public health spending heterogeneous, there is also uncertainty about the effectiveness of public health practices, and therefore about what level of spending is appropriate (CMS, 2011). In addition, according to the National Health Expenditure Accounts (NHEA), probably the most widely cited measure of health-related spending, government spending on public health as a percentage of total health expenditures appears to be relatively stable. In the late 1990s it returned to a peak reached in the early 1970s. It declined only slightly during the last decade, from 3.2 percent of total health spending in 2000 to 3.1 percent, or $77.2 billion, in 2009 (Frist, 2002; TFAH, 2008b).

All of these considerations suggest that the question of how to increase and provide stability to public health finance may be premature, if not wholly unwarranted. There are several reasons why it is not.

First, there is a consensus among public health experts that U.S. public health spending is too low, as well as statistical analyses supporting this view (TFAH, 2008b). A study by the Trust for America's Health (TFAH) found that adequate funding of public health at the federal, state, and local levels would require an additional $20 billion annually (2009). Other estimates of the needed increase in the amount of public health spending have also been offered (Levi et al., 2007). The TFAH estimate will be used in this paper as a benchmark for discussion. This facilitates comparison with current public health spending and assessment of the economic and political challenges involved in maintaining or increasing it. It is examined more critically in the final section of the paper, however, along with related issues concerning evaluation of the appropriate level of spending on public health.

Second, per capita public health spending is both highly variable across

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jurisdictions and is often quite low, in some cases extremely low, especially when compared with spending on personal health care. This is true regardless of whether the source of funds is federal, state, or local, separately or in combination. According to one study, federal public health spending per capita through the U.S. Centers for Disease Control and Prevention (CDC) in fiscal year 2009 averaged $19.23, but it ranged from a low of $13.33 in Virginia to a high of $58.65 in Alaska. Median state public health spending in fiscal years 2008-2009 was $28.92 per person, ranging from $3.55 in Nevada to $169.92 per person in Hawaii (TFAH, 2009). A study published in 2009 reported local public health agency spending by quintile, with average per capita spending for the middle quintile of $29.89. Average spending in the lowest quintile, however, was $7.68, compared with $101.86 for the highest quintile, a ratio of over 13 (Mays and Smith, 2009). A survey of 685 local health officials by Baum and colleagues in 2008 and 2009 showed average per capita local health department expenditures of $88.02, but with an almost astonishingly broad range, from $.97 to $1,671 (Baum et al., 2011).

These broad ranges are probably skewed as a result of the fact that public health agencies with the highest spending also appear to provide a wider scope of clinical preventive services and medical treatment compared with lower-spending jurisdictions (Honoré et al., 2004). Even with this qualification, however, the enormous variation in spending levels, and especially the lowest amounts reported, almost certainly mean that public health spending is insufficient in many jurisdictions. These jurisdictions need to know how to increase the funding of their public health departments even if others may not.

Third, as discussed in the third section of this paper, the trends for both the revenue bases and spending of government at all levels have been and remain strongly unfavorable. Policy inertia is thus much more likely to lead to a reduction than an increase in public health spending. Very few jurisdictions are immune from these trends, and they are in addition to risks posed by shorter-term fluctuations in the economy, some severe, such as those recently experienced by state and local governments (Sack, 2011).

Finally, research has been conducted in recent years examining financial characteristics of public health systems and their impact on performance. While this research is limited and preliminary, and has been conducted by a relatively small group of investigators, it is internally consistent and a useful contribution to the understanding of public health finance. It is discussed in the next section of this paper.

FINANCE AND PUBLIC HEALTH SYSTEM PERFORMANCE

TFAH has reported considerable data on the extent of federal funding for state health departments by CDC and the Health Resources and Ser-

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vices Administration, as well as various health outcomes by state. However, the report did not systematically correlate these variables (TFAH, 2009). State public health agencies may be independent of other agencies ("stand-alone"), part of larger agencies such as a state department of health services ("umbrella"), or independent but also charged with performing functions other than public health, such as Medicaid administration and health insurance regulation ("mixed"). TFAH noted a previous finding that these differences in organizational structure did not seem to play a significant role in the amount of state public health funding (TFAH, 2009).

Other research focusing on local public health departments, however, has assessed the relationship between the sources of funding for public health services and performance. These studies have relied primarily on the measures of 10 essential public health services of the National Public Health Performance Standards Program launched in 2002 (CDC, 2010; Moulton et al., 2004). Not surprisingly, they find that public health performance improves with increased funding, but they also indicate that both the nature and the source of funding, federal, state, or local, matters.

The survey of local public health department officials by Baum and colleagues provides a baseline for the sources of funds for local health departments. These results are summarized in Table D-1. (The numbers have been rounded and some details omitted.) Eighty-six percent of the health

TABLE D-1 Major Sources of Funds for Local Health Departments

Revenues by Source, %	Total	Local Governance (n = 517)	State Governance (n = 91)
Local			
City/town	7	8	0.4
County	19	20	8
(Total local)	(26)	(28)	(9)
State	20	18	32
Federal			
Pass-through	17	17	13
Medicaid	10	8	25
Medicare	5	5	3
Direct	2	2	2
(Total federal)	(34)	(33)	(43)
Fees			
Patient	4	4	2
Regulatory	7	8	2
Private Foundations	1	2	0.5
Private Insurance	1	1	0.5
Other	7	7	6

SOURCE: Adapted from Baum et al., 2011.

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departments surveyed were governed at the local level, and 14 percent at the state level. As Table D-1 shows, there were obvious differences between the two types of departments in their reliance on local versus state revenues, and state-governed departments received more federal funds as a result of greater Medicaid funding. This is probably the result of differences in services in the two cases, but this is not reported by the authors.

Results, not included in the table, were also reported for local health departments serving small (<50,000), medium (50,000-499,999) and large (500,000 or more) populations. Overall percentages of revenues from the federal government, the states, and local sources did not vary dramatically with population size, although as population increased the percentage of state revenues grew (from 20 percent for the smallest to 24 percent for the largest departments), and the internal breakdown of federal revenues changed. The largest jurisdictions received more direct federal funding (6 percent) compared with the smallest jurisdictions (1 percent) but less revenue from Medicaid (7 percent vs. 12 percent).

Several studies now support the conclusion that the most effective form of public health spending is local health department spending. Mays and colleagues found the strongest predictor of public health system performance was the size of the population, with larger size correlated with better performance on 7 of the 10 essential public health services. The most consistent predictor of performance, however, was local health department spending, which was positively correlated with all 10 services. Increased federal spending was associated with improved performance for only 5 of the 10 services, and generally had a smaller effect in each case than local spending. This study estimated that a $100 per-capita increase in local public health department spending would raise performance scores by up to 7.6 percent (Mays et al., 2006).

More recently, Mays and Smith (2011) reported the results of a longitudinal study finding that mortality rates from preventable causes of death, including infant mortality and deaths due to cardiovascular disease, diabetes, and cancer, fell between 1.1 and 6.9 percent for each 10 percent increase in local public health spending. All-cause mortality and deaths from influenza also were negatively correlated with increased local public health spending, while deaths from control conditions such as Alzheimer's disease did not (Mays and Smith, 2011). Similarly, Erwin and colleagues found that increases in local health department expenditures were significantly associated with decreases with infectious disease morbidity at the state level (Erwin et al., 2011).

Likewise, in a 2004 study by Mays and colleagues local public health agency spending emerged as a significant but relatively modest predictor of performance for 9 of the 10 essential services. Federal public health spending was associated with increased levels of performance for 7 of the 10 services

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and state spending with only 2 of 10 (Mays et al., 2004b). The authors estimated that a $10 increase in per capita local public health spending was associated with increases in performance of 1.5 to 3.1 percentage points, and the same increase in federal spending would result in increases in performance ranging from 0.1 to 0.3 percentage points. These modest effects might be compared with total per capita public health spending, recently estimated as $120 (TFAH, 2009), but one should be cautious about attributing too much precision to either side of the comparison.

Furthermore, the finding that local health spending is more effective than spending at the federal or state level is consistent with an earlier study by Mays and Smith showing a strong positive correlation between public health system performance and local tax revenues. According to this study, local public health systems whose performance was above the mean for the population derived 65 percent of their revenues from taxes, 11 percent from state and federal funding, and 23 percent from other sources. By contrast, taxes made up only 28 percent of funding for those agencies whose performance was below the mean; these agencies received 31 percent of revenues from the state and federal government and 41 percent from other sources (Honoré et al., 2004). This comports also with research indicating that decentralized public health agencies and agencies governed by a local board of health were significantly less likely to experience reductions in per capita spending compared with their counterparts (Levi et al., 2007).

Finally, Bernet found a significant positive correlation between increases in local public health revenues in Missouri and increases in per capita state and federal revenues devoted to public health. For each $1 increase in per capita state and federal revenues local public health agencies increased their own funding by $.50. Rather than using federal and state revenues as a substitute for local public health spending, it appears that these local jurisdictions increased it (Bernet, 2007).

In short, local public health funding appears to be superior to federal funding, which appears to be superior to state funding, but the evidence in favor of the superiority of local funding is the strongest. In addition, there is evidence that greater reliance on taxes to finance public health is correlated with better outcomes, and that greater local control is associated with greater funding stability. While the direction of the causal relationship is unclear, the conclusion that local revenues are best for local public health services is also consistent with scholarship in tax policy about local government services in general (Brunori, 2007a). Consequently, it seems reasonable to believe that marginal public health spending should be directed to local public health departments, and that they should attempt to support their own spending locally, as much as possible. The study by Bernet indicates further that local public health spending is complementary to federal spending rather than competitive with it.

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The goals of public health finance thus should be to match public health spending with the appropriate level of government, to increase it when justified programmatically, and to stabilize it against the powerful forces acting to reduce it. In the abstract, this means targeting funding to local public health departments, which appear to be able to use it most successfully. The research is much too limited and public health spending at the federal and state levels is much too diverse, however, to conclude that increases in the latter could not be well spent and are not needed in their own right. In addition, if important public health needs are not and cannot be met at the local level, then the state and federal governments should either attempt to supplement local funding or fill the gaps themselves. To some extent this can be accomplished by reallocating existing funds, but as noted previously the budgetary pressures at all levels of government mean that the absence of policy changes favors reduction of spending on public health, not stability (Cooper, 2011). Federal and state governments must therefore act to protect their own spending on public health regardless of what happens at the local level.

THE BUDGETARY AND LEGAL SETTING FOR PUBLIC HEALTH FINANCE

In fiscal year 2008, the last year before the recession significantly affected the federal budget, total federal revenues were $2.5 trillion, or 17.7 percent of GDP (Tax Policy Center, 2008). In 2008 state and local government revenues, net of transfers from the federal government, were about $2.2 trillion (Barnett, 2011; U.S. Government Revenue, 2011). Although these are revenue rather than spending figures and are not precisely comparable, they are sufficient to illustrate the magnitude of public health spending relative to all of government. Using the NHEA estimate of $72.9 billion in public health spending in 2008 (CMS, 2012), it was the equivalent of about 1.6 percent of U.S. government revenues at all levels in that year.

The good news from a political standpoint is that even if public health spending is increased in keeping with recent public health expert recommendations, it would remain a relatively small share of total government outlays. In addition, much of the intellectual case that public health has to make for itself is very strong. The bad news is that every dollar of government spending and revenues is now fiercely contested. Generating an additional $20 billion of spending on public health each year in accordance with the TFAH recommendation, for example, will require not merely creativity, but also a persistent strategy designed to address a complex set of budgetary, legal, economic, and political considerations that both accounts for the existing problems and makes their solutions extraordinarily difficult. This section of the paper discusses the budgetary and legal issues involved, while the fourth section focuses on political and economic concerns.

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Historically and under the Constitution, federal, state, and local governments have different patterns of and authority to tax as well as different spending responsibilities. Despite these differences all three levels of government confront somewhat similar, and quite serious, problems in providing for their long-term financial stability. The flow of government funds from one level to another (generally downward) means that these problems are interdependent. Many of the problems on the spending side of the ledger are relatively widely known, but other, less well-publicized problems concerning governments' ability to raise revenue are no less important. In both academic literature and the media, the lower the level of government, the less attention these problems tend to receive. The discussion below will therefore proceed in the opposite order.

Local Governments

Both local and state governments face long-term problems in funding employee pensions and retiree health benefits (GAO, 2010; *The Economist*, 2011a; *The New York Times*, 2011a). Otherwise, except for spending related to health care, local government spending needs—for such basic services as schools, fire and police department protection, and infrastructure development—vary more or less with population size and are relatively consistent over time.

The ability to meet these needs, however, is widely variable from one jurisdiction to another and is obviously subject to fluctuations in the economy (Dillion, 2011). Infrastructure spending has lagged, creating a budgetary overhang. Local governments depend heavily on transfers from states and the federal government, which face their own severe budgetary challenges. There is a consensus among local public finance experts that local government operations should be funded to the extent possible with local sources of revenues, and the study by Mays and Smith (2011) indicates that this may be true for public health in particular. All of these considerations point to the conclusion that in the years ahead local governments will need to generate as dependable a source of revenues on their own as is possible. For legal and economic reasons, however, local governments have considerably less flexibility in achieving this goal than the federal or state governments, even if they can muster the political will to do so.

At present, intergovernmental transfers and property taxes are by far the dominant source of local government revenues. In 2006, local governments received about 38 percent of total revenues from intergovernmental transfers: about 34 percent from state governments and 4 percent from the federal government. State transfers to local governments have remained relatively stable as a percentage of total local government revenues, while federal transfers decreased from a high of about 10 percent in the 1970s to current levels in the early 1990s and then stabilized (Brunori, 2007a;

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Wildasin, 2009). Almost 60 percent of the amount transferred from states is used to finance education.

Local governments are creatures of state government and, unlike the federal and state governments, do not have separate, independent legal status either for their existence or authority to tax. The property tax is the only tax levied in all 50 states and the District of Columbia. It generates about 72 percent of local tax revenues, or 26 percent of total local government revenues (Brunori, 2007a). Along with the federal income tax, however, the property tax consistently polls as one of the most unpopular taxes, in part because both taxes are highly visible (Brunori, 2007a; *The Economist* 2011a). The property tax was the first target of the "tax revolt," resulting in the adoption of Proposition 13 in California. This model was quickly followed in other states, and as of 2007, 29 states had adopted property tax revenue limits (Brunori, 2007a).

About 14 percent of local revenues were derived in 2005 from user fees, and 8 percent from utility charges. In all, only about one-third of local government revenues is generated by locally imposed taxes. Notably, this amount is similar to the figure reported in the study by Mays and Smith (2011) for local jurisdictions whose public health system performance was below the mean.

Sales, income, and many other taxes are generally prohibited for local governments without statutory approval or constitutional amendment. Thirty-three of the 45 states imposing a sales tax allow their local governments to impose similar taxes. In 2006, about 9 percent of local governments did so, yielding about 11 percent of local government tax revenue. Excise taxes on lodging, meals, fuel, and other goods and services accounted for about 5 percent of local tax revenue. Only 15 states allow local government to tax some form of personal income, including wages. Personal income taxes generated about 4 percent of local revenues in 2005, but they generated a much larger share (24 percent in 2002) for cities with a population over 300,000. Eight states authorize local governments to impose taxes on corporate income, and local corporate income taxes raised only $4.4 billion in 2005, less than 1 percent of tax revenues (Brunori, 2007a).

These are all averages, but for mostly obvious reasons, local government tax and other revenue systems are extremely diverse. For example, Tallahassee, Florida, raises 40 percent of its total revenue from selling electric power. As suggested above, however, in general larger cities derive more revenue from personal income taxes, and smaller municipalities a greater share from the property tax.

Competition among jurisdictions, however, greatly limits the ability of local governments to tax personal or corporate income, even if authorized by states (Brunori, 2007a). In view of the relative ease with which both corporations and individuals can change their local residence, compared with

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state or national residence, this is a severe constraint for local governments in trying to raise additional revenue from these sources. To a somewhat lesser extent, and depending on how uniform taxes are across an area (e.g., statewide vs. county-level taxes) this is also true of sales taxes. By comparison, real property provides a stable tax base because it is immobile and cannot be hidden. In addition, constraints on the property tax base are largely the consequence of government action rather than changes in the economy.

The property tax is therefore one of the few options that local governments have in raising additional tax revenues of their own, as opposed to sharing in state-level taxes or relying on intergovernmental transfers. Moreover, since funding of public health and public health performance shows a positive correlation with population, it may be the smaller localities that are most in need of additional revenue, and public health officials may be able to play a more active role in these smaller political arenas. Leaders in public health, perhaps particularly in small jurisdictions, should therefore join forces with others in supporting the property tax.

Recent research by Honoré and colleagues (2011) indicates that this is not a mere counsel of perfection. They surveyed 720 counties in the Mississippi Delta region and found that 338 of these counties had a property tax dedicated to public health (Honoré et al., 2011). The details regarding these dedicated taxes were not reported, but they also note that five states—Ohio, Louisiana, Kansas, North Dakota, and Michigan—now levy a local dedicated property tax to fund senior services. Finally, Honoré and colleagues (2011) found that jurisdictions with dedicated property taxes had better health outcomes, but only those with per capita income greater than $28,000. The authors suggest that this may be due to the lower after-tax income of poorer residents in low-income jurisdictions and the known association of low income with poor health status (Honoré et al., 2011).

This conclusion is speculative, but it is entirely plausible and possibly axiomatic that more affluent jurisdictions are better situated to improve public health funding on their own, while less affluent ones need greater assistance from other levels of government. Historically, the bulk of this assistance has been provided by state governments, whose own financial challenges are discussed next.

State Governments

Numerous analyses have concluded that although states' current budgetary problems obviously reflect the impact of the recession starting in 2008 and to that extent are cyclical, they are also structural, representing a chronic inability of revenues to grow in tandem with economic growth and the cost of government that has been developing for years (Lav et al., 2005). Three studies conducted in 2005 or earlier examined the structural

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budget balance of the 50 states. All three found that more than two-thirds of the states face structural deficits. By one set of criteria the states most at risk for structural deficits are Alaska, Arkansas, Colorado, Florida, Nevada, New Mexico, Pennsylvania, South Carolina, Tennessee, Texas, and Wyoming (Lav et al., 2005). If, however, only revenues generated by the states themselves are taken into account—to reflect the threat to the federal government's ability to transfer funds to states in the future—spending in almost all states grew faster than revenue from 1977 to 2007 (Lav et al., 2005).

Both sides of the budgetary equation for states are responsible for the problem. There is wide recognition, at least in policy circles, that health care costs and the aging of the population impose burdens on state budgets that are increasingly difficult to sustain. Conflicts about funding of state employee pensions and retiree health benefits are major news stories. The Government Accountability Office reports that state and local health care spending rose from 12 percent of total spending in 1978 to 20 percent in 2008, with no change in this trajectory in sight. Spending on education fell from 40 percent to 36 percent of the total, and all other categories fell or remained constant, with one notable exception: "public order and safety," for which spending increased from 10 to 13 percent of total state expenditures (GAO, 2010). The United States has the highest incarceration rates in the world by far, and heavy budgetary costs are only one of many unfortunate consequences (Rich et al., 2011; Schmitt et al., 2010).

Although it may be less widely recognized than concerns about state governments' long-term spending commitments, revenues of state governments are subject to serious structural problems in their own right, largely due to the erosion of the sales and, to a lesser extent, the corporate tax base. As in the case of local governments, state tax systems are, of course, not uniform, and they depend both on the politics and the economic circumstances of the state. For example, only 45 states impose sales taxes, as noted previously, and 41 as well as the District of Columbia impose personal income taxes (Brunori, 2007b). Several states that are, or at least once were, rich in natural resources rely heavily on oil, gas, timber, and other severance taxes. Four of these states—Alaska, Texas, Washington, and Wyoming—have no income tax, and two—Alaska and Montana—have no state sales tax (Brunori, 2007b). Nevada, which derives substantial revenues from gambling, also has no income tax.

Less than 50 percent of state revenue is derived from taxes. In 2003, federal aid, mostly to fund federally mandated programs, Medicaid, Temporary Assistance for Needy Families, and other income-transfer payments, constituted about 27 percent of state revenue. Another 8 percent came from user fees, licenses, and service charges. Smaller amounts came from lottery and gambling proceeds (Brunori, 2007b). Nearly 50 percent, in turn, of state tax revenues are derived from general sales taxes, and another 17 per-

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cent is derived from selective sales taxes, such as taxes on motor fuels and alcoholic beverages. Two-thirds of state taxes are therefore generated by sales and excise taxes. Individual income taxes make up about 34 percent, and corporate income taxes only 5 percent, of state tax revenue. Property taxes constitute only about 2 percent of state tax revenue (Census Bureau, 2011). The percentages vary from year to year, of course, and the figures just provided are expressed as a percentage of state tax rather than total revenues. They would be approximately halved if expressed as a percentage of the latter. Personal income taxes thus generate only about 17 percent of total state revenues.

For the sake of comparison, the federal government finances its operations almost entirely through taxes and, to the extent of any budget deficit, borrowing. Personal income, payroll, and corporate income taxes currently make up 42 percent, 40 percent, and 9 percent, respectively, of total federal revenues (CBO, 2011c). Excise taxes are minimal and, unlike almost all other comparable countries, the United States has no general consumption tax, such as a value-added tax (VAT) (Sessions and Lee, 2008a).

The states' heavy reliance on sales taxes has been and will continue to be threatened by a significant erosion in the sales tax base (Brunori, 2007b; GAO, 2010; Lav et al., 2005). This base—the amount of goods and services subject to tax—fell from about 51.4 percent of personal income in 1990 to 41.5 percent in 2001, and many public finance scholars are of the view that this erosion will accelerate (Brunori, 2007b). This is due primarily to three factors. First, most states exempt services from the sales tax, and services make up an increasingly large share of the economy. Second, most states provide exemptions for many categories of goods, such as food and prescription medications. Third, states are experiencing increasing difficulty in taxing goods not explicitly exempt from tax, as sales of goods have moved onto the Internet and beyond the reach of state taxing authorities. Estimates of revenue lost as a result grew from $170 million in 1998, to $15.5 billion in 2003, and $33.7 billion in 2008 (based on a 2004 projection) (Brunori, 2007b). There is every reason to believe that this trend will continue (GAO, 2010).

In addition, the states have experienced a reduction in corporate income tax revenues, which have declined from a high of 9.7 percent of state tax receipts in 1977 to the current figure of about 5 percent. This is attributable in part to aggressive tax planning that results in shifting reported income from higher-tax to lower- or no-tax jurisdictions. States also lose significant corporate tax revenue by providing tax incentives, such as investment or job creation credits and accelerated depreciation. As with local jurisdictions, although to a somewhat lesser extent, it is also a reflection of changes in the economy, including the increasingly interstate and international nature of business, and the mobility of capital (Brunori, 2007b; Lav et al., 2005).

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Federal Government

For the most part, projected federal budget deficits are the result of projected spending increases rather than revenue shortfalls, at least compared with historical averages. In 2007, before the onset of the economic recession and the enactment of the ACA, the Congressional Budget Office (CBO) projected that by 2030 federal spending would increase to 29 percent of GDP, with a projected budget deficit for that year of 10 percent of GDP (CBO, 2007; Sessions and Lee, 2008b).

CBO's most recent projections are even more bleak, but the pattern is the same. That is, federal spending was and is projected to increase dramatically due in large part to the aging of the population and general increases in health care costs. CBO projects that this will result in an increase in Medicare and federal Medicaid spending by 2035 of nearly 5 percent of GDP under one fiscal scenario (which it designates the "alternative" scenario), and an increase in Social Security outlays of 1.3 percent of GDP. Under this scenario, the federal government would run a budget deficit of 15.5 percent of GDP in 2035, and U.S. government debt held by the public would equal 187 percent of GDP, rising by the amount of the deficit each year (CBO, 2011b).

The projections under the "alternative" scenario assume that several current policies that restrain health care spending increases, such as the sustainable growth rate rules for physician payment, would not be in effect, consistent with congressional practice in the past. If they are assumed to continue, under what CBO designates the "extended baseline" scenario, Medicare and Medicaid spending is projected to increase by 3.4 percent of GDP by 2035 (CBO, 2011b). The projected increases in spending, especially under the alternative but politically realistic scenario, would place an enormous burden on the federal budget, and it is doubtful that the financial markets and U.S. economy would sustain such a trajectory for federal government borrowing (CBO, 2011b).

Revenues would not keep pace with increased spending under either CBO scenario but would come much closer to doing so under the extended baseline. Over the last 40 years, total federal revenues have ranged from less than 15 percent of GDP in 2009 and 2010 to nearly 21 percent in 2000, with an average of 18 percent (CBO, 2010). Under the extended baseline scenario, revenues would rise to 23 percent of GDP by 2035, and under the alternative scenario they would be 18.5 percent of GDP. The extended baseline scenario assumes that tax cuts enacted under the Bush administration will expire, and that the alternative minimum tax (the AMT, which provides an alternative tax base that is broader than the regular income tax, but at somewhat lower rates) would not be indexed for inflation. The latter assumption would mean, however, that 50 percent of taxpayers would be pay-

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ing the AMT, probably not a reasonable political expectation. Reversing this assumption would reduce revenues by about 2 percentage points of GDP.

Revenues from personal income taxes have fluctuated between approximately 8 and 10 percent of GDP (Cooper, 2011). They would be greater than 13 percent and 10 percent, respectively, under the extended baseline and alternative scenarios. While this indicates that the personal income tax base is economically stable, it has gradually been narrowed through policy change. For example, due largely to indexing of tax rates, tax credits, and increases in the personal exemption and standard deduction, almost 50 percent of potential income tax filing units paid no income tax in 2009 (Gould, 2011).

Federal corporate taxes have declined from 5 percent of GDP to around 2 percent now. They are projected to show little change between now and 2020 (Friedman, 2003; Gould, 2011). Increasingly aggressive and innovative tax planning may make even that forecast optimistic (Kleinbard, 2011). There is interest in reforming the corporate tax in either a revenue-neutral way or to raise additional revenue (Gray, 2011), but it is doubtful at best that corporate tax revenues could be restored to the levels of the 1950s. In 2005 U.S. corporate tax revenues as a percentage of GDP were the third lowest among countries in the Organisation for Economic Co-operation and Development (OECD), at 1.8 percent of GDP. The weighted average for all OECD countries, however, was only 2.5 percent of GDP (CBO, 2005). The potential for deriving large amounts of new revenue from the corporate tax, at least relative to the size of the federal budget, is therefore fairly low.

Federal excise tax revenues have dropped even more than corporate taxes and currently raise about $100 billion annually, again with little change forecast. Estate and gift taxes now generate yet smaller amounts of federal revenue, $19 billion in 2010, due again to changes in law during the Bush administration. These changes were extended, along with the tax itself, as part of a budget agreement reached at the end of 2010 between the Obama administration and Congress. The CBO projects that if the estate tax is extended in its current form it will generate revenues of about $70 billion in 2020 (CBO, 2011a,b; Gale and Harris, 2008).

THE POLITICAL AND ECONOMIC SETTING FOR PUBLIC HEALTH FINANCE

The budgetary developments described in the previous section, which affect all three levels of government and have been decades in the making, can be regarded as tectonic in magnitude, character, and tempo, and they require similar and equally powerful forces for an explanation. These are the forces with which public health finance must contend, and for this reason they must be understood.

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The basic facts to be explained are that government spending has consistently gone up at a rate faster than revenue, and that this now appears to be on a trajectory that is unsustainable for the federal and many state governments—data about local governments specifically are more difficult to find, as often information is reported for state and local governments together. The structural deficits result from growing problems in revenue generation as well as increases in spending. Why has this occurred, and why has the response of policymakers been so inadequate, for so long?

The explanation consists of economic, demographic, and political factors. Although some are familiar or have already been touched upon, they are mutually reinforcing, and summarizing them helps show this. They can be further broken down into factors affecting general public finance and related, but distinctive, factors affecting public health finance. These two categories will therefore be examined separately.

The levels of taxes and government spending are, of course, among the most fiercely contested issues in U.S. politics and policy, both historically and perhaps especially today. These controversies are also inextricably woven into the history of the subject. The purpose of this paper is to provide guidance to the committee about how to improve funding for state and local public health departments. While this may be accomplished in part by mobilizing additional private resources, it is highly unlikely that this can be a complete solution.

In any case, focusing on this option alone would not constitute a complete examination of the problem. In view of the budgetary trends discussed in the third section of this paper, as well as the evidence supporting financing of local public health departments with taxes presented in the second section, the solutions must include the possibilities of finding new sources of tax revenue as well as of providing greater stability to existing tax bases. The discussion in the next two parts of the paper is intended to be an objective analysis of how best to meet the needs and policy concerns specifically of public health. For the reasons just given, however, it cannot avoid raising and addressing issues that are politically controversial.

General Budget Politics

It is often observed that Americans more than citizens of many other countries hold "antistatist" views, meaning they are "less concerned with what government will do to benefit individuals than what government might do to control them" (Lee et al., 2006; Oliver, 2006, p. 196). In earlier periods of U.S. history, however, deficits occurred primarily during wartime or economic crises such as the Great Depression and were rarely if ever structural (Suddath, 2009). Even if general observations about Americans' ideology along these lines are accurate, it is necessary to look beyond them to find explanations for the development of structural deficits in recent de-

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cades, and their emergence presumably should be more or less contemporaneous with it. All of the considerations discussed below meet these criteria.

Demographic Trends

The aging of the population and of the baby boomers in particular results in predictable increased spending on programs for retirees and the elderly, such as pensions, Social Security and Medicare, as well as more specific services. It also increases the "dependency ratio" (the ratio of retirees and younger dependents to the working population). Retirees also earn less income and spend less, and they qualify for specific income and property tax exemptions without regard to need (GAO, 2010; Lav et al., 2005).

Health Care Costs

Health care costs have risen faster than general inflation for decades. Taking into account tax expenditures, and even before the ACA, government sources accounted for about 60 percent of health care spending (Honoré et al., 2011). The tax expenditure for the exemption of the value of employee-sponsored health insurance alone represents about 11 percent of the total (Sessions and Lee, 2008a). Both private and government health care spending are increasing regardless of age of the population served (Oliver, 2006), but the increase is greatly exacerbated by the aging of the population (Lee et al., 2006).

Electronic Commerce

The rapid growth of the Internet and online sales has already reduced state and local sales tax revenues substantially. "Use" taxes attempt to collect the amounts owed from the purchasers but have an extremely low compliance rate. There are constitutional constraints on state efforts to combat this problem by taxing out-of-state sellers. In *Quill v. North Dakota* (504 US 298 1992) the U.S. Supreme Court held that a state cannot compel a vendor to collect sales and use tax unless that vendor has a "physical presence" in the state. Congress could authorize states to do so under the Commerce Clause, and states are attempting to address the problem in part through interstate compacts, but the progress so far has been modest (Brunori, 2007b).

Globalization and International Competition

Globalization involves and is in part due to increased mobility of capital. This places pressure on corporate taxes at all levels of government. As discussed earlier, corporate mobility increases as the jurisdiction gets smaller

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and the benefits offered by that jurisdiction are more easily available elsewhere. This implies that the plausibility of strengthening corporate taxes gets weaker at each lower level of government—federal, state, and local, in that order.

Increased Income Inequality and Age Stagnation

Globalization is in turn one of the explanations offered for wage stagnation and increased income inequality in the United States, in addition to computerization and other advances that provide increasingly higher rewards to skilled labor and lower wages to others (OECD, 2007). In mid-2008 the highest-earning decile of the U.S. population earned nearly half of all income, higher than its previous peak before the Great Depression. A very high proportion of income (7 to 9 percent, in the late 1990s) goes to the top 0.1 percent of households. Average family income roughly doubled between 1947 and 1973, but it grew by only 22 percent between 1973 and 2007, which itself was largely attributable to the increase in two-earner families (McCarty et al., 2008; Piketty and Saez, 2007; *The Economist*, 2010).

Political Polarization

A marked increase in political polarization is evident from the briefest glance at the news. This is true both electorally and legislatively (Aaron, 2010; McCarty et al., 2008). McCarty and colleagues argue at length and provide copious data documenting that polarization is itself strongly correlated with income inequality. They also cite studies and provide their own data concerning a number of pernicious consequences of polarization for the political process. These include undermining citizens' trust in the capacity of government to solve problems and legislative gridlock (McCarty et al., 2008).

Economic and Political Power of Corporations

The economic and political power of corporations is the subject of academic literature and popular media and is accepted to some extent across the political spectrum, but it is seldom quantified. One simple way to do so is to compare corporate revenues with government receipts. For example, in 2009 the revenues of the top six companies in the Fortune 500, about $1.67 trillion, was roughly equal to total expenditures of all 50 states. Measured this way, California, the state with the highest spending, would have ranked number 5 on the Fortune 500. Safeway, ranked 50th on the Fortune 500 that year, had revenues approximately equal to the spending of Michigan, the 9th highest-spending state (CNN, 2009; NASBO, 2010).

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These can be regarded as comparisons of apples (revenues) and oranges (spending), and they are based on corporate revenues rather than profits. While not intended as serious statistical findings, they are nevertheless meaningful. They illustrate both the economic interests that corporations have to protect, and the resources they can bring to bear in the form of lawyers, lobbyists, media campaigns, campaign contributions, and the like, to protect them. The marked increase in income inequality presumably makes these statements true also of extremely affluent individuals. As an illustration of the kinds of financial clout that corporations can wield and strategies they can employ to block government action, it was recently reported that Amazon threatened to sever ties with as many as 25,000 online advertisers in California in response to a provision in the state's budget requiring Internet retailers to collect sales tax from consumers (Aaron, 2010; CNN, 2009).

Orchestrated Efforts to Change Public Attitudes

Hillary Clinton's statement concerning a "vast right-wing conspiracy" may have been a rhetorical misstep, but antitax and antigovernment forces constitute a well-orchestrated effort and make no pretense to the contrary. Few would dispute, for example, that Grover Norquist's Americans for Tax Reform, with its "taxpayer protection pledge" and other strategies, has been tremendously successful. Earlier efforts by conservatives to develop an intellectual base and coordinated strategy to promote their agenda date back at least to the 1950s (Wooldridge and Micklethwait, 2004), and reached one relative high-water mark with the "Tax Revolt" leading to Proposition 13 in 1977.

The Politics of Public Health Finance

At roughly the same time that U.S. political conservatism started to gather strength, public health began to take on a new set of roles. This is not entirely a coincidence, since the change in public health resulted in large part from improvement in control of infectious disease, which led in turn to increased emphasis on chronic disease in both health care and public health. Ironically, but not coincidentally, health care spending then began to increase rapidly, while the political case for public health spending began to become more challenging. This parallels trends behind the movement toward greater individualism and antistatism in general budgetary politics, but it creates a separate set of political challenges for public health finance in particular (Epstein, 2003; Gostin and Bloche, 2003).

Public health services have always been public goods. The increased emphasis on chronic disease changes the case for government funding of public health, however, that tends to weaken political support for it. Even

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in the earlier, infectious disease model, the benefits of public health services may be less visible than schools, roads, water systems, and police and fire department protection (police cars and fire trucks are visible enough). On the other hand, in this model public health is similar to other government services in that its benefits potentially accrue to the entire populace. Like the police and departments, it also protects against a seemingly external and immediate threat. The prompt increase in federal funding of public health following the anthrax attacks in 2001 illustrates these factors in the politics of public health prevention of infectious disease (Frist, 2002).

By comparison, to the extent that chronic disease is seen as inevitable or the product of individual behavior, public health can be viewed as pointless or not a suitable use of public revenues. Within U.S. culture particularly it may be relatively natural to see chronic disease as more appropriately addressed on an individual basis by health care providers, a viewpoint that is also consistent with providers' economic interests. Similarly, more than efforts to prevent infectious, and particularly epidemic, disease, public health interventions directed at chronic disease can be seen more easily as redistributive both economically and geographically, even within a single local jurisdiction. Finally, any benefits produced in preventing chronic disease are also realized over the long run rather than immediately, making them even less visible and more subject to doubt.

These difficulties are exacerbated when the scope of public health is expanded further to encompass efforts to address the social determinants of health. The timeline for results becomes even longer, the causal relationships even more complex, and the boundary between public health and general social policy increasingly difficult to discern.

Public health scholars are well aware of these political problems, but public health policy has done too little to address them. Arguably, it represents a failure of public health to make a political transition that corresponds to its changing responsibilities. For example, although the goal remains improved population health, a clear understanding of this in the public health policy community does not translate into a clear understanding of it by the public itself. Especially in view of the dominance of medical care in the United States, it is not necessarily obvious to a layperson that prevention of infectious disease through infection control and sanitation measures and prevention of chronic disease are even the same enterprise. If, moreover, there is no agreed-upon definition of "public health" even within the field, how can the public be expected to know what it is and to support increased funding for it?

There is extensive evidence in the literature that this is more than a rhetorical question. According to Sorenson, for example, results of a 1996 poll indicated that "most people have little or no idea of what 'public health' means" (Wooldridge and Micklethwait, 2004). In an article entitled

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"Americans' Conflicting Views About the Public Health System, And How to Shore Up Public Support," Blendon and colleagues state that they did not use the term *public health* in surveys conducted from 2008 to 2010 to answer this question because "[p]rior surveys have shown some confusion on the part of Americans about what the term *public health* means" (Blendon et al., 2010, p. 233). An analysis of public health in communities with a population larger than 100,000 found that two of the 20 public health activities whose perceived effectiveness were rated as relatively low were "providing health information to the public" and "developing support and communications networks among health-related organizations, the media, and the public" (Mays et al., 2004a, p. 1022).

The failure of one recent public health finance initiative should be evaluated in light of these observations. A proposal to tax sugared beverages in New York State was defeated despite earlier indications of public support, after an intense lobbying effort in which proponents were outspent on advertising by opponents by a 4:1 ratio (Gershman, 2011). The baseline of public opinion at which the debate started may have mattered, however. While there are problems with this proposal, as with all proposals, the intellectual case for reducing obesity to improve the nation's health and reduce health care costs is simply overwhelming (Lakdawalla et al., 2005; Ludwig, 2007; Sturm, 2002). Yet Blendon and colleagues report that in 2009 only 9 percent of those polled named obesity as one of the two diseases or medical conditions that they believe pose the greatest threat to Americans, after cancer, heart disease, HIV/AIDS, influenza and diabetes, without regard to steps needed to address the problem (Blendon et al., 2010).

The surgeon general's report on tobacco in 1964 was a major news event that reverberated for years and was instrumental in leading to the gradual, but pronounced, reduction in tobacco use that followed (Department of Health Education and Welfare, 1964). How many Americans, by comparison, are aware of the surgeon general's "Call to Action to Prevent and Decrease Overweight and Obesity" in 2001 (Surgeon General, 2001)? The world of media and communications today, and in 2001, is very different from that in 1964. Public health must emulate the example of the 1964 report despite these differences, however, if it wants to build a political base for itself within the electorate and legislatures.

SOLUTIONS

While there is a general awareness within the public health community that it will be difficult, or even very difficult, to increase or even stabilize its funding, there is much less understanding of the precise nature of the difficulties. The proposals offered to date therefore cannot, and do not, fully grapple with them. The criticisms of the field of public health finance

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mentioned at the beginning of the paper thus can be extended to include a neglect of these considerations and of the strategies needed to deal with them effectively. They are a function of the legal, economic, and political factors above. They affect both public finance in general and public health finance more specifically, but their combined effects on public health are mutually reinforcing and not merely overlapping or additive.

The goals of improving public health system performance and ensuring its financial stability are likewise, and fundamentally, complementary. The statement made by Honoré and colleagues that "maintaining support for taxation policies can be greatly influenced by demonstrating a return on taxpayer investments" may seem banal, but it is important (Honoré et al., 2011, p. 2). In addition, public health and public health finance operate in a federal system that is itself experiencing severe problems at each level. Since funding for public health has historically cascaded downwards, so also do the problems. They must therefore be addressed through an approach that encompasses all three levels of government, and which also takes into account the great variety of public health departments and services in question.

Finally, to secure stable and adequate financing over the long run public health must bring the same tenacity, ingenuity, and patience to bear that the antitax movement has in striving to reduce taxes. Whether or not one agrees with the political agenda of that movement, there can be little doubt regarding its success as a public relations campaign. Public health is unlikely to be able to match the resources of antitax advocates, but neither is it wholly destitute. As a practical matter, the limitations of its resources in pursuing the financial well-being of public health policy mean only that they should be employed more effectively and in a more coordinated fashion up and down the ladders of government.

The following discussion first reviews previous proposals for improving public health finance as well as models that are experimental but have already been employed. It then describes alternative approaches. The proposals predate enactment of the ACA, and some aspects of them were incorporated into it, but only to a limited extent. The details of this will not be explored here. The specific alternative proposals are intended to illustrate a general strategy implied by the analysis earlier in the paper in addition to standing on their own.

Previous Proposals

TFAH Recommendations

In 2009 a report from the TFAH made a number of recommendations for improvement of public health finance (TFAH, 2009). They include the following

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- Create a federal Wellness Trust, as initially proposed by the Brookings Institution. According to the TFAH description, "The Wellness Trust would ensure every American has access to a core set of proven preventive care services, including immunizations and clinical prevention, screenings, and health counseling. The Trust would become the primary payer for these services for all Americans, and it would also have the authority to provide funding for infrastructure improvements. [Financial] support … would come from federally funded health agencies and private insurers determining their spending and resulting savings from preventive services [and] general revenue, in a process similar to how Medicare is funded, and would increase annually by the estimated projected growth in national health expenditures" (TFAH, 2009, p. 6).
- Create one or more similar wellness trusts at the state level.
- Redirect a percentage of Medicare spending toward public health programs. The TFAH states that "Medicare would more than likely recoup the investment in future savings" (TFAH, 2009, p. 6).
- Similarly, redirect a percentage of federal Medicaid spending (with a required state match) toward public health.
- Set up Medicaid Administrative Accounts, under which states would use a part of federal Medicaid matching funds to support public health and prevention programs.
- Institute surcharges on employer-sponsored health insurance, which would be waived if insurers agree to a prevention investment package.
- Impose or increase several behavior-related or "sin" taxes, including soft drinks (as proposed in New York), candy or snack taxes, and existing taxes on alcohol and tobacco.
- Impose a food advertising profits tax, such as for advertising on convenience foods, candy, and soft drinks, reflecting an estimated $11 billion in spending on direct media advertising.

A recurrent theme of these proposals is the possibility of recapturing health care spending and diverting it to public health. This is intuitively plausible and is sensible economically and as a matter of health policy. If health spending is viewed as a combination of spending on health care and spending on public health, it seems very likely that spending at the margin should be routed to the latter. On the other hand, in some ways this funding mechanism replicates the problems in funding public health it is designed to solve. It is complicated, and costs and benefits are difficult to measure and assign, in much the same way as they are with public health finance generally. In addition, healthcare is already extremely expensive, and this approach would make it even more so, or at least appear to be. The costs

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would almost certainly be passed through to the insured population. That point would not go unnoticed by opponents, and they would bring it to the attention of the public at large.

Public–Private Partnerships

McNally and Pine describe two cases in New York City in which relatively small grants from the New York City Community Trust, a private foundation, were used to jump-start programs to increase screening rates for colon cancer, and to increase school-based screening and treatment for sexually transmitted diseases. Both programs achieved favorable results, especially compared to the size of the grants ($1.65 million and $85,000, respectively). For example, there was an increase in colonoscopies of 68 percent in 1 year in the three hospitals participating in that program (McNally and Pine, 2009).

Private grants can also furnish an opportunity for public health agencies to obtain increased funding from the government. The Robert Wood Johnson Foundation (RWJF) announced in 2007 that it would spend $500 million to try to reduce childhood obesity rates. One program, in Louisville, Kentucky, has received $740,000 from RWJF and an additional $8 million from CDC to implement a broad-based, community-wide effort that includes education programs, the introduction of a 100-mile bicycle and pedestrian loop around the city, and addition of bicycle racks to city buses (Strom, 2011).

As McNally and Pine note, public–private partnerships may have a greater chance of succeeding when the goal is to increase the demand for health care services of current health care providers, who therefore have a clear economic interest in the arrangement (McNally and Pine, 2009). Similarly, Halvorson and colleagues report that collaboration between public health and medical care providers is more likely in markets characterized by higher HMO penetration and lower HMO competition, presumably because this increases the chances that prevention services for the community will benefit the HMOs' patient populations (Halverson et al., 2000).

"Process" markers such as an increase in clinical screening may also be simply more likely to yield positive results than are health outcomes markers. The evidence that the RWJF program in Louisville is reducing obesity appears to be anecdotal, but the fact that it has been sustained for nearly a decade (since 2003) should also not be dismissed.

Social Impact Bonds

Social impact bonds (SIBs) are a new form of financial instrument that attempts to finance public services by offering private investors a share of

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any savings realized by government as a result. They are thus also a form of public–private partnership, but one that is relatively untested. It appears that only one issue of $8 million has been floated, with another in the process, although the Obama administration's budget includes $100 million to create pilot programs for SIBs (Ross, 2011). The proponents of SIBs recognize that, at least initially, it would probably be necessary to recruit investors interested in socially beneficial outcomes and not just a financial return (Social Finance, 2010).

The transaction costs for SIBs are likely to be considerably higher than for public–private partnerships involving existing health care providers, such as those reported by McNally and Pine. In addition, the one issue of SIBs that was successfully launched is intended to reduce prison recidivism in the United Kingdom (Ross, 2011; Social Finance, 2010). It is not clear how readily this example can be adapted to health care or the United States. To be returned in part to investors, the savings need to be measureable by the institutions realizing them. Presumably it would be desirable for the population to be readily identifiable and attributable to a specified set of providers or payors such as insurers, since savings from the intervention could otherwise accrue to others. Both of these issues are likely to be greater problems in the United States than in the United Kingdom.

In addition, the time horizon for prevention of chronic disease, where public health finance most needs help, may be longer than for prison recidivism, for which results may be observable even within a year. Possibly such an arrangement would work for some public health needs, such as prevention of falls by older adults, exacerbation of congestive heart failure, or diabetes control, but asking investors to wait for a financial payoff from primary prevention of the underlying diseases could be a tough sell.

On the other hand, SIBs can also be regarded as venture capital, with the investors providing the capital, and those who develop and implement the services providing the "sweat equity." Their prospects of success possibly could be enhanced through cultivating direct relationships between these two groups, as occurs in more typical venture capital settings.

Tax Expenditures

Tax expenditures have grown enormously in recent decades, in part because they have been favored by both major political parties (Gould, 2011). Tax expenditures might be used in public health finance by helping to support public–private partnerships. For example, investment in SIBs might be encouraged by providing favorable tax treatment to any income they generate. On the other hand, tax expenditures are almost universally regarded as poor tax policy (Brunori, 2007b). The long-term political trends are also against them, as illustrated by the fact that Republicans in Congress

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vehemently opposed to tax increases are considering the possibility of reducing some current tax expenditures (Paletta, 2011). Creation of new tax expenditures might play some role in public health finance, but political as well as policy currents are moving strongly in the other direction.

Alternative Approaches

Designing alternative approaches and having them adopted by policy makers requires taking into account the legal and political constraints discussed at length in this paper. Alternative approaches should also reflect the comparative advantages offered by different levels of government and in different locations, as well as the data indicating that public health funding is most effective if it is generated locally. On the other hand, if possible a comprehensive approach should provide a floor that ensures funding particularly for the poorest local jurisdictions. The discussion below presents options for the federal, state, and local governments, followed by other elements of a more comprehensive approach.

Federal Government

Many public finance experts believe that in order to achieve budgetary stability the federal government will need to institute a new, broad-based tax such as a VAT (Graetz, 2008; Sessions and Lee, 2008a) or a carbon tax (Graetz, 2011). In 2005 Emanuel and Fuchs proposed that a dedicated VAT be used to fund a system of universal health insurance vouchers, with 0.5 percent of the revenues set aside each year to finance an independent Institute for Technology Outcomes and Assessment (Emanuel and Fuchs, 2005). This idea could easily be adapted to dedicate a similar amount to public health. The possibility of enacting a VAT, however, has given rise to a political battleground unto itself. Any new broad-based tax will be adopted only in the context of legislation enacted to achieve comprehensive budget reform that would overcome the entire set of political barriers described in this paper. This is highly unlikely in the foreseeable future except, perhaps, in the event of a collapse in the financial markets even more severe than that which occurred in 2008. In any case, the political forces involved are too large to make this a useful strategy for public health.

Creating a trust fund solely to fund public health can be considered to be at the next level down in order of political magnitude. The ACA includes a Prevention and Public Health Fund, and it authorizes and appropriates increasing amounts to the Fund, reaching $2 billion in fiscal year 2015. It appears, however, that the Fund lacks a dedicated source of revenues, meaning that it is in fact subject to the annual appropriations process each year. One source of revenues that might be considered for this or a similar public health fund is the federal estate tax.

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The expiration of the estate tax at the beginning of 2011 under prior law was postponed for 2 years in an agreement reached between the Obama administration and Congress at the end of 2010. The top estate tax rate had, however, already undergone a scheduled decrease from 55 percent to 45 percent under legislation enacted during the Bush administration, and starting in 2011 the tax applies to estates with a value for estate tax purposes of over $5 million, raised from $3.5 million by the agreement (Jacobson et al., 2007).

The estate tax, to a great extent successfully relabeled the "death tax" by opponents, will continue to be a matter of political controversy and intensive legislative wrangling as the new expiration date approaches. About half of estate tax revenues come from estates with a taxable value of $10 million or more, and more than a third from estates with a value of $20 million or more (IRS, 2011). As noted previously, CBO estimates that if extended in its current form the estate tax would raise an additional $50 billion annually by 2020, as compared with the $20 billion that the TFAH estimates is needed for public health.

This presents an interesting opportunity. It may be possible to craft a proposal to make the estate tax permanent while increasing the top rate, perhaps back to 55 percent, but to apply the top rate (or conceivably even the tax itself) only to estates with a value of more than $10 million, $20 million, or even $100 million. The revenues yielded could then be dedicated either to the existing Prevention and Public Health Fund or possibly an alternative fund, as discussed below.

There are numerous potential advantages to this proposal. First, it is doubtful at best that making the estate tax permanent would be seriously deleterious to the economy. The estate tax has been in effect for 90 years. To say that the performance of the U.S. economy over that time has followed changes to the estate tax would be a strained interpretation of the data, to put it mildly. In any case, there is certainly reason to believe that the effects of the estate tax on economic productivity are low compared to almost all other taxes. Moreover, from the standpoint of financing the federal government, the estate tax is already in some peril. As a result, it can be argued that an extension or modification of it applicable to very large estates would supplement other government revenues rather than preempt their use, meaning that they could be dedicated to public health without placing an additional burden on the federal government's fiscal posture.

The estate tax would also be a stable source of revenues. Compared with proposals to recapture and redirect funding from health care to prevention via a trust fund, the proposal is much less complex, and it would not increase health care costs. It has the further advantages of serving as a partial correction to increased income inequality, and of shifting resources from old to young, the opposite of many current federal and other programs that account in part for the financial straits of government.

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Estate tax opponents, and antitax activists more generally, have successfully used labels to advance their cause, including not only the "death tax," but phrases such as "tax relief" and "job-killing taxes." Possibly with the assistance of marketing experts, this strategy could be employed in reverse. It is hard to think of a one-word alternative to "death" tax that offers its rhetorical advantages. Care would be needed to avoid choice of a name for this proposal that cannot be easily parodied. An acronym such as "Wealth in Service of Health," or "Wealth Serving Health," as in the WISH tax, might be susceptible to that problem. The argument would be, however, that with revenues dedicated to public health the tax would not be a "death" tax, but one supporting health, as well as a contribution by a fortunate subset, literally and figuratively, of one generation to the renewal of another.

Another option might be to dedicate the revenues to a new fund that is designed precisely to ensure that all local public health departments have at least a minimal amount of funding, such as $20 per capita. In that case, the tax could be promoted using the numbers of both the threshold for the tax and the floor for public health department funding, such as "10 for 20," or "20 for 20." That is, an estate tax or tax rate on estates with a value over $10 million or $20 million would ensure that everyone has local public health services worth at least $20.

Yet another alternative would be to dedicate the revenues to both public health and education, or possibly to the health and education of children. If a trust fund were set up to benefit children only, the threshold for the top rate might even be higher, e.g., $50 million or $100 million. In any case, modification of the rate and threshold affords flexibility in designing a revenue source to match public health needs.

A final possible advantage of the proposal is that it would offer public health advocates an opportunity to raise the profile of the needs of public health more generally every time that the tax is discussed in the media. In effect, it could provide free advertising, meaning that it would have value for public health even if it is never enacted.

Patashnik (2000) has argued that the case for dedicating tax revenues to government trust funds is most compelling and their resistance to subsequent change is strongest when underlying promises are based on a reciprocal exchange of specific tax payments now for benefits later—reciprocity, and when individual beneficiaries subsequently become reliant on these promises—reliance. Because of the inherently diffuse nature of the benefits of public health, it is difficult to design a trust fund for public health that satisfies these criteria. Arguably, however, any dedicated source of revenues for public health that can be enacted and that has a stable revenue base is more reliable than purely general revenues. Owing especially to the peculiar current political circumstances of the estate tax, it warrants consideration as such a revenue source. Although such a trust fund arguably would be

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characterized by low rather than high reciprocity and reliance, spending from it can nevertheless enjoy privileged status within the budget process. For example, under the Highway Trust Fund (financed by motor fuels taxes) officials can enter into binding obligations under "contract authority" in advance of appropriations. It is difficult for the appropriations committees to deny appropriations of funding that have been legally and politically committed in this way (Patashnik, 2000).

State Governments

All states impose an estate tax, most at rates that enable the entire amount to be credited against the federal tax. As of 2005, 17 states and the District of Columbia had decoupled their estate taxes from the scheduled sunset of the federal estate tax (Brunori, 2007b). Thus, an estate tax option similar to that just described might also be available at the state level.

As discussed earlier, state sales tax bases are eroding, in part due to the increasing share of services in the economy. Taxes on sugared beverages, snacks, and other such foods do not suffer from this problem. Imposing such a tax at the state level would limit the ability of consumers to avoid it by purchasing outside the jurisdiction. The amounts raised by the tax should be dedicated to public health or to obesity prevention in particular, both for policy reasons and to capture the fact that the tax would be intended to offset the costs of obesity in terms of additional health care spending. The revenue potential is large, e.g., a tax of 1 cent per ounce on sugar-sweetened beverages would raise an estimated $1.8 billion in California, and approximately $1 billion in Florida, New York, and Texas (Brownell et al., 2009).

This is not a new idea, and its policy advantages and disadvantages have been discussed elsewhere (Bittman, 2011; Brownell and Frieden, 2009; Brownell et al., 2009; Leicester and Windmeijer, 2004). To have a reasonable chance of enactment, however, it needs a better political strategy. One component of this strategy is simply for public health to do a much better job of raising public awareness of the problem of obesity, and of making the case for taxes of this sort, than it has so far. For example, a search for video clips of television coverage of this issue generated very little, principally a clip from Fox News covering a decision by the American Medical Association to drop its support for a sugared beverage tax (Hutchison, 2011).

Rather than employing a scattershot approach, public health leaders should make a choice about a limited number of messages to be conveyed repetitively and relentlessly until they become "water cooler" talk. One option would be wide dissemination of the maps of the United States, such as the animated map on the CDC Web site (CDC, 2011), that visually display the rise of obesity across the nation. They are impressive and alarming,

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and should be everywhere that public health advocates can afford to place them. The long-term increase in health care costs per capita due to obesity could form the basis of a second message. Some dollar figure or set of figures representing the best estimates of this increase could be identified and, again, repeated until it becomes a matter of common knowledge, and can be compared by average voters with the per capita revenues raised by the tax. For example, Thorpe and colleagues estimated that obesity accounted for 12 percent of per capita increases in health care spending from 1987 to 2001 (Thorpe et al., 2004).

As with the estate tax option, this approach would also serve an educational function for public health regardless of its fate in the legislative process. The strategy should be national in concept, but it could be carried out with particular emphasis on one or a small number of states that offer the best opportunities for enactment, for whatever reason. The national campaign should make a conscious selection of the state or states and work backward from this, rather than forward solely by chance or revenue needs. The food industry is aware of this possibility (Hartocollis, 2010), but that should be viewed as an endorsement rather than a criticism. Patience and looking for a policy "window of opportunity," as described by Kingdon (1995), are in order rather than rejecting this option because it has not succeeded so far.

This will not be easy. An important purpose of the analysis earlier in the paper was to demonstrate that it will never be. Despite the inherent unpopularity of taxes and the financial power behind them, it was not necessarily easy for antitax advocates to move that agenda forward and, with the possible exception of Proposition 13, it did not happen quickly. Public health advocates should take note.

Local Governments

Public health finance is threatened if public finance is threatened. For this reason, public health policy makers should be aware of the importance of protecting and broadening the tax base of all jurisdictions. For the federal government this could include enactment of a VAT or carbon tax. It is extremely doubtful that the voice of public health can be heard in this context over the continuous din of federal government politics. The ability of public health advocates to provide meaningful input on issues of general public finance is, however, likely to grow as the jurisdiction gets smaller. Influence at the state level does not seem out of the question, particularly in the smaller states, and it should be an even more realistic possibility at the level of local government.

Local governments have relatively few options for dependable tax revenues of their own other than the property tax. Sales, excise (including

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beverage and similar taxes), and corporate taxes suffer from the limitations discussed earlier. Particularly in view of the evidence that public health spending that is locally funded is most effective, local public health officials should therefore become property tax proponents. Dedicating some property tax revenues to a specific public health purpose, as in the states mentioned in the third section of the paper, may have policy advantages as well as soften political opposition.

Assistance will nevertheless be needed from state governments and the federal government, especially for the poorest communities. In addition to providing funding directly addressing this problem, the federal government (or state governments) could consider a program similar to the "Race to the Top" program employed by the Department of Education, now in a second round of funding (U.S. Department of Education, 2011). For example, the Department of Health and Human Services (HHS) could initiate a competition designed to identify a small number of model public health systems across the country, with several categories based on the size of the population served. In addition to any financial inducements, the public health systems so identified should be awarded a designation, such as a "Star" program. Once this is accomplished, HHS could then offer funding to other communities, if it is needed, to adopt the practices or meet the standards of the model systems. One purpose of such a program would be to engender, and then take advantage of, the civic pride that is possible especially for smaller communities.

Public health finance alternatives that are small individually may nevertheless be meaningful in the aggregate if adopted by a large number of local public health departments. This presents an opportunity for the use of public–private partnerships, potentially including SIBs. There is a pun on "SIBs" that may be merely amusing, but which might be used also to take further advantage of civic pride and cooperation. Possibly, investors in more affluent communities could work together with officials in other, lower-income communities to assist with public health finance in the latter. These would be cooperative arrangements between sister communities, or "SIBs for sibs."

Dedicated Taxes

Patashnik has argued that the case for dedicating tax revenues to government trust funds is strongest when underlying promises are based on reciprocity and reliance, as he defines these terms (Patashnik, 2000). The two examples of high reciprocity/high reliance trust funds that he offers are the Social Security and Medicare trust funds. In these two cases, program reductions are readily seen as a betrayal of the program's beneficiaries and of their previous payments into the funds. By comparison, according to

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Patashnik, the federal Highway Trust Fund, which depends on motor fuels taxes, involves high reliance but low reciprocity (Halverson et al., 2000).

As noted previously, it will be challenging to design a trust fund for public health that has a high degree of reciprocity and reliance, especially at the level of the federal and state governments. Both the Medicare and Social Security trust funds, of course, involve taxes paid while employed for benefits to be received on retirement, and there is at least a plausible relationship between the taxes and future benefits. This relationship is more difficult to demonstrate for the benefits of public health given the diversity of age and circumstances of the entire population. If there were no such difficulty, the problems of public health finance could be much more easily solved without the trust fund. Arguably, the proposal that bests fits this model is Emanuel and Fuchs' plan for a value-added tax dedicated to pay for health insurance, modified to have a portion of the revenues set aside for public health. As noted earlier, however, that proposal will not be enacted outside the context of a comprehensive budget agreement not easily envisioned at the moment.

The idea of a wellness trust fund financed through savings recaptured from health care is another version of this idea, but suffers from its own potential political problems, also previously discussed. Moreover, even if in theory the reciprocity between burdens and benefits for the wellness trust fund is high, reciprocity may be difficult to perceive owing to the complexity of the relationships involved, both at any given time and across time, and the fact that those paying into the fund will be large institutions that have their own internal economic complexity. This might also weaken the element of reliance, with the result that, by contrast with Social Security and Medicare, many such institutions might be more than happy to have the program abandoned so that the taxes, which are easily and necessarily quantified, can be repealed.

Because the benefits of public health are diffuse both geographically and politically, public health may tend to be chronically underfunded. For this reason, as a matter of policy it may warrant dedicated revenues at the federal level that do not necessarily meet Patashnik's tests, such as the estate tax proposal discussed above. There would be a potential symbolic link between the tax and public health, but very little reciprocity. The element of reliance might grow over time, however, once programs based on it are established, and particularly if it is used to fund the least affluent jurisdictions. Conceivably, though perhaps paradoxically, reliance might be more powerful politically than for a wellness fund specifically because the tax would not be premised on reciprocity and so would not be plagued by a continuing argument regarding how well this criterion is being satisfied.

The extent to which dedicated property taxes involve relative reciprocity and reliance depend on the details, such as there would be less reciprocity for a dedicated property tax to fund senior services than one funding general public health services. For a local property tax, the relationship

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between taxes paid and services provided might be simpler and more easily followed than in the case of trust funds at higher levels of government. The sense of reciprocity and reliance thus might also be stronger politically for dedicated local taxes.

As a political matter, other things being equal, if a dedicated source of revenues that is politically viable can be found, one can argue, again somewhat paradoxically, that it should be used to fund either popular or unpopular public health spending. In the former case, the attractiveness of the use serves to counter hostility to the tax. General revenues can then be devoted to other public health services justifiable as a policy matter but which have less popular appeal. In the latter case, the trust fund would be used to ensure funding of public health services that are most likely to be politically threatened.

Coordination

For the most part, public health departments across the country struggle with finance on their own. Efficiency and effectiveness, as well as the complexity of the challenges they confront, described in this paper, dictate that their efforts should be coordinated. They should be able to learn from their individual successes and failures specifically in the area of finance, and they should be able to join forces and pool resources in making their case to the public. This should be facilitated at the national level either by the federal government, by public health organizations, or both.

This could include development of criteria when innovative financing arrangements such as public–private partnerships, including SIBs, might best be used. It could also catalog and monitor cases in which they have actually been employed. This would be analogous to the successful agricultural extension program employed by the U.S. Department of Agriculture, as discussed by Gawande in his analysis of cost-control pilot programs in the ACA (2009). As an added feature, it might also attempt to coordinate the efforts of public health leaders across the country to formulate and execute a national plan for public health finance, including by improving the understanding of, and increasing support for, public health by the electorate and legislators. This coordinated approach to public health finance across the federal system, vertically and horizontally, is similar to and might follow the model of "collective impact initiatives" described by Kania and Kramer (2011).

Marketing

Public health leaders cannot afford to assume that convincing or even overwhelming scientific data mean that the public is convinced. The so-called birther controversy demonstrates that truth does not automatically

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drive belief. Businesses around the world have marketed their products—some with very limited merit, others obviously harmful—successfully for decades. The antitax movement is certainly media savvy. Public health should be also. It does not have the advantage of selling a simple product, such as a soft drink, but it will be hard-pressed to ask voters to fund it if they cannot even say what it is. Defining the 10 essential public health services is helpful for public health research and communication within the field but not for communication with the broader public or as a media strategy.

Simple, repetitive messages work in marketing: think of the Nike "swoosh." In an analysis concluding that marketing has played a central role in the rise of obesity in the United States, Zimmerman notes that "the number one rule of marketing … is to have a single, consistent message that is hammered home in many different media and modes" (Zimmerman, 2011, p. 297). Public health may not be able or even need for the general public to understand and support all of its services, but it does need to win the public over. There are many compelling stories to tell, and public health should mine its data base to find them. If it is really the case that some public health departments are able to spend less than a dollar each year—less than the cost of a typical vending machine soft drink—for each of its residents, the public should know that. The presentation of health disparities in the United States in terms of the "eight Americas" (Murray et al., 2005) is powerful, but its power to effect change is severely limited if only readers of the *American Journal of Preventive Medicine* are familiar with it.

HOW MUCH SHOULD BE SPENT ON PUBLIC HEALTH?

As noted in the introduction to this paper, there is a consensus among public health experts that spending on public health in the United States is too low, as well as a number of estimates of the amount of additional funding needed. These include the estimate reported by TFAH of an annual shortfall in national public health spending of $20 billion, used as a general point of reference in this paper. The TFAH estimate was based on a consultation with 15 public health experts, which relied in turn on two analyses: the amount needed for the United States to match the average of public health spending for countries in the Organisation for Economic Co-operation and Development (OECD), determined to be $24 billion; and an extrapolation from a detailed needs assessment for the state of Washington, calculated at $18 billion (TFAH, 2008a).

The fact that the two results roughly coincide provides a modest amount of support for TFAH's overall estimate of $20 billion. Nevertheless, like other such estimates it should be regarded as tentative and preliminary. For example, basing the estimate in part on OECD averages exposes it to ambiguities due to the lack of a universally accepted definition of public health, noted earlier, which creates problems in comparing public health ex-

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penditures in different countries. In addition, TFAH acknowledges explicitly that the Washington State model "uses a default population without defined demographic characteristics" and "may understate or overstate the necessary increase in public health investment when extrapolated nationwide" (Sensenig, 2007; TFAH, 2008b).

Top-Down vs. Bottom-Up Approaches

The two analyses underlying TFAH's estimate illustrate two general approaches to estimating national public health spending needs. Top-down approaches look at the total amount of spending on public health and assess whether it is adequate based on some benchmark. TFAH's comparison of public health spending in the United States with spending in other OECD countries is an example. Bottom-up approaches start with analyses of spending needs of smaller jurisdictions within the United States, such as the Washington state needs assessments relied on by TFAH, and build up from them to calculate a total for the entire population.

An alternative top-down approach is suggested by studies examining the costs incurred, such as through increased spending on medical care, or lost productivity, that are attributable to health conditions that might be prevented or reduced through effective public health measures, such as obesity (Lakdawalla et al., 2005; Thorpe et al., 2004). The argument is that increased spending on public health would be cost-effective to the extent that it would reduce these other costs. For example, if $10 billion in spending on medical care could be saved annually by preventing obesity, then perhaps that amount should be spent instead on public health. The strength of the argument depends, however, on whether the increased public health spending would in fact improve health status, and that this would in turn lead to reducing other spending. In effect, if the argument is made only in terms of dollar outlays (i.e., leaving aside the inherent superiority of prevention over subsequent treatment), the $10 billion in the example does not necessarily identify a public health spending target, but rather only establishes a maximum. How much should be budgeted for public health up to that maximum depends on how effective the public health measures would be in reducing obesity relative to their costs.

Estimates under both the top-down and bottom-up approaches should be sensitive to context. For example, both require taking into account the size of the budget reasonably available, perhaps disregarding political considerations. This also generates difficult problems. For a top-down approach, one possible relevant national "budget" is U.S. GDP. Framing the problem this way, however, arguably would require examining all possible alternatives for the proposed spending, public and private, a daunting task to say the least.

A second option that has considerable intuitive appeal is to use the total

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amount spent on health as the budget framework, including medical care, public health, and health-related research. If, however, the United States spends too much on medical care, as many believe it does, then that framework is also distorted. Adjusting for the distortion would in turn require establishing how much ideally should be spent on health care. This presents both the same problem as the proposal of comparing public health spending to GDP and additional complexities of its own. Similar issues arise for state and local budgets, and hence bottom-up approaches, since all spending involves the opportunity costs of other uses of funds, and there is no limit to the possible competing demands.

Bottom-up estimates of what spending is needed on public health also require an assessment of how effective public health spending is, which in turn requires the choice of a metric to make that assessment. Metrics employed by bottom-up research include comparative effectiveness measures such as quality-adjusted life-years (QALYs) (Kindig and Mullahy, 2010), performance of the 10 essential public health services (Mays et al., 2006), and others (Mays and Smith, 2011). None is free of problems (Zimmerman, 2011), and each may have appropriate uses, depending on the context and, as a practical matter, simple availability of the data. For example, QALYs may facilitate comparison with health care spending, and so might be more useful to the U.S. Congress, whereas performance of essential public health services may be more useful to local public health officials. As a practical matter, simple availability of the data may dictate the choice until better standardization of databases is achieved. The multiplicity of standards, however, further complicates the conceptual problems.

In any case, no methodology for estimating the amount of public health spending needed in the United States has yet gained general acceptance. Moreover, even if accurate, the existing estimates are not well suited to budget planning, in that they provide aggregate numbers and not an estimated cost of specific proposals, whether of new or existing public health activities, designed to achieve identified public health goals. Public health finance researchers have in fact recognized that at present there is a shortage of evidence concerning the value of specific investments in public health that would support such budgetary proposals (Mays and Smith, 2011). Indeed, one group of scholars has gone so far as to suggest that the issue "whether public health performance is correlated with improved community health" is itself an open question (Scutchfield et al., 2009, p. 270).

Public health finance researchers thus face both theoretical and practical difficulties in determining how much the United States should spend on public health. This also presents obvious problems in making the political case for devoting additional resources to public health. On the other hand, there are important differences between the academic research agenda and the wide variety of political communities. This means that their approaches

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to the questions are also different and, in the case of the political process, variable. There is an overlap between the research agenda for public health finance and the informational needs of political institutions, but they are not identical. Progress on the research agenda will benefit the political process, but it will not necessarily drive it. The analysis of the question thus differs depending on the setting.

The Research Agenda

Although it is something of an idealization, public health finance researchers can be considered a single academic community, whose goal is to develop a consensus on the most rationally defensible answer to the question of how much public health spending is needed, supported by the best possible evidence base. The sooner that consensus is arrived at (if ever), the better, but there is no deadline and the timetable is indefinite. Bottom-up and top-down approaches perform different functions in striving to achieve that goal.

Neither the bottom-up nor top-down approaches can avoid the conceptual problems noted above. Bottom-up approaches encounter the specific problem of choice of metrics to a greater extent than top-down ones. Unlike top-down approaches, however, bottom-up research generates information to support specific evidence-based interventions in public health. These data are also potentially useful for decision makers at all levels of government—local, state, and national—again unlike top-down estimates. In the process, the data constitute small components of an overall estimate, and are more readily converted into budget proposals than top-down estimates. The conduct of bottom-up research will also help motivate efforts to consolidate how information is recorded and made available, and targeting the goal of an aggregate estimate provides an incentive to achieve agreement, or as much as is possible, on the relevant metric or metrics.

It may be worth noting in this context that despite their disadvantages, QALYs facilitate comparison of public health interventions with medical care. QALYs fail to capture all of the relevant value achieved through improved health (Gostin, 2008). To the extent, however, that public health advocates wish to make the policy and political argument that public and population measures would reduce medical costs, and therefore be cost-effective in that sense, this may provide a reason for greater use of QALYs in public health finance research in appropriate cases. A similar argument can be made in favor of conducting research in terms of other health outcomes such as morbidity and mortality. The 10 essential public health services, on the other hand, are effectively process measures and may be less readily suited to arguments comparing the value of public health interventions with medical care.

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Bottom-up research also has to assign priorities. These presumably include the feasibility of the research. As a policy matter, however, it may be desirable to increase research on local jurisdictions with very low per capita spending on public health. To the extent that this research bears out the hypothesis that such jurisdictions have significant and urgent needs for increased funding, it could be used to support a dedicated financing mechanism to provide that funding, as discussed in the fifth section of this paper. One possibility along these lines is suggested by the model public health systems proposal, analogous to the Department of Education's "Race to the Top" program, also outlined in section five. Per capita spending in the model public health systems serving populations of various sizes could be used to set thresholds for minimum spending in jurisdictions of similar size.

Top-down estimates are not as well suited to budget planning as bottom-up estimates, but they can serve a broader hortatory or aspirational function in the policy and political processes. The methodology used to generate the existing estimates thus far can be fairly easily criticized, however, and efforts should be made to improve them. There may be a limit to the amount of precision and reliability that can be achieved, but progress toward that end will also enable top-down estimates better to perform a second, more academic function. That is, top-down and bottom-up approaches have a dialectical relationship, in that top-down estimates serve as guidelines for assessing the state of development of fine-grained research. The larger the gap between top-down and bottom-up estimates, the more that remains to be done on bottom-up research (assuming that the top-down estimate is generally accurate).

Because top-down estimates are developed not only for the amounts actually spent on public health, but also for the amounts that should be spent, this benchmark function of top-down estimates will remain relevant even if work on bottom-up estimates has reached a very high level. At present, the gap between top-down estimates and any estimates based on bottom-up research is likely to be very large. Ideally, in the long run, the two types of estimates should converge, but they would continue to be checks on each other. Thus, both top-down and bottom-up approaches are and should remain useful for academic purposes.

The Political Arena

By contrast with a theoretically unified research community, there is an enormous number of overlapping political communities. They include not only every political jurisdiction in the country, at every level of government, but countless subpopulations within each jurisdiction, such as legislatures, legislative committees, executive branch officials and agencies, and voters, which in turn have various political alliances and predilections. What will

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count as sufficient evidence that a given amount should be spent on public health, and how public health is defined for that purpose, will depend on these predispositions. Democrats will differ in this respect from both Republicans and independents. It will also depend on the time and circumstances, even for the same individual or individuals. The political and economic environment in 2012 is different from that in 1965, or even 2008.

Political communities are also presented with specific questions, to be answered at a more or less specific time. For example, legislators may be asked to vote on an annual appropriations bill or instead for a trust fund financed with an earmarked tax. A local public health board has to decide how to allocate its budget at a particular point in time with the information it has available. Elections occur on scheduled dates. In the current era of political gridlock, legislative action can be deferred seemingly indefinitely, but there are practical consequences of delay.

The upshot of considerations such as these is there is no single or unchanging standard employed in politics to assess how much spending is needed on public health, even in theory.

The Prevention and Public Health Fund included in the ACA can serve as an example. It provides for substantial increases in public health spending without specifying details, and without a dedicated financing mechanism. Members of Congress who voted in favor of the ACA, and thus the Fund, are doubtless more favorably disposed toward government spending, and spending on public health in particular, than those who voted against it. It seems likely that they would, and probably should, have been less inclined to vote for the Fund if it had provided for permanent appropriations financed with an earmarked tax (Patashnik, 2000). To the extent that bottom-up evidence in favor of public health spending is underdeveloped, and given the large amounts involved, a vote in favor of the Fund thus would appear to be supported by top-down rather than bottom-up evidence. Both as an explanation and a justification, this seems consistent both with the political inclinations of its supporters and the substantive nature of the Fund. This example concerns policy making for the federal government, but similar factors would apply analogously to decisions at the state and local level.

Politically, more evidence in favor of a given position is always better. Both top-down and bottom-up estimates can be useful depending on the context. Thus, both top-down and bottom-up approaches have a place in politics as well as in academics. In the political arena, however, this is not because of an attempt to converge on a single answer to the question of the appropriate amount of public health spending by comparing top-down with bottom-up estimates, but for practical, rhetorical purposes as well as in the interest of good policy. Nevertheless, it does result in a substantial overlap in the agendas for public health finance researchers in the political and academic contexts.

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Developing the public health finance database will take a substantial amount of time, even if efforts to do so increase markedly over present levels. As discussed in section five, laying the political groundwork for political support for increased public health spending will also require a considerable investment of time. As a result, and somewhat fortuitously, these efforts can be thought of as on somewhat similar timetables, and so can to some extent proceed in parallel.

It might be argued that in the meantime public health policy should be put on hold, or even that in the absence of compelling evidence in favor of public health interventions there should be no public health spending at all. There are presumably very few policy decisions, however, especially budgetary decisions, that are supported by truly overwhelming and irrefutable evidence. Decision makers therefore have no alternative to making choices in the face of uncertainty (Kindig and Mullahy, 2010).

On the other hand, there is no room for complacency. Asking voters or legislators to increase taxes to support new public health activities, or even to devote existing revenues to public health rather than alternative uses (including tax cuts), is challenging enough. Uncertainty about the amount of funding that is and can be put to effective use in public health makes that challenge even more formidable. The fierce competition for public funds, the distressing condition of the economy now and for the foreseeable future, and pressure to reduce government spending all dictate that finance be assigned a high priority in the public health research agenda.

This research itself requires funding. Several commentators have argued recently that public health interventions should be included in comparative effectiveness, or patient-centered outcomes, research funded by the ACA and, earlier, the American Recovery and Reinvestment Act (Kindig and Mullahy, 2010; Scutchfield et al., 2009). In view of the need to improve the evidence base, and thus the political case, for public health finance, these arguments deserve urgent and close attention.

CONCLUSIONS

The financial challenges faced by public health cannot be dealt with adequately in isolation from and ignorance of broader challenges to public finance. It is unlikely that state and local health departments will be able to obtain secure and adequate funding if government finance more generally is collapsing. It will therefore be necessary not only to pursue funding options targeted specifically to public health, but also for public health leaders to work with others in addressing these broader public finance concerns.

Public health leaders should also work to pursue funding options designed specifically to support public health, and to increase funding of public health out of whatever revenues are available. To do so effectively they must

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understand the constraints involved at all three levels of government and how they relate to one another. They must be able to convince voters and legislators of the merits of the public health activities that the revenues in question will finance. They should coordinate their efforts for reasons of both politics and policy. They should assign a high, even very high, priority to research in public health finance. The severe pressures on public health finance for the foreseeable future make all of these elements of a comprehensive strategy imperative now, if they were not already.

Both the broader threats to public finance and the difficulties more specific to public health finance are long in the making. The demographic and economic changes, and the changes in the mission of public health caused by the increased emphasis on chronic disease and upstream determinants of health, are also long-term in nature. The powerful influence of the antitax movement is partly the result of its having followed a patient, long-term strategy whose beginnings can be traced to the 1950s, with periodic successes that were first consolidated and then built upon. It has been an enormously well-orchestrated and well-financed effort that has played into and contributed to changes in the economy as well as Americans' skepticism about government.

It is unlikely that public health can match the financial resources of the antitax movement even if it joins forces with other policy communities. It does, however, need to match that movement's focus, coordination, and long-term perspective. The intellectual case for much of what public health wishes to accomplish is strong, even overwhelming, but public health must also make this case in a way that is more compelling to the average voter than it has in recent years.

REFERENCES

Aaron, H. J. 2010. The midterm elections: High stakes for health policy. *New England Journal of Medicine* 363(18):1685-1687.

Appelbaum, B. 2011 (August 27). Fed chief says politics hurt markets and nation: Bernanke suggests fiscal process is broken in U.S. Online. *The New York Times*, p. A1.

Barnett, J. L. 2011. *State and Local Government Finances Summary: 2008*. Governments Division Brief. Washington, DC: U.S. Census Bureau.

Baum, N. M., C. Desroches, E. G. Campbell, and S. D. Goold. 2011. Resource allocation in public health practice: A national survey of local public health officials. *Journal of Public Health Management & Practice* 17(3):265-274.

Bernet, P. M. 2007. Local public health agency funding: Money begets money. *Journal of Public Health Management & Practice* 13(2):188-193.

Bittman, M. July 23, 2011. Bad food? Tax it, and subsidize vegetables. *The New York Times*, SR1.

Blendon, R. J., J. M. Benson, G. K. SteelFisher, and J. M. Connolly. 2010. Americans' conflicting views about the public health system, and how to shore up support. *Health Affairs* 29(11):2033-2040.

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For the Public's Health: Investing in a Healthier Future

Brownell, K. D., and T. R. Frieden. 2009. Ounces of prevention: The public policy case for taxes on sugared beverages. *New England Journal of Medicine* 360(18):1805-1808.

Brownell, K. D., T. Farley, W. C. Willett, B. M. Popkin, F. J. Chaloupka, J. W. Thompson, and D. S. Ludwig. 2009. The public health and economic benefits of taxing sugar-sweetened beverages. *New England Journal of Medicine* 361(16):1599-1605.

Brunori, D. 2007a. *Local Tax Policy: A Federalist Perspective*, 2nd ed. Washington, DC: Urban Institute Press.

Brunori, D. 2007b. *State Tax Policy: A Political Perspective*, 2nd ed. Washington, DC: Urban Institute Press.

CBO (Congressional Budget Office). 2005. *Corporate Income Tax Rates: International Comparisons*. Washington, DC: CBO.

CBO. 2007. *The Long-Term Budget Outlook*. Washington, DC: CBO.

CBO. 2010. Statement of Douglas W. Elmendorf, director. *Trends in Federal Tax Revenues and Rates*. Committee on Finance, United States Senate. Washington, DC: CBO.

CBO. 2011a. *The Budget and Economic Outlook: Fiscal years 2011 to 2021*. Washington, DC: CBO.

CBO. 2011b. *CBO's 2011 Long-Term Budget Outlook*. Washington, DC: CBO.

CBO. 2011c. *Reducing the Deficit: Spending and Revenue Options*. Washington, DC: CBO.

CDC (Centers for Disease Control and Prevention). 2010. *National Public Health Performance Standards Program: 10 Essential Public Health Services*. http://www.cdc.gov/nphpsp/essentialServices.html (May 26, 2011).

CDC. 2011. *U.S. Obesity Trends: Trends by State 1988-2009*. http://www.cdc.gov/obesity/data/trends.html (July 12, 2011).

Census Bureau. 2011. *2010 Annual Survey of State Government Tax Collections: Summary Table*. http://www.census.gov/govs/statetax/ (July 4, 2011).

CMS (Centers for Medicare and Medicaid Services). 2011. *National Health Expenditures by Type of Service and Source of Funds, CY 1960-2009*. https://www.cms.gov/nationalhealthexpenddata/02_nationalhealthaccountshistorical.asp (June 26, 2011).

CMS. 2012. *National Health Expenditures Data-CY 1960-2010*. https://www.cms.gov/NationalHealthExpendData/downloads/tables.pdf (January 3, 2012).

CNN. 2009. *Fortune 500: Our annual ranking of America's largest corporations*. http://money.cnn.com/magazines/fortune/fortune500/2009/full_list/ (June 29, 2011).

Cooper, M. July 15, 2011. No matter how debt debate ends, governors see more cuts for states. *The New York Times*, p. A8.

Davey, M. 2011 (July 2). Minnesota shuts down, and not just for Fourth. *The New York Times*, p. A1.

Department of Health Education and Welfare. 1964. *Smoking and Health. Report of the Advisory Committee to the Surgeon General of the Public Health Service*. Washington, DC: Department of Health, Education, and Welfare.

Dillion, S. July 6, 2011. Saving money means less time for school. *The New York Times*, p. A14.

Elliott, D. J. 2010. *State and Local Pension Funding Deficits: A Primer*. Washington, DC: Brookings Institution.

Emanuel, E. J., and V. R. Fuchs. 2005. Health care vouchers—A proposal for universal coverage. *New England Journal of Medicine* 352(12):1255-1260.

Epstein, R. A. 2003. Let the shoemaker stick to his last: A defense of the old public health. *Perspectives in Biology and Medicine* 46(Suppl 3):S138-S159.

Erwin, P. C., S. B. Greene, G. P. Mays, T. C. Ricketts, and M. V. Davis. 2011. The association of changes in local health department resources with changes in state-level health outcomes. *American Journal of Public Health* 101(4):609-15.

Friedman, J. 2003. *The Decline of Corporate Income Taxes*. Washington, DC: Center on Budget Priorities and Policies.

Copyright © National Academy of Sciences. All rights reserved.

Frist, B. 2002. Public health and national security: The critical role of increased federal support. *Health Affairs* 21(6):117-130.

Gale, W., and B. Harris. 2008. The Bush tax cuts: How have they affected revenue? In *The Tax Policy Briefing book. A Citizen's Guide for the 2008 Elections and Beyond*. Washington, DC: Tax Policy Center (Urban Institute and Brookings Institution).

GAO (Government Accountability Office). 2010. *State and Local Governement: Fiscal Pressures Could Have Implications for Future Delivery of Intergovernmental Programs* (GAO-10-899). Washington, DC: GAO.

Gawande, A. December 2009. Testing, Testing: The Health-Care Bill has no Master Plan for Curbing Costs. Is That a Bad Thing? *The New Yorker*, Pp. 34-41.

Gershman, J. 2011 (July 5). Albany Lobby Efforts Shift. *The Wall Street Journal*. http://online.wsj.com/article/SB10001424052702304760604576426153610350280.html (August 28, 2011).

Gostin, L. O. 2008. *Public Health Law: Power, Duty, Restraint*, 2nd ed. Los Angeles: University of California Press.

Gostin, L. O., and M. G. Bloche. 2003. The politics of public health: A response to Epstein. *Perspectives in Biology and Medicine* 46(Suppl 3):S160-S175.

Gould, J. C. April 4, 2011. Targeted tax benefits, indexing, and the mass income tax. *Tax Notes*, Pp. 75-80.

Graetz, M. J. 2008. *100 Million Unnecessary Returns: A Simple, Fair, and Competitive Tax Plan for the United States*. New Haven, CT: Yale University Press.

Graetz, M. J. 2011. *The End of Energy: The Unmaking of America's Environment, Security, and Independence*. Boston, MA: MIT Press.

Gray, S. March 4, 2011. Washington mulls a corporate tax overhaul. *TIME Magazine*. http://www.time.com/time/business/article/0,8599,2057093,00.html (August 29, 2011).

Halverson, P. K., G. P. Mays, and A. D. Kaluzny. 2000. Working together? Organizational and market determinants of collaboration between public health and medical care providers. *American Journal of Public Health* 90(12):1913-1916.

Hartocollis, A. 2010 (July 3). Failure of state soda tax plan reflects power of an antitax message. *The New York Times*, p. A14.

Honoré, P. A., E. J. Simoes, W. J. Jones, and R. Moonesinghe. 2004. Practices in public health finance: An investigation of jurisdiction funding patterns and performance. *Journal of Public Health Management & Practice* 10(5):444-450.

Honoré, P. A., P. J. Fos, X. Wang, and R. Moonesinghe. 2011. The effects on population health status of using dedicated property taxes to fund local public health agencies. *BMC Public Health* 11(1):471.

Hook, J., and C. Boles. 2011 (June 22). House GOP digs in on debt ceiling: Senate's McConnell gets no traction with idea to boost borrowing cap without broader budget deal. *The Wall Street Journal*. http://online.wsj.com/article/SB10001424052702304070104576399423847035368.html (August 29, 2011).

Hutchison, C. 2011 (June 23). *Support for Soda Tax Fizzles at the American Medical Association*. http://abcnews.go.com/Health/Diet/soda-tax-support-lags-american-medical-association/story?id=13905027 (September 20, 2011).

IOM (Institute of Medicine). 1988. *The Future of Public Health*. Washington, DC: National Academy Press.

IOM. 2003. *The Future of the Public's Health in the 21st Century*. Washington, DC: The National Academies Press.

IRS (Internal Revenue Service). 2011. *U.S. Internal Revenue Service Statistics of Income: Estate Tax Statistics 2007*. http://www.irs.gov/taxstats/indtaxstats/article/0,,id=210652,00.html (July 9, 2011).

Jacobson, D. B., B. G. Raub, and B. W. Johnson. 2007. The estate tax: Ninety years and counting. In *Internal Revenue Service SOI Bulletin*. Washington, DC: IRS.

Copyright © National Academy of Sciences. All rights reserved.

For the Public's Health: Investing in a Healthier Future

Kania, J., and M. Kramar. 2011. Collective impact. *Stanford Social Innovation Review* Winter:36-41.

Kindig, D., and J. Mullahy. 2010. Comparative effectiveness of what? Evaluating strategies to improve population health. *Journal of the American Medical Association* 304(8):901-902.

Kingdon, J. W. 1995. *Agendas, Alternatives, and Public Policies*. New York: Longman Harper Collins College Publishers.

Kleinbard, E. D. 2011. The lessons of stateless income. *Tax Law Review* 11(9): 699-744.

Lakdawalla, D. N., D. P. Goldman, and B. Shang. 2005. The health and cost consequences of obesity among the future elderly. *Health Affairs* 24(Suppl 2):S30-S41.

Lav, I. J., E. McNichol, and R. Zahradnik. 2005. *Faulty Foundations: State Structural Budget Problems and How to Fix Them*. Washington, DC: Center on Budget and Policy Priorities.

Lee, P., T. Oliver, A. E. Benjamin, and D. Lee. 2006. Politics, health policy, and the American character. *Stanford Law Polical Review* 17(1):7-32.

Leicester, A., and F. Windmeijer. 2004. *The "Fat Tax." Economic Incentives to Reduce Obesity.* Briefing Notes No. 49. London: The Institute for Fiscal Studies.

Levi, J., C. Juliano, and M. Richardson. 2007. Financing public health: Diminished funding for core needs and state-by-state variation in support. *Journal of Public Health Management & Practice* 13(2):97-102.

Ludwig, D. S. 2007. Childhood obesity: The shape of things to come. *New England Journal of Medicine* 357(23):2325-7.

Mays, G. P., and S. A. Smith. 2009. Geographic variation in public health spending: Correlates and consequences. *Health Services Research* 441(5 Pt 2):1796-1817.

Mays, G. P., and S. A. Smith. 2011. Evidence links increases in public health spending to declines in preventable deaths. *Health Affairs* 30(8):1589-1593.

Mays, G. P., P. K. Halverson, and F. D. Scutchfield. 2003. Behind the curve? What we know and need to learn from public health systems research. *Journal of Public Health Management & Practice* 9(3):179-82.

Mays, G. P., P. K. Halverson, E. L. Baker, R. Stevens, and J. J. Vann. 2004a. Availability and perceived effectiveness of public health activities in the nation's most populous communities. *American Journal of Public Health* 94(6):1019-1026.

Mays, G. P., M. C. McHugh, K. Shim, D. Lenaway, P. K. Halverson, R. Moonesinghe, and P. Honoré. 2004b. Getting what you pay for: Public health spending and the performance of essential public health services. *Journal of Public Health Management and Practice* 10(5):435-443.

Mays, G. P., M. C. McHugh, K. Shim, N. Perry, D. Lenaway, P. K. Halverson, and R. Moonesinghe. 2006. Institutional and economic determinants of public health system performance. *American Journal of Public Health* 96(3):523-31.

Mays, G. P., S. A. Smith, R. C. Ingram, L. J. Racster, C. D. Lamberth, and E. S. Lovely. 2009. Public health delivery systems: Evidence, uncertainty, and emerging research needs. *American Journal of Preventive Medicine* 36(3):256-65.

McCarty, N., K. T. Poole, and H. Rosenthal. 2008. *Polarized America: The Dance of Ideology and Unequal Riches*. Cambridge, MA: MIT Press.

McNally, L., and R. N. Pine. 2009. Partnering to advance public health: A foundation supports public programs. *Health Affairs* 28(2):578-83.

Moulton, A. D., P. K. Halverson, P. A. Honoré, and B. Berkowitz. 2004. Public health finance: A conceptual framework. *Journal of Public Health Management Practice* 10(5):377-382.

Murray, C. J., S. Kulkarni, and M. Ezzati. 2005. Eight Americas: New perspectives on US health disparities. *American Journal of Preventive Medicine* 29(Suppl 5):S4-S10.

NASBO (National Association of State Budget Officers). 2010. *Fiscal Year 2009 State Expenditure Report.* Washington, DC: NASBO.

Copyright © National Academy of Sciences. All rights reserved.

Novy-Marx, R., and J. D. Rauh. 2011. The Revenue Demands of Public Employee Pension Promises. Simon School Working Paper No. FR 11-21. http://ssrn.com/abstract=1973668 (accessed January 20, 2012).

OECD (Organisation for Economic Co-operation and Development). 2007. *Policy brief: Globalisation, Jobs and Wages*. Washington, DC: OECD.

Oliver, T. R. 2006. The politics of public health policy. *Annual Review of Public Health* 27(1):195-233.

Paletta, D. 2011 (July 1). Obama pushes for a deficit deal by July 22. *The Wall Street Journal*. http://online.wsj.com/article/SB10001424052702303763404576418231837713932.html#printMode (August 27, 2011).

Patashnik, E. M. 2000. *Putting Trust in the US Budget: Federal Trust Funds and the Politics of Commitment*. Cambridge, UK: Cambridge University Press.

Piketty, T., and E. Saez. 2007. How progressive is the US federal tax system? A historical and international perspective. *Journal of Economic Perspectives* 21(1):3-24.

Rich, J. D., S. E. Wakeman, and S. L. Dickman. 2011. Medicine and the epidemic of incarceration in the United States. *New England Journal of Medicine* 364(22):2081-2083.

Ross, P. July 6, 2011. *Social Impact Bonds: Boston Company Is Looking for Capitalists to Invest in Governmental Social Program*. http://www.commonwealthmagazine.org/Investigations/What-Works/2011/Summer/001-Social-impact-bonds.aspx (August 28, 2011).

Sack, K. 2011. A city's wrenching budget choices. *The New York Times*, July 5, 2011, p. A1.

Schmitt, J., K. Warner, and S. Gupta. 2010. *The High Budgetary Cost of Incarceration*. Washington, DC: Center for Economic Policy and Research.

Scutchfield, F. D., M. W. Bhandari, N. A. Lawhorn, C. D. Lamberth, and R. C. Ingram. 2009. Public health performance. *American Journal of Preventive Medicine* 36(3):266-272.

Sensenig, A. L. 2007. Refining estimates of public health spending as measured in National Health Expenditures Accounts: The United States experience. *Journal of Public Health Management Practice* 13(2):103-114.

Sessions, S. Y., and P. R. Lee. 2008a. A road map for universal coverage: Finding a pass through the financial mountains. *Journal of Health Politics, Policy and Law* 33(2):155-197.

Sessions, S. Y., and P. R. Lee. 2008b. Using tax reform to drive health care reform. *JAMA* 300(16):1929-1931.

Social Finance. 2010. *Towards a New Social Economy: Blended Value Creation Through Social Impact Bonds*. London: Social Finance.

Strom, S. 2011 (June 14). A city tries to slim down. *The New York Times*, p. B1.

Sturm, R. 2002. The effects of obesity, smoking, and drinking on medical problems and costs. *Health Affairs* 21(2):245-253.

Suddath, C. 2009 (August 25). The U.S. deficit. http://www.time.com/time/magazine/article/0,9171,1919169,00.html (August 28, 2011).

Surgeon General. 2001. *Surgeon General Launches Effort to Develop Action Plan to Combat Overweight, Obesity*. Washington, DC: HSS.

Tax Policy Center. 2008. The numbers: What are the federal government's sources of revenue? In *The Tax Policy: A Citizens' Guide for the 2008 Election and Beyond*. Washington, DC: Urban Institute and Brookings Institution.

TFAH (Trust for America's Health). 2008a. Blueprint for a healthier America: Modernizing the federal public health system to focus on prevention and preparedness. In *Blueprint for a Healthier America*. Washington, DC: TFAH.

TFAH. 2008b. *Prevention for a Healthier America: Investments in Disease Prevention Yield Significant Savings, Stronger Communities*. Washington, DC: TFAH.

TFAH. 2009. *Shortchanging America's Health: A State-by-State Look at how Federal Public Health Dollars are Spent and Key State Health Facts*. Washington, DC: TFAH.

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For the Public's Health: Investing in a Healthier Future

The Economist. 2010 (April 15). *Social Mobility and Inequality*: *Upper Bound*. http://www.economist.com/node/15908469/ (July 7, 2011).

The Economist. 2011a (July 7). *Public-Sector Pensions: Blood on the Table, Money in the Bank. Atlanta's Mayor and City Council Strike a Deal to Control Pension Costs*. http://www.economist.com/node/18928863 (July 7, 2011).

The Economist. 2011b (April 20). *A Special Report on Democracy in California: The People's Will*. http://www.economist.com/blogs/multimedia/2011/04/special_report_democracy_california (April 23, 2011).

The Economist. 2011c (May 24). *The Texas Budget: A Blow to the Model*. http://www.economist.com/node/18442083 (July 2, 2011).

The New York Times. 2011a (June 22). *A $176 Billion Gap for Public Pensions*. http://www.nytimes.com/interactive/2011/06/21/business/union-graphic.html (June 22, 2011).

The New York Times. 2011b (August 13). A growing gloom for states and cities: The Republican-led debt crisis will only add to budget cutbacks in capitols and city halls, p. SR10.

Thorpe, K. E., C. S. Florence, D. H. Howard, and P. Joski. 2004. The impact of obesity on rising medical spending. *Health Affairs* (Suppl Web Exclusives):480-486. http://content.healthaffairs.org/content/early/2004/08/25/hlthaff.w4.437.short (August 25, 2010).

U.S. Department of Education. 2011. *Obama Administration Announces $500 Million for Race to the Top-Early Learning Challenge*. http://www.ed.gov/news/press-releases/obama-administration-announces-500-million-race-top-early-learning-challenge (July 9, 2011).

U.S. Government Revenue. 2011. *Government Revenue Details 2008*. http://www.usgovernmentrevenue.com/yearrev2008_0.html (July 5, 2011).

Wildasin, D. E. 2009 (June 1-2). *Intergovernmental Transfers to Local Governments*. Paper presented at the Lincoln Institute Conference on the Changing Landscape of Local Public Revenues. Boston, MA: The Lincoln Institute of Land Policy.

Wooldridge, A., and J. Micklethwait. 2004. *The Right Nation: Conservative Power in America*. New York: Penguin Press.

Zimmerman, F. J. 2011. Using marketing muscle to sell fat: The rise of obesity in the modern economy. *Annual Review of Public Health* 32:285-306.

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Appendix E

Funding Diagram for Public Health

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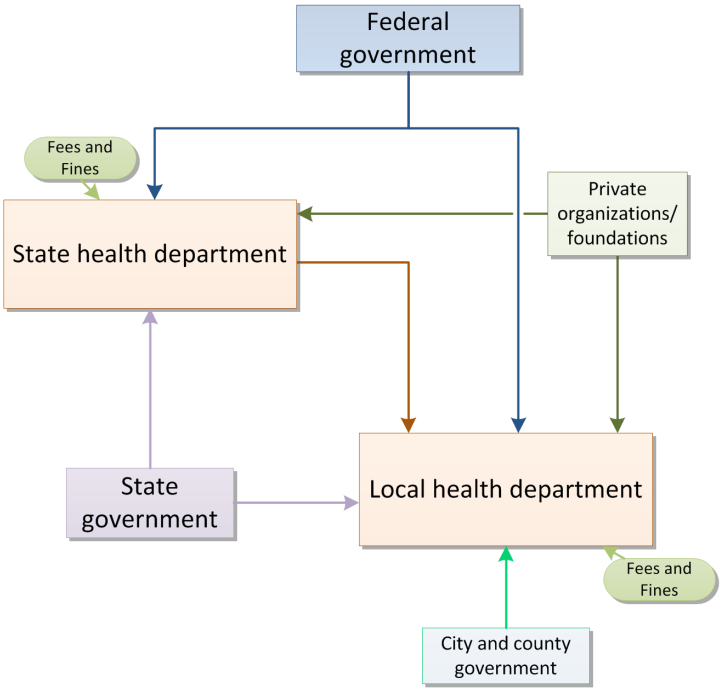

This figure illustrates the complexity of the current systems of funding of public health. The left diagram represents a traditional, relatively parsimonious view of funding. In it, the federal government gives block and categorical grants (often originating in Congress) to state health departments and gives direct support to local health departments. The state government gives the state health departments discretionary funds, categorical or programmatic funds, and dedicated revenue. Some of the funding is passed on to local health departments, which also receive funding from city and county government. Both the state and local health departments receive some funding from private groups and receive fees, fines, and, in some cases, Medicaid and Medicare dollars. The left diagram does not communicate the expansive, complicated, and intertwining nature of the delivery of public health, as the right diagram begins to illustrate.

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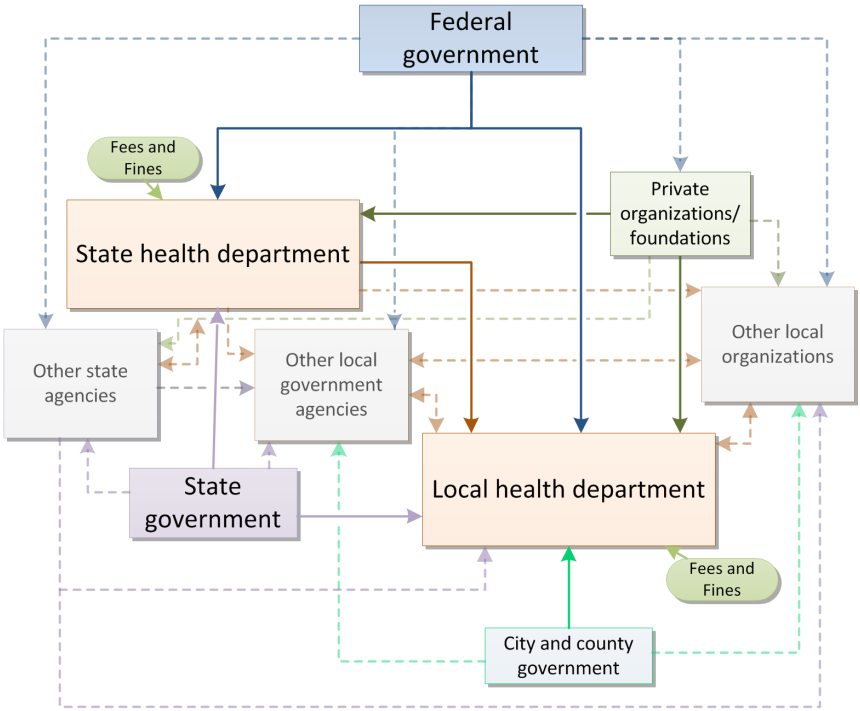

In addition to the main organizations identified in the left diagram, other groups—such as other state agencies, local agencies, and local organizations—create policies and deliver programs and services that affect the public's health. Consider Medicaid, behavioral health, and environmental health and protection as examples. These other organizations pay local health departments, other local government agencies, and other local organizations (nongovernment organizations and community-based organizations) to provide valuable public health services. Those interrelationships greatly affect the public's health but are difficult to track and quantify. Even among traditional government public health, tracking revenue and expenditures is extremely difficult, given the variety of funders, services, and billing systems involved (discussed in more detail in Chapter 3).

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Appendix F

For the Public's Health: The Role of Measurement in Action and Accountability

Report Summary

For the Public's Health: The Role of Measurement in Action and Accountability, this first of three reports, builds on earlier Institute of Medicine (IOM) efforts to describe the activities and role of the public health system, which was defined in the 2003 report *The Future of the Public's Health in the 21st Century* (IOM, 2003) as the intersectoral system that comprises the government public health agencies and various partners, including communities, the health care delivery system, employers and business, the media, and academia. In the present report, the system has been redefined as simply "the health system." The modifiers *public* and *population* are poorly understood by most people other than public health professionals and may have made it easier to misinterpret or overlook the collective influence and responsibility that all sectors have for creating and sustaining the conditions necessary for health. In describing and using the term *the health system*, the committee seeks to reinstate the proper and evidence-based understanding of health as not merely the result of medical or clinical care but the result of the sum of what we do as a society to create the conditions in which people can be healthy (IOM, 1988).

The committee's charge in preparing this report was to "review population health strategies, associated metrics, and interventions in the context of a reformed health care system. The committee will review the role of score cards and other measures or assessments in summarizing the impact of the public health system, and how these can be used by policy-makers and the community to hold both government and other stakeholders accountable

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and to inform advocacy for public health policies and practices."[1] At the committee's first meeting, the sponsor clarified the intent of the reference to the "public health system" to mean the multisectoral system described in the 2003 IOM report rather than the government public health infrastructure alone (IOM, 2003).

This report is the committee's response to its first task and hence focuses on measurement and on the U.S. health statistics and information system, which collects, analyzes, and reports population health data, clinical care data, and health-relevant information from other sectors. However, data and measures are not ends in themselves, but rather tools to inform the myriad activities (programs, policies, and processes) developed or undertaken by governmental public health agencies and their many partners, and the committee recognizes that its later reports on the law and funding will complete its examination of three of the key drivers of population health improvement.

The committee finds that the United States lacks a coherent template for population health information that could be used to understand the health status of Americans and to assess how well the nation's efforts and investments result in improved population health. The committee recommends changes in the processes, tools, and approaches used to gather information on health outcomes and to assess accountability. This report contains four chapters that offer seven recommendations relevant to public health agencies, other government agencies, decision-makers and policy-makers, the private sector, and the American public.

The national preoccupation with the cost of clinical care evident in the lead-up to the passage of the Affordable Care Act of 2010 is well founded, and changes in the system's pricing, labor, processes, and technology are essential and urgent (see Chapter 1). However, improving the clinical care delivery system's efficiency and effectiveness will probably have only modest effects on the health of the population overall in the absence of an ecologic, population-based approach to health improvement. Unhealthy communities and unfavorable socioeconomic environments will continue to facilitate unhealthy choices and unhealthy environments.

The expected reform of the clinical care delivery system and the committee's understanding of the centrality of socioenvironmental determinants of health led it to view measures of health outcomes (often presented as indicators for public or policy-maker consumption and conveying statistical data directly or in a composite form) as serving three primary functions:

[1]Although the committee uses clinical care system in the report to refer to the health care or medical care delivery system, the language in this quotation comes directly from the sponsor's charge to the committee, so it was not changed.

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- To provide transparent and easily understood information to members of communities and the public and private entities that serve them about health and the stakeholders that influence it locally and nationally.
- To galvanize and promote participation and responsibility on the part of the public and institutional stakeholders (businesses, employers, community members, and others) that have roles to play in improving population health.
- To foster greater accountability for performance in health improvement on the part of government health agencies, other government entities whose portfolios have direct bearing on the health of Americans, and private-sector and nonprofit-sector contributors to the health system.

The committee believes that analysis and use of health and relevant nonhealth data and measures are a necessary complement to and facilitator of other efforts in the transformation to healthier people, healthier community environments, and a strong, competitive national economy. Achieving those outcomes relies on an integration and building of synergy between the best evidence-based interventions at the population level and in the clinical setting. Measurement of health outcomes and performance can spur change—as demonstrated by communities that have been able to "move the needle" in their own local efforts to improve the conditions for health and in the clinical care system's efforts to improve quality.

More complete, useful, timely, and geographically pertinent information is a necessary but not sufficient ingredient to facilitate heightened community engagement and improved performance by various stakeholders in the health system, defined as encompassing the "activities undertaken within the formal structure of government and the associated efforts of private and voluntary organizations and individuals" (IOM, 1988, 2003).

In Chapter 1, the committee constructs its case for change that will lead to a transformed health statistics and information system and to a more concrete framework for placing measurement in the service of accountability. The committee's case includes an overview of the literature on the determinants of health and implications for the issues discussed in the remainder of the report.

In Chapter 2, the committee discusses the national health statistics and information enterprise. That enterprise is large and productive, but it lacks optimal coordination, it has gaps that impede its contributions to understanding of and improvement in population health outcomes, it does not shed sufficient light on the relevance of the determinants of health nationally or in communities, and it does not sufficiently inform about how the nation or communities can achieve improvements in health apart from

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those provided by traditional public health programs and by clinical care. For example, such health outcomes as infant mortality and cardiovascular disease expose the limits of a national health strategy that directs the vast majority of its resources toward change in the clinical care delivery system without equally aggressive attacks on the loci of conditions that lead to the adoption of unhealthy behaviors and creation of unhealthy environments. Without understanding and acting on those important conditions that can improve people's ability to live healthy lives, the United States will continue to incur needless clinical care costs, and the health of the population will fall further behind that of other nations.

In Chapter 3, the committee offers a series of recommendations to address the challenges described in Chapter 2, beginning with a transformation of the nation's primary health statistics agency. The transformation, the committee believes, has the potential to improve system-wide coordination and capacity to ensure that needed data are available to health-system partners. That is, to ensure that the best evidence is built through research and modeling to facilitate effective, efficient, and equitable actions to improve population health. The chapter's other recommendations are for the development and adoption of three types of measures that could better inform the public, decision-makers, public health practitioners, and their many partners about health outcomes and their determinants; an annual report on the socioeconomic determinants of health; modeling for predictive and systems use; data-sharing between public health agencies and medical care organizations; and public health agency reporting on clinical care performance pertinent to population health.

In Chapter 4, the committee uses the lens of measurement to examine and discuss system performance. It reviews the responsibilities of all stakeholders in the health system and outlines a framework for defining accountability and holding stakeholders accountable for the contributions they can make to population health. At the end of the chapter, the committee envisions what could happen in a transformed, high-performance health system in which the capacities of local laws, workplace policies, business decisions, clinical encounters, and public participation are harnessed to achieve marked gains in two exemplar health outcomes in individuals and communities: infant mortality and cardiovascular disease.

RECOMMENDATIONS

The committee finds that at all levels of American life—including local, state, and national—decision-makers lack sufficient information to make important choices about the health of their communities. That is due in part to the lack of sufficient coordination, integration, coherence, and capacity of the complex, multisectoral health statistics and information

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enterprise that generates, analyzes, and translates pertinent information for decision-makers and the public. The report's first recommendation proposes a solution.

Recommendation 1
The committee recommends that:

1. **The Secretary of Health and Human Services transform the mission of the National Center for Health Statistics to provide leadership to a renewed population health information system through enhanced coordination, new capacities, and better integration of the determinants of health.**
2. **The National Prevention, Health Promotion, and Public Health Council include in its annual report to Congress on its national prevention and health-promotion strategy an update on the progress of the National Center for Health Statistics transformation.**

The committee finds that the nation's population health statistics and information enterprise lacks three types of measures that could support the information needs of policy-makers, public health officials, health system partners, and communities. These are: a standardized set of measures that can be used to assess the intrinsic health of communities in and of themselves; a standardized set of health outcome indicators for national, state, and local use; and a summary measure of population health that can be used to estimate and track health-adjusted life expectancy (HALE)[2] for the United States. To elaborate on each of the measures, despite a long history of efforts to develop and implement the summary measure of population health in national data sets, such as National Center for Health Statistics (NCHS) surveys and the Healthy People objectives, no summary measure appropriate for calculating HALE has been adopted for routine use by federal agencies. Also, there currently is no coordinated, standard set of true measures of a community's health—not aggregated information about the health of individuals residing in a community, but rather measures of green space, availability of healthy foods, land use and zoning practices that are supportive of health, safety, social capital, and social cohesion, among many other determinants of health. Finally, the committee notes a proliferation of health outcome indicator sets (measures of distal health

[2]A definition of health-adjusted life expectancy (HALE): "Year-equivalents of full health that an individual can expect to live if exposed at each age to current mortality and morbidity patterns. Years of less than full health are weighted according to severity of health conditions. The HALE calculation modifies a standard life expectancy calculation by weighting the number of life years lived by each age group using the mean health state score for that age group" (Statistics Canada, 2006). Additional discussion of HALE and of summary measures of population health is provided in Chapter 3.

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outcomes such as disease rates and disease-specific death rates), some of high quality, and all designed for different purposes but with a degree of overlap and the potential to cause confusion among decision-makers. The committee was not constituted to and did not endeavor to develop lists of proposed indicators. The process of developing and reaching evidence-based consensus on standardized indicator sets will require considerable research, broad-based discussion (involving all relevant parties), and priority-setting to come up with parsimonious sets. Research would include modeling and other efforts to elucidate the linked nature of many determinants of health and intermediate indicators of health. Clarifying those relationships can lead to development of useful measures at all geographic levels. A national effort toward such elucidation may initially require defining a modest core set that all localities would be encouraged to use (for example, to support comparisons and allow "rolling up" from the local to the state and even national levels); additional optimal indicators could be identified for other outcomes or community characteristics of interest to particular localities.

Recommendation 2
The committee recommends that the Department of Health and Human Services support and implement the following to integrate, align, and standardize health data and health-outcome measurement at all geographic levels:

a. A core, standardized set of indicators that can be used to assess the health of communities.
b. A core, standardized set of health-outcome indicators for national, state, and local use.[3]
c. A summary measure of population health that can be used to estimate and track health-adjusted life expectancy for the United States.

Ideally, the development of the indicators described above will be conducted with advice from a fully resourced and strengthened NCHS (see Recommendation 1) and input from other relevant stakeholders, including other agencies and organizations that collect, analyze, and report data; community-level public health practitioners; and the public health research community.

Because the summary measure of population health in part (c) would serve as a marker of the progress of the nation and its communities in improving health, it should be implemented in data-collection and public-

[3]The conception of a community may differ from one context to another, and it could range from a neighborhood to a county. Local decision-makers may include mayors, boards of supervisors, and public health officials. The notion of local may also vary (from census tract or ZIP code to city or county) depending on planning or research objectives and many other factors.

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communication efforts at the federal level (such as the periodic Healthy People effort, which as discussed in Chapter 3 has attempted to include such a summary measure in the past) and at state and local levels. The committee believes that public officials need to take steps to educate Americans with respect to the meaning of summary measures of population health and their linkage to determinants that are amenable to action at individual and societal levels. Promotion of and education on the summary measure of population health will be needed if it is to can gain traction as a key marker of the progress of the nation and its communities in improving health.

Many commentators in the field have expressed great expectations about the potential of health-information technology, such as electronic health records, to inform population health activities and public health practice, and the Affordable Care Act calls for investment to inform public health and population health data-gathering. However, great care is needed to ensure that new investment meets all the stated goals, is not used largely to maximize the use and usefulness of clinical care data in the care delivery system in isolation from population health stakeholders, and gives high priority to accuracy and safeguarding of confidentiality and privacy.

Despite broad recognition in health circles of the vital importance of nonclinical determinants of health in shaping population health, the committee has found that the United States does not have a centralized federal comprehensive annual report that highlights and tracks progress on the root causes of poor health at the population level. A newly strengthened and adequately resourced NCHS may be well suited to assume that responsibility.

Recommendation 3
The committee recommends that the Department of Health and Human Services produce an annual report to inform policy-makers, all health-system sectors, and the public about important trends and disparities in social and environmental determinants that affect health.

The committee was asked to consider the implications of health care reform for population health and for the public health infrastructure in the context of measurement. It is unclear what effects the Affordable Care Act will have on public health agencies' role in the delivery of clinical services. However, the committee found that the Affordable Care Act's emphasis on prevention and its other population health–oriented provisions offer an opportunity to consider ways to integrate clinical care and public health efforts to contribute to improving population health.

Both clinical care and public health stakeholders need to benefit from the data-sharing relationship. For example, clinicians need easier access to the data that they submit to government entities, access to analyses to help

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them to improve the appropriateness of the care they deliver, and access to other population health data (such as disparities and determinants) pertinent to the health status of the communities they serve and how they compare with the larger population so that they can tailor clinical care, outreach, and community services to meet needs better and improve outcomes. Similarly, clinical care system data have been shown to be an important source of syndromic surveillance information for infectious diseases, small-area health data, and service use patterns to inform population health efforts, including filling gaps in data available from other sources (NCVHS, 2010).

Recommendation 4
The committee recommends that governmental public health agencies partner with medical care organizations and providers in their jurisdictions to share information[4] derived from clinical-data sources, when appropriate, to inform relevant population health priorities. Such information will support core health indicators that are otherwise unavailable at some or all geographic levels.

The committee also believes that public health agencies can play an important role in reporting to the public on clinical care system performance. They already do to some extent in various states and jurisdictions with regard to specific services and care settings. There are important concerns about confidentiality and privacy that must be weighed along with the value of open disclosure and analysis. However, much more could be communicated to the public in an easy-to-understand format and in the context of a broader effort to inform and educate the public about effectiveness and efficiency in clinical care and to improve patients' decision-making.

Recommendation 5
The committee recommends that state and local public health agencies in each state collaborate with clinical care delivery systems to assure that the public has greater awareness of the appropriateness, quality, safety, and efficiency of clinical care services delivered in their state and community. Local performance reports about overuse, underuse, and misuse should be made available for selected interventions (including preventive and diagnostic tests, procedures, and treatment).

[4]Information shared will generally be deidentified and aggregated. In some circumstances, however, the data are and must be tracked individually (for example, for infectious-disease reporting and immunization-registry purposes). Variations in local needs and public health authority may lead to other types of data-use agreements.

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Chapter 2 highlights both the extraordinary capabilities of the population health statistics and information available to support population health improvement activities and the substantial gaps that remain. Gaps include an understanding of some of the more recently conceptualized and studied complex causal and interrelated pathways to health outcomes, such as the contributions of social cohesion. The gaps make the work of decision-makers and communities more difficult because they lack information needed to support policy-making, health-needs priority-setting, resource allocation, and other aspects of planning. The committee believes that an array of modeling techniques can help to fill knowledge gaps, advance the state of the science, and provide better and more timely information to decision-makers and stakeholders.

Recommendation 6
The committee recommends that the Department of Health and Human Services (HHS) coordinate the development and evaluation and advance the use of predictive and system-based simulation models to understand the health consequences of underlying determinants of health. HHS should also use modeling to assess intended and unintended outcomes associated with policy, funding, investment, and resource options.

The committee concludes that an accountability framework is needed that includes (1) reaching agreement among health-system stakeholders and those holding them accountable on specific plans of action for targeting health priorities; (2) holding implementing agencies or stakeholders accountable for execution of the agreed-on plans; and (3) measuring execution and outcomes and agreeing on a revised plan of action (an iterative loop). Chapter 4 highlights two types of accountability: contract accountability, referring to the financial and statutory relationships between government public health agencies (and to a smaller extent nonprofit public health organizations) and their funders; and compact accountability (or mutual accountability), referring to the agreement-based relationships among other stakeholders and with the community.

Recommendation 7
The committee recommends that the Department of Health and Human Services work with relevant federal, state, and local public-sector and private-sector partners and stakeholders to

1. **Facilitate the development of a performance-measurement system that promotes accountability among governmental and private-sector organizations that have responsibilities for protecting and improving population health at local, state, and national levels.**

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The system should include measures of the inputs contributed by those organizations (e.g., capabilities, resources, activities, and programs) and should allow tracking of impact on intermediate and population health outcomes.

2. **Support the implementation of the performance measurement system by**
   a. **Educating and securing the acceptance of the system by policy-makers and partners.**
   b. **Establishing data-collection mechanisms needed to construct accountability measures at appropriate intervals at local, state, and national levels.**
   c. **Encouraging early adoption of the system by key government and nongovernmental public health organizations and use of the system for performance reporting, quality improvement, planning, and policy development.**
   d. **Assessing and developing the necessary health-system capacity (e.g., personnel, training, technical resources, and organizational structures) for broader adoption of the framework, including specific strategies for steps to address nonperformance by accountable agencies and organizations.**

Strategies to address nonperformance could (depending on the stakeholder) range from technical assistance, training, and mentorship to direct oversight and assumption of responsibilities and from consolidation with other jurisdictions (or regionalization) to pooling of resources or sharing of specific resources and expertise to increase agency capacity and meet performance standards to ensure that every person in every jurisdiction has access to a full set of public health services. Such strategies would be applied in a stepwise fashion that builds capacity locally and improves the health of the community.

CONCLUSION

The first decade of the 21st century has been an extremely active and productive time for health-outcome and other types of indicators. Multiple organizations have drawn on federal and other government data to derive or develop myriad indicators of the various dimensions of population health—from distal outcomes to underlying and intermediate causal factors. However, the proliferation of indicator sets (varied in quality and purpose) has the potential to create confusion and further fragmentation in a field that is already splintered among numerous public, private, and nonprofit producers, translators, conveyors, and users of data.

The committee has examined the role of data and indicators in inform-

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ing action and creating accountability and has offered recommendations that if implemented can lead to a more coherent, efficient, and useful health information system. The changes and challenges of the future, ranging from an aging population to economic hardship, require a system that fully integrates the determinants of health perspective into its instruments and methods, that uses the benefits of new technologies to their fullest advantage to increase efficiency and maximize resources, and that builds information bridges among sectors. Finally, the health information system must be intensely focused on the needs of end users (communities and decision-makers at all geographic levels), engaging them in the evolution of efforts toward coherence, standardization, and rationalization of a measurement capacity that advances the health of the public.

REFERENCES

IOM (Institute of Medicine). 1988. *The Future of Public Health*. Washington, DC: National Academy Press.

IOM. 2003. *The Future of the Public's Health in the 21st Century*. Washington, DC: The National Academies Press.

NCVHS (National Committee on Vital and Health Statistics). 2010. *Toward Enhanced Information Capacities for Health: An NCVHS Concept Paper*. Washington, DC: HHS.

Statistics Canada. 2006. *Population Health Impact of Disease in Canada (PHI): Glossary*. http://www.phac-aspc.gc.ca/phi-isp/glossary-eng.php (November 2, 2010).

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Appendix G

For the Public's Health: Revitalizing Law and Policy to Meet New Challenges

Report Summary

For the Public's Health: Revitalizing Law and Public Policy to Meet New Challenges, the second of three reports by the Committee on Public Health Strategies to Improve Health, builds on earlier Institute of Medicine efforts to describe the activities and role of the public health system. As defined in the 2003 report *The Future of the Public's Health in the 21st Century* (IOM, 2003), the system is multi-sectoral and comprises governmental public health agencies and various partners, including the community (individuals and organizations), the clinical care delivery system, employers and business, the mass media, and academia, or more broadly, the education sector. The committee's first report (IOM, 2011) redefines the system as simply "the health system." By using this term, the committee seeks to reinstate the proper and evidence-based understanding of health as not merely the result of clinical care, but the result of the sum of what we do as a society to create the conditions in which people can be healthy (IOM, 1988).

The committee's charge in preparing the current report was to "review how statutes and regulations prevent injury and disease, save lives, and optimize health outcomes" and to "systematically discuss legal and regulatory authority; note past efforts to develop model public health legislation; and describe the implications of the changing social and policy context for public health laws and regulations."

"Law is foundational to U.S. public health practice. Laws establish and delineate the missions of public health agencies, authorize and delimit public health functions, and appropriate essential funds," wrote Goodman and colleagues (2006, p. 29). The law is also one of the main "drivers" facilitating population health improvement. The committee believes now is a critical

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time to examine the role and usefulness of the law and public policy more broadly, both in and outside the health sector, in efforts to improve population health. This sense of urgency is due to recent and evolving developments in the following areas: the sciences of public health; the economy (i.e., the economic crisis and the great uncertainty and severe budget cuts faced by governmental public health agencies); the social and legislative arenas (e.g., the *Affordable Care Act*); the functioning of public health (e.g., fragmentation of government response to public health issues, lack of interstate and intersectoral coordination of policies and regulations); and the health of the population (e.g., data on the increasing prevalence of obesity and poor rankings in international comparisons of major health indicators).

In the report's second chapter, the committee examines the laws that codify the mission, structure, duties, and authorities of public health agencies. The chapter also examines the loci—federal, state, and local—of government action to manage different types of health risk, as well as the interaction among the levels of government. In the third chapter, the committee discusses statutes, regulations, and court litigation as tools specifically designed to improve the public's health. In the fourth chapter, the report explores non-health laws and policies that are enacted or promulgated in other sectors of government, but have potentially important impacts on the public's health. These include public policy in areas such as transportation, agriculture, and education. Numerous examples of policies adopted in various sectors of government have had unintended consequences for health. These include (1) agricultural subsidies that spurred the development of inexpensive sweeteners, which are a key component of nutrient-poor foods and beverages, and (2) a national education policy that has led to diminished and even nonexistent physical education in schools.[1] The chapter discusses the intersectoral nature of the influences on the public's health, and refers to structured ways to consider health outcomes in all policymaking—a "Health in All Policies" (HIAP) approach. This approach takes into account health-producing or health-harming activities in all parts of government, as well as those of private sector actors. In this chapter, the committee also continues its discussion of the broad determinants of health begun in its first report, but now in the context of legal and policy interventions, many located outside the health sector or involving multiple sectors. The chapter ends with a discussion of the evidence needed for "healthy" policymaking.

The report's key messages focus on three major areas. First, the committee finds that laws and public policies that pertain to population health warrant systematic review and revision, given the enormous transformations in the pract-ice, context, science, and goals of public health agencies and

[1]For a discussion of the effect of the No Child Left Behind policy on physical education in schools, see http://sports.espn.go.com/espn/otl/news/story?id=4015831.

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changes in society as a whole. Second, the committee urges government agencies to familiarize themselves with the toolbox of public health legal and policy interventions at their disposal. Also, the report discusses evidence of the effectiveness of legal and policy tools, as well as efforts to advance the science needed to inform policymaking to improve the public's health. (The effectiveness of policy interventions is especially noteworthy against a backdrop of current and future economic exigencies and the high premium placed on efficiency and accountability.) Third, the committee encourages government and private sector stakeholders to explore and embrace HIAP for their synergistic potential. The consideration of health in a wide range of public- and private-sector policymaking will lead both to improvements in population health and to the achievement of priority objectives in other sectors, such as job creation and educational reform, and a more vibrant and productive society. The report offers 10 recommendations and a conclusion to address the challenges it identifies and enhance the use of law and public policy to improve population health.

RECOMMENDATIONS

Public health statutes—the laws that define the authorities and roles of federal, state and local public health agencies—were enacted when major population health threats were due to hygiene factors (water, food, sanitation), communicable diseases, public safety issues, maternal and child health challenges, and occupational injury and illness. The contemporary burden of disease has shifted increasingly to chronic conditions and injuries as infectious disease declined, but the evolving physical, social, and built environments have contributed new challenges. In addition to the health hazards of another era, older public health laws currently "on the books" were informed by the scientific standards of the day and the statutory context and constitutional jurisprudence of their time, including conceptions of individual rights. Some laws were enacted in piecemeal fashion in reaction to contemporary epidemics, leading to layers of statutory accretion rather than holistic or comprehensive legislation (Gostin et al., 2008).

Two major efforts to review and update public health law took place around the turn of the 21st century. These were the *Turning Point Model State Public Health Act* (1997–2003) and the *Model State Emergency Health Powers Act* (MSEHPA) (2001–2002). The *Turning Point Model Public Health Act* was a broad (though not comprehensive) model law composed of nine articles and incorporating two other model acts—a revised version of the MSEHPA in the article pertaining to emergency powers, and the *Model State Public Health Privacy Act* (Gostin et al., 2001, 2002). Despite the development and dissemination of these model acts, their use for widespread updating or modernization of public health statutes has been

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limited. Most public health law in jurisdictions today remains grounded in late 19th and early 20th century experiences. The *Turning Point Model State Public Health Act* and the *Model State Emergency Health Powers Act* drew on actual high-quality laws already in place in various jurisdictions around the country, and could continue to serve as benchmarks (i.e., legal best practices) in the process of reviewing and updating enabling statutes. Efforts may be made to identify statutory benchmarks in additional areas not explicitly covered in the existing model acts, such as performance measurement and accreditation, and contemporary leading causes of disease and death.

Recommendation 1: The committee recommends that state and local governments, in collaboration with their public health agencies, review existing public health laws and modernize these as needed to assure that appropriate powers are in place to enable public health agencies to address contemporary challenges to population health.

The 10 Essential Public Health Services (10 EPHS) (see Box S-1) are widely accepted and often incorporated into public health practice and in current strategies to measure and improve public health performance. However, the 10 EPHS are generally not incorporated into public health agency that enables statutes as standard of practice in public health (Meier et al.,

BOX S-1
The 10 Essential Public Health Services

1. Monitor health status to identify and solve community health problems.
2. Diagnose and investigate health problems and health hazards in the community.
3. Inform, educate, and empower people about health issues.
4. Mobilize community partnerships and action to identify and solve health problems.
5. Develop policies and plans that support individual and community health efforts.
6. Enforce laws and regulations that protect health and ensure safety.
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable.
8. Assure a competent public and personal health care workforce.
9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services.
10. Research for new insights and innovative solutions to health problems.

SOURCE: Public Health Functions Steering Committee (1994).

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2009). Exceptions are largely found in states that have updated their statutes (Meier et al., 2009). The committee believes all communities deserve access to the public health protections and services embodied in the language of the 10 EPHS and codified in the referenced model acts.

Changes in agency structure and organization are necessary to enable all jurisdictions to provide access to the full array of public health services. The wide range of programs and interventions that are consistent with operating under the 10 Essential Public Health Services can be (and in some cases are being) delivered directly by the state health department, by each local health department, by public health system partners, or by various permutations thereof including through centralization, regionalization, or interjurisdictional compacts among different agencies.

Many local public health agencies are small and have limited capabilities. Proposals have been made to explore different ways to reorganize local public health structure toward greater effectiveness, including through organizational restructuring, such as consolidation of services among public health agencies (IOM, 2003). However, multiple formidable barriers exist to such actions including state constitutions and court rulings as well as statutory requirements of local and state governments (Baker and Koplan, 2002; IOM, 2003; Libbey and Miyahara, 2011). These legal impediments urgently need to be re-examined and revised to improve the effective use of existing public health resources and broaden the impact of needed investments.

Recommendation 2: The committee recommends that states enact legislation with appropriate funding to ensure that all public health agencies have the mandate and the capacity to effectively deliver the Ten Essential Public Health Services.

Public health accreditation has been discussed for decades in the U.S. public health community, and many public health agencies have engaged in a variety of certification, accreditation, and performance measurement activities at the national, regional, and local levels. However, public health is far behind its clinical care system counterparts in implementing accreditation standards as uniform measures of performance. Despite a rich literature on health care accreditation, the empirical evidence for accreditation correlations between accreditation and performance is uneven, with modest positive findings for certain outcomes (e.g., promoting change through the self-evaluation that occurs in preparation for accreditation).

Nevertheless, the field of accreditation is moving in the direction of better data collection and more research. The committee believes that national public health accreditation, which is evolving and is not yet a mature process, holds the potential of becoming a mechanism toward certifying that an agency's delivery of the core public health functions and 10 EPHS

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meets uniform standards, and at a future date, perhaps, can be positioned to certify that they are executed with excellence.

The public health accreditation movement shares elements with many activities in and outside the public sector. These include measurement and reporting of performance, transparency in operations, and accountability for process and outcome. These contemporary values are reflected in the *Government Performance and Results Act* of the 1990s and in the current administration's Open Government Initiative. Existing public health statutes often do not reflect current demands for accountability and its relationship to the structure, function, and authority of public health agencies. As discussed in the committee's first report, it is necessary to integrate accountability into the way public health agencies *and* their partners perform their functions.

For the reasons described—the widespread use of accreditation in health care, and the public and policymaker familiarity with the notion; the need for a higher level of accountability and transparency; and the potential usefulness of accreditation in improving quality and other outcomes—the committee finds that national accreditation holds promise as a conduit in aiding governmental public health agencies to demonstrate minimum structural and quality process capabilities.

Recommendation 3: The committee recommends that states revise their laws to require public health accreditation for state and local health departments through the Public Health Accreditation Board accreditation process.

Several states have their own accreditation processes in place. These should resemble or be as rigorous as those set by the Public Health Accreditation Board. All states should set goals to have these standards in place no later than 2020.

Legal Capacity

Appropriately trained legal counsel needs to be readily accessible for all policy discussions in public health agencies to facilitate clear understanding of the legal basis for public health initiatives or interventions. The increasing availability of legal technical assistance from several existing national academic or not-for-profit sources, while beneficial, cannot take the place of an official legal advisor who is recognized by, and part of the same team as the health officer and the jurisdiction's chief executive. The committee recognizes that many agencies are too small to have their own dedicated counsel, and that some type of resource-sharing arrangement, aside from broader restructuring such as consolidation or regionalization, would be needed.

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Public health agency legal counsel requires training in public health and in public health law. Attorneys counseling public health agencies also must possess knowledge and experience in the following areas: laws that establish the public health agency and set forth its jurisdiction and authorities, programmatic aspects of the agency's work, and procedures and processes consistent with applicable laws and policies. Such training, knowledge, and experience can be obtained through adequate career ladders within a health department, through education or, ideally, through a combination of both. One of the prerequisites for strengthening public health law capacity in health departments is the availability of legal training in schools of public health (for example, for individuals wishing to pursue a JD/MPH, and for other public health students) and in schools of law for individuals interested in public policy, and especially its health dimensions.

Recommendation 4: The committee recommends that every public health agency in the country have adequate access to dedicated governmental legal counsel with public health expertise.

Federalism and Preemption

"Preemption occurs when a higher level of government restricts, or even eliminates, a lower level of government's ability to regulate an issue" (NPLAN and Public health Law Center, 2010, p. 1). Preemption can advance or impede the achievement of population health objectives. States and localities play a vital and historic role in safeguarding the public's health and safety. They can be "laboratories" of innovation, with greater flexibility than at the national level. Consequently, unless there are compelling reasons to the contrary, the federal government ought not preempt state and local authority in advancing the public's health. A provision of the *Affordable Care Act*, for example, preempts state and local authority to require menu labeling in restaurants and vending machines that diverges from (e.g., is stricter than) the federal standards outlined in the Act. Although federal oversight of food manufacturing and processing may be appropriate because of its close nexus to interstate commerce, restaurants are locally regulated relative to sanitary standards and are locally permitted establishments. Other federal statutes, like the *Health Insurance Portability and Accountability Act*, create a national protective floor, but allow the states to enact stricter standards. This kind of "floor preemption" is usually preferable, enabling states and localities to enact more protective public health regulations.

Preemption in the field of public health may also lead to non-enforcement of a preemptive federal standard. When a federal agency is given preemptive authority to regulate in an area where local public health agencies have a greater capacity and infrastructure to regulate, the result is likely to be that

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the public health measure will not be enforced. In such instances preemption, and certainly "ceiling" preemption, should be avoided or arrangements for local enforcement should be put in place.

When considering the appropriateness of preemption the impact on public health and enforceability must be assessed. As the federal government embarks on a regulatory review to determine whether federal regulations unnecessarily hamper business activity, the committee urges that this principle be upheld and efforts be made to avoid creating new or interpreting existing preemptive laws in ways that may have unintended and unhealthful consequences.

Recommendation 5: The committee recommends that when the federal government regulates state authority, and the states regulate local authority in the area of public health, their actions, wherever appropriate, should set minimum standards (floor preemption) allowing states and localities to further protect the health and safety of their inhabitants. Preemption should avoid language that hinders public health action.

Some recent legislation, such as the *Affordable Care Act*'s establishment of menu labeling requirements, extends particular public health protections nationally, but also vests the Food and Drug Administration with regulatory authority over facilities it has not previously regulated, such as food service establishments that have been in the purview of state or local public health agencies. In these types of settings, the federal agency is unable to adequately enforce these requirements. Furthermore, federal efforts would be duplicative of state or local enforcement. Statutes and regulations need to allow public health agencies to enforce standards as necessary to protect and promote the public's health. Collaborative efforts are needed to facilitate enforcement of federal standards by states or localities. However, mandating that states and localities assume this federal responsibility would not be helpful unless they have adequate funding to do so.

Recommendation 6: The committee recommends that federal agencies, in collaboration with states, facilitate state and local enforcement of federal public health and safety standards, including the ability to use state or local courts or administrative bodies where appropriate. Federal, state, and local agencies should combine their resources, especially in areas where regulatory authority is vested in one level of government, but enforcement capacity exists in another level.

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Intersectoral Laws and Policies That Contribute to the Public's Health

Significant and compelling evidence indicates that policies enacted by government agencies beyond the health sector have substantial effects on the health of the population. A Health In All Policies approach requires policymakers, with the support of public health agencies, to adopt a collaborative and structured approach to consider the health effects of major public policies in all governmental sectors. This "all-of-government" approach offers the benefits of improving health while also achieving key objectives in other parts of government. Seen from the perspective of other sectors, HIAP approaches could enhance their ability to achieve their own objectives because improvements in population health can have wide-reaching effects on many aspects of society.

A multi-sector strategy that explicitly considers the impact of non-health sector action on U.S. health can create progress in that sector (e.g., transportation, agriculture) while simultaneously increasing the quality of life, longevity and economic productivity of the population.

Recommendation 7: The committee recommends that states and the federal government develop and employ a Health In All Policies (HIAP) approach to consider the health effects—both positive and negative—of major legislation, regulations, and other policies that could potentially have a meaningful impact on the public's health.

As acknowledged in the committee's report on measurement, there is no formal accountability process for private-sector entities that influence, for good or bad, the health outcomes for the community (IOM, 2011). This is significant because an estimated one-third of overall public health expenditures are incurred by nongovernmental public health partners, such as employers and schools (Mays et al., 2004). Although the committee proposed a measurement framework for accountability in its first report, it did not discuss in any detail the issues of governance and the types of organizational structures that may be useful in operationalizing the framework, especially outside governmental agencies.

As noted in the first report, private sector employers, community organizations, and other stakeholders in the multisectoral health system can contribute to health through their actions including through policy. These actions range from employee health and wellness initiatives to efforts to strengthen potentially health-enhancing features of communities. In its present discussion about law and policy, the committee uses the model of the National Prevention, Health Promotion, and Public Health Council and its associated public–private advisory group as a point of departure for envisioning how intersectoral action on population health could be planned

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and implemented across government agencies and between the public and private sectors.

Recommendation 8: The committee recommends that state and local governments

- **create health councils of relevant government agencies convened under the auspices of the chief executive;**
- **engage multiple stakeholders in a planning process; and**
- **develop an ongoing, cross-sector, community health improvement plan informed by a HIAP approach. Stakeholders will advise in plan development and in monitoring its implementation.**

Evidence to Inform Policy

The rationale for all population health interventions, including laws, must be based on the best evidence available while taking into consideration the strength of the available evidence, the level of uncertainty surrounding the evidence, and the risk of harm (economic or health-related) that arises from implementing or failing to implement. In some cases, the best available evidence may be limited. In those cases, new laws and judicial review of public health legal interventions will need to be built on sound theory and the opinion of content experts. Such limited evidence may be used to craft legal interventions when health threats and potential harms from inaction are large; when opportunity costs and unintended harms from action are within acceptable limits; and when the time or costs required for gathering more definitive evidence are substantial relative to the expected value of the additional evidence.

In some cases, assessments of health impact may not be necessary or useful, such as in the cases of modest-sized commercial developments in a community or policies that are largely unrelated to or expected to have negligible health impacts. In other cases, assessing the impact is imperative to determine a policy's likely extent of negative or positive effects on population health and to take action to avert damaging consequences. Such cases would include several major health-consequential federal laws that require periodic reauthorization (e.g., the transportation bill).

Accurate and complete assessment of the outcomes and benefits of public health laws is complicated by the fact that the effects of laws are frequently distributed across multiple segments within the population, and affect multiple health and social endpoints over long periods of time. Thus, outcome measures for public health laws need to consider not only measures of mortality and morbidity, but also important intermediate outcome measures.

Legal interventions merit study for their effectiveness and comparative

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effectiveness (both against other legal intervention and compared to other kinds of interventions). Furthermore, a system of surveillance could be developed and pilot-tested to track the progress of efforts to expand the geographic reach of effective policies and laws, and to identify unmet needs for policy development and advocacy strategies. Although the administrative and methodological task of such research is challenging, the committee asserts as a general principle the obligation of policymakers to study, to whatever degree possible, the potential ramifications of policies in any sector that could substantially affect the health of the public.

> **Recommendation 9: The committee recommends that state and federal governments evaluate the health effects and costs of major legislation, regulations, and policies that could have a meaningful impact on health. This evaluation should occur before and after enactment.**

This recommendation applies to both public health and non-public health agencies, working in concert. Before or after enactment, a scientific assessment would be conducted whenever possible. Before enactment of such policies, the vested authority (e.g., the public health agency) would study the potential health impact and/or cost-effectiveness. After enactment, the authority would review the health outcomes and costs associated with implementation of the policy and would, where appropriate, offer recommendations to the chief executive and legislature on changes that would improve outcomes.

Such evaluation and assessment could be conducted by the responsible agency, such as through *National Environmental Policy Act* (NEPA) requirements, or by the public health agency. Several models exist for requiring and conducting assessments of health policy impact, including government commissioning of assessments (e.g., actuarial analyses) of the impact of all health policies, and the requirements of NEPA. A knowledge base exists for crafting an accepted framework for evaluating the evidence of public policies, but an interdisciplinary team of experts is needed to build on the existing literature, review methodological challenges, and arrive at a consensus on preferred criteria.

> **Recommendation 10: The committee recommends that HHS convene relevant experts to enhance practical methodologies for assessing the strength of evidence regarding the health effects of public policies as well as to provide guidance on evidentiary standards to inform a rational process for translating evidence into policy.**

Such guidance would include (1) methods for assessing the certainty of

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effectiveness (benefits and harms), and if a law or policy is effective, the magnitude of effect, for suitable populations; (2) methods for assessing the effectiveness of interventions (policies and programs) when used alone or in combination (i.e., their incremental and or synergistic benefits); and (3) priorities for and consideration of the contextual issues when determining whether (and where) to implement policies. The contextual issues to be considered include importance of the problem (severity, frequency, burden of disease, cost), feasibility (affordability, acceptability), availability of alternatives, demand, fairness (equity), preferences and values, cost-effectiveness, potential to advance other societal objectives, potential for harms, legal and ethical considerations, and administrative options.

REFERENCES

Baker, E. L., and J. P. Koplan. 2002. Strengthening the nation's public health infrastructure: Historic challenge, unprecedented opportunity. *Health Affairs* 21(6):15-27.

Goodman, R. A., A. Moulton, G. Matthews, F. Shaw, P. Kocher, G. Mensah, S. Zaza, and R. Besser. 2006. Law and public health at CDC. *Morbidity & Morality Weekly Report* 55:29-33.

Gostin, L. O., J. G. Hodge, and R. O. Valdiserri. 2001. Informational privacy and the public's health: The Model State Public Health Privacy Act. *American Journal of Public Health* 91:1388-1392.

Gostin, L. O., J. W. Sapsin, S. P. Teret, S. Burris, J. S. Mair, J. G. Hodge, Jr, and J. S. Vernick. 2002. The Model State Emergency Health Powers Act: Planning for and response to bioterrorism and naturally occurring infectious diseases. *Journal of the American Medical Association* 288(5):622-628.

Gostin, L. O., B. E. Berkerman, and J. Kraimer. 2008. *Foundations in Public Health Law.* Edited by International Encyclopedia of Public Health. Vol. 2. San Diego: Academic Press.

IOM (Institute of Medicine). 1988. *The Future of Public Health*. Washington, DC: National Academy Press.

IOM. 2003. *The Future of the Public's Health in the 21st Century.* Washington, DC: The National Academies Press.

IOM. 2011. *For the Public's Health: The Role of Measurement in Action and Accountability.* Washington, DC: The National Academies Press.

Libbey, P., and B. Miyahara. 2011. *Cross-Jurisdictional Relationship in Local Public Health: Preliminary Summary of an Environmental Scan*. Princeton, NJ: Robert Wood Johnson Foundation.

Mays, G. P., P. K. Halverson, E. L. Baker, R. Stevens, and J. J. Vann. 2004. Availability and perceived effectiveness of public health activities in the nation's most populous communities. *American Journal of Public Health* 94(6):1019-1026.

Meier, B. M., J. Merrill, and K. Gebbie. 2009. Modernizing state public health enabling statutes to reflect the mission and essential services of public health. *Journal of Health Management Practice* 15(2):112-119.

NPLAN (National Policy & Legal Analysis Network to Prevent Childhood Obesity), and Public Health Law Center. 2010. *Negotiating Preemption: Strategies and Questions to Consider.* Oakland, CA: Public Health Law & Policy.

Public Health Functions Steering Committee. 1994. *The Public Health Workforce: An Agenda for the 21st Century. Full Report of the Public Health Functions Project*. Washington, DC: Department of Health and Human Services.

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Appendix H

Meetings Agendas

Held by the Committee on Public Health Strategies to Improve Health (March 2011-September 2011)

MEETING EIGHT: MARCH 3, 2011
VENABLE CONFERENCE CENTER, WASHINGTON, DC

8:00 – 8:45 am	Welcome, Introductions, and Opening Comments *Marthe R. Gold, Chair of IOM Committee* *Steven M. Teutsch, Vice-Chair of IOM Committee*
8:45 – 9:15 am	The Value of Health and What This May Mean for Public Health Funding *David Cutler, Otto Eckstein Professor of Applied Economics, Harvard University*
9:15 – 9:40 am	Questions from the Committee
9:40 – 10:10 am	Financing Mechanisms and Models for a Public Health System of Accounts *Peggy Honoré, Director, Public Health System, Finance, and Quality Program, Office of Healthcare Quality, Office of the Assistant Secretary for Health, Department of Health and Human Services*
10:10 – 10:30 am	Questions from the Committee
10:30 – 10:45 am	Break

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10:45 – 11:05 am	Current Funding Status and Key Issues for State Public Health Agencies *Katie Sellers, Senior Director Survey Research, Association of State and Territorial Health Officials*
11:05 – 11:45 am	Current Funding Status and Key Issues for Local Public Health Agencies *Carolyn Leep, Project Director, National Association of County and City Health Officials*
11:45 – 11:55 am	Questions from the Committee
11:55 am – 12:25 pm	Public Health Spending in the Context of National Health Expenditures *Aaron Catlin, Deputy Director, National Health Statistics Group, Office of the Actuary, Centers for Medicare & Medicaid Services* *Art Sensenig, Consultant, ALS Economic Measurement, Formerly, Economist at the Centers for Medicare & Medicaid Services*
12:25 – 12:45 pm	Questions from the Committee
12:45 pm	Adjourn

MEETING NINE: MAY 5-6, 2011
20 F STREET, NW, WASHINGTON, DC

Thursday May 5, 2011

8:30 – 8:45 am	Welcome, Introductions, and Opening Comments *Steve Teutsch, IOM Committee Vice-Chair*
8:45 – 9:05 am	Public Health Spending and Health Determinants; Pay-for-Population Health Performance *David Kindig, Emeritus Professor of Population Health Sciences and Emeritus Vice-Chancellor for Health Sciences, Department of Population Health Sciences, University of Wisconsin Medical School*

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9:05 – 9:25 am	Questions from the Committee
9:25 – 9:45 am	Public Health Financial Management Needs and How Public Health Agencies Are Funded *F. Douglas Scutchfield, Peter P. Bosomworth Professor of Health Services Research and Policy, College of Public Health and Medicine, University of Kentucky*
9:45 – 10:05 am	Questions from the Committee
10:05 – 10:25 am	Public Health Financing Today *Jeff Levi, Executive Director, Trust for America's Health*
10:25 – 10:45 am	Questions from the Committee
10:45 – 11:00 am	Break
11:00 – 11:20 am	Funding Formulas; Intersection of Funding Efficiency and Optimal Health Department Size *Patrick M. Bernet, Assistant Professor, Management Programs, College of Business, Florida Atlantic University*
11:20 – 11:40 am	Questions from the Committee
11:40 am – 12:00 pm	Value Stream Mapping and How It Can Be Applied to Public Health *Julie S. Ivy, Associate Professor, Fitts Faculty Fellow, North Carolina State University*
12:00 – 12:20 pm	Questions from the Committee
12:20 – 1:30 pm	Lunch
1:30 – 1:50 pm	Impact of Health Care Reform on State Budgets and of Prevention on Health Care Spending *Barbara A. Ormond, Senior Research Associate and Randall R. Bovbjerg, Senior Fellow, Health Policy Center, The Urban Institute, [presenter: Bovbjerg]*

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1:50 – 2:10 pm	Questions from the Committee
2:10 – 3:20 pm	Innovative and Sustainable Financing Mechanisms at the Local Level *Paul Kuehnert, Executive Director, Kane County Health Department, Aurora, IL* *Joan Brewster, Director, Grays Harbor County Public Health & Social Services Department, Aberdeen, WA* *Terry Allan, Health Commissioner, Cuyahoga County Board of Health, Ohio*
3:20 – 4:00 pm	Questions from the Committee
4:00 – 4:10 pm	Break
4:10 – 4:30 pm	Public Health Savings from the Affordable Care Act *Kenneth E. Thorpe, Robert W. Woodruff Professor, Chair, Department of Health Policy and Management, Rollins School of Public Health, Emory University*
4:30 – 4:50 pm	Questions from the Committee
4:50 – 5:10 pm	Concluding Comments/Adjourn

Friday May 6, 2011

9:30 – 9:35 am	Opening Comments *Marthe R. Gold, Chair of IOM Committee* *Steven M. Teutsch, Vice-Chair of IOM Committee*
9:35 – 10:05 am	Funding Efficiency and Revenue Streams—What Needs to Be Addressed in the Future *Rex Santerre, Professor of Finance and Healthcare Management, University of Connecticut, School of Business*
10:05 – 10:35 am	Questions from the Committee

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10:35 – 11:20 am	Discussion
11:20 am	Adjourn

MEETING TEN: JULY 20, 2011
BECKMAN CENTER OF THE NATIONAL ACADEMIES, IRVINE, CA

1:00 pm	Welcome and Introductions *Marthe R. Gold, Chair of IOM Committee* *Steven M. Teutsch, Vice-Chair of IOM Committee*
1:15 pm	Implementation of Community Benefit Requirements *Kevin Barnett, Public Health Institute*
3:00 pm	Valuing Disease Prevention and Contributions of Public Health Actions to Population Health Improvement *Dana Goldman, University of Southern California*
4:00 pm	Adjourn

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Appendix I

Committee Biosketches

Marthe R. Gold, MD, MPH (*Chair*), is the Logan Professor and chair of the Department of Community Health and Social Medicine of the Sophie Davis School of Biomedical Education of the City College of New York. She is a graduate of the Tufts University School of Medicine and the Columbia School of Public Health. Her clinical training is in family practice, and her clinical practice has been in urban and rural underserved settings. She served on the faculty of the University of Rochester School of Medicine from 1983 to 1990, and from 1990 to 1996 she was senior policy adviser in the Office of the Assistant Secretary for Health in the U.S. Department of Health and Human Services (HHS). Her focus at HHS was on financing of clinical preventive services and the economics of public health programs. Dr. Gold directed the work of the Panel on Cost-Effectiveness in Health and Medicine, an expert panel whose report, issued in 1996, remains an influential guide to cost-effectiveness methods for academic and policy uses. Dr. Gold's current work is on public and decision-maker views on the use of economic analyses to inform resource-allocation decisions. She is also involved in funded initiatives that seek to increase the level of patient engagement and activation in community health-center settings. A member of the Institute of Medicine, she has contributed to a number of its reports and has served most recently on the communication collaborative of the Evidence-Based Roundtable.

Steven M. Teutsch, MD, MPH (*Vice Chair*), became the chief science officer of the Los Angeles County Department of Public Health in February 2009, where he continues his work on evidence-based public health and policy. He

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had been in the Outcomes Research and Management Program at Merck since October 1997, where he was responsible for scientific leadership in developing evidence-based clinical-management programs, conducting outcomes research studies, and improving outcomes measurement to enhance quality of care. Before joining Merck, he was director of the Division of Prevention Research and Analytic Methods (DPRAM) in the Centers for Disease Control and Prevention (CDC), where he was responsible for assessing the effectiveness, safety, and cost effectiveness of disease and injury prevention strategies. DPRAM developed comparable methods for studies of the effectiveness and economic impact of prevention programs, provided training in the methods, developed CDC's capacity for conducting necessary studies, and provided technical assistance for conducting economic and decision analysis. The division also evaluated the effects of interventions in urban areas, developed the *Guide to Community Preventive Services*, and provided support for CDC's analytic methods. He has served as a member of the U.S. Preventive Services Task Force, which develops the *Guide*, and of America's Health Information Community Personalized Health Care Workgroup. He chaired the secretary of health and human services' Advisory Committee on Genetics, Health, and Society (in the National Institutes of Health Office of Science Policy) and serves on the Evaluation of Genomic Applications in Practice and Prevention Working Group. Dr. Teutsch received his undergraduate degree in biochemical sciences at Harvard University in 1970, an MPH in epidemiology from the University of North Carolina School of Public Health in 1973, and his MD from Duke University School of Medicine in 1974. He completed his residency training in internal medicine at Pennsylvania State University, Hershey. He was certified by the American Board of Internal Medicine in 1977 and the American Board of Preventive Medicine in 1995 and is a fellow of the American College of Physicians, the American College of Preventive Medicine, and the American College of Epidemiology. Dr. Teutsch is an adjunct professor in the Emory University School of Public Health Department of Health Policy and Management and the University of North Carolina School of Public Health. He has published over 150 articles and 6 books in a broad array of fields in epidemiology, including parasitic diseases, diabetes, technology assessment, health-services research, and surveillance.

Leslie Beitsch, MD, JD, is the associate dean for health affairs and directs the Center for Medicine and Public Health of Florida State University. Before joining the University's College of Medicine, Dr. Beitsch was Commissioner of Health for the state of Oklahoma from June 2001 to November 2003. Earlier, he had held several positions in the Florida Department of Health for 12 years, most recently as deputy secretary. He received his BA in chemistry from Emory University and his MD from Georgetown University School

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of Medicine and completed his internship at the Medical College of South Carolina. He received his JD from Harvard Law School.

Joyce D. K. Essien, MD, MBA, is director of the Center for Public Health Practice of the Rollins School of Public Health of Emory University and Retired Medical Officer, Captain U.S. Public Health Service at the Centers for Disease Control and Prevention. Dr. Essien leads a team in collaboration with the Sustainability Institute that is building and applying simulation and syndemic modeling applications to diabetes to inform cross-sectoral strategy, deliberation, and decision support for policy formulation and strategic interventions at the national, state, and local levels to reduce the present and future burden of diabetes. Dr. Essien was one of nine members who received the 2008 inaugural Applied Systems Thinking Award from the Applied Systems Thinking Institute for the magnitude of the problems that were being addressed (chronic-disease syndemics and health system transformation), the interdisciplinary composition of the team, and the long track record of engagement and application in applied settings. Dr. Essien is a coauthor of the *Public Health Competency Handbook—Optimizing Individual and Organizational Performance for the Public's Health*. She serves on the Executive Committee of the Atlanta Medical Association; the boards of directors of the VHA Foundation, the Atlanta Regional Health Forum, and ZAP Asthma Consortium, Inc.; and the advisory committees for the Association for Community Health Improvement, the Association for Health Information Management Foundation, and the MPH program at Florida A & M University, which she chairs. She is a member of the Bon Secours Hospital System Board Quality Committee and the Institute for Alternative Futures Biomonitoring Futures Project and Disparity Reducing Initiative. The ZAP Asthma Consortium, Inc., cofounded by Dr. Essien, is the recipient of the Rosalyn and Jimmy Carter Partnership Award. For her service and contributions, Dr. Essien was a recipient in l999 of the Women in Government Award from *Good Housekeeping* magazine, the Ford Foundation, and the Center for American Women and Politics at Rutgers University. She has also been a recipient of the Thomas Sellars Award from the Rollins School of Public Health and the Unsung Heroine Award from Emory University. Dr. Essien is one of three recipients of the 2008 Excellence in Medicine Award from the American Medical Association Foundation.

David W. Fleming, MD, is director and health officer for Public Health in Seattle & King County, a large metropolitan health department with 2,000 employees, 39 sites, and a budget of $306 million serving a resident population of 1.9 million. Before assuming that role, Dr. Fleming directed the Bill & Melinda Gates Foundation's Global Health Strategies program, in which capacity he oversaw the foundation's portfolios in vaccine-preventable dis-

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eases, nutrition, newborn and child health, leadership, emergency relief, and cross-cutting strategies to improve access to health tools in developing countries. He is a former deputy director of the Centers for Disease Control and Prevention. Dr. Fleming has published on a wide array of public health issues and has served on multiple boards and commissions, including the board of the Global Alliance for Vaccines and Immunization. Dr. Fleming received his medical degree from the State University of New York Upstate Medical Center in Syracuse. He is board-certified in internal medicine and preventive medicine and serves on the faculty of the departments of public health of the University of Washington and Oregon Health Sciences University.

Thomas E. Getzen, PhD, is professor of risk, insurance, and health management at the Fox School of Business at Temple University and executive director of *iHEA*, the International Health Economics Association, which has 2,400 academic and professional members in 72 countries. He has also served as a visiting professor at the University of Toronto, the Woodrow Wilson School of Public Policy of Princeton University, the Wharton School of the University of Pennsylvania, and the Centre for Health Economics of the University of York. His textbook *Health Economics: Fundamentals and Flow of Funds* (Wiley; 4th ed., 2010) is used in graduate and undergraduate programs throughout the world. His research focuses on the macroeconomics of health, finance, forecasting of medical expenditures and physician supply, price indexes, public health economics, and related issues. He recently completed a model of long-run medical-cost trends for use by the Society of Actuaries, building on the work of economists at the Centers for Medicare and Medicaid Services and the Congressional Budget Office.

Lawrence O. Gostin, JD, LLD (Hon.), is the Linda and Timothy O'Neill Professor of Global Health Law and the director of the O'Neill Institute for National and Global Health Law at Georgetown University. He served as the associate dean of Georgetown Law until 2008. He is also a professor at the Johns Hopkins Bloomberg School of Public Health and a visiting professor at Oxford University in the United Kingdom. He is a fellow of the Hastings Center, the Kennedy Institute of Ethics, and the Royal Society of Public Health. Professor Gostin is on the editorial boards of several journals and is law editor of the *Journal of the American Medical Association*. He directs the World Health Organization and Centers for Disease Control and Prevention Collaborating Centers on Public Health Law. Professor Gostin is a member of the Institute of Medicine (IOM) and has chaired four IOM committees.

George Isham, MD, MS, is senior adviser to HealthPartners, responsible for working with the board of directors and the senior management team

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on health and quality-of-care improvement for patients, members, and the community. Dr. Isham is also a senior fellow of the HealthPartners Research Foundation and facilitates progress at the intersection of population health research and public policy. He is active nationally and cochairs the National Quality Forum–convened Measurement Application Partnership, chairs the National Committee for Quality Assurance (NCQA) clinical program committee, and is a member of NCQA's committee on performance measurement. Dr. Isham is chair of the Institute of Medicine (IOM) Roundtable on Health Literacy and has chaired three IOM studies and served on others related to health and quality of care. In 2003, he was appointed a lifetime National Associate of the National Academies in recognition of his contributions to the work of IOM. He is a former member of the Centers for Disease Control and Prevention (CDC) Task Force on Community Preventive Services and the Agency for Healthcare Research and Quality U.S. Preventive Services Task Force, and he currently serves on the advisory committee to the director of CDC. His practice experience as a general internist was with the U.S. Navy, at the Freeport Clinic in Freeport, Illinois, and as a clinical assistant professor of medicine at the University of Wisconsin Hospitals and Clinics in Madison, Wisconsin.

Robert M. Kaplan, PhD, is the director for behavioral and social sciences and director of the Office of Behavioral and Social Sciences Research (OBSSR) of the National Institutes of Health (NIH). Before joining NIH in February 2011, Dr. Kaplan was Distinguished Professor of Health Services at the University of California, Los Angeles (UCLA) and Distinguished Professor of Medicine at the UCLA David Geffen School of Medicine, where he was principal investigator at the California Comparative Effectiveness and Outcomes Improvement Center. He led the UCLA–RAND health services training program and the UCLA–RAND Center for Disease Control and Prevention Prevention Research Center. He was chair of the Department of Health Services from 2004 to 2009. From 1997 to 2004, he was professor and chair of the Department of Family and Preventive Medicine at the University of California, San Diego. He is a past president of several organizations, including the American Psychological Association Division of Health Psychology, Section J of the American Association for the Advancement of Science (Pacific), the International Society for Quality of Life Research, the Society for Behavioral Medicine, and the Academy of Behavioral Medicine Research. He is a past chair of the Behavioral Science Council of the American Thoracic Society. Dr. Kaplan is a former editor-in-chief of *Health Psychology* and of the *Annals of Behavioral Medicine*. He is the author, coauthor, or editor of more than 18 books and about 470 articles or chapters. The Institute for Scientic Information includes him in its list of

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the most cited authors in his field (defined as above the 99.5th percentile). In 2005, he was elected to the Institute of Medicine.

Wilfredo Lopez, JD, is providing professional consulting services in public health law to the Centers for Disease Control and Prevention (CDC) through a CDC independent contractor. Previously, he was a consultant to the New York City (NYC) Department of Health and Mental Hygiene from 2007 to 2009, spearheading the NYC Health Code Revision Project. From 1979 to 2006, Mr. Lopez served as a staff attorney, deputy general counsel, and, from 1992, as general counsel to the New York City Department of Health and Mental Hygiene. On his retirement in December 2006, he was vested with the titles General Counsel Emeritus to the New York City Department of Health and Counsel Emeritus to the New York City Board of Health. Mr. Lopez is the author of articles in public health and public health law. In 2007, Mr. Lopez, in collaboration with CDC, served as executive editor of "The National Action Agenda for Public Health Legal Preparedness." He is the coeditor and coauthor of a textbook titled *Law in Public Health Practice*. Mr. Lopez's other professional activities in the field include serving as a member of the National Advisory Committee to the Public Health Law Research Program of the Robert Wood Johnson Foundation (since 2009), and a member of a workgroup assisting CDC's National Center for Health Statistics in revising the Model State Vital Statistics Act and Regulations (2009-2011).

Glen P. Mays, PhD, MPH, is the F. Douglas Scutchfield Endowed Professor of Health Services and Systems Research at the University of Kentucky College of Public Health. Dr. Mays's research centers on strategies for organizing and financing public health services, preventive care, and disease management strategies with a focus on estimating the health and economic effects of these efforts. He directs the Public Health Practice-Based Research Networks Program funded by the Robert Wood Johnson Foundation (RWJF), which brings together more than 900 public health agencies and researchers from around the nation to study innovations in practice. Dr. Mays also directs the National Longitudinal Survey of Public Health Systems, which since 1998 has followed a nationally representative cohort of U.S. communities to examine the implementation and impact of multiorganizational public health strategies. He has published more than 50 articles and 2 books on his research, which has been funded by RWJF, the Centers for Disease Control and Prevention, the Agency for Healthcare Research and Quality, the Health Resources and Services Administration, and the National Institutes of Health. Dr. Mays earned an undergraduate degree in political science from Brown University, earned his MPH and PhD in health policy and administration from the University of North Carolina at

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Chapel Hill, and completed a postdoctoral fellowship in health economics at Harvard Medical School.

Phyllis D. Meadows, PhD, MSN, RN, is associate dean for practice in the Office of Public Health Practice and clinical professor in the Department of Health Management and Policy of the University of Michigan (UM) School of Public Health, where her responsibilities include developing and teaching courses in public health administration and public health policy in the department and overseeing leadership training of public health professionals for the office. As a senior fellow of health for the Kresge Foundation, Dr. Meadows is designing a national initiative for community health centers. Most recently, she served as director and public health officer of the Detroit Department of Health and Wellness Promotion. Before that, she spent over a decade as a program director at the W. K. Kellogg Foundation, where she worked in youth, health, health-policy, and education programming. Dr. Meadows joined the UM School of Public Health faculty in February 2009 as a clinical professor and associate director of public health practice. She holds a bachelor's degree and an MS in nursing and a PhD in sociology from Wayne State University (WSU). She is the recipient of numerous honors and awards, including the WSU School of Nursing Lifetime Achievement Award, the UM Distinguished Public Health Practitioner Award, and the Michigan Department of Community Health Director's Award for Innovation in Public Health.

Mary Mincer Hansen, RN, PhD, is chair of the Master's of Public Health program and adjunct associate professor in the Department of Global Health at Des Moines University. She is the former director of the Iowa Department of Public Health in the cabinet of Governor Vilsack and was his designee to Governor Huckabee's National Governors Association Chair's Initiative "Healthy America," which focused on addressing the obesity epidemic in America. She has testified before Congress on pandemic influenza preparedness and testified before the Institute of Medicine's Committee on Pandemic Community Mitigation. Before being appointed as director of the Department of Public Health, she was an associate professor in the Drake University Department of Nursing, director of the Drake University Center for Health Issues, president of the Iowa Public Health Foundation, and a research fellow on a Centers for Disease Prevention and Control patient safety grant at the Iowa Department of Public Health. Dr. Mincer Hansen has served in many national positions, including being a member of the Robert Wood Johnson Foundation Advisory Committee for Partners Investing in Nursing's Future and the Council of State Governments Public Health Advisory Committee and president of the Association of State and Territorial Health Officials (ASTHO). Currently, Dr. Mincer Hansen is an

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appointee to the National Health Care Workforce Commission. She also serves on the Iowa Department of Public Health Advisory Council and Senator Harkin's Nurse Advisory Committee and as president of the ASTHO Alumnae Association. Her awards include the Iowa State University College of Human Sciences Alumni Achievement Award, the Iowa Medical Society Community Contribution Award, the Title V Friends of Iowa's Children Award, and the Iowa Public Health Association Henry Albert Memorial Award for distinguished leadership.

Poki Stewart Namkung, MD, MPH, received her AB from the University of California (UC), Berkeley; her MD from UC Davis; and her MPH from UC Berkeley. She is a fellow of the American College of Preventive Medicine. Dr. Namkung served as the health officer and director of public health for the city of Berkeley from 1995 to 2005 and is now the health officer and chief medical officer in the Santa Cruz County Health Services Agency. She has received many honors, including selection as a state scholar for the Public Health Leadership Institute in 1996, the California Public Health Association–North Leadership Award in 2003, and the Outstanding Berkeley Woman Award in 2005. She has served on many advisory boards and commissions and was elected president of the California Conference of Local Health Officers for 2001-2003, president of the Health Officers Association of California for 2003-2005, and president of the National Association of County and City Health Officials (NACCHO) for 2006-2007. She cochairs the Joint Public Health Informatics Taskforce, serves on NACCHO's Public Health Informatics Workgroup and Immunization Workgroup, and chairs the NACCHO Adolescent Health Advisory Taskforce.

Margaret O'Kane, MHSA, has served as president of the National Committee for Quality Assurance (NCQA), an independent nonprofit organization whose mission is to improve the quality of health care everywhere. Under Ms. O'Kane's leadership, NCQA has developed broad support among the employer and health-plan communities; today, many Fortune 100 companies will do business only with NCQA-accredited health plans. About three-fourths of the nation's largest employers use Healthcare Effectiveness Data and Information Set (HEDIS®) data to evaluate the plans that serve their employees. Ms. O'Kane was named Health Person of the Year in 1996 by *Medicine & Health* magazine. She also received a 1997 Founders Award from the American College of Medical Quality, recognizing NCQA's efforts to improve managed-care quality. In 1999, Ms. O'Kane was elected a member of the Institute of Medicine. In 2000, she received the Centers for Disease Control and Prevention's Champion of Prevention Award, the agency's highest honor. Ms. O'Kane began her career in health care as a respiratory therapist and went on to earn a master's degree in health administration and planning from the Johns Hopkins University.

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David Ross, ScD, directs the Public Health Informatics Institute (PHII), a program of the Task Force for Global Health, which is affiliated with Emory University, and serves as corporate secretary of Global Health Solutions, Inc., a nonprofit subsidiary of the Task Force. PHII supports public health practitioners in their use of information and information systems to improve community health outcomes. He received his ScD in applied mathematics and operations research from the Johns Hopkins University. His career spans health care research and administration, environmental health research, and public health and medical informatics consulting. He became the director of All Kids Count, a program of PHII supported by the Robert Wood Johnson Foundation (RWJF), in 2000, and later began PHII, also with funding from RWJF. Dr. Ross was an executive with a private health-information systems firm, a Public Health Service officer with the Centers for Disease Control and Prevention (CDC), and an executive of a private, nonprofit health system. In 1983, he joined CDC's National Center for Environmental Health. During his career at CDC, he worked in environmental health, CDC's executive administration, and public health practice. Dr. Ross was founding director of the Information Network for Public Health Officials, CDC's national initiative to improve the information infrastructure of public health. His research and programmatic interests reflect those of PHII: the strategic application of information technologies to improve public health practice. He served as director of the RWJF national program Common Ground and its InformationLinks national program. He served on the Institute of Medicine (IOM) core committee for the evaluation of the U.S. government's global HIV/AIDS PEPFAR program and on the IOM panel recommending the research agenda for public health preparedness, and he is a member of the Certification Commission for Health Information Technology.

Martín J. Sepúlveda, MD, FACP, is a fellow and vice president of Health Industries Research of the IBM Corporation. He leads a global team of health industry subject matter experts guiding applied research in diverse disciplines for health care systems solutions and transformation in mature and rapidly growing countries worldwide. He previously served as IBM vice president of integrated health services and led health policy, strategy, benefits design and purchasing, occupational health, wellness, and health productivity for IBM globally. Dr. Sepúlveda is a fellow of the American College of Physicians, the American College of Preventive Medicine, and the American College of Occupational and Environmental Medicine. He was elected an honorary member of the American Academy of Family Medicine and serves on the American Board of Internal Medicine Foundation, the Commonwealth Fund Commission for a High Performance Health System, and the Institute of Medicine's Population Health and Public Health Practice Board. He chairs the Global Business Group on Health and the Institute for Health

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Benefits Innovation Research at the Employee Benefits Research Institute. Dr. Sepúlveda received his MD and MPH from Harvard University. He completed residencies in internal medicine at the University of California, San Francisco Hospitals and in occupational and environmental medicine at the National Institute for Occupational Safety and Health, trained in the Epidemic Intelligence Service of the Centers for Disease Control and Prevention, and completed a fellowship in internal medicine at the University of Iowa Hospitals and Clinics.

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