



PROGRESS AND PERIL
BIOTERRORISM PREPAREDNESS DOLLARS
AND PUBLIC HEALTH

ELIN GURSKY

A CENTURY FOUNDATION REPORT

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In response to the anthrax attacks of fall 2001, the federal government increased public health funding for state and local governments to enhance preparedness for such emergencies. Thanks to the generous support of The Robert Wood Johnson Foundation, The Century Foundation embarked on a Public Health Preparedness and Bioterrorism Project examining how states and cities are using these new federal resources. This report examining developments on a national level (and one analyzing public health preparedness activities in a specific state—Illinois) was commissioned as part of the project.

This effort is part of The Century Foundation's Homeland Security Project, a broader study aimed at informing the public and the policymaking community about the complex challenges related to preventing and responding to domestic terrorism. More information on the Homeland Security Project is available at www.homelandsec.org.

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1.

INTRODUCTION

Two decades ago the public health sector was commemorating twentieth-century achievements in human longevity as a result of technological advances in vaccines and antibiotics, improved systems of sanitation, and enhanced safety regulations. Having conquered diseases like polio and scarlet fever, it was immersed in confronting the dangers of new and reemerging microbial pathogens like hantavirus, HIV-AIDS, hemorrhagic *E. coli*, and multiple-drug-resistant tuberculosis.

The use of biological weapons against civilian populations was, at most, a background concern, largely dismissed from the social consciousness when the United States curtailed its offensive biological weapons program in 1969. However, eleven illnesses and five deaths from inhalational *Bacillus anthracis* in the fall of 2001, the result of exposure to spores deliberately conveyed through the U.S. mail, renewed concerns about America's vulnerability to biological agents.

The anthrax attacks thrust the public health sector into the context of national security as the country proceeded along an increasingly ominous and uncertain post-cold war journey into the twenty-first century. State and local public health departments now are faced with challenges to understand unfamiliar pathogens, to integrate new partners to address biopreparedness issues, and to institute novel and rapid systems of response. They

also must assimilate new technologies to assist in detecting, monitoring, tracking, and controlling disease occurrence in the event of the deliberate release of one or more bioweapons—many of which have no medical preventive or treatment countermeasures.

In June 2002 Congress authorized the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. The act granted the extraordinary sum of almost \$1.6 billion for the purpose of enhancing federal, state, territorial, and local efforts to prepare and respond to the threat of bioterrorism, acute outbreaks of infectious disease, and other public health emergencies.¹

This report maps out the strategies that the public health sector has undertaken to equip itself with new competencies against the threat of bioterrorism. Senior state and local public health officials with direct knowledge of the funding patterns, budgets, and program strategies involved in the fiscal year 2002 federal bioterrorism preparedness initiative were interviewed. Several agency heads, both local health department directors and state health commissioners, delegated participation to a deputy or program director they deemed would have greater depth of knowledge in this area. The titles and positions of the individuals interviewed for the study that forms the basis of this report included health commissioner, health director, health administrator, and bioterrorism coordinator (see Appendix, page 53, for the Questionnaire that was used in the interviews).

The study sought to interview leaders from state and local health departments representative of the nearly 3,050 public health agencies serving the United States. Both rural and urban, small and large, agencies that reflected the geographical variation of the country and the vast range of preparedness needs were selected. To illuminate the coordination of preparedness efforts and funding strategies between state health organizations and their local public health departments, the study targeted two to four local public health agencies within each state chosen. Of the ten states and thirty-five local public health agencies that met the selection criteria, a total of eight state officials and thirty-four local public health officials agreed to take part.

Study participants were assured that their interviews were not for attribution, and identifying information was removed prior to data review and analysis.

2.

THE HISTORY OF PUBLIC HEALTH IN THE UNITED STATES

FUNDING THE EVOLVING MISSION OF PUBLIC HEALTH

The annals of public health practice evoke a powerful legacy of stewardship over populations—from the first acts of collecting vital statistics for monitoring the health status of settlers in the new colonies to the signal detection of hyperendemic rates of disease to the implementation of measures to contain the spread of transmissible diseases and harmful environmental exposures. As the country and its population grew, public health responsibilities expanded. Diverse organizational structures and funding strategies for managing these responsibilities contributed to the fragmented public health systems in the nation today.

EARLY PUBLIC HEALTH EFFORTS SUPPORTED BY TITHES, FINES, AND TAXES

Within a fledgling America, public health duties rested with state and local governments that applied a sense of responsibility and strong religious beliefs to their oversight of the ill and their efforts to prevent disease.

Public health activities in the eighteenth century included providing welfare money to the poor; campaigning through the courts to limit the number of passengers on ships sailing to the new colonies; imposing maritime quarantines; regulating slaughterhouses (which were acknowledged sources of filth and disease); empowering administrators to isolate individuals or houses with plague or smallpox; and impressing houses, caregivers, or other essentials into service for the care of the ill.²

Early public health measures were funded by a variety of strategies including the collection of tithes, donations from benefactors, and the imposition of fines against those who violated sanitary laws by, for example, spitting in public, selling putrid meat, or failing to drain swamps.³ Some colonies required that the persons or parties held responsible for introducing infectious diseases into a community be made accountable for all costs and damages resulting from the disease.⁴ Taxes often were used to support welfare health activities, such as providing free inoculations and follow-up care for the indigent, and to control the spread of disease.

THE DEVELOPMENT OF FORMALIZED PUBLIC HEALTH ORGANIZATIONS AND INCREASED FEDERAL EFFORTS

Efforts to develop more organized programs of public health were set in motion in the late eighteenth century as poor sanitation, dense urban populations, and the spread of communicable diseases threatened the country's growth and prosperity.⁵ Local and state boards of health began to appear across the United States during the next century, starting with Baltimore in 1793. At this time, limited budgets based on tax revenues were the primary source of support for both local and state public health agencies; only two states spent more than two cents per person in a given year.⁶

In 1798 the federal government established a loose network of marine hospitals in port cities, called the Marine Hospital Service (MHS), to care for seamen, upon whom the early Americans relied heavily to ensure continued trade and security. Since traveling seamen could not find adequate care in the overburdened state or local hospitals of port cities, providing for these men

became a national concern. Federal taxes placed on seamen and ships supported the MHS and its physicians.

In 1912, as rail travel, increased waves of immigration, and population density fueled the spread of infectious disease epidemics, the MHS became the United States Public Health Service, and Congress expanded its functions to include the supervision of quarantines, sanitation, the medical inspection of immigrants, the prevention of interstate spread of disease, the implementation of general epidemiological investigations, the institution of research projects, and the coordination of national and state public health activities.⁷ The U.S. Public Health Service also supported state public health departments through grants-in-aid and by loaning expert personnel and assistance to tackle particular problems.⁸

The role of private donors remained an important part of the public health funding equation. For example, in 1909 John D. Rockefeller provided \$1 million to create the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease, the first installment in his numerous public health investments.⁹

NEW FEDERAL STRATEGIES EMERGE TO FUND PUBLIC HEALTH

The early twentieth century was marked by the emergence of federal categorical public health grants distributed at the state and local levels. Although categorical grants permitted Congress to fund research on certain diseases or target particular population needs, they constrained state public health agencies to act in accordance with federal priorities and distracted from traditional, all-encompassing public health services. The first categorical grant program through the U.S. Public Health Service to state and local governments began in 1918, specifically to address venereal disease control among soldiers in World War I.¹⁰ (Medical examination statistics during the war revealed a surge in the number of young men carrying venereal disease, most often syphilis.) Subsequently, the Sheppard-Towner Act of 1922—fueled by the concerns of women recently granted the right to vote by the Nineteenth

Amendment—provided states with some minimal funding for maternal and child health programs.¹¹ Roosevelt’s New Deal extended this trend through the 1930s,¹² with categorical grants addressing issues such as crippled children, tuberculosis, mental health, industrial hygiene, and dental health.¹³

In 1945, federal block grants were created providing, quite literally, a “block” of funds that can be applied broadly toward public health issues at the discretion of lower governmental levels. Both federal block grants and categorical grants have fundamental strengths and weaknesses. Categorical funding streams attract persistent support groups who advocate at various levels of government, including Congress, for continued and expanded appropriations. Additionally, categorical funding offers local and state governments the opportunity to identify and target strategy and develop programs aimed at specific risk groups or health issues, such as infant immunization or hypertension. But because such funding streams do not interconnect, they create barriers that prevent integration efficiencies, and therefore are referred to pejoratively as “stovepipes” or “silos.”

Conversely, although block grants provide funded entities with greater flexibility to address the spectrum of population health issues, their lack of a natural constituency leaves them vulnerable to political and budgetary trends that may not be in the best interests of the public’s health. Indeed, the very benefit of a block grant’s flexibility may simultaneously function as its weakness, jeopardizing critical health issues that would benefit from the focused support available through the mechanism of categorical funding.

Throughout the middle of the twentieth century, public health departments continued to rely upon federal funding programs, which exceeded the level of support provided through state coffers. Federal public health grants totaling over \$63 million reached a relative high in the early 1950s, but diminished with the end of the Korean War.¹⁴ Federal and state revenue streams fluctuated throughout the latter half of the twentieth century. By 2000, because state and local spending had grown while federal spending stagnated during the 1970s and 1980s, the former accounted for 70 percent of spending for public health services.¹⁵

TRADITIONAL PUBLIC HEALTH ROLE OVERSHADOWED BY THE NEED TO PROVIDE MEDICAL CARE

The Social Security Act of 1935 established the maternal and child health services block grant, social insurance programs for the elderly, and cash assistance programs for the aged, blind, disabled, and poor dependent children.¹⁶ The act sustained the trend in categorical health funding but also began to reenvision public health as a provider of care for the disenfranchised. Attention to traditional public health functions continued to diminish following World War II as postwar reorganization of the health care sector generously funded biomedical research and hospital construction.¹⁷ Many Americans received health insurance as an employment benefit after the war; federal grants responded to growing health care demands by supporting hospitals—building new ones and modernizing existing ones—that had become obsolete owing to the lack of capital investment during the Great Depression and World War II. For example, the Hospital Survey and Construction (Hill-Burton) Act of 1946 called for the federal government to pay one-third the cost of building hospitals and allocated \$75 million for each of the first five years for this purpose. Thus began a subtle shift of emphasis from the public funding of disease prevention to medical treatment. In 1929, 17 percent of U.S. health expenditures funded hospital care; by 1990 this figure had risen to 43 percent.¹⁸

Title XIX of the Social Security Act Amendments of 1965 ushered in the Medicare and Medicaid programs to provide care for the disenfranchised. The major responsibilities of the U.S. Public Health Service shifted from infectious disease surveillance and prevention to medical treatment. Public health funding tactics also changed. Fees—sometimes means-tested—were imposed on the services that health departments were required to provide, both realigning costs to the consumer and allowing state legislatures to continue to reduce the amount of general fund dollars that would be available for state and local public health efforts. Public health departments continued to be diverted from their core, population-based responsibilities of disease surveillance and investigation of outbreaks

to address personal health issues such as nutrition, chronic diseases, and prenatal care.

Emerging social movements of the 1960s—civil rights and the war on poverty, for example—presaged further erosions of the role, critical capacity, and funding of the “traditional” public health system. New social agencies and neighborhood health centers were created, and other single-focus departments like environmental health were established, often by carving out functions, authority, and personnel previously residing within the domain of public health departments.¹⁹

As their resources and reach dwindled, public health agencies became more burdened by both the failing health status of populations (growing rates of heart disease, cancers, drug use, and so on) and rising expectations that they should provide medical attention to the escalating numbers of Americans disenfranchised from insurance and routine sources of health care.²⁰ In the minds of many, “public health” had become synonymous with “publicly funded health care.” By the late 1980s, 75 percent of all state and local health department expenditures went for personal health care services, a trend that would continue through the end of the twentieth century. Public health had earned the designation “provider of last resort.”

EMERGING INFECTIOUS DISEASES PRESENT NEW PUBLIC HEALTH CHALLENGES

Many considered public health’s traditional role in disease surveillance and intervention superfluous as the second half of the twentieth century heralded the “golden age of antibiotics.” In his 1962 text *The Natural History of Infectious Disease*, Nobel laureate Frank Macfarlane Burnet declared, “To write about infectious disease is almost to write of something that has passed into history.”²¹

Despite similar predictions, however, infectious diseases gradually overtook the pharmaceutical and medical interventions that had promised their elimination. During the 1970s, cases of gonorrhea in the United States increased by nearly 170 percent because of acquired drug resistance,²² and during the 1980s reported cases of tuberculosis grew by about 20 percent

for the same reason.²³ Additionally, the globalization of economies, population movements, and climatic and ecological change have introduced “a world” of new diseases. Since the early 1970s nearly forty newly identified infectious pathogens have appeared, including HIV, hepatitis C, El Tor and O139 strains of *Vibrio cholerae*, hantavirus, Ebola virus, *E. coli* O157:H7, and the SARS virus.²⁴ The overlay of behavioral health issues also has exacerbated the incidence and prevalence of some infectious diseases. Rising rates of drug abuse in the 1970s and 1980s resulted in epidemics of sexually transmitted diseases, HIV-AIDS, and fetal development problems as a result of transplacental infection.²⁵

Explosions in the incidence of emerging and reemerging infections occurred as the penetration of managed care in our health system crested. Celebrated by policymakers as the means by which rising health care costs could be contained through the virtues of eliminating fragmentation of service provision and strictly apportioning diagnostic and treatment encounters, many—even in public health—had hoped that managed care would tip the balance of funding from interventional medical services to preventive health activities.²⁶ In fact, the promise of managed care has only partially been fulfilled, as health care continues to get more expensive without necessarily becoming more effective.²⁷

When Medicaid assumed a managed care platform, public health lost the majority of its fee-for-service revenue, the money on which it had become increasingly dependent over years of treating patients while diminishing its focus on population-wide health issues. There were now frighteningly few sources of support for public health’s traditional functions: disease detection and surveillance, investigation, and outbreak control. By the 1990s government expenditures on public health represented a mere 1 percent of total government health outlays in the United States.²⁸ The disproportionate emphasis on treatment at the expense of prevention has resulted in this country achieving the highest per capita investment in health care in the world but with only the twenty-seventh highest life expectancy rate to show for it.²⁹

PUBLIC HEALTH TODAY

The public health sector faces the specter of bioterrorism with limited human and fiscal resources. Many skilled medical and public health professionals have left the public health workforce for more secure and lucrative positions elsewhere.³⁰ Sophisticated technologies, long present in other sectors like banking, the food industry, travel, and commerce, have eluded the grasp of public health departments. The public health system has become dislocated from some critical colleagues, the hospital sector and private physicians, by competing for—rather than complementing—roles and revenue. Many public health officials express frustration with the lack of acknowledgment of their responsibilities, and paltry resources as state and local funding continue to decline.

The evolution of public health's mission reflects the oft-shifting dynamics of populations, politics, and fiscal procurement strategies. Beginning as a system funded by tithes and taxes, charged with the responsibility of bolstering our nation's security and protecting our young and growing economy, public health in the United States has become a fractured enterprise, responsible for providing the disenfranchised with health care and funded by fluctuating and ultimately unreliable state and federal revenue streams, which have alternatively compensated for one another in a downward spiral. The overriding objective of protecting the public's health, and with it the nation's psyche and its well-being, has shattered into a thousand categories and blocks that fail to be more than the sum of their parts. Public health today is a tiny bit of everything but not enough of anything.

BIOTERRORISM TAKES PUBLIC HEALTH IN A NEW DIRECTION

During the 1970s and 1980s the Soviet Union developed the most advanced biological weapons program known. Soviet scientists weaponized pathogens such as smallpox, anthrax, and plague and developed dispersion

devices like biological missiles. Modern biotechnology and genetic engineering facilitated the development of antibiotic-resistant and genetically altered, more virulent strains of biological agents. In the late 1990s the Russians developed techniques for cultivating the newest emerging pathogens, such as Marburg and Machupo viruses.³¹ Gene sequencing and recombinant technology have allowed scientists to create “designer” viruses: by splicing an immunomodulatory gene from a mouse into a mousepox virus, a research team in Australia accidentally created a pox virus that could kill both vaccinated and genetically resistant mice.³² The increased commercial accessibility of genetic engineering, while certainly improving biomedicine, also may have unleashed capabilities to create pathogens more virulent than could be conceived by nature.³³

The first legislation specifically addressing bioterrorism preparedness in Congress was the Defense Against Weapons of Mass Destruction Act of 1996, also known as the Nunn-Lugar-Domenici Act. This act, which established the framework for homeland defense against nuclear, chemical, and biological weapons of mass destruction, was drafted in response to mounting concerns through the 1990s over the suspected buildup of biological weapons.³⁴ The campaign to prepare the nation for post-cold war asymmetric threats took the form of rapidly training a front line of local emergency workers, or first responders, and working more closely with the Federal Emergency Management Agency (FEMA), the departments of Defense and Energy, and other relevant federal, state, and local agencies. By 1998 first responders in 40 of the 120 U.S. cities designated for funding in the act had completed training.³⁵ The Nunn-Lugar-Domenici Act authorized \$36 million to the Department of Defense but only \$6.6 million to the U.S. Public Health Service in fiscal year 1997.³⁶ The Public Health Service used its funds to develop Metropolitan Medical Strike Teams (MSTs) prepared to deliver mass medical treatment and conduct mass decontaminations. Consisting of physicians, nurses, paramedics, emergency medical technicians, hazardous material technicians, and law enforcement officers, MSTs were developed as well to aid coordination between area medical

facilities to ensure that limited resources would be used efficiently during an emergency.³⁷

More bioterrorism-related funding came subsequently through the Public Health Threats and Emergencies Act of 2000, which allocated \$540 million to state and federal biodefense and public health capacity-building activities. Approximately \$300 million was made available to state and local public health agencies. This relatively small amount was directed toward beginning the process of defining and assessing the status of state and local capacities that would be necessary to respond effectively to a significant public health threat. Included within this list of essential capacities were preparedness planning, surveillance and epidemiology, laboratory preparedness, communications, and strategies to prevent the spread of infectious diseases.³⁸

The Public Health Security and Bioterrorism Preparedness and Response Act of 2002, triggered by the anthrax attacks of 2001, provided an infusion of almost \$1 billion specifically to improve state and local level public health capabilities and hospital preparedness.³⁹ The objective of this report is to understand how these funds were handled and spent among state and local health departments.

Many of the individuals who were interviewed for this report view bioterrorism preparedness as an opportunity to rebuild the infrastructure, credibility, and mission of the public health system that has eroded over the past four decades. Others view biodefense as yet another capricious interest that will further deflate the system's current efforts and will tax its limited resources. While bioterrorism preparedness may present one of the country's greatest challenges, in many ways it may prove to be the public health system's defining opportunity.

3.

BIODEFENSE FUNDING: WHERE HAS IT GONE? HOW HAS IT BEEN SPENT?

GUIDING THE USE OF THE FISCAL YEAR 2002 BIODEFENSE FUNDS

As seen from the national perspective, the state and local public health “system” is a fragmented and diverse collection of departments and agencies.⁴⁰ Attributable in large part to federalism, the public health system encompasses a wide array of organizational structures, funding levels, and responsibilities. Some states have one central government body that oversees all public health services; others have separate agencies for social services, aging, mental health, and environmental health, all of which have their own policy and programmatic responsibilities. There are states in which public health authority is centralized, others in which the authority is decentralized or delegated to the local health agencies, and still others in which there resides a mixture of centralized and decentralized authority.⁴¹ Additionally, the responsibilities of public health departments vary in concert with how they are organized within city, county, district, territorial, or state governments and with the respective scope of human resources at their command. Of the almost three thousand local health departments across the United

States, two-thirds serve populations of less than fifty thousand. The median number of full-time staff in local health departments is thirteen persons; the mean is sixty-seven.⁴²

The lack of uniformity in practices, resources, and capacities means that local and state public health practice eludes ready delineation.⁴³ Despite two major efforts that took place in the latter part of the twentieth century to harmonize and bring programmatic consistency to the work of state and local public health departments through three “core functions” and ten essential services,⁴⁴ it is difficult to define responsibilities and compare expectations of what can be delivered across the nation’s public health agencies. A 1988 Institute of Medicine report, *The Future of Public Health*, concluded that the public health system was in “disarray.”⁴⁵

Following the 1950s, increased emphasis on local public health decisionmaking militated against rigid systems of federal oversight. When block grants appeared as an important conduit for the federal funding of public health, they were designed to distance Washington from the decisionmaking process at the state level.⁴⁶ Although the federal government continued to finance categorical public health programs, targeting new diseases and vulnerable populations, the absence of standardization promoted inconsistencies in the scale, resources, and competencies of public health agencies across the country, which in turn confounds any attempts to compare and track public health expenditures.⁴⁷

Bioterrorism necessitated a change in the paradigm. Whereas traditional public health problems might be “categorically” approached by consideration of specific environmental, genetic, behavioral, gender, and other risks, bioterrorism implied a more encompassing “at-risk” population—the citizens of the United States. The Department of Health and Human Services recognized the importance of greater precision and consistency of practices across the nation and the necessity of imposing clearly defined guidelines for the use of bioterrorism preparedness funding. In concert with the Centers for Disease Control and Prevention (CDC), it crafted a blueprint titled, “Cooperative Agreement Award Notice and Grant

Guidance, Guidance for Fiscal Year 2002 Supplemental Funds for Public Health Preparedness and Response for Bioterrorism.” Grantees received an initial 20 percent of their share almost immediately, but the release of the remaining 80 percent of each grantee’s award was contingent upon approval by the Department of Health and Human Services. Written submissions were required to reflect the guidance document’s loosely weighted six focus areas: preparedness planning and readiness assessment (20 percent); surveillance and epidemiology capacity (20 percent); laboratory capacity for biological agents (13 percent); communications and information technology (12 percent); risk communications and health information (5 percent); and education and training (10 percent). In addition to specified objectives or focus areas, the CDC plan set critical benchmarks for progress and emphasized grantee accountability.⁴⁸

The document, which was formulated in a relatively swift three months, served the critical need of helping catalyze bioterrorism preparedness efforts for many public health agencies that were uncertain about how to meet this new challenge. In fact, 88 percent of the study respondents acknowledged that the CDC guidance document helped channel short-term efforts and provided an important framework with which to prepare for new public health responsibilities. One participant noted, “CDC did a wonderful job to help us reach critical capacities.” Twenty-five participants remarked either that the plan was, at the very least, a useful checklist (as one official remarked, to “give CDC what it wanted”) or that it served as a guide for expending bioterrorism preparedness funds. A few participants noted that there was unevenness in the quality of guidance provided in the CDC’s plan, specifically referring to the focus area addressing education/training and the one addressing communications and information technology.

Some participants utilized the guidance document as a template, believing that it was both amenable to modification within the construct of their own organizations and conducive to incorporating their “own spin.” A few states used the plan as the basis for creating their local health department plans.

Although few participants would deny the benefits of the CDC's guidance document in jump-starting preparedness efforts, many who were interviewed for this report expressed widespread concern that the guidance document was too inflexible and prescriptive to facilitate easy implementation at the local level, where uniformity and consistency have historically been absent. Six local public health agencies expressed concerns that the CDC document was too "state-centric" and did not harmonize with the preparedness needs of most local agencies. Eleven responded that the guidance was not flexible enough to be efficiently implemented at the local level. Eight noted that the rigidity of the system of proportional weighting of focus areas was impractical and inconsistent with the existing diversity of capabilities across public health departments.

Both the plan and the funds that necessitated its creation promise to advance public health toward what the "core functions" and "ten essential services" initiatives had aimed for in the previous decade—a set of uniform capacities for public health agencies across the country. Bioterrorism preparedness funding may offer the unique opportunity to rebuild the public health systems' infrastructure to meet national objectives.

Moreover, most public health officials recognized that the capabilities needed to detect and respond to biological weapons required the same skill sets and resources that are needed to deal with naturally occurring microbial infections as well as a variety of other health emergencies. The synergy thus produced fit the test of a "dual-benefit" paradigm.

The philosophy of "dual benefit" or "dual use" has been deeply rooted within the public health system for a number of years. The term "dual benefit" is common to both economics and engineering in reference to a single application yielding advances on more than one front, while "dual use" most frequently is connected with technologies that have both civilian and military applications. In today's public health argot, "dual benefit" and "dual use" refer to the complementary gains to traditional public health capacities and biodefense capacities when basic infrastructure, surveillance and detection systems, laboratories, tools, and competencies are strengthened.

Every one of the interviewees emphasized that bioterrorism preparedness efforts should be used to strengthen communicable disease and other traditional public health programs. One local health department interviewee from a southern state spoke of both the importance and benefit of combining efforts in biodefense, emergency, and disease outbreak preparedness: “[there is] not enough of everyday work in bioterrorism to keep specific positions fully busy, but there is a variety of related needs that are core and essential functions of public health.”

In fact, the CDC’s “Cooperative Agreement Award Notice and Grant Guidance” specified that the fiscal year 2002 funds be used to enhance public health infrastructure. Critical benchmarks in the document included planning to develop a system to evaluate urgent disease reports, to assign at least one epidemiologist to each metropolitan statistical area with a population greater than 500,000, and to cover 90 percent of the population with a communications system, the Health Alert Network, extending across public health agencies and hospital emergency departments.

Although thirty-six of the study participants indicated a strong desire to pursue dual-benefit ventures with the bioterrorism preparedness funds, many also spoke of the difficulty of realizing this goal in practice. Eleven participants referred to the general inflexibility of the CDC guidance document, commenting that it often promoted the creation of specialized, narrowly focused programs, pejoratively referred to in public health jargon as “stovepipes”—the very antithesis of “dual benefit.” Several participants indicated that the guidance plan eroded efforts to build the cross-operational infrastructure on which bioterrorism preparedness depends. According to one local health official in the Northwest, “It felt just like another categorical program,” with little potential for reaping dual benefits.

The perceived rigidity of the guidance plan and the necessity of accounting for monies expended specifically against six focus areas dampened the power that comes from implementing dual-benefit initiatives. As one midwestern local health official complained, accounting requirements and red tape “impeded [efforts] to cross over multiple focus areas,” thereby defeating measures to improve organizational agility.

MOVING FEDERAL BIODEFENSE DOLLARS TO STATE AND LOCAL PUBLIC HEALTH AGENCIES

The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 represented the single largest investment in basic public health infrastructure since World War II.⁴⁹ It allocated approximately \$1 billion specifically to improve state and local level public health capacities and hospital preparedness.⁵⁰ The CDC was responsible for distributing \$918 million of that sum to state, selected local, and U.S. territory public health agencies; the Health Resources and Services Administration (HRSA) distributed \$120 million to hospitals in each state and territory.

In January 2002 Secretary of Health and Human Services Tommy Thompson sent a letter to every U.S. territorial and state governor as well as the mayors of New York City, Chicago, and Washington, D.C., and the leadership of Los Angeles County, local entities that were to receive direct federal funding, detailing how much each grantee would receive for preparing for bioterrorism and other public health emergencies. At that time, the secretary announced the release of more than \$200 million of the approximately \$1 billion authorized to recipients for rebuilding state, territorial, and local public health infrastructure. The federal plan specified a minimum or base amount of \$5 million to each entity, with additional funding based on population according to the most recent data collected by the Bureau of the Census.⁵¹ This initial release of funds was to be spent in developing a required plan and, in part, to cover costs directly pertaining to anthrax-related activities. Release of the remaining funds was to take place upon approval of the plans by the CDC and Department of Health and Human Services. Grantee plans were to be submitted to the department by March 15, 2002.⁵² After the initial review, twenty-four states and two cities had their plans fully approved; twenty-four states and Los Angeles County had most of their plans approved, with some funds withheld pending further review or refinement of a portion of the plan; two states, Washington, D.C., and all eight U.S. territories were given an extension to complete their plans. By June 2002 plans from all states, territories, and directly funded local jurisdictions

had been approved, and the remaining funds were distributed.⁵³ (For the purposes of this study, attention was placed on funds allocated to the states and not to the four local jurisdictions or the territories.)

Each state has an accounting system that organizes cost centers in ways that are unique, making it impossible to compare investments in public health. Funding streams for state and local public health departments reflect the same broad diversity as described earlier. There are multiple sources of revenue from agencies such as the Department of Health and Human Services, the Department of Housing and Urban Development, the Department of Agriculture, the Environmental Protection Agency, and the Department of Education. Although the organization of public health agencies and programs varies substantially from state to state, most federal dollars are absorbed by and subsequently drawn down from state general revenue.⁵⁴ Many states have a local health funding formula and also require that local health departments submit annual budget requests.⁵⁵ There is no standardized methodology among states for determining the amount of general funds awarded to local public health departments.⁵⁶ Nearly all such agencies believe that they are underfunded.⁵⁷

In general, states and the four directly funded local jurisdictions were able to access federal biodefense funds—which ranged from \$6.5 million for Wyoming to \$70.8 million for California—quickly after the DHHS notice of award was received.⁵⁸ A majority of state health officials indicated that it took only a matter of weeks before they had spending authority, owing to the recognition of the importance of the biodefense initiative. In some states, however, delays occurred as their legislatures completed legally required processes to authorize receipt and expenditure of the federal funds.

States subsequently enjoyed considerable latitude in terms of passing the money on to local public health agencies, however. According to a number of local respondents, the procedures involved were lengthy and laborious. In fact, the in-state allocation processes resulted in delays of one to thirteen or more months (with an average of five months across the study) before localities could receive spending authority for

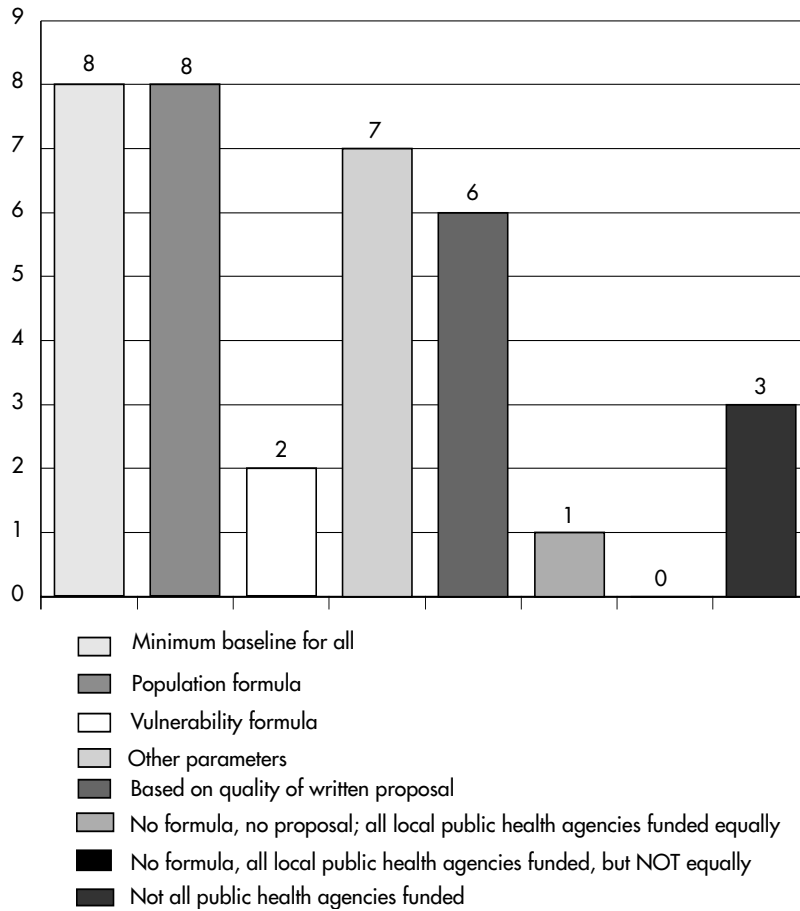
the biodefense funds. Although most state agencies attempted to implement a collaborative funding process, study respondents, on average, rated the level of state and local collaboration as a three on a scale of one to five, with five being the highest level of collaboration (three respondents reported “zero” and eight reported a five). The holdups in conferring local spending authority for bioterrorism preparedness were a significant source of frustration among many of the local public health officials interviewed.

States explained their actions by attesting to the intensive exertions required to put local funding strategies and policies into place. Given the unusual size of the federal award, and the unprecedented visibility and urgency of bioterrorism preparedness following the anthrax attacks, the states were faced with an intricate challenge in allocating such impressive sums in a way that could be accounted for readily. There were three conundrums facing state public health departments as they moved to disburse federal bioterrorism preparedness dollars to their local public health agencies: Which local agencies to support? How much funding should they receive? Through what process could these federal dollars be allocated?

DETERMINING WHICH LOCAL HEALTH AGENCIES SHOULD RECEIVE BIOTERRORISM DOLLARS

A number of states indicated that they attempted to provide at least some small amount of money broadly across the majority of local health agencies. The bulk of funds in most states, however, was dispersed according to population size, a method similar to the federal algorithm used to determine the state awards. There were several examples of states preferentially allocating larger awards where significant public health capacities already existed that could serve as a foundation for bioterrorism preparedness. There were also many instances in which states determined that generous awards to small health departments would have a negligible impact on bioterrorism preparedness efforts overall. (See Figure 3.1, page 26.)

FIGURE 3.1
STRATEGIES USED BY STATES TO AWARD FUNDS
TO LOCAL PUBLIC HEALTH AGENCIES



Source: Compiled by author from data drawn from the survey described in the Appendix.

Several health officials used this effort to find ways to build efficient bioterrorism response strategies as an opportunity to consider or further expand the use of regional public health networks. In some instances, biodefense preparedness procedures helped to create regional staffing models for certain classes of expertise, such as epidemiologists and planners. Regionalization also was seen as the model for ensuring integrated responses across

local agencies and jurisdictions to handle a surge in demand from a large-scale disease outbreak that could overwhelm the capabilities of a single department.

Many of the local public health officials who were interviewed for this study acknowledged the merits of the regional approach and both its short- and long-term benefits. One participant noted enthusiastically that regionalization could allow public health to carry out its intended mission without intervention from elected officials: “regionalization cuts past governance and political issues.”

DETERMINING LOCAL PUBLIC HEALTH FUNDING AMOUNTS

In addition to the decisions regarding which agencies should receive support, states were faced with determining the total amount of local funding to be awarded. Eight local officials representing six states were required to submit a written proposal that would be factored into the state’s calculation of their award amount.

Although most state health officials noted that they aimed for equity and worked within the guidelines for CDC grants, several local health departments felt that state agencies withheld too much of the award for their own use and for infrastructure development. In fact, the range of awards to the local health departments (although at least two had not received any of the money at the time these study data were collected) interviewed for this study was from \$20,000 to \$6.3 million. The concerns raised by local respondents surveyed about the percentage of funds retained by the states can be considered in the context of a report to Congress showing that 41 percent of the \$918 million designated went directly to local jurisdictions.⁵⁹ Subtracting direct allocations from Washington to the four large local jurisdictions and the allocations to U.S. territories, what was sent directly to local jurisdictions amounted to 34.1 percent. This study did not quantify the “indirect” benefit of state expenditures to their localities. Some local respondents acknowledged that there were significant benefits to their communities from state expenditures (for example, software

licenses, communication systems, epidemiologists), while others indicated that purported benefits were overstated and did not match local priorities.

DETERMINING FUNDING STRATEGIES TO LOCAL HEALTH DEPARTMENTS

Once they devised formulas to determine which local agencies should receive bioterrorism preparedness assistance and the amount, states had to construct a process for releasing funds and ensuring accountability of expenditures. Some states modified existing local grants to facilitate the flow of new monies. A few states implemented a system of contracts with local governments. This was perceived by local health officials as requiring a long and “lawyer-centric” review and approval process. Most local health departments needed approval of the state contracts by local boards of health or city commissioners, which further delayed sign-offs authorizing the expenditure of new funds.

FUNDING BIOTERRORISM PREPAREDNESS IN A CLIMATE OF FISCAL UNCERTAINTY

States currently are burdened by the greatest combined deficit in recent history. According to the 2000–2001 State Health Care Expenditure Report, after a decade of strong economic indicators, the fiscal conditions of the states started to deteriorate in 2000. During 2002, thirty-seven states had to cut their enacted budgets by an aggregate \$13 billion. Tax revenues fell, and nearly every state dealt with deficits while constructing its 2003 budget.⁶⁰ Fiscal distress is expected to continue through 2003 and 2004. In its January 2003 report, the Center on Budget and Policy Priorities projected that states will face budget deficits between \$70 billion and \$85 billion for fiscal year 2004.⁶¹ According to a recent survey by the National Conference of State Legislatures (NCSL), thirty-nine states responded that they are facing budget gaps totaling at least \$68 billion for fiscal year 2004.

This is on top of cumulative budget gaps of \$37.8 billion in 2002 and \$75 billion in 2003.⁶² Private insurance has been in decline since the 1990s, but was balanced by an expansion in public coverage through Medicaid and the State Children's Health Insurance Program (CHIP), both of which involve federal funding and matching funds from state coffers. The state matching rate, or what proportion of the funding is provided by a given state, varies quite widely from state to state for both programs.⁶³ However, this year states will face budget cuts of \$40 billion to \$50 billion, with Medicaid being one of the programs likely to suffer sizable reductions. Today there are 41.2 million uninsured Americans,⁶⁴ and many local public health departments still constitute an important "safety net" when it comes to health care services.

Both across-the-board and program-specific reductions have had staggering effects on public health agencies, what one study participant referred to as a "death of a thousand cuts." Fourteen of the forty-two health officials interviewed for this study who had specific knowledge of their recent budget and staffing cutbacks—affecting local and state health departments covering jurisdictions ranging from 22,000 to 36 million—have sustained in total more than \$27 million in budget reductions and the loss of 384 full-time-equivalent positions. Most study participants who identified specific program details complained that their tobacco control programs have sustained significant cuts, if not complete elimination. Additional program setbacks included cuts in substance abuse programs, maternal child health programs, mental health programs, violence prevention, school-based clinics, elder care programs and home visiting, teen pregnancy and wellness programs, perinatal services, nursing, water quality and environmental health, as well as tuberculosis, HIV, and other communicable disease control programs. State budget woes, not least the cuts borne by public health agencies, have been prominently featured in the media.

Creating a new program—bioterrorism preparedness—has required strong leadership and decisionmaking by state and local public health officials. Unfortunately, this has occurred in an environment of extreme state and local

budget shortfalls, and most of the budgetary decisions have been beyond the control of public health officials. States and local communities have had little general revenue of their own to dedicate to the cause: almost all of the study participants indicated that federal contributions financed 100 percent of their bioterrorism preparedness program. Some local respondents acknowledged, however, that a significant amount of unbudgeted, in-kind local support in fact supplemented the federal funds received.

Moreover, receiving biodefense monies did not immediately facilitate acquiring new and essential resources at either the state or the local level. There were lengthy and difficult hurdles to vault, such as securing exemptions from hiring freezes and negotiating over positions with unions. The process of realignment to emphasize biodefense skill sets damaged morale in departments where preexisting programs and positions were trimmed to make way for what many perceived to be yet another “silo” of special interests.

Some states, pressed to maintain “smaller government,” contracted with schools of public health and medicine to acquire essential skilled personnel. This was derided by some of the interviewees as working against the goal of building a strong foundation for public health. Moreover, there were a few instances in which bringing in outside “expertise” turned out to be less efficient. One study participant retold her experience:

The state required us to fund a local college to develop training modules for the biological agents. But the college did not have the resident expertise for this task so they “hired” us to do the work. Then the college realized they had to hold conferences and teach from these modules. They did not have the expertise for this either so they “hired” us back again. We did all the work but the money went from us back to them and back to us through a series of contracts. It was a waste of time and money when we could have done it in the first place.

State and local public health officials and leaders at the Department of Health and Human Services were all concerned with the possibility that routine public health agency funds might be supplanted by the bioterrorism pre-

paredness grant. Supplantation, a well-known concept to those who have worked in the public health sector, refers to using one funding source to replace another. For example, in anticipation of a large federal block grant, a state government may elect to cut a proportionate amount of its own resources for public health, shifting more of the fiscal burden to the federal government. Acts of supplantation are difficult to substantiate, however, because of the interpretive nature of defining what constitutes illegal supplantation and the lack of standardization in accounting for state and local public health funds.⁶⁵ Supplantation of state and local spending with federal bioterrorism money was expressly forbidden in section 319C-1 of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (PL 107-188), which “requires amounts appropriated to be used to supplement and not supplant other state and local public funds provided for activities included under the grant programs.”⁶⁶

Study participants were explicitly asked about the occurrence of supplantation. Twenty-nine, or 70 percent of those who answered the question, responded with an immediate and resounding “no” and qualifiers such as “it would be illegal” or “we were told we could not do it.” However, some indicated that supplantation had taken place. Additional questioning revealed examples of probable supplantation in practice. In all, twelve study participants representing seven of the ten states either acknowledged supplantation in practice or described activities that could be construed as supplantation. In perhaps the clearest example, one local interviewee noted that “the state cut out all of the local support for mandated services, passed through the bioterrorism funds at the same dollar level, and required us to fulfill both sets of responsibilities.” He added that legislative efforts are under way to correct that problem.

Because substantial budget cuts were being implemented simultaneously with the creation of new bioterrorism preparedness responsibilities, many felt that they were being asked to do additional jobs with the same, or often even a smaller-sized, staff. In several instances, state and local public health employees at risk from the budget ax were shifted into newly

created and federally funded biodefense positions. “It wasn’t supplantation,” said one study participant. “It was building new capacity.” One official recounted that he held the new biodefense positions open long enough to allow vulnerable staff to apply for and be hired into these slots. The interviewees emphasized that transplanted personnel shouldered most if not all of the biodefense responsibilities.

Staff transplantation tended to defeat the intent of the statute in accruing essential expertise to respond to the threats posed by biological weapons. When veteran employees from other areas of public health were moved into bioterrorism preparedness slots, the fit in terms of skill sets was questionable. Although nursing and environmental health/sanitarian positions entail training that is easily transferable and applicable to biodefense preparedness, other occupations have less evidence of experience that is directly relevant. Those previously classified as, say, “tobacco control workers” or “teen pregnancy outreach staff,” who were moved precipitously into these positions, will require time and additional training to become effective bioterrorism specialists.

Once hiring authority was finally approved, the quest to find qualified staff, particularly highly specialized people like epidemiologists, to fill newly created positions proved exceedingly difficult. Salaries were rarely competitive, and, without conviction about the sustainability of federal biodefense funding, these “soft money” positions offered limited professional security. As one participant lamented, “We could not attract the best and the brightest.”

HOW THE 2002 BIODEFENSE PREPAREDNESS FUNDS HAVE BEEN SPENT

The 2001 anthrax attacks demonstrated the frailty of the U.S. public health system. Systems of communication and information sharing between the public health and hospital communities were limited. Laboratories could not

meet the demands for testing “white powdered” specimens. The medical community was learning on the fly about how to diagnose and treat an unfamiliar disease. Previously unfamiliar partners, including the police and the FBI, suddenly were inserted into what many thought, at least initially, was a health investigation. Public health departments lacked the surge capacity to meet the unrelenting demands of the “worried well,—” the media, and the elected officials who required continuous assurances that aggressive and consistent measures were being instituted to protect their constituents.⁶⁷

The fiscal year 2002 federal bioterrorism preparedness grant aimed to improve the ability both to recognize unusual disease outbreaks and to mount a timely and efficient response to track and control their ill effects on populations. Public health’s “core business” has always centered on the detection and rapid containment of infectious diseases. However, the organizational and personnel capacities of the public health system currently are inadequate and would be overwhelmed if required to respond to deliberate, perhaps multiple, releases of highly communicable and incapacitating or lethal pathogens on unsuspecting and vulnerable populations. Recognizing the multiplicity of competencies required, the CDC/Health and Human Services guidance document sought not only to lay out a blueprint for public health departments to begin preparedness routines, it also emphasized that this would require planning, integration, and coordination with other critical responders to a bioterrorism attack or mass-casualty event: hospitals, public safety and law enforcement, emergency responders, and others.

This study elicited specific information from participants regarding their use of federal bioterrorism preparedness funds: What tools were acquired, and what were the real or perceived preparedness gains achieved? Topping the list of the most frequently purchased items was critical communications equipment, including computers, laptops, redundant servers, Global Positioning System software, videoconferencing equipment, cell phones (and even a few satellite phones), BlackBerry devices, and pagers. Many study participants remarked that this equipment was essential for their efforts to provide 24/7 operational capacity,

something that has not been available from the majority of local health departments and some state health agencies until quite recently. Other equipment purchases have included refrigerators, alarms, and back-up generators pertinent to vaccine storage. Web sites have been revamped, and the Health Alert Network has been expanded. There have been many laboratory upgrades, and numerous public health departments have developed plans and made arrangements to receive and dispense items from the Strategic National Stockpile, which is a national repository of antibiotics, antidotes, antitoxins, and medical supplies designed to augment and resupply state and local public health agencies in the event of a large-scale health emergency.

Some officials stated that it was difficult to spend so much money quickly. Additionally, seven study participants reported that purchasing efforts were constrained by a requirement to procure certain items—especially communications equipment—through state-sanctioned “sole source” vendors. While this strategy supported the building of uniform and interoperable platforms statewide, a number of local public health interviewees volunteered their preference for local purchasing authority for several reasons: state purchasing of “big-ticket” items was delayed because of overall state spending restrictions and budget shortfalls and also as a result of the search for “approved” vendors. A few study participants pointed out that state-based approaches to purchasing limited their ability to acquire items specific to their needs. One local public health official from a western state recalled, “After four months the state returned our money because they could not get what we needed from a designated vendor.”

True “gains,” however, exceeded the purchases of equipment. Many of the interviewees declared that the most important preparedness enhancements have involved developing strong relationships and connectivity with hospitals, law enforcement, fire departments, and traditional emergency responders. In the minds of many participants, these relationships have paid big dividends. One state official said, “The commandant of the national guard and the state EMS director are my new best friends.” According to

another study participant, “EMS now checks with us before rushing in with sirens blazing.” Many pointed out that creation of these relationships takes time, and resources to sustain them once formed. Several observed that as a result they have gained visibility and credibility within the community and the chambers of elected officials. “We are now part of the big picture,” stated a participant.

Specialized capabilities have been acquired by hiring part-time pharmacists and contracting with universities, mental health agencies, and public relations firms for the development of media materials and assistance with community outreach. Contracts with medical schools have helped supply epidemiologists and infectious disease specialists. Training programs both for and by health department personnel promoted mutual learning among practitioners in various fields and added to the development of external partnerships.

A number of interviewees mentioned the importance of drills and exercises to test their response capacity, but not all had sufficient funds to cover the costs entailed, especially smaller local health departments. Many indicated that they still require training in the Incident Command System and still need to develop increased proficiency in risk communication. (Incident Command is a basic operations and management system that has been applied in hospitals, fire departments, and other emergency response organizations.)

There was one specific issue that stimulated much commentary, both negative and positive. According to most respondents, the Phase I Smallpox Vaccination Initiative, which was not a component of the six focus areas enumerated in the federal guidelines, delayed many state and local bioterrorism preparedness programs and required substantial, unbudgeted time and resources. Some participants complained that it also compromised their credibility within the community and among the hospital sector, particularly given the disagreement in the science and medical professions regarding actual risk levels and the advisability of using a vaccine with serious side effects.⁶⁸ Some participants found the smallpox initiative

so time-consuming that labor had to be diverted from routine but important work such as outbreak investigation and reporting, planning for pandemic influenza, and even taking hurricane precautions. One interviewee noted, “It took everything we had for months—and no one was vaccinated.” Additional, unsolicited comments about the smallpox vaccination program were made: “Stopped us dead in the water”; “Curtailed virtually all other BT work”; “Totally derailed planning efforts for many months”; “It was a nightmare.”

Despite the frustration expressed by the majority of interviewees, most acknowledged that the smallpox vaccination program had important benefits that contributed to overall bioterrorism preparedness. Public health agencies did interact, some to a very significant degree, with hospitals, which helped build relationships and improve partnerships. Additionally, it reinforced mass immunization planning efforts and facilitated the practice of mobilizing staff and resources. Because it was so personnel intensive, the smallpox vaccination initiative required at least some contribution from the majority of staff in local health departments. This developed intra-agency cohesion, a sense of agencywide pride, and a shared sense of bioterrorism preparedness. One of the participants, in considering what had been gained through the Phase I initiative, expressed the thought, “If you can be prepared for smallpox you can be prepared for anything.”

BIOTERRORISM: ARE WE NOW MORE PREPARED? WHAT WILL GREATER PREPAREDNESS COST?

Public health officials have encountered and overcome many barriers in their efforts to move bioterrorism planning and response capabilities forward subsequent to receiving federal funding in 2002. In fact, despite the pain and sweat needed to get past the impediments, many might perceive a “silver lining” in that preparedness has brought fresh attention to public health and has given it an expanded sense of value within the community. The public

health officials interviewed for this study cited the following successes as a result of their implementation of the federal bioterrorism program.

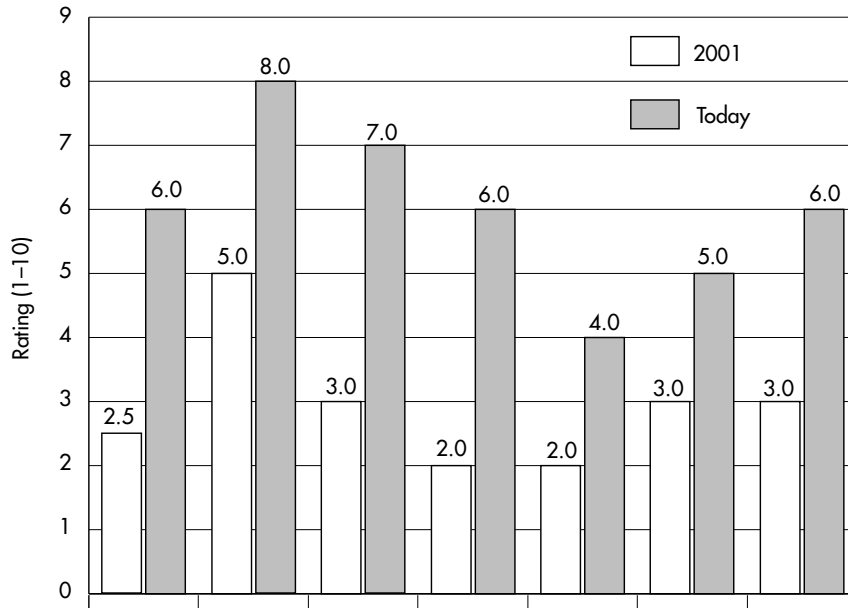
SUCCESSSES IN PREPAREDNESS

PREPAREDNESS LEVELS. The majority of the individuals interviewed for this study agreed that their health departments are now better prepared than before the anthrax attacks. While participants, on average, rated their 2001 level of preparedness for a significant biological attack at 2.6 on a scale of 1–10 (with 10 being the highest), they rated their current level of preparedness at 5.5, more than twice as high. (See Figure 3.2a and Figure 3.2b, pages 38 and 39). New or improved relationships with organizations outside the field, development of community plans, training in the highest-priority biological weapons scenarios, modernized equipment, and, for some, the opportunity to participate in drills or tabletop exercises have contributed to this rising gauge of preparedness. A few of the study participants ventured that their preparedness campaigns would have led to swift and proficient responses to a potential SARS outbreak had it occurred in their jurisdictions.

INTRA-AGENCY COHESION. Several participants believed that bioterrorism preparedness had fostered a greater sense of cohesion within their organizations. A few public health officials recalled that they resisted the inclination to establish separate bioterrorism offices, recognizing that response efforts would need to be integrated horizontally across the organization. There were several respondents who specifically thought bioterrorism preparedness might facilitate disassembling the “silos” and “stovepipes” that have become characteristic of health departments.

CREDIBILITY GAINS. Participants noted that their agencies now have much greater visibility and credibility within their communities. Many of those interviewed felt that their work had been recognized and valued and that

FIGURE 3.2A
STATE OFFICIALS' RATINGS OF PREPAREDNESS FOR A
SIGNIFICANT BIOTERRORIST INCIDENT: 2001 VERSUS TODAY



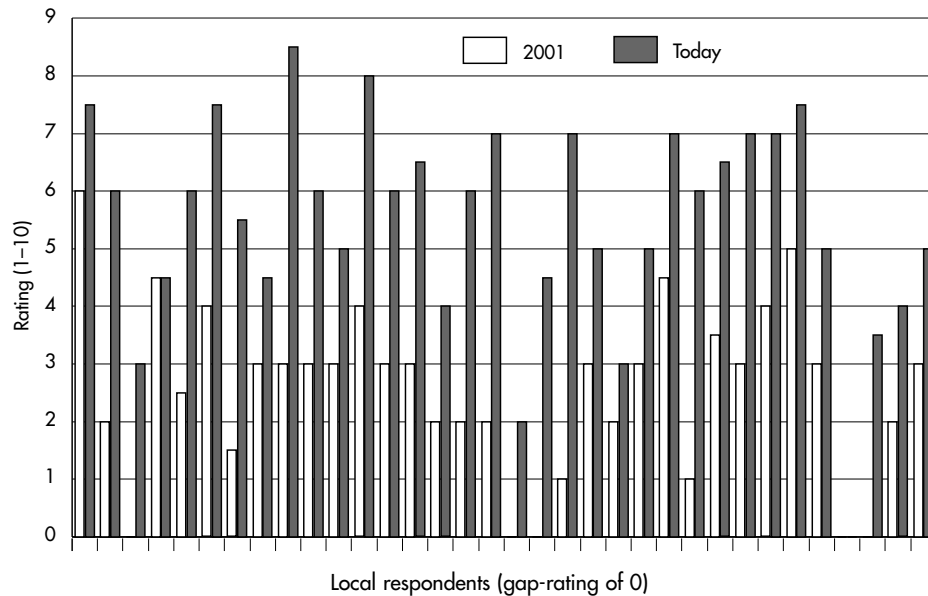
Note: n=7 responding state health officials; one state official declined to comment.

Source: Compiled by author from data drawn from the survey described in the Appendix.

the anthrax attacks prompted outreach from potential partner agencies and new opportunities at interagency collaboration. Inquiries such as, “So what is it public health does?” have occurred with some frequency. Relationships between elected officials, members of the non-public health workforce, and first responders have improved significantly, as have the relationships with professional medical and nursing associations and hospital associations.

STATE-LOCAL RELATIONSHIPS. On average, the relationships between local and state public health officials also have improved, consistent with the intent of the federal guidance document. The quantity and quality of

FIGURE 3.2B
LOCAL OFFICIALS' RATINGS OF PREPAREDNESS FOR A SIGNIFICANT BIOTERRORIST INCIDENT: 2001 VERSUS TODAY



Note: n=34 responding local health officials.

Source: Compiled by author from data drawn from the survey described in the Appendix.

communication taking place in the form of collaborative planning and regular discussion has grown considerably. Where relationships have not improved—or, in a few cases, have eroded—this was attributed to disagreement over the distribution and use of the bioterrorism preparedness funds. A few local officials protested that states were “out of touch” with local needs and problems.

SYSTEM IMPROVEMENTS. Many public health officials, at both the local and state levels, are now focusing on the current and potential capacities of smaller public health agencies to respond to a biological crisis. The fact that

preparedness dollars were, in so many cases, judiciously awarded and that there are efforts to implement workable regional response systems—capable of bringing in outside expertise, dealing with surges, and forging the right links to achieve organizational interoperability—bodes well for public health. Bioterrorism preparedness funding has given the public health sector the unique opportunity to rebuild, revitalize, and in some instances restructure.

PREPAREDNESS CHALLENGES AHEAD

In addition to the benefits listed above, there are a number of issues that will require greater thought and attention if the country is to reap the full rewards of its investment in the public health sector's biodefense capabilities.

DEFINITION OF PREPAREDNESS. Inquiries regarding preparedness naturally begin with, "Prepared for what?" When the interviewers queried participants about their preparedness for a biological catastrophe, a number doubted that they would or could ever know fully unless one actually occurred. Several public health officials commented that preparedness is less about equipment and more about "infrastructure, relationships, and ongoing staff training and retention," which are harder to control and maintain. One participant stated that preparedness was not a vision that could be defined at the local or state level and that "the feds [must have the] vision to know when we are fully prepared."

PREPAREDNESS FOR OTHER FORMS OF TERRORISM. There are many preparedness and training issues yet to be resolved by the public health system. Although many agencies attempted to heighten their level of competencies within an "all-hazards" preparedness framework, a number of health officials felt they lacked the skills to respond to chemical and radiological threats, address food and agriculture security, conduct community vulnerability assessments, and work with the intelligence community.

PRIORITIZING THE THREAT. A number of participants expressed frustration that excessive human and financial resources had suddenly become focused on unknown and possibly low-probability bioterrorist contingencies, while state governments were forced to make massive cuts to essential public health services where the need and demand is clear.

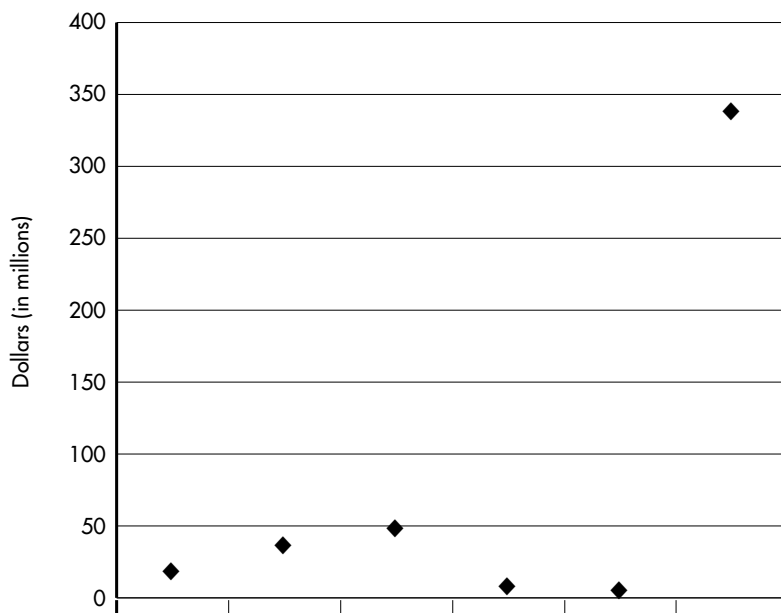
SURGE CAPACITY. The current wave of state and local budget cuts and the resultant reductions in workforce—with the promise of more losses to come, given the fiscal climate—are systematically eroding the response capability of the public health sector. Even with additional equipment, training, and specialized expertise, an adequate public health response will require a critical mass of public health professionals in the event of a bioweapons attack or large-scale infectious disease epidemic. That corps must include the professionals that staff more traditional public health functions on a daily basis but are trained to participate in bioterrorism response should the need arise. As that resource is diminished through staff cuts, the public health surge capacity suffers.

FUNDING CONTINUITY. Sustaining a public health system sufficiently prepared to respond to the threat of bioterrorism at the state and local levels will require the commitment of many years of continuous funding, not just a short-term investment by Washington. When asked what it would cost to develop an “adequate” level of bioterrorism preparedness, participants varied widely in their responses. Several officials obviously had given this much thought, providing figures like “\$300 million to build a statewide information infrastructure, improve hospital capacities and fully train and integrate the responder communities.” A number of those surveyed thought that several years of funding at levels consistent with current awards would be needed to build a solid foundation. (See Figure 3.3a and Figure 3.3b, pages 42 and 43.)

UNDERSTANDING THE SCOPE. While many study participants had pondered the issue of sustainability, a surprising number provided responses indicating

the need for only modest amounts of money to achieve a reasonable level of preparedness. When probed about how a relatively minuscule amount of money would be used, one health official replied, “Well, if I could have one more half-time nurse. . . .” Similar answers reflected a disturbingly limited level of understanding among public health practitioners regarding the necessity of a well-trained workforce and a thoroughly organized and functional infrastructure in responding to a major biological attack.

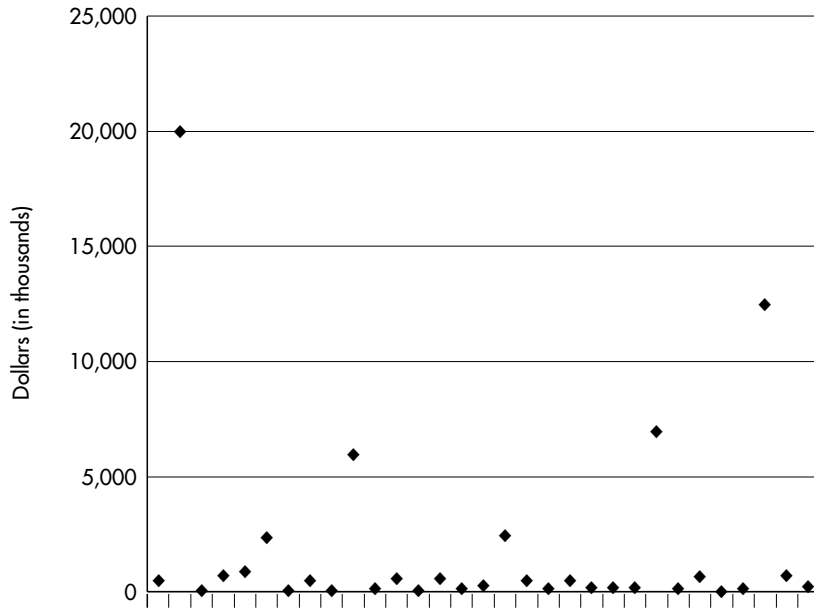
FIGURE 3.3A
ESTIMATED ONE TIME INCREASE OVER FISCAL YEAR 2002 FUNDING
LEVEL TO ACHIEVE BIOTERRORISM IN JURISDICTION (STATES)



Note: n=6 responding state health officials; two state officials declined to comment.

Source: Compiled by author from data drawn from the survey described in the Appendix.

FIGURE 3.3B
ESTIMATED ONE TIME INCREASE OVER FISCAL YEAR 2002 FUNDING
LEVEL TO ACHIEVE BIOTERRORISM IN JURISDICTION (LOCALITIES)



Note: n=31 responding local health officials; three local officials declined to comment.

Source: Compiled by author from data drawn from the survey described in the Appendix.

4.

CONCLUSIONS

The study that underlies this report was conducted in order to understand the strategies to improve public health preparedness levels as a result of the federal bioterrorism initiative for fiscal year 2002. The inherent variability that characterizes the U.S. public health system and the methodology applied to this small sample study preclude precise comparison across the states and localities selected for participation. Moreover, in some instances the data provided by some participants lacked specificity or full financial disclosure. Descriptive analysis of data from state and local health departments within targeted states, however, does demonstrate several compelling and consistent themes that emerged as these agencies began to confront the threat of bioterrorism following the anthrax attacks of 2001. Those themes merit consideration as the country moves forward with public health preparedness initiatives.

ROBUST BIODEFENSE CAPABILITIES WILL REQUIRE SUSTAINED INVESTMENT IN PUBLIC HEALTH

The response to a biological attack demands expertise in the detection and containment of epidemics. This core capability, and others that are vital components of a working public health system, have eroded over past decades. If Congress and the administration intend to decrease the country's

vulnerability to potential domestic bioterrorist threats—or other acts of terrorism that could result in mass casualties—they must commit to a long-term investment that rebuilds the public health system as a whole. Bioterrorism preparedness cannot be funded as a “categorical” initiative. What is called for are not only specific tools, training, and practices but also a critical corps of specialists and professionals and basic public health capacities that cut across traditional public health categories. Durable competencies against bioterrorism, naturally occurring disease outbreaks, and other potential disasters will not be achieved through fragmented program support.

Respondents emphasized that since the skills and resources required to detect and respond to bioterrorism are the same as those required to fulfill many traditional public health responsibilities, reductions in basic public health capacities render biodefense efforts less effective. Moreover, many commented that a categorical approach to bioterrorism preparedness limits the funding and skilled personnel available. Despite concerns that the accountability requirements associated with the use of the federal bioterrorism preparedness funds may have deprived the “dual-benefit” paradigm of its full potential, monies clearly have infused public health departments, both state and local, with the tools and capabilities needed to conduct “core” business—computers to collect and analyze data, surveillance systems to detect unusual disease activity, and cell phones and Internet connectivity to report and alert other essential personnel and services. “Dual use,” or building biodefense as an outgrowth of more basic and essential capacities, should be considered a fundamental strategy for tackling both natural and deliberate health threats.

The majority of study participants expressed concern that a legacy of underinvestment in traditional public health functions, together with the repercussions of the fiscal challenges facing state and local governments, has cut down on the size, agility, and surge capacity of many health agencies. The interviewees noted that this would result in a less effective and sustainable response in the event of a widescale emergency such as a bioterrorism attack.

Study participants reported that their attempts to come to terms with the threat of bioterrorism through the federal preparedness initiative were fraught with process-related challenges: moving funds, deciding which agencies (public health and others) to support, determining funding amounts, and navigating the various federal, state, and local controls involved in expenditures. These challenges contributed to delays and, perhaps, the perception that vital federal preparedness dollars were being underspent or that the initiative was being given less vigorous attention than demanded within a climate of concern about potential terrorist threats. Almost all of these initial difficulties were eventually resolved: subsequent funding streams should be more readily and efficiently absorbed into local and state financial systems. Nonetheless, local and state financing practices, hiring procedures, and other inherent complexities associated with the operations of governments will always contribute to a significant phase lag between the issuing of spending authority and the actual disbursement of federal dollars.

The necessity of installing accurate systems to shepherd and account for bioterrorism preparedness funds was clearly acknowledged by the public health officials who participated in this study. The Department of Health and Human Services and CDC should do everything they can, within reason, to guarantee accountability while eliminating unnecessarily burdensome fiscal and progress reporting requirements.

Public health officials noted the difficulty in recruiting professionals with specific expertise such as epidemiologists, citing noncompetitive salaries, the uncertain fiscal outlook, unavailability of personnel with such training, and limited hiring authority, among other issues. Further, several observed that “outsourcing” had both positive and negative effects—new capabilities were acquired but did not necessarily contribute directly or consistently to building a public health infrastructure. The inadequate staffing of many public health agencies is a problem still waiting to be solved, and increased attention to improving intra-agency coordination and removing “stovepipes” will be essential to maximize response capacity.

Many jurisdictions have tried to develop regionwide capabilities, while limiting biodefense funding to the smallest local health departments, as a way of shoring up the public health system. Renewed collaboration and partnerships with other institutions such as hospitals and public safety organizations are likely to have strengthened public health's ability to mount an effective and coordinated response to a health crisis, one that could minimize disease exposure and perhaps mortality rates. These relationships should be nurtured and sustained in this dynamic environment.

PUBLIC HEALTH NEEDS IMPROVED UNDERSTANDING OF BIOTERRORIST THREATS AND RESPONSES

It appears that, for the most part, state and local public health departments have used federal funds wisely to invest in equipment and training that have allowed agencies and their staffs to do more, giving substance to the perception of greater preparedness. However, this study also revealed that a number of public health practitioners lack the background and experience to envision fully what is needed to respond effectively in a bioterrorist attack scenario. Beyond large food-borne or similar "point source" outbreaks or meningitis epidemics (which are being significantly reduced in dormitory and other congregate settings thanks to new vaccination requirements), public health practitioners have had limited opportunity to manage large-scale disease containment programs in recent years. As significant and costly as those outbreaks have been, however, with the possible exception of practitioners dealing with the anthrax attacks of 2001, a significant proportion of the public health workforce will likely have difficulty comprehending the magnitude of resources that would be consumed by the unremitting demands of even a small-scale biological attack. Indeed, it is too early to predict what financial and human capital will be required to achieve and sustain adequate biodefense capabilities. But the expectations of survey participants that "one more nurse" or "another person to answer the phone" will prepare their health departments for a bioterrorism attack belie the notion that our public health system is aware of, let alone ready for, the challenges ahead.

While the tallies of state and local expenditures are important in understanding and directing future preparedness efforts, the most effective plans will ensure genuine accountability rather than mere procedural accounting. More drills and exercises, especially at the local level, need to be implemented to test the response capabilities of public health agencies and their community partners. The Department of Health and Human Services, CDC, and other agencies with threat-response expertise (the Department of Defense, the Federal Emergency Management Agency, the Department of Homeland Security) should be impaneled to identify and articulate a clearer understanding of what is needed for providing an urgent and concerted response to a biological attack.

While it is generally acknowledged that there is resident expertise in bioterrorism at CDC and many of the state health departments, federal- and state-centric approaches to preparedness and response will fall short. As several local respondents attested, local health departments know their territory, are connected with their community resources, and, given adequate training, practice, and resources, are better positioned to respond to emergencies. However, while there is a frequently used adage that “all response is local,” it is possible that the capacity must be regional, statewide, or even multistate in scope. There needs to be greater consideration of what is the appropriate locus of response during each phase of a bioterrorism incident, taking advantage of the specialized and complementary roles of local, regional, and state agencies, and what funding is required for each.

THREATS TO SECURITY DEMAND CONSISTENCY OF CORE COMPETENCIES AT ALL LEVELS OF GOVERNMENT

The state and local public health system continues to be, as the Institute of Medicine’s 1988 report declared, in disrepair. Many of the changes called for by the IOM have not occurred, and the public health system is poorly positioned to assume new roles in biodefense while still working to define its mission and balance its obligations to population- and personal-based health. In yet another test of its resiliency, amidst a

barrage of emerging microbial threats, chronic disease management problems, and dwindling state and local resources, the public health system is being asked to respond to the relatively new threat of biological warfare. Poor economic conditions nationwide have resulted in a large number of cuts, degrading core infrastructure as well as specific, categorical programs that once comprised a substantial portion of public health activity. The combination of budget shortfalls and bioterrorism preparedness appears to be subtly reshaping the public health system.

Respondents reflected unease in their perceptions of “restrictive” guidance and confusion about society’s expectations for agency performance, especially regarding “traditional” public health roles versus biodefense responsibilities. A number of respondents vented their frustration that public health campaigns they perceived to be more important were being sidetracked to concentrate on bioterrorism preparedness. Some expressed a fundamental distaste for the subject of biological weapons and felt that these tasks were inconsistent with the mission of public health.

Sorting out and coordinating the roles of local, state, and federal public health agencies in the detection of and response to emergent health issues and potential acts of bioterrorism is paramount. Without clarity of responsibilities and performance targets, further infusions of critical funding will be spent in ways that do not maximize preparedness. The federal guidance document has provided an excellent foundation from which to develop more detailed bioterrorism response standards. Strong leadership at all levels will be required to harmonize and bring about consensus. The nation’s policymakers and the Department of Health and Human Services can be tolerant of variability in the process for achieving preparedness across fifty states and three thousand local public health agencies. The standards of preparedness, however, must be consistent and unwavering if public health is to fulfill its mission to protect the nation.

For the first time in history, policymakers are being forced to think on a national level about how these numerous and diverse public health departments are organized, integrated, and funded. It is clear that in addressing the

issue a balance must be achieved between federalism and uniformity. One of the greatest “dual-benefit” achievements of the current climate may be that it serves as the genesis of an effort to rebuild the crippled U.S. public health system with a new spirit of cohesion among the states and localities. Development of a public health system with consistent capacities across and within the states is called for by the Institute of Medicine’s 2003 report “The Future of the Public’s Health in the 21st Century.”

States are (or should be) seizing the opportunity to advance strategies that ensure more uniform application of public health practices, including regional approaches. It is clear that providing support to the smallest local health departments (fewer than five staff) outside the context of a more systematic approach will yield very limited gains in bioterrorism preparedness and response capabilities. However, the citizens served by the most remote public health agencies deserve the same protections as those of the nation’s largest cities.

PROTECTING THE NATION’S INVESTMENT IS OF CRITICAL IMPORTANCE

Improvements in preparedness, for the most part, have resulted from federal investment. Although the federal government is pouring millions of dollars into local and state public health agencies to enhance bioterrorism preparedness, those same health departments simultaneously are losing support critical to traditional public health—and preparedness—efforts as a result of budget cuts in areas beyond the scope of the biodefense grant. If allowed to continue shrinking, the public health workforce would quickly be overwhelmed in the event of a bioterrorist attack, ultimately proving inadequate to meet the demands of hospitals, traditional responders (police, other law enforcement, fire, and safety officials), and the public who depend on it.

Despite the best of intentions and vigilant accounting systems, participants reported that they perceived instances of supplantation of federal preparedness funds, though there were widely varying views of what constitutes

supplantation. The Office of the Secretary of Health and Human Services should better delineate unallowable fiscal practices and discourage elected officials from adopting policies that contravene the intent of funds designated for the protection of citizens' health.

The current funding pattern in some states—federal dollars into public health, state dollars out—will result in a zero-sum game; such practices are intolerable in the current threat environment. State legislatures and governors' offices should be the leading advocates for the needs for sustained investment in the public health system.

Superimposing federal dollars and national preparedness standards on a "fixed" state and local public health system challenges the very roots of our federalism. But widespread concern over the potential for a biological catastrophe demands new strategies to confront the natural and deliberate threats to the health of the nation.

CONCLUDING REMARKS

The targeted interview data that are reviewed and summarized in this report demonstrate that state and local public health agencies have faced the new challenge of bioterrorism preparedness with determination. New skills, equipment, and partnerships have been wrought from new federal investments in the public health system. These funds were generally welcomed and applied to building up or expanding capacities, in most instances consistent with the road map provided through the CDC guidance document.

A deeper assessment of these study data, however, reveals fundamental fault lines in America's public health systems. Across the nation's state and local agencies diverse spectra of workforce complements, skill sets, funding arrangements, roles, and missions are set in place without the organizational interoperabilities that are critical to mounting and sustaining the necessary response to a large-scale infectious disease outbreak or bioterrorist attack. Old orientations, paradigms, and ways of conducting the business of

public health need to be reexamined, and new, more efficient, and more effective practices must be adopted.

Furthermore, although the leadership role that the public health sector must assume is uniquely important, protecting communities under microbial siege necessitates comprehensive and interdependent support from the medical care, security and law enforcement, and emergency responder fields. Collaboration among federal, state, and local public health agencies, as well as between governmental and private sector organizations, also should be emphasized.

We must clearly understand and articulate the current and future threat environment as well as the role that public health can play in safeguarding against the worst eventualities. Only then can we fully appreciate that building a modern and capable public health system will require a long-term commitment of capital and human resources.

Public health's bioterrorism preparedness efforts mirror its evolving capacities. Improving the public health system's ability to respond to health emergencies is one of the most important investments this country can make.

APPENDIX

Interviews were conducted by telephone at prearranged times. Interview length was approximately thirty minutes. Questions required that the interviewees either respond with yes/no answers, rank issues by order of relevancy, or provide “free text” answers in the case of open-ended inquiries. All questions were presented as written for the survey. If probing was required to clarify the original question or encourage additional explanation, this was indicated in writing by the interviewers. There were two teams of interviewers; the reliability and comparability of techniques used to pose questions and probe further were verified prior to initiating the study.

QUESTIONNAIRE

1. Indicate time (weeks) when state public health agency received authorization from state to spend against FY’02 federal biodefense preparedness.
2. Indicate time (months) when local public health agencies received bioterrorism preparedness funding from state.
3. Indicate strategy used to award funds to local public health agencies. (Indicate all that apply).
 - _ Funding with minimum baseline for all
 - _ Funding based on population formula
 - _ Funding based on vulnerability formula
 - _ Funding based on other parameters
 - (Please indicate) _____
 - _ Funding based on quality of written proposal
 - _ No formula, no proposal B all local PH agencies funded equally

- No formula, all local PH agencies funded but NOT equally
 - Not all PH agencies funded
 - Other (Please indicate) _____
4. How was funding strategy determined?
- By Office of Governor
 - By State PH Department with no local PH Department collaboration.
 - Through state and local collaboration. Specify on scale of 0–5 (5 highest)
5. Were bioterrorism preparedness funds dispersed to organizations other than state and local public health departments?
6. What decisions guided expenditures of FY'02 biodefense funds?
- Prioritize
- DHHS/CDC guidance document
 - State government plan
 - State public health department plan
 - Local government plan
 - Local public health department plan
 - Other biodefense plan
 - Plan formulated with other sectors (e.g., safety, EMS, etc.).
- Explain _____
7. Was the DHHS/CDC guidance document helpful?
- Describe _____
8. Were there any state or local restrictions that limited the expenditure of biodefense funds?
- yes no
9. If yes, indicate all the following that apply
- yes no Legislative Mandates
 - yes no Governor's Office Mandates
 - yes no Hiring Freeze
 - yes no Transfer of Funds to Cover Budget Cuts
 - yes no Designated "sole source" Vendors

- yes no Refusal of Funds by a Jurisdiction
 yes no Other (Please indicate) _____
10. If yes, were there any impacts on biodefense preparedness efforts?
11. Were there any instances where the biodefense funds displaced or supplanted state or local public health funding? yes no
12. Has your department had recent budgetary restraints and/or cuts?
 yes no
13. If yes, did these cuts impact personnel, programs or services?
 yes no
14. If yes, did these cuts impact preparedness efforts? yes no
15. Indicate what percentage of preparedness funding comes from each of the following sources.
- _____ Federal
 _____ State
 _____ Local
 _____ Private (Please indicate) _____
 _____ Other (Please indicate) _____
16. Estimate how much money your agency would need to achieve an adequate level of bioterrorism preparedness in your jurisdiction.

17. Estimate how much money you would need to maintain/sustain adequate levels of preparedness once achieved in your jurisdiction.

18. Rate your organization's preparedness for a significant bio-event on a scale of 0 (fully unprepared) to 10 (fully prepared)
- _____ July 2001
 _____ Today
19. List in order of importance the most significant gains your organization has made, directly or indirectly, as a result of federal FY'02 biodefense funding.
20. Has your organizational structure changed as a result of bioterrorism planning and funding efforts? yes no

21. If yes, please describe _____
22. To what extent is the concept of “dual benefit/dual purpose” guiding biodefense preparedness? Please describe.

23. Did the Phase I Smallpox Vaccination initiative have any impact on your biodefense preparedness and other general efforts?
_ yes _ no
24. After the first year and half of bioterrorism planning and preparedness efforts, has there been a change in the relationships between the state and the local public health agencies? _ yes _ no
25. If yes, please rate on a scale of 1 (poor) to 5 (excellent)
_____ July 2001
_____ Today
26. Please share any additional information or insights you have regarding biodefense preparedness planning and response efforts thus far.

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