Emergency Preparedness, Bioterrorism, and the States:

The First Two Years after September 11

by Gerald Markowitz and David Rosner

Milbank Memorial Fund

Milbank Memorial Fund
645 Madison Avenue
New York, NY 10022

The Milbank Memorial Fund is an endowed operating foundation that engages in nonpartisan analysis, study, research, and communication on significant issues in health policy. In the Fund's own publications, in reports or books it publishes with other organizations, and in articles it commissions for publication by other organizations, the Fund endeavors to maintain the highest standards for accuracy and fairness. Statements by individual authors, however, do not necessarily reflect opinions or factual determinations of the Fund.

Printed in the United States of America.

ISBN 1-887748-58-X

TABLE OF CONTENTS

FOREWORD

This report is the second of three by Gerald Markowitz and David Rosner on how the terrible events of September 11, 2001, and the subsequent cases of anthrax, SARS, and monkeypox are affecting policy for the health of populations in the United States. The first report in this series was titled *September 11 and the Shifting Priorities of Public and Population Health in New York*. In this report Markowitz and Rosner examine the experience of officials of the legislative and executive branches of state government who are making and implementing policy to respond to health emergencies. Their final report will examine the response of the federal government to recent health emergencies.

This series of reports is contemporary history, which the authors describe as the "first attempt to place the story that people experienced in a longer and broader historical context." Markowitz and Rosner are distinguished historians who have written extensively about recent events. They base their history on interviews, accounts by journalists, and available public documents. As professional historians they avoid evaluating what state officials have done or recommending what they should do.

Markowitz and Rosner introduce the major themes and findings of this report in an executive summary and elaborate them in the body of the report. Their most important finding is that Americans have reason to worry about the adequacy of our public health infrastructure despite recent attention to its shortcomings. They conclude, "The financial crises of the various states, combined with the shifting focus of the federal government from bioterrorism and terrorism in general to smallpox and the war in Iraq . . . lessened the early potential to enhance the system of services that are essential for the improvement of the nation's efforts to address [both] bioterrorism preparedness and the overall health needs of the American people."

The Milbank Memorial Fund is an endowed operating foundation that engages in nonpartisan analysis, study, research, and communication on significant issues in health policy. Since 1905 the Fund has worked to improve and maintain health by encouraging and assisting persons who make and implement health policy to use the best available evidence. The Fund convenes meetings of leaders in the public and private sectors and publishes reports, articles, and books.

Each of the persons interviewed for this report reviewed it in draft. Other reviewers made many helpful comments. These generous individuals are listed in the Acknowledgments.

Daniel M. Fox
President

Samuel L. Milbank
Chairman

ACKNOWLEDGMENTS

The following persons were interviewed for this report and/or reviewed it in draft. They are listed in the positions they held at the time of their participation.

John O. Agwunobi, Secretary of Health, Florida Department of Health; Brian W. Amy, State Health Officer, Mississippi State Department of Health; J. Nick Baird, Director, Ohio Department of Health; Georges C. Benjamin, Executive Director, American Public Health Association, Washington, D.C.; Michael Caldwell, President-Elect, National Association of County and City Health Officials, and Commissioner, Dutchess County Department of Health, Poughkeepsie, N.Y.; Jan K. Carney, Associate Dean for Public Health and Research Professor, University of Vermont College of Medicine, Burlington; Ronald Cates, Chief Operating Officer, Missouri Department of Health; Harriette Chandler, Member, Health Care Committee, Massachusetts Senate; John D. Chapin, Director, Division of Health Care Financing, Wisconsin Department of Health and Family Services; J. Jarrett Clinton, Regional Health Administrator, Region IV, U.S. Department of Health and Human Services, Atlanta; Jack Colley, State Coordinator for Emergency Response, Texas Department of Public Safety; Angela Coron, Associate Director, California Department of Health Services; Tim Daly, Executive Assistant to Harriette Chandler, Massachusetts Senate; George DiFerdinando, Jr., Director, Medical Quality Improvement, Peer Review Organization of New Jersey, East Brunswick; Robert B. Eadie, Deputy Director, Metropolitan Health Department, Nashville, Tenn.; Catherine Eden, Director, Arizona Department of Health Services; David Engelthaler, Chief, Office of Bioterrorism and Epidemic Preparedness and Response, Arizona Department of Health Services; Thomas E. Gecewicz, City Forum Chair, National Association of County and City Health Officials, and Director, Bridgeport Health Department, Conn.; Lee Greenfield, Senior Policy Advisor, Hennepin County Health and Community Integration, Minneapolis; Norma Gyle, Deputy Commissioner, Connecticut Department of Public Health; Anne R. Harnish, Assistant Director, Ohio Department of Health; John Howard, Director, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Washington, D.C.; Joseph Hunt, Assistant Commissioner, Information Services and Policy, Indiana State Department of Health; C. Earl Hunter, Commissioner, South Carolina Department of Health and Environmental Control; Joseph P. Iser, Investigator, San Francisco District, U.S. Food and Drug Administration; Lisa Kaplowitz, Deputy Commissioner for Emergency Preparedness and Response, Virginia Department of Health; Mary E. Kramer, President, Iowa Senate; Rice C. Leach, Commissioner, Kentucky Department for Public Health; Captain Alvin Lee, Regional Emergency Coordinator, Region X, Office of Emergency Response, Public Health Service, U.S. Department of Health and Human Services, Seattle; Sabrina Jaar Marzouka, Director of Health Planning and Education, Dutchess County Department of Health, Poughkeepsie, N.Y.; Patrick Meehan, Associate Director, Management, National Center for Environmental Health, Centers for Disease Control and Prevention, Chamblee, Ga.; Richard Melton, Deputy Director, Utah Department of Health; Dora Anne Mills, Director, Health Bureau, Maine Department of Human Services; Carol M. Moehrle, County Forum Chair, National Association of County and City Health Officials, and District Director, North Central District Health Department,

Lewiston, Idaho; Patricia T. Montoya, Secretary, New Mexico Department of Health; Anthony D. Moulton, Director, Public Health Law Program, Centers for Disease Control and Prevention, Atlanta; Melvin Neufeld, Member, Joint Legislative Budget Committee, Kansas House of Representatives; Patricia A. Nolan, Director, Rhode Island Department of Health; Dennis M. Perrotta, State Epidemiologist, Texas Department of Health; Sheila Peterson, Director, Fiscal Management Division, North Dakota Office of Management and Budget; Richard A. Raymond, Chief Medical Officer, Nebraska Health and Human Services System; Charlene Rydell, Health Policy Advisor, Office of U.S. Representative Tom Allen of Maine, Portland; J. Thomas Schedler, Chair, Health and Welfare Committee, Louisiana Senate; Richard H. Schultz, Administrator, Division of Health, Idaho Department of Health and Welfare; Mary C. Selecky, Secretary, Washington State Department of Health; Arvy Smith, Deputy State Health Officer, North Dakota Department of Health; Robert B. Stroube, Commissioner, Virginia Department of Health; Brenda Vossler, Bioterrorism Hospital Coordinator, North Dakota Department of Health; Janice L. Weinstein, Clinical Physician, Dutchess County Department of Health, Poughkeepsie, N.Y.; Robert S. Zimmerman, Jr., Regional Director, U.S. Department of Health and Human Services, Philadelphia.

This work was supported in part by an Investigator Award in Health Policy Research from The Robert Wood Johnson Foundation. The views expressed are those of the authors and do not imply endorsement by The Robert Wood Johnson Foundation. The authors would like to thank graduate students Sarah Vogel and Megan Wolff for their very valuable assistance.

EXECUTIVE SUMMARY

Since the attacks of September 11, 2001, fear of terrorism and bioterrorism—and specifically the anthrax outbreak a month later, the threat of smallpox, and more recent outbreaks of SARS and monkeypox—has impelled government to pay more sustained attention and award more resources to health and health-related activities than it has done in years. Public health agencies are now in the national spotlight to a degree not experienced since the great epidemics of influenza, polio, whooping cough, diphtheria, and other illnesses during the first 50 years of the last century. Almost overnight, population health issues—the breadth of social and health services and activities that determine a population's health and well-being, including what is usually called public health—have been pulled into a semimilitary campaign as part of the nation's defenses, thrusting state health agencies into the forefront in the broader arena of emergency preparedness and national security.

This report, the second of three, is an account of important initiatives and responses that have affected the various states' public health systems in the two years following September 11. Here the focus is on the wide variety of adaptations, successes, stresses, and fears that state health and general government officials underwent. The final report will provide a look at the response of federal officials to September 11. General government officials, that is, elected legislators and their staffs, at the state and local levels focused on a broader array of social service, public health, and health care needs that all demanded scarce state and federal resources. Public health officials focused on the possibility of improving traditional public health infrastructural services such as lab capacity, surveillance systems, intra- and interagency communication, protecting the borders, and other specific needs of their agencies. Certainly, the mobilization around public health needs resulted in the allocation of significant resources and what many of our respondents called "progress."

This report is a contemporary history of this critical period of time. The purpose of contemporary history is to tell the story as people experienced it, using a wide variety of primary sources including published and unpublished reports, oral interviews with key participants, and government documents and popular media. Contemporary history is generally the first attempt to place the story that people experienced in a longer and broader historical context. This report is not proscriptive and does not offer specific recommendations to address the issues raised herein. Rather, as all history tries to do, it seeks to provide perspective on contemporary issues that may be incorporated, or not, into policy decisions. As historians, the authors hope to provide the reader with the lessons learned and insights gleaned by the participants themselves. Certain themes have emerged from the interviews and the primary and secondary sources that were examined.

- In the immediate weeks after September 11, there was widespread hope that the new focus on public health would result in a revitalization of the field and dramatic improvements in the public health infrastructure.
- Among the concrete accomplishments were stronger relationships between law enforcement and health providers, enhanced epidemiological capacity, better training for possible bioterrorist events, improved and more secure communication systems, enhanced laboratory capacity, and a group of inoculated health professionals capable of responding to a smallpox outbreak.

- Even in the early weeks following September 11, some public health agency administrators began to fear that the new focus on bioterrorism would distort public health priorities.
- Many in general government feared that a narrow focus on health as an adjunct to national defense could undermine their broader mission to provide a variety of services not necessarily tied to bioterrorism and emergency preparedness.
- The economic recessions that in some states had begun before September 11 strained state budgets and forced reduced spending in numerous sectors of the states' bureaucracies, including health.
- As legislators moved further and further away from the events of late 2001, population health preparedness became just one of a number of different budget priorities that needed to be considered in tough fiscal times.
- The budgetary problems were amplified by the federal mandate in late 2002 for a major smallpox inoculation campaign.
- The attempt to codify and reformulate state public health laws with the draft Emergency Health Powers Model Act and what some criticized as the poor federal handling of the anthrax episode and smallpox inoculation campaign served to stimulate a broad discussion of the obligations and responsibilities of health authorities in light of the new geopolitical situation.
- In the aftermath of September 11, conflicting values over the rights of individuals and the perceived need for greater bioterrorism preparedness served to heighten the sense of disorder for officials whose jobs had been radically transformed in a very short time.

September 11 presented the public health community and those involved with population health more generally a great opportunity to revitalize and rethink the health agenda for the nation. Politicians, administrators, and the general public came to appreciate the vital role that public health agencies could play in a national emergency and in the fight against terrorism, and public health administrators and advocates hoped that they could capture and perhaps recapture the potential that they believed public health had had in a bygone era. Some observers called for a revamping of the nation's health insurance system so that more of the population was covered as a means of improving the surveillance of disease; some called for an expansion of the scope of traditional public health activities so that the growing barriers between prevention and care would be reduced; some called for the extension of the social services system and the integration of the health care and public health systems; others called for the upgrading of the public health infrastructure as a necessary tool in the fight against terrorism. Yet others cautioned that simply increasing budgets and financial resources might do little to address the long-term problems affecting public and population health programs in the various states. While those in general government and public health agencies agreed on many points, those in general government were not looking for increased funding for public health department activities per se to solve decades of problems.

In the two years since September 11, much has been accomplished in terms of providing resources, legal reform, improved surveillance, and communication. Yet, much of the opportunity presented in the

first few months has been hurt by a lack of continued focus on the part of various parties and the financial crises of various states, combined with a narrowing of federal attention from bioterrorism and terrorism in general to smallpox and the war in Iraq more specifically. Because of the centrality of the federal government in these issues, it will be the subject of the third and final report. In general, these interviews and the authors' reading of published and unpublished reports and media coverage suggest that the early potential to reform the system of services essential for the improvement of the nation's efforts to address bioterrorism preparedness and the overall health needs of the population is endangered.

INTRODUCTION

The newspaper headlines were stark and eerie: "Efforts to Calm the Nation's Fears Spin Out of Control," "Local Public Health Officials Seek Help," "This Is Not a Test," "Some States Can't Handle Bioterrorism," "Scared into Action." And the pictures that accompanied them were worse: space-suited investigators, smallpox-ridden children, cold, stark laboratories staffed by masked personnel. State and local health departments were now supposed to be on a "war footing," as one headline noted. Health officials, knowing that their historical role was as the first line of defense against infectious disease, were, at the same time, energized and terrified by the prospect that their actions could be responsible for protecting or damaging the health of an entire state, even nation. How should they react? What were their goals? Their limitations?

Public health is a methodical discipline, historically rooted in the collection of data, the tracking of disease outbreaks, and laboratory and epidemiological investigation, often working in the background, out of the public eye. But the events of September 11 and the October anthrax incidents placed public health and public health agencies in the spotlight to a degree not experienced since the great epidemics of influenza, polio, whooping cough, and similar illnesses during the first half of the 20th century. Many officials felt overwhelmed. The limitations of the public health surveillance system, laboratories, and treatment and social services became all too apparent. Almost overnight, public health services were pulled into a cooperative campaign as part of the nation's defenses. Beleaguered staff and limited laboratory space and supplies, along with the general inexperience with bioterrorism, led to a profound reevaluation—sometimes naïve, sometimes quite sophisticated—of the place of population health services in the country's antiterrorism and emergency preparedness systems.

September 11 and anthrax, the threat of smallpox, the continuing AIDS epidemic, as well as the more recent outbreaks of SARS and monkeypox, compelled general government—elected officials and their staffs—to pay more sustained attention and award resources to public health agencies and population health more broadly than it had done in decades. (Here we distinguish between public health and population health services. By "public health" we mean those services aimed at preventing epidemics and the spread of disease; promotion of chronic disease control and the encouragement of healthy behavior; disaster prevention; disaster response; public health department administration; and licensure and maintenance of facilities, vital records, and laboratories. By "population health" we include those services normally rendered by public health departments as well as access to personal health services of high quality; financial security for parents of young children and retirees; protection against harm as a result of poor water quality, air pollution, toxins in the soil, and contaminated food; control of risks from tobacco and other addictive substances; reduction of injuries and risk of illness in workplaces, homes, and public spaces; and protecting the independence of persons who are frail or have disabilities.) Fear of terrorism—and bioterrorism specifically—thrust state agencies onto center stage in the broader arena of emergency preparedness and national security. Academics and public commentators alike argued that a new conception of traditional emergency responders was now upon us. "Firefighters, police officers, and other first responders will be on the front lines of a terrorist attack. . . . But in a bioterrorist attack, the people on the front lines

will be the practicing physicians who will diagnose and treat diseases, and public health epidemiologists and laboratory personnel who will determine who has been exposed" to a host of biological and chemical agents. From established academics and public health professionals to conservative think tanks and state officials, everyone agreed that "nowadays protection from disease is nothing short of national defense." State government agencies were called upon to play a new and crucial role in emergency preparedness.

In his opening address to the American Public Health Association (APHA) annual meeting just a few weeks after the initial anthrax attacks, Secretary of the U.S. Department of Health and Human Services Tommy Thompson pledged that "we must take this opportunity to do everything we can to strengthen the public health system." The promise of federal bioterrorism money was seized upon by public health spokespeople and even commentators across the political spectrum as a possible salve for the system's inadequacies. Further, it was used to buttress ideological and political goals. One Fellow at the conservative American Enterprise Institute criticized public health leadership for having a "social justice agenda" that crowded out its true calling: "The upheaval of September 11 poses a momentous opportunity for public health to reclaim its proper focus: to protect the population from disease." Citing the 1988 Institute of Medicine study that described the public health infrastructure as being in "disarray," she argued that "that function has suffered for many years." Mohammed Akhtar, executive director of the APHA, disagreed with the overall argument that public health should be narrowly construed but agreed that severe weaknesses existed in the public health system that were the "result of neglect of many decades. . . . Since we conquered many infectious diseases, there have been no major outbreaks, so we continued to cut down on the system. It is at a point that it needs to be rebuilt and modernized."

Those within and outside public health departments and general government had differing views on what constituted preparedness in general and bioterrorism preparedness in particular. Local health officials, worried about the weaknesses in their agency programs, sometimes came into conflict with some state elected government officials and their staffs, whose focus was on a broader array of population health needs. Those concerned with public health at the state level hoped that new federal money would allow state and local agencies to rebuild, even expand, their infrastructures. They hoped that the money could be used both to prepare the nation as well as to bolster general public health programs. But even in the immediate weeks after September 11, some public health agency administrators feared that the new focus on bioterrorism would distort public health priorities. A narrow focus on health as an adjunct to national defense could undermine their broader mission to provide a variety of services not necessarily tied to bioterrorism and emergency preparedness.

Unlike public health officials whose perspectives were framed by their agencies' pressing needs, many government legislators focused on the glaring weaknesses in the social services system, on hospital care facilities, and on the broader threat of terrorism and bioterrorism alike. In addition, they were dismayed that more had not been done to strengthen intrastate and interstate coordination for emergency response.

These early hopes and fears were framed by national crisis and broad social, economic, and political events. The economic recession that in some states had begun before September 11 was greatly exacerbated by the near cessation of travel and consumer spending that followed the terrorist attacks. Strained state budgets led to the need to reduce spending in numerous sectors of the states' bureaucracies, including health. As legislators moved further and further away from the events of late 2001, population health preparedness became just one of a number of different budget priorities that needed to be considered in tough fiscal times. In early 2002, federal grants through the Centers for Disease Control and Prevention (CDC) and the Health Resources and Services Administration (HRSA) provided a substantial infusion of funds for specific health-related activities and programs aimed at improving the public health infrastructure as a part of general bioterrorism preparedness. Even though these funds could not be used to supplant existing programs, the federal mandate in late 2002 for a major smallpox inoculation campaign dramatically affected debates within state governments about where resources should be spent and how personnel should be allocated. In the end, the rapidly developed smallpox program planning and inoculation campaign provided an additional challenge to those in general government concerned with bioterrorism preparedness and to state public health officials who saw the new infusions of federal funds as enabling them to buttress the general public health infrastructure.

Fiscal crisis and political agendas were not the only forces reshaping thinking about population health over the course of the past two years. The attempt to stimulate new and revised law through the draft Emergency Health Powers Model Act (hereafter referred to as the draft Model Act) and, according to many of our respondents, the poor federal handling of the anthrax episode (as embodied in the confusing messages sent out by Secretary of Health and Human Services Tommy Thompson) and smallpox inoculation campaign served to highlight the difficult interface between the public health community and law enforcement. These factors also helped encourage a discussion regarding regional and even national public health response to the threat of biological or chemical attacks. More than two years after the attacks, many public health officials believe that there is still tremendous ambiguity about what bioterrorism and emergency preparedness really mean. Some see it as synonymous with strengthening the existing public health infrastructure. Some see it as building population health services more broadly. Others see it as narrowly focused on smallpox, anthrax, emergency care, border protection, and the like. While all these formulations are obviously complementary, they often create competing demands for scarce resources.

THE CHALLENGE OF BIOTERRORISM

In this section we explore the waxing and waning of the initial expectations of public health officials in the immediate months following the attacks of September 11, 2001. At first, many officials believed that the federal emphasis on bioterrorism would allow for the revitalization of their field. Indeed, important improvements addressed serious weaknesses in the public health infrastructure. But many public health agency and government officials at the state level were wary that the emphasis on national defense could undermine other key programs necessary for improving the population's health.

PUBLIC HEALTH: A BRIEF HISTORICAL OVERVIEW

September 11 helped galvanize the nation against terrorism, and the anthrax episodes in October 2001 and the mobilization against smallpox a few months later thrust public health and public health agencies into the national spotlight. But while public health authorities have been critical in vaccination and treatment programs aimed at preventing polio, flu, and smallpox, September 11 and the October anthrax outbreak stimulated those inside and outside government to see prevention, surveillance, and disease reporting—traditionally responsibilities of public health departments—as integral to the country's national defense system. Public health has historically played a role in national defense efforts. Malaria and yellow fever control have been part of American military campaigns from early-20th-century interventions in Latin America to World War II and Vietnam. As Robert Stroube, commissioner of the Virginia Department of Health, points out, the Epidemic Intelligence Service at the CDC had its origins in the Cold War.

The events of the past two years—specifically the threats of anthrax, smallpox, SARS, monkeypox, and ricin—underscore the historical transformations in the field of public health. Throughout the 19th and early 20th centuries, traditional preventive public health activities were essential to the growth and stability of cities and states. Rampant epidemic diseases, such as cholera, smallpox, diphtheria, and influenza, undermined not only the health of young and old alike but also the economic well-being of the growing industrial and commercial centers throughout the country. While never competing with tuberculosis and other longer-term illnesses as the primary cause of death and disability, ferocious epidemics were a potential threat to the prosperity of such cities as New York, Chicago, Philadelphia, and New Orleans. Quarantine, isolation, surveillance, and the provision of pure water, sewerage systems, and street cleaning made public health departments central agencies in the municipal and state reform efforts. But in the 20th century, the very success of public health campaigns to improve and reform housing, sanitation, nutrition, water quality, and, in addition, the development of sewerage systems (as well as inoculation campaigns against infectious diseases and health programs targeted at women and children, among others) led to a slow decline in the perceived importance of public health departments themselves.

By the second decade of the 20th century, public health officials were noting in their annual reports that the very diseases that had spurred the development of public health departments in the first place were on the wane as mortality statistics showed that longer-term illnesses were

growing in importance. By the 1920s and 1930s, chronic diseases were the major causes of mortality in the United States, and many public health departments had begun programs aimed at addressing heart disease, cancer, and stroke, among other issues. As the century progressed, despite such periodic outbreaks as the influenza epidemics of 1918 and 1919, the polio epidemics into the 1950s, or AIDS and resistant tuberculosis since the 1980s, infectious diseases waned as the focus of public health activities.

Despite the shifting epidemiological picture, throughout the first half of the 20th century public health activities remained prominent and possessed tremendous political and cultural authority. But the growing importance of new medical technologies and treatments for infectious disease began to overshadow traditional public health techniques. The development of antibiotic therapies for individual patients with scarlet fever or rheumatic heart disease, for example, supplanted the authority of population-based approaches to prevention. The development of vaccines for polio, diphtheria, measles, and mumps, among others, were public health triumphs that, ironically, further undercut the rationale for extensive public health interventions in the second half of the 20th century. The mirage of a society freed from infections by antibiotics and vaccines and individuals treated or cured of many diseases by individual physicians—rather than by public health activities—dominated the popular imagination. Moreover, revenues for the care of the poor supported population health services provided by public health departments in many areas. "As new insurance programs were developed for the indigent population (e.g., SCHIP [State Children's Health Insurance Plan], Medicaid expansions)," Robert Stroube observes, "many state and federal leaders thought the funding for public health could be cut as there would be less need for indigent care." As a result, "revenues dried up."

The diminishing stature of the field and the growing power of health care institutions as the bulwark against disease led to a conundrum for those concerned with the maintenance of the public health infrastructure. Public health departments were perceived as less central to preserving the population's health, and requests by state and city health officials for more funding and resources to address fissures in the existing public health system were now seen as self-interested appeals. As critical components of public health's original mandate were moved into departments of sanitation, waterworks, housing, and hospitals, and as the profession of public health became more isolated and specialized, the public and the political leadership no longer understood or sympathized with professional public health officials' goals or activities. For some, the result was chronic underfunding of both public health and population health activities. For others, public health officials were responsible for their own predicament: They had professionalized, defined their mandate too narrowly, and isolated themselves from broader concerns of population health more generally.

BIOTERRORISM: "WHERE BAD BUGS AND BAD GUYS COME TOGETHER"

The federal promises of money in late 2001 and early 2002 raised expectations that what many considered to be the long neglect of state and local public health agencies had, at long last, come to an

end. For those in state public health agencies, the events of late 2001 were seen as potentially empowering, reversing what they perceived to be a century-long decline in status and authority. "Before, they left public health out [at the state level]," said Anne Harnish, assistant director of the Ohio Department of Health. "But bioterrorism brought us to the table and showed that we do have expertise." Similarly, Ronald Cates, former director of the Missouri Department of Health, reflects the ideology of many public health officials: "A lot of people who couldn't spell 'public health' now saw public health as the equivalent of the Department of Defense." Even in Massachusetts, a state with well-established public health traditions and the oldest department of health in the country, administrators and politicians believe that "public health was never really an equal partner at the table . . . in the past," that is, in the past half-century, but "became an equal partner as it was called upon to safeguard our water supply," protect the airports, and protect against the importation of biological agents into the state.

State officials had a somewhat different perception of public health's place in history and in emergency preparedness. For Massachusetts state senator Harriette Chandler, the discussion of anthrax fundamentally transformed state officials' perception of public health. "The anthrax scare that we had was more than a public safety scare," Chandler recalls. "It required public health, it required testing, and it required knowledgeable people. But it also required the two groups [public safety and public health] to work together and to understand where the FBI comes in, local and state police, and if there's a role for municipal authorities. In that paradigm public health was basically the quarterback. We've never had that before." For Chandler, the need for a public health response was part of a broader problem. "It also showed all of the weaknesses that we have in terms of a national disaster or emergency."

Even in states whose government agencies were vigilant in regard to planning for and coping with natural disaster, administrators in departments of health saw the anthrax episode as a watershed. In California, a state where earthquakes, fires, floods, and drought were a central concern of state emergency planning agencies, Angela Coron, associate director of the California Department of Health Services, remembers that "we took advantage of bioterrorism funds for California and Los Angeles to expand our capacity to respond statewide." California, like many states, has a decentralized system with 61 jurisdictions for public health. Moreover, public health came to be "included in emergency preparedness more and more," because anthrax and smallpox are "where bad bugs and bad guys come together."

Across the country, administrators saw bioterrorism as an enormous opportunity to effect a sea change in public attitudes. They hoped that the money could be used both to prepare the nation as well as to bolster general public health programs. Dennis Perrotta, state epidemiologist for the Texas Department of Health, reflects the perception of the public health community that in most disasters public health was "always in the back helping. In bioterrorism, we moved to the driver's seat of the bus. . . . We have been brought to the front table. Sometimes in the past we have been well received, and sometimes not well received, but now the other players are our best friends." In Arizona, Catherine

Eden, once a state legislator but now director of the state's Department of Health Services, and David Engelthaler, chief of the State Office of Bioterrorism and Epidemic Preparedness and Response, thought it was "interesting [that] the military, police, and fire . . . now know they very much need us." But that is "very new for public health to be so far out in the forefront," and it did not occur without a major effort by public health officials. "We had to insert ourselves into the emergency management/response community, and there has been a major culture shift in emergency management, perhaps across the country but definitely in Arizona. . . . We were able to get an understanding of the emergency management/response community and give them an understanding of us."

Catherine Eden, perhaps because her background was in politics, not public health, is able to see the profound change in the culture of the department as public health personnel gained "respect with the legislature and the press." State legislators paid closer attention to the role that departments of health could play in antiterrorist planning. Similarly, Mary Kramer, president of the Iowa State Senate, recalls that anthrax led to "including public health people for the first time in our emergency planning efforts." In Missouri, Ronald Cates, chief operating officer of the state's Department of Health, believes that "public health is the lead agency." Throughout the nation, the events of 2001 led those in public health to reevaluate the accuracy of their half-century-old ideology as an underfunded and unappreciated stepchild of government.

For the first time in many years, the departments of health were engaging in the kind of long-term planning that could result in the provision of services that would protect against bioterrorist emergencies and also protect population health in their states. Emergency preparedness could result in fundamental reform of public health practice. Rice Leach, commissioner of the Kentucky Department for Public Health, believed that public health was recovering its old, lost focus: "This [was] the first time since polio in the 1940s and 1950s that public health has had the opportunity to shine. It's a hell of a situation, but it gives us an opportunity to strut our stuff." Public health has "dealt with these things in the past, . . . but since polio and tuberculosis have declined, we have not had to handle things that affected the entire system."

Whatever loss of prestige the field suffered was immaterial in light of its now very relevant special skills and methodologies. The "decline" of state and local standing in the second half of the 20th century was paralleled by the growing importance of new federal initiatives to address disease in general and infectious diseases more specifically. Most important was the creation in 1946 of the Communicable Disease Center (renamed the Center for Disease Control in 1970, the Centers for Disease Control in 1980, and the Centers for Disease Control and Prevention in 1992) in the United States Public Health Service. This federal agency honed epidemiology, laboratory science, health surveys, and disease surveillance and reporting. Anthony Moulton, co-director of the CDC's Public Health Law Program, points out that the CDC built on state and local department strengths. Public health agencies routinely are engaged in "monitoring health of communities, including the surveillance for infectious disease . . . and monitoring unusual cases and patterns of disease and injury." Also central is close coordination with medical and public health professionals, such as

private doctors, and emergency room nurses and physicians, who are often the first to notice unusual diseases or disease patterns. "One or more observant people see something amiss and may initiate quarantine [or isolation] and notify state/local public health agencies, which in turn would notify the CDC." Some very traditional public health activities that have been used during natural disasters in the various states "applied equally to biological, chemical, and radiological threats."

Once possible disease outbreaks are identified, public health authorities use public health laboratories and a panoply of tools such as inspection, isolation (the segregation of those with symptoms), and quarantine (the segregation of those possibly exposed but not symptomatic) to limit the impact of the disease on the population. Finally, public health authorities ideally do a "postmortem of the whole operation—seeing what went right and wrong—and planning for training courses" and infrastructural improvements. Rice Leach of Kentucky summarized these traditional mechanisms: "In any emergency preparedness you have to detect, identify, intercept, neutralize, and recover. In public health we do surveillance for detection, we use labs and epidemiology for identification, we use vaccines, antibiotics, and quarantine to neutralize, and we are the only ones who can certify that we have recovered from a problem, whether it be bioterrorism or meningitis."

It is not as if the public health and emergency response communities had been caught completely unaware by the September 11 attacks and the anthrax episodes. Before September 11, the federal government had engaged in a number of exercises aimed at assessing the nation's preparedness for bioterrorist and chemical attacks. Two efforts were especially relevant for public health officials. In May 2000 the federal government organized a mock attack on three cities, "simulat[ing] a chemical weapons event in Portsmouth, New Hampshire, a radiological event in the greater Washington, D.C., area, and a bioweapons event in Denver, Colorado." Called "TOPOFF" for its involvement of top officials of the U.S. government, the exercise "illuminated problematic areas of leadership and decision making; the difficulties of prioritization and distribution of scarce resources; the crisis that contagious epidemics would cause in health care facilities; and the critical need to formulate sound principles of disease containment." Also, in 1999 the federal government had "made grants available in five focus areas for bioterrorism preparedness."

In June 2001 the nonprofit Center for Strategic and International Studies, the Johns Hopkins Center for Civilian Biodefense Studies, the ANSER Institute for Homeland Security, and the Oklahoma National Memorial Institute for the Prevention of Terrorism "hosted a senior-level war game examining the national security, intergovernmental, and information challenges of a [smallpox] attack on the American homeland," called "Dark Winter." The exercise spanned 13 days and came to some troubling conclusions about the readiness of the nation to confront a bioterrorist attack, including the lack of planning and coordination at the state and federal levels. Not insignificantly, national concerns about the possibility of a computer system meltdown at the turn of the new century, commonly referred to as "Y2K," had also forced some state agencies to address emergency preparedness planning. Y2K revealed a great deal about the absence of coordination within government and between government and health care organizations.

As a result of these and other efforts, some states had been in the process of planning for the possibility of massive disruptions before September 11. For example, Norma Gyle, a former legislator and now deputy commissioner of the Connecticut Department of Public Health, notes that her state was "very fortunate," for it had been preparing studies during the previous two years. Because of the concerns surrounding Y2K, when in 1999 massive computer failures and disruptions were seen as a real possibility, the state had "organized a command center that stood [Connecticut] in good stead." Because there was at least "one general convinced that there would be no milk left on the shelves," officials were "well organized." Also, California was in relatively good shape, despite low morale due to the state's ongoing budget crises. A well-developed emergency response program had been sharpened in the face of recurrent natural disasters from earthquakes and mudslides to brush fires and chemical spills. Philip Lee, previously assistant secretary in the Department of Health and Human Services and now at the University of California at San Francisco's Institute for Health Policy Studies, said that "overall, California is better off than most states in bioterrorism preparedness. Historically, it has had a strong system of public health laboratories. . . . Chemical spills have honed the skills of hazardous materials containment teams—skills that translate well in the handling of both biological and chemical warfare attacks." Colorado's and Nebraska's labs, among others, were also identified as in relatively good shape in comparison with those of most other states. In addition, the Colorado "Department of Public Health and Environment has discovered ways to more rapidly test for such things as anthrax and plague."

Such planning did not cease when the predicted disasters did not occur. Before September 11, the Connecticut Department of Public Health, like those in 43 other states, had received a Health Alert Network grant from the CDC to improve its electronic communications systems. The department had "made communications a major early priority . . . [and launched] a Web site that linked health care professionals and public safety officials with the health department." This would, in the words of Warren Wollschlager, chief of staff for the Department of Public Health, "provide nearly instant information on critical resources, such as available medicines and empty hospital beds," so that the "state is much better prepared to deal with a germ attack today than it was a year ago."

LACK OF PREPAREDNESS

By and large, most state departments of health were grossly unprepared for September 11 and its aftermath. Georges Benjamin, then director of the Maryland Department of Health and also president of the Association of State and Territorial Health Officials, noted in October 2001, just weeks after the attacks on the World Trade Center and the Pentagon, that "in a field where communication can save a life, some state health departments" did not have an effective e-mail communication system with their local and county departments. The *Atlanta Journal and Constitution*, citing Benjamin, reported that "public health officials have been warning for years that the [public health] system is antiquated." The lack of planning was one problem, but equally important was insufficient financial support.

"Public Health funding has been woefully inadequate and it needs a boost," Benjamin decried. The basic infrastructure of public health needed to be "enhanced . . . at local levels to fund disease-surveillance systems, to do basic medical detective work, to coordinate with local officials, hospitals, and labs." The National Association of County and City Health Officials (NACCHO), in its study "Local Public Health Agency Infrastructure: A Chartbook," and others pointed out that "most public health departments are not accessible 24 hours a day; 10 percent of the 3,000 local health departments don't have e-mail, let alone a computer network that links to hospitals and other health departments that would allow information about suspicious events to be distributed quickly."

Benjamin, now the executive director of the American Public Health Association (APHA), recalls that "September 11 brought home the fact that we had to do something about public health preparedness. Before, there was a small cadre of people concerned about bioterrorism and a small amount of money from the CDC on bioterrorism that was a specialty program and not well funded." And those people were not listened to but "were seen as doomsayers. The West Nile virus episode put people into a response mode, at least on the East Coast. They became tuned in to interagency cooperation to respond to an environmental event. Anthrax rolled out very slowly, insidiously. We knew it was about to come but hoped that it wouldn't . . . and then [were] shocked that it happened, but still there was an avoidance of its implications." After some days of confusion, there was "a quick response and great concern about the impact."

Benjamin's views reflected the growing worries about the public health infrastructure, which preceded the attacks. A CDC report published only months before September 11 detailed the terrible state of most public health departments across the country. Of the 3,000 county and city health departments, approximately 78 percent were directed by people with no graduate training. The CDC found that "only one-third of the U.S. population [were] effectively served by public health agencies." Even the most mundane technologies were lacking in many health departments around the country. "In a test of e-mail capacity, only 35 percent of messages to local health departments were delivered successfully." The CDC lamented that "the U.S. public health infrastructure, which protects the nation against the spread of disease and environmental and occupational hazards, is still structurally weak in nearly every area." In summary, the CDC found that "our local public health agencies lack basic equipment. . . . Our public health laboratories are old and unsafe. . . . Our public health physicians and nurses are untrained in new threats like West Nile virus and weaponized microorganisms."

In the two years following the attack, state departments of health throughout the country sought to determine their own state of preparedness and to define exactly what "preparedness" actually meant. According to Southern California's *North County Times*, one nationwide survey found that "90 percent of county governments were . . . unprepared for biological or chemical attacks." Tom Milne, former executive director of NACCHO, reported that "a significant number of local health departments have no high-speed access to the Internet, no way of sharing data." In fact, Illinois doctors reporting outbreaks have to phone in or mail a form to the state, "basically 1920s technology for monitoring disease," said John Lumpkin, formerly the state's public health chief. In Illinois the

state's three labs—in Chicago, Springfield, and Carbondale—were not linked electronically. "The Springfield and Carbondale labs also need to be upgraded so they can perform more sophisticated tests on site . . . and new equipment that can deliver results of biological tests in one hour, as opposed to 48 hours, under conventional testing methods is needed." Iowa was in a similar position. "'Our personnel are very limited,' said [Mary] Gilchrist, who runs the University hygienic laboratory in Iowa City" and who was president of the Association of Public Health Laboratories.

To help remedy the flaws in the public health infrastructure that the anthrax attack had highlighted, President George W. Bush signed into law on January 10, 2002, a bill to send $1.1 billion to the states, territories, and three cities—Chicago, Los Angeles, and New York—to "develop comprehensive bioterrorism preparedness plans, upgrade infectious-disease surveillance and investigation, enhance the readiness of hospital systems to deal with large numbers of casualties, expand public health laboratory and communications capacities, and improve connectivity between hospitals, and city, local, and state health departments to enhance disease reporting."

The moneys were distributed to the states in three components. All the states were initially given 20 percent of their per capita allotment upfront, in most cases several million dollars, to develop plans for how they would use the money and, after review, were provided with the remaining allocation. The moneys were divided into two parts. The first and significantly larger part consisted of grants from the CDC specifically "targeted to supporting bioterrorism, infectious diseases, and public health emergency preparedness activities." The second, provided through the Health Resources and Services Administration (HRSA), provided funding to "be used by states to create regional hospital plans to respond in the event of a bioterrorism attack." To get the money, the governor's office, often relying on its department of health, submitted bioterror preparedness plans to the U.S. Department of Health and Human Services and was required, among other things, "to provide for at least one epidemiologist . . . for each metropolitan area with a population greater than 500,000, [and to] develop a communications system that provides a 24/7 flow of health information among hospital, state, and local health officials and law enforcement." In addition, the CDC targeted "preparedness planning and readiness assessment, surveillance and epidemiology capacity, laboratory capacity, Health Alert Network/communications, risk communication and health information dissemination, and education and training."

In some measure, a disjuncture of expectations developed between federal officials and those at the state level. For state officials, the billions of dollars pledged to the states seemed like a huge bonanza that promised a possibility of saving the public health infrastructure that they saw as having been eviscerated by years, if not decades, of neglect. But to federal officials, responsible for literally hundreds of billions of dollars devoted to the maintenance of the nation's public health and health care infrastructure, the money made available through the CDC and HRSA augured only modest promise for improving the infrastructure.

In some states such as Virginia, the renewed attention to public health and the relationships developed through the governor's office were "beneficial to the public health system," said Robert

Stroube. Because they had the "opportunity to actually interface with the governor's office," public health had "unprecedented visibility: The governor provided additional state funds for public health preparedness because he thought preparedness was as much a state responsibility as a federal one. Additionally, the governor authorized the state health department to hire an additional 140–150 people in full-time positions to carry out these new responsibilities."

The hiring of trained personnel was a fundamental problem. Georges Benjamin said that in Maryland they were "trying to invest to get an adequate workforce. The good news is states have the money to do it, but the bad news is there [are] not a lot of people with those qualifications," and "there may not be enough qualified people to fill the jobs." Benjamin stated that Maryland was "hiring in all areas—epidemiology, laboratories, public relations, and information technology," and the state was "hopeful with two (local) public health schools that we'll find the staff we need." Texas epidemiologist Dennis Perrotta announced that Texas will hire 50 more public health workers at the state level alone. "New hires will help out at four new public health laboratories, work in public information departments and fill roles as regional bioterrorism prevention planners."

Unlike Maryland and Texas, the situation in Washington State was quite different. Washington is a geographically large and politically and socially diverse state with only one school of public health. Secretary of Health Mary Selecky believed that finding qualified personnel would not be easy: "You don't create epidemiologists overnight." In Kansas the problem of new hires was not merely financial, because in the western counties in particular depopulation had begun to seriously undermine local institutions, including health departments and hospitals. Melvin Neufeld, a member of the Joint Legislative Budget Committee of the Kansas House of Representatives, sees the issue more broadly. Some counties resist consolidation and even coordination of services because of the threat to their independence and integrity. In recent years, there have been battles over the attempts to consolidate school districts and other county governmental programs. Further, there were no trained health professionals willing to move to Kansas, a state whose major industries—agriculture and aerospace—were in decline. Other states, such as Nebraska and Illinois, used the grants to coordinate health services across county lines.

DUAL USE FOR BIOTERRORISM FUNDING

Mary Selecky, among many others, raised the fundamental issue that this flood of bioterrorism money suggested: Was this money going to be there for the long term? And would it support the public health infrastructure generally and not just the short-term fashion of bioterrorism? "We have had numerous communicable diseases many times before we had anthrax last fall, and we're using the same systems." But would there "be a sustained, long-term investment, so . . . if headlines subside, we don't drop our attention?" Others asked a similar question. Officials in Chicago, for example, hoped that federal funds would go "beyond hazardous-materials suits and stockpiles of penicillin to computer networks, personnel training, modern laboratories, and updated equipment that is critical in times of

crisis and in routine work." Patrick Lenihan, the deputy commissioner of the Chicago Department of Public Health, was quoted as saying, "The day-to-day stuff that is taken for granted is just what is called upon in a threat of bioterrorism." Epidemiology and surveillance were essential to the tracking of syphilis and tuberculosis as well as anthrax and smallpox.

Some state administrators see the efforts around bioterrorism as having had lasting positive effects on the public health infrastructure in their states. The Connecticut Department of Public Health's strategy "was the establishment of two hospital-based Centers of Excellence for Bioterrorism Preparedness and Response," at Hartford Hospital and Yale–New Haven Health System. They are "taking a leadership role in regional coordination, education, clinical care, and research to improve Connecticut's ability to respond to a large-scale bioterrorism event."

California had a CDC grant before September 11 for emergency planning, but in the words of Angela Coron, "September 11 focused our attention in a different way. It became very real. You look at things differently when they come home."

In Ohio the federal government provided nearly $35 million to fund bioterrorism-related activities, $30 million of which the CDC provided and HRSA the remainder. Eleven million dollars went to local health departments as a result of these grants. Anne Harnish, assistant director of the Ohio Department of Health, recalls that September 11 forced the department to "revamp the way we looked at everything. . . . In our strategic plan we added the goal of preparedness." The department improved the relationship between "local hospitals and local health departments" and "established 24/7 communication with local health groups so all public health has benefited." She notes that bioterrorism money was critical to the Department of Health "because when people were laid off, it was sometimes possible to rehire them under the bioterrorism rubric."

It was not just the money. The federal and state focus on bioterrorism aided the state in reorganizing its training program for local health agency leaders and Department of Health staff. The department trained 250 local health agency leaders and 413 Ohio Department of Health staff in the principles of their new Incident Command System that would become important for managing the state's smallpox vaccination program. Hospital personnel were trained to recognize "an unusual infectious disease outbreak due to the release of a BT [bioterrorism] agent." This sensitized hospital staff to the importance of reporting infectious diseases to state health authorities, a legal requirement that was often ignored in practice until then.

Virginia, home of the Pentagon and therefore a direct victim of the September 11 attacks, received over $27 million in federal funding, with over $24 million coming from the CDC. It used the money to hire epidemiologists and provide health planning for the 35 local health districts and five regions and to "implement plans for the [Strategic] National Pharmaceutical Stockpile and the smallpox vaccination program." The state also developed "biosafety level 3+ labs and a network of 90 local labs as well as 18 scientific staff to enhance biologic and chemical agent identification." Regional planning for the hospital infrastructure and disaster planning and surveillance activities were all improved as well.

Lisa Kaplowitz, former director of the HIV/AIDS Center of Virginia Commonwealth University, was hired with this new federal funding as deputy commissioner for bioterrorism preparedness in the Virginia Department of Health (VDH) but soon found that her role had expanded to "emergency preparedness—an all-hazards approach." According to one report, the "health department [was now] involved in many types of disasters, natural and manmade." Kaplowitz believes that the department was making good use of the funding. "We are making good progress on the hiring of our public health response staff. About one-third of the 138 new positions have been filled, and most are expected to be filled by early next year. A key component of our preparedness efforts," Kaplowitz notes, "is to build public health infrastructure. People must be in place, trained, and equipped with a well-planned and tested system to effectively detect and respond to any public health emergency." Within a short time the VDH had hired "all key central office Emergency Preparedness and Response Staff, [including] . . . 20 of 35 district epidemiologists . . . [and] 11 of the 35 district emergency coordinators. . . . VDH's Health Alert Network has been established to ensure effective communication connectivity among public health departments, health care organizations, and other public health partners." Kaplowitz recalls that the "Health Department was very pleased with the rapid funding" but that there was "a lot of anger and frustration" among police and fire officials "that they were not getting the money [$3.5 billion] that was promised. . . . People were counting on it, and the legislation was never passed" until mid-2003, and even then it was greatly reduced.

Some of the least populated and most rural states such as North Dakota, which had experienced massive flooding and other environmental disasters in the 1990s, found that the money earmarked for bioterrorism was a benefit to the state's public health infrastructure. Sheila Peterson, director of the North Dakota Office of Management and Budget, noted that the money helped the state to hire epidemiologists and to acquire more equipment for their labs. She does not believe that the new emphasis on bioterrorism created "a drain in resources." In fact, "federal moneys have enhanced our abilities so much."

Arvy Smith, deputy state health officer, and Brenda Vossler, bioterrorism hospital coordinator for the North Dakota Department of Health, explain that the $6.9 million that the state received from the federal government has helped them develop new capabilities in bioterrorist response. The department expected that there would be 13 new hires. Whereas "previously [the department] had only one epidemiologist in each of six regional offices, [it] now [has] added two more. . . . Our labs needed updating and federal funding was important. . . . Our communications with partners improved dramatically. We are working on our Health Alert Network to connect emergency responders and health care providers electronically as well as improving training and coordination of public health programs throughout the state." The infusion of federal funds was of critical importance. "State budgets are very tight now. Without federal money, improvements to public health infrastructure are not possible."

In the days following the anthrax episode, bioterrorism became the "top priority" for the Arizona Department of Health as well as for the entire state, according to Catherine Eden. The department

had organized an emergency response system six months prior, a plan that relied "heavily on our county health department partners." But following September 11 and the anthrax episode, the state health department took on greater responsibility for the laboratory testing of suspected anthrax cases, hoaxes, and other potential bioterrorist emergencies. Despite these added burdens, Catherine Eden and David Engelthaler recalled that "we were able to cover all of our needs. . . . I don't know of any specific issue that suffered."

Kentucky received $16 million, of which $14 million came from the CDC for bioterrorism but which also aided the state's public health infrastructural development. The state used this money to improve its public health laboratories, upgrade coordination among various institutions, and strengthen its epidemiological and surveillance systems. Kentucky had been the site of the first test of the Strategic National Pharmaceutical Stockpile even before September 11. Rice Leach, commissioner of the Department for Public Health, recalls how "October 8 was the exact date that everything changed. In the middle of a meeting a person came in and said that they had a possible anthrax [attack] in three of our clinics." Within half a day, "environmental protection, police, national guard, and other agencies came together to come up with a way to handle all the specimens." Although the state and the department "were caught somewhat flatfooted" by the anthrax scare, the "department, especially the laboratory side, worked almost around the clock to test samples," and the state had to absorb the enormous costs. "We definitely changed priorities. We had to stop doing some things. We got no new money until the CDC grant [$15 million]. We had to absorb the new planning with hospitals, med[ical] societies, etc. It was a public health emergency, and we responded."

Leach acknowledges that "the focus on bioterrorism has taken energy away from the routine monitoring that we engage in," but at the same time it has spurred improvement of the state's communication system so as to provide 24/7 communication with every health department in the state. He believes that "increasingly, people are working together better. People used to talk *about* each other and are now talking *with* each other." Leach believes that the states were immeasurably helped by how flexible the CDC was under Jeff Koplan, who told them that they could "use your other grant money to take care of anthrax. You didn't have to dot every i in the grants to prove you were using it for the purpose you stated. . . . The [secretary] of health and human services is trying to make it right. I give him an A for effort." Leach even believed that the essential issue was not the lack of resources provided by the CDC. "If you had given us more than $15 million, we might not have been able to spend it effectively."

As part of Kentucky's grant from HRSA, the state was able to upgrade two animal laboratories. "Why animal labs? 'The critters could be a source of terrorism,' Leach said. 'Someone can infect our milk, eggs, chickens, and maybe, or maybe not,'" infect humans. Bioterrorism provided the rationale to improve a service essential to this rural state. In Missouri as well, state officials saw the federal government as a "great partner" in the months immediately after September 11. As Ronald Cates, interim director of the Department of Health and Senior Services, put it, the money was "tremendous for Missouri and helped to build a great system for the state." In Colorado federal bioterrorism money

was used to improve the public health system. "'We discovered our infrastructure was very, very fragile,' said Chuck Stout, director of the Boulder County Health Department." The money was used "to hire 14 epidemiologists to help improve disease tracking" and "to improve communication among local health departments," as well as to "beef up laboratories at state facilities in Colorado Springs, Denver, Durango, Grand Junction, Greeley, and Pueblo."

MIXED REACTIONS TO BIOTERRORISM FUNDING

While many state administrators and legislators were enthusiastic supporters of Washington's efforts to combat bioterrorism, other states, such as Kansas, Louisiana, New Jersey, and Texas, had mixed reactions to the impact of federal funding on their state health departments. Perhaps J. Thomas Schedler, chair of the Health and Welfare Committee of the Louisiana State Senate, put it most succinctly: "I guess there's always a good news/bad news scenario in everything you do. I think the good news from a public health standpoint is that the area of public health in Louisiana probably needed some drastic overhauls and new influx of money for years and years, and sometimes it takes a crisis to make that happen."

Specifically, Louisiana "for a long time needed to upgrade [its] lab facilities. . . . That is occurring in several sections of the state [where it] would probably not have occurred without this crisis. . . . Communication lines between hospitals and the Department of Health and Hospitals have been improved. [We stockpiled] certain types of drugs that were not there before, and even though we had limited supplies, it certainly put a focus on those types of things." The other areas that benefited were "looking at things on a regional basis . . . and the structure of command in the event of a biological attack or some other crisis. . . . So that's the good side of it."

But, Schedler points out, "there's a down side as well." The new emphasis on emergency preparedness "has put an untold strain on our budget. . . . The states are having severe trouble right now with Medicaid and budgets and downturns of sales tax, corporate taxes, and the like. So the timing of this couldn't have come at a worse time, but nonetheless, we have seen a tremendous shift into that arena."

In New Jersey, George DiFerdinando, Jr., deputy commissioner of the state's Department of Health and Senior Services, recalled that since the state was the site of some of the first reported anthrax cases at the Camden Post Office and also directly across the river from the World Trade Center disaster, it was especially hard hit by anxiety in the weeks following September 11. "At that time," DiFerdinando recalls, "I was functioning in an operational role [as acting commissioner], and on 9/11, though we were not the lead agency in New Jersey, we could sign executive orders to let people get the medical records of missing relatives and to allow for the release of names of missing people." He remembers that they received "an agreement from Tommy Thompson from Health and Human Services that state agencies could use funds from other programs, for example, tuberculosis, for emergency purposes." While the state could therefore "reallocate people as needed," the strains on

the system were enormous. "If there had been another explosion in Philly, then it would have been very difficult to decide where to put resources."

Federal money was especially important for "improving public health and health care infrastructure." In "Lessons from the Anthrax Attacks of 2001: The New Jersey Experience," Eddy Bresnitz, the state epidemiologist, and George DiFerdinando summarized the crisis that faced the state in the months of September and October 2001: "New Jersey became the focal point of the bioterrorism-related anthrax outbreak in the United States. At least four letters containing weapons-grade anthrax spores passed through the Trenton Postal Processing and Distribution Center [PDC] in Hamilton Township, New Jersey, in September and October 2001. The spore-filled letters caused widespread contamination." In all, 1,100 workers were exposed, and five of them contracted anthrax; one New Jerseyan who did not work in the post office also became ill with anthrax. The state immediately established a surveillance system that included 61 area hospitals from 15 counties. This created tremendous strains on the hospital staff and taught the state that "in the absence of a credible exposure or apparent outbreak, the most critical function is to have a sound surveillance infrastructure for routinely notifiable conditions, such as the more common infectious diseases that must be reported by law. This infrastructure establishes the relationships, lines of communication, and awareness of reporting procedures that are critical to identifying index cases and monitoring for other cases in the event of an intentional exposure. Most outbreaks are not detected by surveillance systems but by clinicians who suspect an unusual event and notify public health officials."

Bresnitz and DiFerdinando learned that in many ways "the response to the contamination of the Trenton PDC was fundamentally the response to a typical airborne contamination of a workplace." But the one major difference was that "the Trenton PDC exposure . . . occurred within a regional and national context of a national state of emergency, and the situation gained resonance beyond any typical workplace safety issue. As a crime scene and as part of an emerging national war on terrorism, the contamination of the Trenton PDC and the public health response involved all levels of the U.S. government and all forms of media." Federal money coming into the state following September 11, therefore, "went for public health and health care infrastructure."

While New Jersey's experience with federally allocated bioterrorism money was generally good, and even though it was given leeway in the allocation of resources, the state still experienced difficulties. The first major problem was in planning for services when the federal budget itself was in crisis and decisions about funding occurred "only five months before the start of the fiscal year." The state did not know what cuts might occur in existing programs, whether it would be able to balance those cuts with new money, or whether federal mandates would dictate how the money should be spent. The second problem was that emphasis on emergency preparedness distorted some priorities. "Before September 11, New Jersey had a substance abuse task force" that estimated that "there might be a million people in need of treatment under the concept of treatment," of which 80,000 at any time might voluntarily ask for treatment. "In August of 2001 we had high hopes for extra dollars" to treat 40,000 people. "But no one heard that after 9/11. How could it be any other way after money started

flowing for bioterrorism?" DiFerdinando and the state had expected increased revenues from the tobacco tax that had recently been raised to $1.50 per pack. "This would have allowed the $30 million commitment for tobacco control to rise to $45 million. But with the budget constraints, the governor is now proposing $10 million." The state budget crisis had undone the increase in revenues that the health department had expected from the tobacco tax. In the end, DiFerdinando believes the problems facing New Jersey were due to "a confluence of the state budget crisis, bioterrorism, and smallpox."

TEXAS: A CASE STUDY OF THE MIXED BLESSINGS OF BIOTERRORISM MONEY

Texas, a huge state with 254 counties and a highly decentralized county-based public health system, was nearly overwhelmed by the anthrax episode. Jack Colley, state coordinator for emergency response, recalls that "with anthrax we quit trying to keep track of the number of undetermined white powders. What did we learn? Before we had eight labs working from 8:00 to 5:00, and now we have ten labs with 24/7 capacity." The state quickly became skilled at "how to process, detect, and give feedback, that is, confirm or deny, quicker." It "treated every single reported white powder as potential anthrax" and mobilized to swiftly "detect biological, chemical, and radiological agents."

The problems facing a state the size and complexity of Texas, with many far-flung rural counties, were daunting. Emergency Medical Services and fire department personnel wanted new equipment, county officials wanted to ensure that localities have "plans in place to handle a biological outbreak and have the capabilities to detect, treat, and contain a biological incident. Local hospitals and health departments in the county need to be able to recognize signs of illness, report the suspect diseases, treat mass casualties, and provide necessary antibiotics or vaccines." One evaluation by the Texas Association of Counties of the state's emergency response system concluded that "since Sept. 11, the Texas Department of Health has been gearing up preparation and response activities, but the state system relies on local public health entities to identify attacks, and little is known about levels of readiness at the local level, especially in rural areas." The problems identified included poor infectious disease surveillance programs at the local level and "many health care professionals [who] lack[ed] the capability to handle bioterrorism."

Localities, like the state, were strapped by the increased demands placed on them at the very time when budgets were contracting and taxes were being reduced. "Harris County Sheriff Tommy Thomas, who serves on the governor's homeland security task force, said many agencies, both governmental and private, voiced concerns about the cost of security during a hearing about terrorism preparedness issues in Houston." As a result, many counties turned to the state and the federal government for additional funding.

Governor Rick Perry "authorized the use of more than $6 million from the health department's budget for improving bioterrorism preparedness, including adding staff, upgrading laboratory equipment, and improving training." In addition, the state received $2.1 million from the Department of Mental Health and Mental Retardation to address posttraumatic stress. The health department,

according to state epidemiologist Dennis Perrotta, also began "working with other agencies to improve communication systems, prepare health facilities, and create a plan for getting medicines and improving detection of outbreaks." Perhaps what came through most forcefully was that "a strong and flexible public health system is the best defense."

Perrotta, who had served as a consultant to the Asthma Surveillance Case Definition Work Group of the Association of State and Territorial Health Officials, had a broad view of the crisis affecting state health departments across the nation. He became acutely aware of both the tremendous support federal bioterrorism money provided for the states as well as the problems. The CDC grants were welcomed, but the "big surprise was the amount of work that the CDC and HHS [Department of Health and Human Services] wanted us to do in planning. Now it makes sense." While Perrotta believed that "there can be a distortion of priorities" as a result of the federal grants, overall "this money is really helping us build an infrastructure in epidemiology that I only dreamed about when I came here years ago. The dual nature of this money is being put to good use. Planning is crucial and we're able to do it, and we are building new relationships with the emergency preparedness people in other departments."

Perrotta points out that Texas was using the "money to build the infrastructure in local and regional health departments" where epidemiologic response teams were established for bioterrorism, but the state also "used them for other public health problems. Thirty-two people have been hired in the eight regional offices, which is key, and local health departments have hired two to three times that number of people." Perrotta believes that the state has been "dramatically improving its capacity and ability to respond" to bioterrorist threats, as well as to other infectious disease threats, such as the West Nile virus and SARS. "It is a nice time to be in my position."

Although there was a "great interest in the legislature in the activities of government to protect public health," Perrotta's "priorities have been overwhelmed by bioterrorism, with 90 percent of my time spent on the two bioterrorism grants and smallpox." Perrotta worried that since many counties had no local health department, "the state department would be required to do disease surveillance and other public health activities in these areas." The basic infrastructure needed to be reinforced before more complex systems were put in place. Perrotta believed that having a system of syndromic surveillance, for example, would be useful, "but with the resources I have, I need to worry about much more basic stuff."

Perrotta's experience as the state epidemiologist is very different from that of Jack Colley, the state coordinator of emergency response, illustrating the varying perspectives of those inside and outside health departments themselves. In short, Colley believes that his "budget is not adequate" for the effort the state put into planning and preparedness operations: "You will never be able to determine the cost of the effort that we have put into it. We cannot put a dollar amount on the pure effort. September 11 changed our whole operation." Right after September 11, "we were told that Congress was going to appropriate $3.5 billion for emergency preparedness that would go to the locals and the states. They promised $335 million in a supplemental budget to plan for how to use the $3.5 billion." Colley recalls

that state employees "worked hard in the spring and developed many, many programs. We spent endless hours doing our homework. It was a tremendous effort to come together for a common cause, and there was no infighting, we were all in this together. . . . But the $3.5 billion has yet to appear, and the $335 million was reduced to $100 million. 'The check is in the mail' but has not been delivered," Colley laments. In an article in *Washington Technology*, William Welsh noted that President Bush's "2003 budget promised $3.5 billion for new first-responder grants to be overseen by the Federal Emergency Management Agency. But in the bill approved by Congress, only a fraction of the money is actually new funding, according to an analysis by the National Governors Association of Washington. Most of the funds come from older programs that either have been eliminated or consolidated, or whose scope has been broadened to include homeland security, the association said."

The problem with the failure of the federal government to deliver on its promises was that "when we prepare for terrorism, we prepare for everything," Colley observes. Unlike public health officials, whose perspective was historically more limited to infectious disease outbreaks, Colley was involved in planning for a wide range of threats to population health. Since the summer of 2002, Texas has "gone through four presidentially declared disasters," including one flood that affected 41 counties, an area larger than that of South Carolina. In addition, major resources went into the effort to gather materials and evidence across a wide swath of the state following the Columbia shuttle disaster in February 2003. From the perspective of the emergency response team, "We are in constant response mode. . . . I'm disappointed that the federal government has not given more resources to state and local governments. Partnership should be about not just sharing information but sharing resources. The intention is there, but show me the money." Colley asserts that the establishment of the Department of Homeland Security in June 2002 further drained "resources that would have or could have gone to the states." Interestingly, in contrast to Dennis Perrotta, who believed bioterrorism money strengthened public health in Texas, Colley questioned whether emergency preparedness money was strengthening emergency preparedness in Texas. Colley asked whether emergency response to hurricanes, floods, and other natural disasters has been shortchanged. "FEMA [Federal Emergency Management Agency] was a very efficient organization, but they have been brought into the Department of Homeland Security. We need to make sure that these programs stay viable in 2004."

As with public health, the relative poverty of rural county governments was of real concern in emergency preparedness. "For many counties low on funding, [antiterrorism and emergency preparedness] could be a large order to fill. The state's Division of Emergency Management [DEM] reported local governments need $195 million to better equip first responders such as police, public health, fire departments and hazardous materials teams with protective suits, decontamination equipment, and monitoring and detecting equipment. The DEM also reported there is a training shortfall among emergency responders with more than 290,000 personnel across the state in need of terrorism response training. It's safe to say that this shortfall lies largely within rural counties. Large, urban counties likely have a terrorism task force or a hazmat response team, while in a rural county the closest hazmat team might be 100 miles away and the county depends on neighboring counties for

assistance and equipment." Although metropolitan areas that participated in bioterrorist preparedness activities had received federal subsidies for several years, Texas and other states considered the subsidies inadequate. The states' experiences with the federal grant programs, which we will explore in the next report, varied in part because of regional and state distinctions.

DISTORTIONS CAUSED BY FEDERAL BIOTERRORISM FUNDING

While many state officials saw the federal involvement in bioterrorism and emergency preparedness as generally beneficial or at least a mixed blessing, American Public Health Association executive director Georges Benjamin (then president of the Association of State and Territorial Health Officials) and others developed a fundamental critique of the effect of federal funding for bioterrorism on population health. Within a few months of the World Trade Center disaster, Benjamin was cited in a February 5, 2002, *New York Times* article as cautioning that "while public health officials view bioterrorism preparedness as important . . . it should not come at the expense of other programs. They note that just five Americans have been killed by bioterrorism over the last year, while thousands die each year of chronic illnesses and infectious diseases. 'We will be very concerned if we are funding one thing at the expense of another,' said Georges C. Benjamin. . . . 'If you really want to push people towards better health, you have got to keep these programs in place.'"

The concern at the time was prompted by the fact that a new federal "budget proposal calls for a $57 million cut in the CDC's program for chronic disease prevention and health promotion. Infectious disease control, meanwhile, would be cut by $10 million, at a time when public health officials are particularly concerned about the threat of new and emerging infections." The budget for other programs, including "childhood immunization, environmental health, preventing birth defects, and sexually transmitted diseases, including AIDS," would remain flat. Advocates worried that their own public health priorities would be shortchanged. The *New York Times* quoted Marsha Martin, executive director of AIDS Action, who said that President Bush was sending "a clear message that our nation's public health has fallen off the administration's radar screen." Martin also asked for a broader definition of emergency preparedness: "homeland security also means investing in prevention and care services for people at risk and living with H.I.V."

Benjamin was also concerned about the panicked and erratic reaction of federal officials who were sending out mixed messages about future funding and priorities. "'Yo-yo funding has been the history of public health,' said Dr. Georges C. Benjamin. Dr. Leslie M. Beitsch, the former health commissioner in Oklahoma, said, 'I think it's a very significant commitment, but the question then becomes, is it a long-term commitment?'" State health officials echoed these fears, saying "they were eager for the money [for bioterrorism preparedness] but were concerned that it would not last." In Connecticut there were worries among hospital and health care professionals that despite the promises of adequate supplies, the Strategic National Pharmaceutical Stockpile would not be there when it was needed. Norma Gyle, deputy commissioner of the Department of Public Health, has

misgivings that the "42 local clinics that are being organized and have been extremely active in recruiting and staffing" might not have funding in future years. In Minnesota Lee Greenfield, former legislative leader and now an adviser to the Hennepin County (Minneapolis) Board of Commissioners, believes that the mixed messages about the funding for emergency preparedness would lead the "sheriff's people" to demand "space suits" for bioterrorism activities, while public health departments would go without. "Priorities were kind of mixed up." In Iowa there were concerns that existing programs were already suffering because of the new priorities. As of April 2003, they had not received crucial funding so they "are taking money out of other programs. . . . We are shifting maternal and child health to the Medicaid side of the equation. We are borrowing people from the University of Iowa because it has a lot of talent that we can draw on to create a response team and do training." State officials worried that "we have top-down communication but no process by which to activate it.

When Angela Coron, associate director of the California Department of Health Services, was asked if the state was paying enough attention to the everyday issues of public health, she answered, "No. We are dealing with bioterrorism where the threat is unknown versus other issues where we know they are killing people. We always question where we put our limited resources." She acknowledges that "without the new bioterrorism grants from the federal government, we would not have been able to do what we have done. To do more, we need more money. We do not have enough funds to do all the things we know we need to do."

EFFECTS OF BUDGET CRISES ON PUBLIC HEALTH AND EMERGENCY PREPAREDNESS

Whatever the conflicting views of state officials about federal bioterrorism money in general, there was a broad consensus that the budget problems that most states began to suffer in 2002 have had a deleterious impact on states' abilities to respond to both bioterrorism and population health needs. The positive effects of the federal bioterrorism funding in various states were undermined by the economic downturn that devastated most state budgets, and the distortions in services and attention created by that infusion of money were amplified as state legislatures attempted to cope with huge deficits and falling tax revenues. Except in a handful of states, officials complain that essential public health services had to be cut back in part because federal mandates required an increase in spending for targeted programs and was, in the case of smallpox, a generally ill-conceived effort. A few have questioned, however, whether the redirection of attention and resources had any major impact, asking whether "greater resources build sustained, integrated systems that will solve problems." In this section we will describe the experiences of the various states and the influence of growing deficits on public and population health programs. As legislators moved further away from the events of fall 2001, population health preparedness became one of a number of competing budget priorities that needed to be considered in tough fiscal times.

In midwestern states such as Minnesota and Iowa, downturns in the economy were exacerbated by September 11 and the broad economic recession that continued into 2003. "In Iowa we have done much difficult cutting in the past three years because our revenues have been down," Mary Kramer, president of the Iowa State Senate, observed. "Our economy is just stagnant."

In Minnesota, Lee Greenfield notes, "the immediate effect of 9/11 was most seen in the airport and air travel" industries. The state is the home of Northwest Airlines, and mass "layoffs occurred here, as generally in the country. A lot of people are choosing not to fly. That had a serious economic effect on everything at once." Minnesota had a $27 billion biennial budget and faced a $4.2 billion shortfall for which there was no hope of increased revenues, since the newly elected governor gained office "on a platform of no new taxes." Further, the state "house Republicans were also elected on that basis, and they are the majority in the house. . . . Obviously, without any new taxes the proposal from the governor's office is to essentially cut $4.2 billion in spending." Since the governor had vowed not to cut public education from kindergarten through twelfth grade, "that throws it all to the rest," and population health programs were a major portion of the rest. In fact, virtually all state agencies, including education, suffered serious cuts. Cuts in budgets, new federal money, and changing goals of departments created a situation in which there was limited workforce availability in most states. Mary Selecky, secretary of the Washington State Department of Health, suggested that Washington State has "the same people doing many things—no matter the funding."

Arizona's state budget deficit in 2003 was $500 million, or 8 percent of the budget, and in 2004 the deficit is expected to top $1 billion, or 15.8 percent. In California Angela Coron notes the chasm the state is facing: "Our budget deficit is $34 billion, which is larger than the actual budgets of any state except New York." By June 2003, the projected deficit was $38.2 billion, fueling a successful effort to recall the state's governor.

At the other end of the country, New England states also face crises of immense dimensions. In Maine, a fairly large state geographically with a small but highly dispersed rural population, $1 billion has been cut from the $6 billion two-year budget. "We've been losing federal money," notes Charlene Rydell, the health policy adviser to U.S. Representative Tom Allen and a former state legislative leader. The situation in Massachusetts was equally grim. State Senator Harriette Chandler, a member of the health care committee, said the state was "between a rock and a hard place. . . . If we're talking last year and this year—last [fiscal] year being the [calendar] year we are currently in—I'd bet the budget has been cut 20 to 25 percent easily. On top of that there will be more cuts coming. We're $3 billion in deficit for 2004."

Only Wyoming and North Dakota reported that their state economies and budgets were in good shape. Florida and Arkansas had no budget deficits in fiscal year (FY) 2003 but are projecting substantial deficits in FY2004. Sheila Peterson of the North Dakota Office of Management and Budget described the state's budget as "tight but balanced. North Dakota's economy does not tend to experience the wide fluctuations, the major ups and downs, like other states' economies. In fact, as an energy-exporting and commodity-exporting state, we tend to run countercyclical to the national economy."

ECONOMIC PROBLEMS AFFECT POPULATION HEALTH SERVICES

The effects of these budget cuts on public health departments and programs were severe, especially in those states that had invested a significant amount of state money in building up population health programs. Ironically, states that had relied entirely on federal grant funding without investing state funds were affected less severely when state budget deficits forced a contraction of state health programs.

In Minnesota some of the health department's signature programs were threatened. The tobacco suits that were first initiated by Minnesota's attorney general had resulted in the creation of what was to be a permanent endowment "to pay for antismoking campaigns for young people and for some medical education and the like." About $1.3 billion, Lee Greenfield estimates, was to be put aside. But because of the budget deficits and the state's unwillingness to raise taxes, "the governor is undoing those endowments or at least suggesting they be undone" to provide a quarter of the money needed to close the budget deficit. The rest is being accomplished through programmatic cuts, "including some severe cuts in the various programs we have for providing health care for people."

Minnesota, Greenfield points out, with its long tradition of populist politics, had developed in the mid-1970s the "only statewide general assistance medical care program for adults without children who would otherwise not be eligible for Medicaid." Then in 1992, "Minnesota Care was enacted to subsidize health insurance for working families (with and without children) whose incomes were above Medicaid eligibility and who paid premiums on a sliding fee scale. . . . The part that's for families and singles without children is being drastically cut, in fact eliminated." Greenfield estimates that "there are about 68,000 people who would lose their current coverage in state or federal programs." Traditional public health activities are also being affected, despite the influx of federal money for emergency preparedness

and bioterrorism. "There is nothing being eliminated," Greenfield notes, but inspections of restaurants, nursing homes, and other establishments are being reduced.

In Connecticut the state has ordered 5 to 10 percent across-the-board budget cuts, notes Norma Gyle. "Lots of lab people are taking early retirement—not because of 9/11 but because of the budget crisis. We have had to cut back and there is only one manager left at the lab, and eight have retired." In Ohio the Public Health Department budget was cut 21 to 25 percent, with cuts occurring in every area. As in Minnesota, education could not be touched, in this case because "Ohio is under court order to provide education for every child in Ohio." As a result, Anne Harnish recounts, "We've had staff reductions of 60 of 300 people approximately. Maternal child health clinics have been reduced, hemophilia treatments for adults have been eliminated, immunizations and laboratories have been cut, and local environmental health efforts have been reduced." There have been only two areas in which the department has seen increases in funding: vector-borne diseases, as a result of worries about West Nile outbreaks, and vital statistics, which is a result of charging increased fees.

Virginia's "very large deficit" has resulted in the "yo-yo funding" that Georges Benjamin feared. Lisa Kaplowitz, the state's deputy commissioner for emergency preparedness and response, notes, "Last year more money was put in to fund epidemiological positions and emergency medical services, but this year much money was cut because of a $2 billion deficit." Public health was able to "support its core missions," and "care for women and children, HIV, immunization, etc., have been preserved." What suffered were funds that in more prosperous periods would have been sent on to nonprofit agencies. In Kentucky the budget had an 8 percent shortfall, and when the General Assembly did not pass a budget, the governor put together "a spending plan" that cut all departments by 10 percent. As a result, according to Rice Leach, commissioner of public health, the department was left "with no wiggle room at all. We used to have money to implement good new ideas, but no more." Even worse, the department "lost 40 positions out of 400, and there is a hiring freeze." Leach argues that public health should be doing various forms of environmental monitoring, such as septic tank and restaurant inspections and monitoring outbreaks of disease related to food, "but now we are working only on urgent problems, not routine monitoring, and things will happen if we don't keep an eye on routine monitoring."

Leach relates that he had "been in public health since 1966, but this is the first time I can't maneuver to head off perceived problems like a meningitis outbreak or other acute issues." Kentucky is unable to do things in the same way it did before. For example, prenatal clinics may open for only three days, not five. "Maternal and child health doctors were reassigned to bioterrorism so that there was not a net loss of personnel to the department, but there was one person gone from maternal and child health."

Kansas faced a particularly difficult period. As a result of the severe economic downturn, as well as the loss of tens of thousands of jobs in the aircraft industry that provided good health benefits, "charity clinics are being overrun," notes Melvin Neufeld. "There are also substantial cuts in Medicaid reimbursement and a lot of resistance from the provider community and threats to reduce provision of services." Residency programs for physicians are being cut, which is threatening services to 137,000 individual patients. If they lose the indirect costs of medical education under

Medicare, "medical education in Kansas is threatened with collapse." Neufeld believes that ultimately this will result in fewer physicians in private practice and in local hospitals and, as a result, "charity clinics will be even more overrun." As in other states, "the governor vowed not to cut education, so the rest of government appropriations are collapsing." Neufeld notes that the State Children's Health Insurance Program (SCHIP) "may not have enough money to meet their matching costs, and therefore the state might have to give up all [its] federal money." Neufeld, as a state representative, sees the broad implications for population health of subtle demographic and economic changes on the funding of medicine and its institutions.

In Maine as well, Charlene Rydell, an adviser to Representative Tom Allen, is sensitive to the broader impact on population health of the "hundreds of millions of dollars" that need to be pared from the state budget. "They are cutting funding to providers; they're cutting the number of state workers; they're cutting the university; they're changing the way state purchases are done. They're cutting incentive payments to doctors for children's health visits." As Rydell explains, the state had expected more help from the federal government to do "more preparation" for emergency preparedness, "especially in hard fiscal times." Maine is "suffering from both hard economic times and heightened needs for homeland security."

Local communities and the state do not have the resources to cover the added expenses. For example, airports are now a federal responsibility, but "local police have to be at the airports more, and they are a local responsibility." Rydell explains the ripple effects of such a seemingly small increased responsibility. "So we're taking police off the streets to be at the airports. This will cost more money either in overtime or in more police. And where are we going to get the money? The federal presence at the airport is very visible, but people are less aware of the uniformed and plainclothes police who are also there." She points out that there was supposed to be more money for first responders, but grants from the Department of Homeland Security have not come through, which has added strains "to already stretched budgets. We have had to spend more money to make sewers, water, etc., more secure."

Similarly, in Massachusetts, State Senator Harriette Chandler is mindful of the substantial impact of budget deficits on social programs, hospital care, and other population health programs throughout her state. With the antitax platform espoused by the governor and much of the state legislature, public health programs will likely be devastated by the budget deficits. "The Department of Health, according to our governor's budget, is going to be totally reorganized with major cuts," Harriette Chandler and Tim Daly report. The governor has the constitutional power "to cut unilaterally in certain areas, and health and human services is one of those areas that he can cut. That is exactly what has happened here. So we have seen over and over again hits to public health." Among the services that have been affected are nursing and school-based clinics, which "in many cases are gone." In addition, research has been severely restricted, and "some of our AIDS programs have been tremendously cut—35, maybe even 40 percent. The cuts are enormous."

Daly laments the horrible consequences for health-related and often proven programs: "Tobacco control has basically been eliminated. We had a model program nationally and that's gone. Absolutely

gone. Hepatitis research, cancer research, any funding that was disease specific, is gone. We have a new commissioner of public health, and I would assume that she will see her budget dramatically, dramatically cut." In short, according to Chandler, "It is a nightmare." This is her ninth year in the legislature, but for "the first time people come up to me and say, 'I'm so glad I'm not you. There are terrible, terrible things you have to deal with this year.' And they are terrible. We've cut Medicaid so that we have turned loose on the street without health care 50,000 Medicaid patients. We suspect more will be coming. I don't know what's going to happen to these folks without preventive health care. They are going to jam our hospital ERs, and those hospitals are already teetering on financial disaster."

Chandler worries that the original commitment to public health and emergency management is waning as we move further away from the September 11 tragedy. "As the days and the weeks passed since 9/11, I think the terror and the horrific impact that we had on that day and for such a long time after is receding in our minds," she worries, "and so we go about our lives, and of course we've been overtaken now with this incredible budget crisis that we have. That has become, unfortunately, our first priority. So everything becomes secondary to that." Even public safety is being cut. "We have an emergency medical system that we passed into the law in 2000 called EMS 2000 . . . and everybody hails it as a wonderful thing." Yet even this program, which appears so critical to the national agenda, has been stripped of funds. "In the governor's budget this year, he cut every penny from that line. . . . We have no way of rerouting ambulances to another hospital if a hospital is closed or [an] ER is filled. We have people in the rural areas who don't have hospitals nearby—I don't know what they are going to do without a communication system. In the case of a terrorist attack, I don't know what will happen if we depend on ambulances that have no interactive communication. And that is exactly where we are because of the budget."

The profound budget crisis is having an equally devastating effect in California. Angela Coron describes the extensive cuts to the general immunization program: "The [then] governor [Gray Davis] has proposed a $4.5 billion cut in the health department, and Republicans are looking at between $700 million and $1 billion more." Even in Texas, where state epidemiologist Dennis Perrotta notes that it was "a nice time to be in my position," critical services have suffered, including chronic-disease surveillance detection of birth defects, cancer care, and others. Because of the "proposed budget cut of 12 percent by the Texas legislature, there is a profound threat to the 'invisible' but 'real' public health planning, assessment, and protection services." While bioterrorism is "federally funded and not being cut," the "hepatitis and cancer registry are on the chopping block."

Health departments were also facing budget cuts in Tennessee. In Nashville, Robert Eadie, deputy director of the city's Metropolitan Health Department, notes that while the department has not yet felt the brunt of what he called the state's "huge budget crisis," the staff in the department was worried about the possibilities of grants that might not be renewed, staff cuts in the future, and further cutbacks. Similarly, Arizona projects a 10 percent difference between revenues and projected income, which has led public health officials to fear for their various programs. Since "there is never any discretion in taking federal money and [using these funds] for other services" that are in danger of

being cut, there is a great deal of anxiety about the upcoming budget. Catherine Eden "thinks we'll be okay—but every time you pick up a paper, there is a story regarding layoffs."

J. Thomas Schedler, chair of the Louisiana Senate's Health and Welfare Committee, notes the peculiar problem of a very poor state trying to close a looming budget deficit. He estimates that the state will face "only about a $300 to $400 million budget deficit." But because "a huge portion of our budget is dedicated," the only major areas that are not proscribed from cuts are health and hospitals, social services, and higher education. The governor has "pretty much by executive order disallowed any cuts to higher education," which means that "social services and health and hospitals take the brunt every time we get into a financial crisis." Since social service and health care are often funded through a three-to-one federal match, a $400 million state cut results in a total loss of $1.6 billion. "So the impact of the current cuts as proposed will be much more drastic."

This has been particularly difficult, as Schedler observes, for the health system broadly conceived. He notes that hospitals, Medicaid reimbursement, mental institutions, and the availability of and access to pharmaceuticals, services, and insurance for young families are all threatened in a state with a large poor and uninsured population. In December 2001 the Bush administration proposed revising the hospital reimbursement system with the expectation that $9 billion would be saved over the course of five years. For the states, the reduced federal support would result in a larger burden on the state budgets. Schedler points out that Louisiana has "a fairly high Medicaid population. . . . With the economy being what it is and the cost of health care, we are seeing a tremendous number of people who are now 'the working uninsured.'" Schedler notes that the combination of layoffs, reductions in health benefits by employers, and decisions by the "younger population who are taking risks in going without insurance" has taken a toll. He observes that "almost across the board our institutions—developmental centers, mental institutions, and hospitals—have taken a 15 percent cut," including 15 percent cuts in pharmaceuticals, for example, at the very time that there has been "an 18 to 19 percent rapid growth in our pharmacy bills with Medicaid."

Louisiana, with an extensive charity hospital system, an outgrowth of the Huey Long administration of the 1930s, is facing its own peculiar crisis. At the same time as demand for services from the charity system is increasing, people are asking, "Should we disband that system? . . . There is a raging debate in Louisiana [over whether] . . . we are the smartest people on earth now or the stupidest," Schedler notes. "We haven't determined which one yet." The state, unlike local governments, cannot collect property taxes, hence there is little room for increasing revenues for the hospital system. And because six of the ten charity hospitals around the state are teaching hospitals, "when you start monkeying with this . . . you also monkey with the education of our health professionals." Private hospitals, of course, would resist taking on more patients without full reimbursement. Since many of the charity hospitals are "economic engines" for local communities, any reduction in their support exacerbates the number of unemployed and therefore the number of uninsured in the state. "It's really a monumental problem."

SMALLPOX CAMPAIGN AND POPULATION HEALTH PROGRAMS

If state budget crises were not enough to cause disruptions and potential disasters for the public health departments around the country, the smallpox vaccination campaign, initiated in December 2002, caused added strains to the system. On the one hand, the national attention to public health and its needs created by the federal program to inoculate half a million health care workers in the first of what was described as a three-stage process, was an enormous boon to the field. Citizens who had not thought about the source of their pure water, air, or food now came to understand the enormous effort that went into assuring their purity. In the context of the general mobilization around the war in Iraq and the discussion about the danger of biological warfare, the smallpox vaccination campaign and the public health system's role in protecting the country from bioterrorism led to support for a national campaign to prepare for a possible smallpox attack. But as the campaign continued and it became clear that this effort, far from building support for and strengthening population health initiatives in the states, was actually draining resources and energies, support began to wane. While some officials praised the stimulus to plan for possible future bioterrorist events, soon an uncommitted public health community, a resistant public, and health providers who did not volunteer to become vaccinated virtually stopped the campaign in its tracks.

From the first, states mobilized to organize broad inoculation campaigns involving state and local health care workers. They needed to develop methods for conferring with officials in "all health jurisdictions at one time." Angela Coron in California remembers that they "utilized e-mail and conference calls to dialogue with each other about concerns about the CDC guidelines and their implementation at the local level." They proceeded cautiously, phasing in their system in February 2003. "We waited until, as a state, we were ready and provided training for localities." When they felt confident that their personnel were well organized, "we began shipping vaccine." In Arizona the state was methodical in organizing its inoculation campaign, even though neither the governor nor the director of the Department of Health Services supported the smallpox program or encouraged hospital staff or others to take the vaccination. "We've taken a very cautious approach to the smallpox inoculation. There has been a lot of planning, a lot of people participating in getting a system put together in Arizona," recall Catherine Eden and David Engelthaler.

Norma Gyle remembers that in Connecticut the response of local health authorities to the campaign was "excellent." In Arizona Eden recalls that many believed that even though "the possibility of an intentional release of smallpox virus is remote . . . the consequences of a release would be so serious that the state must be ready." Similarly, Lisa Kaplowitz in Virginia notes that initially there was "a good response from the health department." In Louisiana and New Jersey, health officers agreed, there was at least initially little opposition and a fair amount of enthusiasm for the effort to inoculate health care workers throughout the states.

Despite the early optimism and planning, many, if not most, of the states began to encounter resistance to the campaign for a variety of reasons. As of June 2003, the goal of half a million people was far from being met. Only 37,608 health care workers had received the vaccine, according to reports presented at a conference called by the CDC. In California, for example, the initial goal of the

campaign was 40,000, but according to Angela Coron the state had inoculated only "somewhat over 1,000" by the end of March. One of the major issues in California and other states was the safety of the vaccine itself. There had been no systematic smallpox vaccination campaign for several decades, and the relative risk of the vaccine seemed to many to outweigh the possible advantages from a hypothetical attack.

Minnesota quickly "ran into some trouble with some of our doctors," says Lee Greenfield, as evidence surfaced that the vaccine could create problems for people with heart disease. In Ohio there was also concern about potential heart problems, as well as worries "about spreading the live virus to AIDS patients," who might be particularly vulnerable because their immune systems were compromised. Infectious-disease doctors were concerned that the vaccine might lead to outbreaks of smallpox as patients shed the virus, despite the fact that smallpox vaccine does not contain smallpox virus, live or otherwise, but rather vaccinia, and thus no individual can contract the disease from it. In Texas epidemiologist Dennis Perrotta, the "architect" of the program there, had "grave concerns about inoculating large numbers of people." When asked by a local paper whether he would be vaccinated, he answered, "I will be immunized, and I will live someplace else for three weeks (while the vaccination site sheds virus)," because he feared that his wife might be particularly susceptible since she has eczema. Perrotta remembers that "people throughout Texas asked, 'What is the risk? What is the chance of smallpox?'" He recalls that "hospital staff asked, 'should I be inoculated if I don't know the risk [of other health consequences]?'" The state had estimated that in phase 1 it would vaccinate 40,000, but by mid-April only 2,700 had been vaccinated. In Kentucky, as well as Virginia and Arizona, fear of the vaccine's side effects limited the efficacy of the campaign.

The fear about the safety of the vaccine merged with other anxieties and movements about the country. Both a general distrust of government among various segments of the population and distrust of immunizations created wariness about the campaign in some communities. Lee Greenfield in Minnesota noted at the time that "there is another strange movement" that was interfering with the campaign. "There are a whole bunch of folks who go to the legislature protesting against immunizations, period. Why should kids have them?" Greenfield argues that many are searching for reasons to reject inoculation, and "they read the data backward. It's really strange," he remarks. "They talk about the one person in a million who has problems with the vaccine and not the hundreds of thousands who would get sick. . . . There is a movement against vaccinations." People argued, "We don't need this. Are you going to force us to be immunized?"

The movement is difficult to label, Greenfield argues. "I mean this funny group of people who are anti-immunization or . . . anti–[organized] medicine . . . they believe in alternatives. They're sort of mixed together in funny ways. I don't think it's very well organized. But they have had an impact with the legislature." Greenfield does not think that traditional labels can adequately capture the political orientation of these antivaccinationists. "It's the far left and the far right together. I mean it's the most absurd companions you could imagine." Some believe that "we're putting something in the vaccines to control them," while others see the vaccination program as a conspiracy of the drug companies.

Similarly, in Missouri Ronald Cates of the Department of Health notes that the campaign elicited a strange alliance whereby the "extreme left and extreme right are so extreme they touch each other." The antivaccinationists "thought that the government was putting something in the vaccine to control them. Some were scared that people in black helicopters were swooping down and worried that 'surveillance equaled helicopters.'" Some in Texas feared that this was a forced vaccination program, but opponents "were mollified when they found out it was voluntary." Others in the Lone Star State were "concerned about the overarching power of the federal government," but Perrotta told them not to worry since "these are the people that brought us Amtrak."

Many public health personnel, embroiled in horrific budget fights, were concerned about the cost of the campaign. In Minnesota the health department organized a campaign to immunize "key people . . . [but] the costs of that were astronomical per person [because] it was a small number of people." In Maine "the costs of the vaccination campaign" were worrisome, according to Charlene Rydell. "We need to pay to take over from people who are vaccinated and need to be isolated from sick patients. But we don't have extra people and a reservoir of people who can take over."

If state officials had been convinced there was an imminent danger, the response might have been different. But in Maine, at least, such was not the case. "There is not a strong enough threat at this time, especially when we're having budget problems, and we're getting resistance from individuals especially with publicity about health problems and deaths. The federal government has not come through with funds for the true costs of the program, . . . about $200 per person when there are no complications." In Maine, Rydell points out, every level of the health system appears to be resisting the smallpox inoculation campaign. "Hospitals are private, and there are no health care professionals being vaccinated. We're not getting many volunteers from the health care community. We have put together a plan, if in fact the threat is more real than it is now. People are worried about the costs, and nobody is paying us to do it."

Health care professionals and hospitals had particular concerns that led to their unwillingness to participate in the program. Many institutions were apprehensive about liability issues, particularly the issue of whether the institution would be held liable if someone suffered disease or death as a result of being inoculated or if patients became ill as a result of being exposed to hospital staff that were exposed to those recently vaccinated. For staff, the issue was whether they would be covered by workers' compensation if they became ill as a result of being inoculated themselves.

In Minnesota and other states, a number of hospitals "opted out" because of these fears. In some states there was concern over being designated the emergency smallpox hospital for an area. Such designation could financially ruin an institution should patients shun it for fear of being exposed. "In Virginia more than half of the 88 hospitals with emergency services have declined to take part until liability and compensation issues are resolved," said Lisa Kaplowitz. Even in Kentucky, where Rice Leach, the public health commissioner, "was the first in the state to receive the vaccine," "the compensation issue is a real problem, a much bigger problem than fear of bad reactions to inoculations." In mid-November 2002 a survey "found that 16 of 84 hospitals said they

weren't certain whether they would prevaccinate employees. Most wanted more information, [Leach] said."

Dennis Perrotta said that there was real resistance from certain Texas hospitals. Some administrators said, "We want to participate, but we want a letter absolving us of all responsibility," something the state could not do. He worried about the other side of the issue: What would happen if "a hospital had someone come in with smallpox—wouldn't they be liable if other people got infected and they hadn't done anything to protect them beforehand?" In Tennessee resistance from hospitals as well as personnel was strong, especially at Vanderbilt, a Level 3 Trauma Center. Robert Eadie found this especially troubling since the emergency room personnel would be first to see this type of problem.

State Senator Harriette Chandler is also cognizant of the resistance of professional staff to the inoculation campaign in Massachusetts. "The nurses and doctors have been very unwilling to cooperate, particularly the nurses. . . . That is not something that is original to us. I think this is happening elsewhere as well, all across the country." The nurses "are afraid that they are going to get sick. I think that's what it really comes down to." Furthermore, the state has no capability to cover the "liability for anyone who contracts smallpox in the course of inoculation." As a result, Chandler believes, "we are going to continue to see those nurses unwilling to participate, and without them we can't." In Arizona some "hospitals came out front saying they would not participate in the prevaccination program," according to Catherine Eden. "We were not trying to get every hospital to participate. Our goal was to have public health teams and select health care teams . . . be vaccinated around the state. But there has been resistance," particularly from public health workers and hospitals because of the workers' compensation issue. "We don't have a large number of people vaccinated because of those concerns and because we have concerns about causing ill effects on the public's health."

Georges Benjamin summarized the problem of compensation as of March 2003: The administration had just put out a compensation bill, but it was very "different from what the public health community desires. We want no caps and no delay before being reimbursed for health care issues. But this is going to be a political process, and there is going to be give-and-take." The bill would have set a lifetime cap on compensation at $262,100, with an annual cap of the smaller of 66.6 percent of lost wages (75 percent for those with dependents) or $50,000. It failed to pass the House in late March, but a revamped version passed in mid-April 2003.

"WHY ARE WE DOING THIS?": THE GROWING UNEASINESS WITH THE SMALLPOX VACCINATION CAMPAIGN

The uneasiness that arose while considering the safety of the vaccine and the financial costs of the vaccine were concrete manifestations, some informants assert, of a growing discomfort with the entire rationale for the smallpox campaign. As Lee Greenfield of Minnesota summarized, "There are a lot of people now reluctant . . . to get immunized. There is the whole public health question that people

have raised. We do not know of an actual case of smallpox that exists in the world." Thus, he asked, "Why are we doing this?" For many public health administrators throughout the country, there was a general sense that a political agenda had trumped public health judgment. Many voiced the sense that public health should be left to public health professionals, rather than risk inaccurate messages that would undermine public health authority.

Across the country, state administrators referred to the distortions in program and policy that the smallpox campaign caused. In Virginia, county "departments of health have had to give up some of their core functions, and you can do that for a short time," Lisa Kaplowitz pointed out, "but not for the long term because of this rush to do smallpox inoculations. If we go and ask the fire folks to monitor smallpox, they could turn around and say, 'you got extra money and we didn't.'" A number of state administrators saw the federal government's insistence on a smallpox campaign as, at a minimum, an intrusion, if not outright pressure. As Kaplowitz reports, "To say that there was pressure from the federal government was an understatement. . . . They say they are not mandating it, but the pressure is intense." In the end it was a "security issue," not a public health issue. But even as a security issue there was a feeling that the focus on smallpox was taking time and resources from other pressing bioterrorist threats. "Somebody high up believes there is some likelihood that smallpox is a terrorist issue. The downside is that you're not looking out for agents that are more likely. There are a lot of other organisms that are available to many people—plague, anthrax, botulism, etc. We are not focusing on the broader issues of biological, chemical, or radiological terrorism. They're being overshadowed by smallpox."

Similarly, in California the smallpox campaign was seen as a distraction from the core functions of public health as well as more comprehensive security issues. "It has shifted our focus because we wanted to make sure we were implementing smallpox vaccination safely," Angela Coron stated. "It has pulled people from the immunization program and from the broader BT [bioterrorism] program to just focus on smallpox." California had been told verbally by the CDC that the state "could shift some budget from bioterrorism to smallpox, but it took a long time to get the guidelines in writing so the policy could be implemented. It was frustrating because it took much more effort than expected." Overall, the California system is highly decentralized so that "the impact on the state has been varied . . . and each jurisdiction pulled people from different programs. But immunization was pulled most extensively."

Even in states where federal money was seen as a means of buttressing the public health infrastructure in general, the emphasis on smallpox was a major distraction. The money was an "interesting double-edged sword," according to Robert Eadie. He believes that public health departments do the work essential for bioterrorism because bioterrorism "is a fancy way to say communicable disease control." But the focus on what he called the "bad news" of smallpox "took away from base services." Tennessee spent an enormous amount of time "getting geared up for smallpox." Still, he wonders, "Was the effort worthwhile and needed?" The state has not changed priorities, but it "can't do as much." Its TB elimination project and its syphilis emergency project had to redirect staff because "bioterrorism moneys were used for equipment and infrastructure instead of staff."

In Iowa, where "there has just not been a public outcry to inoculate the masses of people," State Senator Mary Kramer believes that "in the great scheme of things, the fear of smallpox is overrated." What was really needed were funds to help the state "to protect our food supply, agriculture, and act on contagious diseases. Because even if they are less deadly, they are also very debilitating." With the "laser intensity of focus on smallpox," she worries that "other threats" are being overlooked.

All these problems were identified very early in the planning efforts in the Midwest. In October 2002 health officials from Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin met in Chicago to discuss and plan for coordination and organization of the smallpox vaccination campaign that was just being proposed by the federal government. The meeting was aimed at identifying the various problems that needed to be addressed even before planning for the campaign could begin. Among the "essential issues" that were immediately identified were hospital and personnel "indemnification from liability for all aspects of smallpox vaccination and follow-up," the voluntary nature of the campaign, "compensation for injury due to any contact with vaccinia virus, including compensation for furloughs and lost work time," and logistical issues revolving around laboratory space, public education and public relations, chain of command between federal, state, and local health officers, data management, data sharing, training, and the need to understand the "tradeoffs (diversions) of time and resources: public health infrastructure building versus administration of smallpox vaccinations." Despite this detailed review, most of these problems soon surfaced among state administrators.

Georges Benjamin takes a long view of the entire recent history of bioterrorist threats. Anthrax helped focus the nation on the dangerous possibility of infectious diseases as a terrorist tool and the ways in which the infusion of federal money to combat that threat could be used: "Lots of money was poured in for all-hazards management to build up the public health infrastructure." But the smallpox inoculation campaign is another matter. Even though "smallpox has become the new mandate," it "has been underfunded"; furthermore, the single-minded attention to it has "sacrificed core public health activities," pulling money and people from other public health programs. Not only has it undermined core public health programs, but "we have also sacrificed an all-hazards management (bioterrorism) approach to concentrate on one specific disease."

Benjamin summarizes the general uneasiness of many in the public health community as well as in the broader population: "Many public health practitioners believe the case for smallpox inoculation has not been effectively made and is taking away resources and personnel from things we know we should be doing. It is pulling people away from screening for HIV and the counseling of AIDS patients, prenatal care clinics, other immunizations, and inspection programs for other diseases. A basic surveillance system is already lacking. And money is being used to deal with a theoretical disease. . . . Already people are being laid off in disease and inspection programs but are being hired in bioterrorism. They are being funded by shifting moneys around. Phase 1 was supposed to inoculate 500,000 people, but only about 12,000 have been inoculated so far. It is well behind schedule, it is stalled."

If you consider improved communication and coordination among public health and health care entities for planning and conducting smallpox vaccinations, the program has some success stories. "The approach taken in Indiana and some other states," says Joe Hunt, assistant commissioner of Information Services and Policy for the Indiana State Department of Public Health, "was to focus on training, clinic planning, and response coordination for prompt effective response if smallpox is reintroduced." In fact, the debate itself had a positive impact. As J. Nick Baird, director of the Ohio Department of Health, put it, "In an open society we have to expect differences of opinion." But the smallpox debates helped "the nation move quickly to address some ascendant concerns and will stand us in good stead should we need to move quickly on an outbreak in the future." Despite the questionable goal of the federal government to inoculate half a million people, the public health community "essentially decided at what level we should vaccinate for smallpox. Although the numbers may be smaller than many states desired," he notes, "we will have a cadre of persons who can respond in the event of need."

WISCONSIN: ONE ADMINISTRATOR'S VIEW

Wisconsin, a state with a diverse mix of urban and rural populations, populist as well as conservative political traditions, and a nationally recognized educational institution, makes a good case study of the ways that the aftermath of September 11 posed problems and possibilities for public health administrators.

For the Wisconsin Department of Health and Family Services, the September 11 attacks and the anthrax episode only three weeks later revealed the fundamental weaknesses in the state's infrastructure and the limits of its ability to address public health crises. The state recognized that it had only been able to cope with the growing fears within the state by exploiting its workforce and by redeploying staff to the emergency teams, thereby abandoning other public health functions. "Resource constraints" was the polite term used for what some administrators described as the "exploitation" of a dedicated workforce and the "illegal redeployment" of staff from some necessary services to the labs. There were too few workers trained in epidemiology to address the plethora of reports of possible anthrax contamination, and the few trained epidemiologists and laboratory workers were too concentrated in Madison and Milwaukee to respond adequately to reports from the more distant, rural areas of the state. "We have been stretched," reported John Chapin, director of the Division of Health Care Financing for the Department of Health and Family Services (DHFS). "Because of capacity, DHFS can only deal with one moderate-sized event for a limited period of time," he argued. Just that past week, in early October 2001, the department had had to address "both panic (anthrax) and pancakes (E. coli) at the same time. Luckily, one was false and one was small. . . . We were lucky." Headlines and local news stories made the public aware of the huge efforts that this usually invisible department was making in the wake of the first possible cases of anthrax. Federal promises of help for public health augured a new day for the department.

Chapin recalls the reaction of the public health community to the attention that public health received in the months following the outbreak of anthrax and the federal decision to inoculate as many as 500,000 people against the threat of smallpox: "September 11 was a tragedy for the nation and the people," he observes. "But it gave great hope to public health. It was the first glimpse that the federal government would truly help public health." Chapin notes that "many in the public health community . . . felt that they have been unfairly left out for a generation from the great federal and state funding frenzy of health care financing. Now, with the tragedy of recent events, many in public health view[ed] this war as the 'great opportunity' to join the frenzy." Wisconsin's governor had "recently" exempted "public health positions" from a general government hiring freeze. "This was a wonderful policy decision, and all in DHFS declared conceptual victory: State government had finally gotten it." Wisconsin itself "had a budget of $250 million for public health," and as much as "$20 million in new funds for bioterrorism was forthcoming from the federal government." It was a relatively good moment for public health that provided the possibility of an expansion of basic services, the consolidation of the public health infrastructure, and the reorganization of local and state bureaucracies. Mirroring a broader consensus at the national level, local administrators gloried in the possibilities of a federally funded expansion of public health activities. "At the local, state, and national level [there was] much talk that the 'lean' years for public health are now over. At the recent American Public Health Association convention, most of the hall conversation was that the national coffers would soon be open to public health because of the war and that this would solve the long-term infrastructure problems with the system."

At the very least, long-term needs to improve the health department's electronic data system, its processing of information, and its coordination of the state and local health activities, as well as its need to develop a "sufficient and competent workforce and equitable, adequate, and stable funding," seemed like a possible result of the new popular, media, and federal attention to public health needs. "These [were] the preconditions for the health of the public health system," and administrators believed that "any funding to enhance the capacity of public health to deal with the issues of terrorism and national security need[s] to address these broad systems requirements. It [is] the capacity of the system rather than its particular focus that needs to be fixed." Wisconsin's planning group believed that "what [was] wrong with public health [could] not be fixed in a month or a year or the duration of a war. Fixing public health [was] the work of a decade of sustained effort." "True public health infrastructure development focuses on long-range, pre-incident planning in terms of increasing capacity and resilience of public health, the family, the community, and the population," Chapin argued. "Wisconsin spent a lot of time writing a proposal," Chapin recalls, which cost the department "$1 million. . . . Fifty people contributed to writing it and consulted with scores of people in the community." The department developed "287 objectives." Ultimately, the state received $20 million for public health, of which the department "kept a small amount and distributed [the] rest to local and community groups and the 12 regional consortia."

The attention to public health had radical implications for the state and for the country. "September 11, 2001, should have changed the . . . debate in America for the next decade," Chapin

argued. "Cost containment is now secondary to the more immediate question of the health status of the population and threats to that status. Surveillance is now an issue of national security. Epidemiology, rather than economics, is the key discipline for looking at health data in a time of bioterrorism." Increasing the capacity of and access to hospitals, improved staffing at local departments, even strengthening families and community institutions, Medicare and Medicaid funding, and mental health services were essential for preparing the state for emergencies. For administrators, the line between an "emergency response" and the planning for everyday needs and services was a blurry, inexact, and false distinction. "Actual incident response is useful only in a probability situation that is likely to be insignificant for any one locality; but pre- and post-incident infrastructure is useful every day and everywhere." The Board of the Wisconsin State Lab of Hygiene was briefed by Chapin at a March 2002 meeting, at which he emphasized that "the overriding theme for Wisconsin's plan would be 'dual-use.' General public health and disaster response, including terrorism response, suggests we should be creating a dual capacity response. The Department of Health and Family Services' approach is to build an infrastructure capable of everyday use in the public health system."

Chapin has a broad view of public health readiness that transcends the bureaucracy itself and the traditional needs of the Wisconsin health department. In many ways he saw public health as part of a broader population health program. "This funding should also include complementary health and human services, and not just public health services," he notes. Specifically, mental health services as well as "health care and human service functions outside of the Division of Health" need to be included in any planning. "One prime example is mental health assistance in terrorist events, especially as it relates to children. In the old days," Chapin argues, "mental health [w]as not . . . traditionally viewed as a 'public health' issue at the state level. . . . Family health and its relation to children's mental health are crucial to a national response to domestic terrorism. There is now another factor of violence in the lives of America's children that transcends class, race, and region."

Chapin believes that "both mental health education at the community/family level as well as intervention at the family/individual level should come as a package of 'human services' that should be linked in funding to public health services. These would include mental health, housing, acute health care, employment/retraining and relocation, nutritional support, and all the other services needed to mitigate the impact of these events. These services should be managed as a single package at the community and state level. Therefore, their funding at the broadest human services federal level should be integrated."

Preparedness was to be integrated into an effort to improve ongoing services, and administrators in Wisconsin believed the new focus on public health could certainly prove to be a panacea. But the early hopes of the public health community were undermined by a combination of political, economic, and internal problems. The most immediate problem emerged because of the ongoing budget crises affecting the state in light of the recession that was taking its toll on the state's budget. Wisconsin was facing more than a $1 billion deficit, and what looked to administrators like a windfall for augmenting the public health services looked to legislators in Madison, the state capital, more like

an opportunity to shave costs for public health. In face of the competing demands from other state agencies, legislators believed that the federal funding allowed them to reduce funding because "the feds were doing it." The problem was that "money was coming to the state not for infrastructure but for short-term problems, not long-term problems," which undermined an already strained public health system enormously. While the governor and some top administrators understood that infrastructure could not be separated from preparedness issues, "there [was] still only a superficial awareness of the role of public health" among many budget department legislators and administrators who wanted to focus on bioterrorism at the expense of longer-term infrastructural needs.

Chapin believes that one of the major shifts occurred when the Bush administration pushed to oust Jeffrey Koplan from the directorship of the CDC. "Koplan, when he was with the CDC, talked a true message of dual capacity," Chapin recalls. He recognized the need "to build up public health infrastructure," for only then could the states "also be ready for bioterrorism." Chapin argues that Koplan represented a portion of the public health community that believed public health readiness required a system of surveillance, information exchange, and local integration with voluntary organizations that could not be isolated from ongoing public health activities. "If you're not using things every day, you are wasting [them]," Chapin said, summarizing what Koplan represented for the public health community. "But then the White House wanted proposals that demanded specific mandates." Within a few months, according to Chapin, efforts to reform the department succumbed to federal and local legislative goals.

While anthrax raised hope briefly—until state budget problems undermined possibilities for infrastructural improvements—the problems posed by the fiscal crisis were amplified by the campaign for smallpox inoculation. Chapin notes that "smallpox diverted human resources to a political event and posturing. Wisconsin had to divert money from building regional coalitions and infrastructure to get ready for inoculations." Chapin believes that the federal government's myopic focus on bioterrorism undermined Wisconsin's effort to build a broad-based public health infrastructure capable of providing needed protection from smallpox, while providing adequate services for the rest of the population. Although the department believed that providing support for rural as well as urban areas made sense for a state that had a vast rural population, as well as large populations in cities such as Madison and Milwaukee, "the feds said you can't do this. We had to follow their guidelines."

On December 13, 2002, President Bush announced the smallpox inoculation campaign, which Chapin gave a most scathing critique. He believed that virtually every aspect of the effort would undermine both state departments of health and the broader antiterrorist program. Specifically, he felt that the campaign would weaken "the long-term strength of public health at the state level" in its efforts "to defend against all sources of terrorism." The effort would lose public support because, he argued, it would weaken the "consensus about the war on terrorism because why we are doing it is dubious, if not bogus, outside the beltway."

Since "bioterrorism funding's second purpose is to deal with realistic and immediate credible threats from biological, chemical, radioactive, and conventional terrorism," Chapin believed it was

important to plan for such an inoculation campaign. However, "actually immunizing people for smallpox" when no public official could honestly argue that such an attack was imminent or even credible undermined public confidence. "If it does not build infrastructure, but instead diverts resources from it, and it is not dealing with an immediate credible threat—why is it being done?" He worried that this was a cynical act for domestic political reasons and to build support for the war in Iraq. Rather than divert attention from serious concerns, "the stance governors should take is to plan, prepare, train, and educate, but not to actually vaccinate until there is either a credible threat or a verified event in the world. There is time. The smallpox models do not predict instant world contamination as that is not how it spreads. Therefore, governors should accept the vaccines, but not implement until the what, why, how, and when makes sense."

When the federal government ignored this advice, focused on smallpox, and then began the inoculation of thousands of health care workers across the country, Chapin resigned. He saw the emphasis on smallpox as diverting any possibility for building an infrastructure for population health.

THE DRAFT MODEL ACT AND THE STATES

The crisis with regard to bioterrorism and public health preparedness was framed by extensive and ongoing worry about the adequacy of state budgets and the negative effects of prolonged economic stagnation. Concurrent with these concerns, however, was a broad public discussion about a policy agenda to prepare the nation for the possibility of new and unexpected events. The general mobilization against terrorism has elicited a variety of responses across the nation. The USA PATRIOT Act, the creation of the Department of Homeland Security, the incarceration and deportation of many men of Middle Eastern descent, and an expansion of federal surveillance activities and restrictions on implementing the Freedom of Information Act—all have been justified on the basis of national security.

The attempt to codify and reformulate state public health laws through distribution of the draft Emergency Health Powers Model Act and what some criticized as the poor federal handling of the anthrax episode and smallpox inoculation campaign stimulated a broad discussion of the obligations and responsibilities of health authorities in light of the new geopolitical situation. In the aftermath of September 11, conflicting values over the rights of individuals and the perceived needs for greater bioterrorism preparedness served to heighten the sense of disorder for officials whose jobs had been radically transformed in a very short time.

At the behest of Gene Matthews, legal counsel to the CDC, Stephen Teret and Lawrence Gostin at the Center for Law and the Public's Health at George Washington University and Johns Hopkins University drafted the model legislation, with input from staff of the National Conference of State Legislatures, the National Governors Association, the National Association of Attorneys General, the Association of State and Territorial Health Officials, and the National Association of County and City Health Officials (NACCHO). Although work on the legislation began well before September 11, the attacks on the World Trade Center and the Pentagon, coupled with the anthrax outbreaks a month later, greatly increased the urgency of the activity. Over the course of the next few weeks, by late October 2001, a draft Model Act was posted on the Internet and began circulating throughout the country.

The Model Act was conceived of as a checklist or template that the states could use in assessing their existing public health emergency laws. Anthony Moulton, co-director of the CDC's Public Health Law Program, notes that "the approach Gostin and his colleagues took to preparing the draft Model Act had two basic parts." The first was "to examine the existing public health laws of the states and to include provisions the authors considered exemplary." As a result the act was "largely composed of provisions of existing state laws." The second "was to include provisions the authors believe important because they comported with modern jurisprudence, for example, with the due process reforms of the Warren Court."

The Model Act itself was not the first attempt to recodify existing public health law. But unlike earlier efforts, the stress of the moment lent the effort urgency. Only a few years before, in 1998, the Robert Wood Johnson Foundation and the W.K. Kellogg Foundation jointly funded 14 state-level partnerships as well as partnerships in 41 communities and tribal jurisdictions to "identify, analyze, and address challenges collaboratively pertaining to public health system improvement." A major part

of this effort was to create a uniform public health law that transcended state and local jurisdictions. These efforts, called "Turning Point," were administered by NACCHO and the University of Washington School of Public Health and Community Medicine.

Without the impetus of a national emergency, the efforts to coordinate achieved only limited success and relatively minor adjustments in relationships and law. Even after September 11, the provisions of the Model Act were perceived by some as a "governmental takeover." Organizations such as the National Conference of State Legislatures, which ultimately endorsed the Model Act, found that some of their members had "gone ballistic" when they learned that they were "being listed as a collaborator on the draft." From across the political spectrum, "there appeared to be no great enthusiasm for the gradual recodification foreseen when the act was first released." The plan, from the beginning, was to issue a preliminary draft for public review and comment, to revise it accordingly, and to issue a second draft. Many comments were received, some supportive, some critical, many making helpful substantive and technical suggestions. In late December 2001 a revised draft was circulated which could be used as "a checklist for thinking about the adequacy of extant legislative provisions."

In short, the Model Act would grant broad authority to governors to declare a state of emergency in the event of a bioterrorist attack. It would further allow public health officials to gain access to personal health records without the usual patient consent. It would require physicians and pharmacists to report "unusual" health events and physicians to provide information regarding individual patients who show unusual symptoms. The act would also allow public health officials to initiate quarantine and isolation measures and to mandate vaccinations and medical examinations. Public health officials would be given the power to "seize and control" personal property and access to communications as well. Finally, it would grant to governors exclusive power over "funds appropriated for emergencies" and require states to develop comprehensive plans for responding to attack.

The Model Act focused many public health officials on serious questions regarding the rights of federal, state, and local health officials to organize quarantine, isolation, surveillance activities, and the like and their potential infringement on civil liberties. As Lawrence Gostin argued in his important book *Public Health Law: Power, Duty, Restraint*, there is embodied in the Constitution an inherent tension between "the legal powers and duties of the state to assure the conditions for people to be healthy . . . and the limitations of the power of the state to constrain the autonomy, privacy, liberty, propriety, or other legally protected interests of individuals for the protection or promotion of community health." Many public health practitioners and policymakers in the early 21st century are confused about their powers and even their responsibilities with regard to infectious disease control. For much of the 19th century, as epidemic disease swept through the nation's growing cities and was the major cause of death for children and adults alike, few public health officials questioned their right to engage in activities that intruded on personal liberties and civil rights. But as epidemic diseases waned in the 20th century as the major causes of death and as preventive measures and curative techniques developed, the drastic use of forced quarantine, isolation, and involuntary

removal to infectious-disease hospitals virtually ceased as everyday tools of public officials. With the very limited exceptions of AIDS and TB during the 1980s, concerns over civil liberties outweighed the police powers of public health officials. It is in this context that the Model Act became a lightning rod in the debate over the implications of bioterrorism and chemical attack for public health law.

In 2002 virtually every state used the Model Act as a basis against which to check its own laws and their adequacy. "Twenty states took action on the legislation. At times it was defeated," notes Moulton. "For example, Iowa defeated a model bill in 2002 but recently adopted it." What is important about the Model Act is that "each state is shaping and tailoring it to [its] special needs." The broad concerns were about civil liberties and private property rights, reports Moulton. Questions were raised about whether the federal or a state government could come in and take over a hospital. Does the state have the right to intrude on the doctor-patient relationship? Is forced quarantine (or even isolation) a real possibility? What should be the extent of compulsory government powers? The legislation itself has created strange alliances and even stranger splits in the states. "In most states, ACLU [American Civil Liberties Union] chapters were opposed to the Model Act, but others, such as [those in] Vermont, favored it. Some conservative administrators who helped write state legislation modeled on the act have been attacked by conservative organizations worried about increasing powers of the state." In the national media, opposition to the Model Act appeared intense. Groups from the left to the right highlighted the possibilities of government intrusion into the lives of ordinary Americans. In a front-page article in *USA Today* titled "Many States Reject Bioterrorism Law; Opponents Say It's Too Invasive," the paper quoted Barry Steinhardt of the ACLU as saying that the Model Act "gives governors and state health officials a blank check to impose the most draconian sorts of measures." It also quoted Andrew Schlafly of the conservative Association of American Physicians and Surgeons that the Model Act "goes far beyond bioterrorism. . . . Unelected state officials can force treatment or vaccination of citizens against the advice of their doctors." Respected health ethicists also weighed in against aspects of the act in the prestigious *New England Journal of Medicine*. George Annas argued that there was "no empirical evidence that draconian provisions for quarantine, such as those outlined in the Model Act, are necessary or desirable."

REFORMING STATE LAW

For most practicing administrators in the various states, the broad concerns among civil libertarians, academics, and constitutional lawyers regarding the Model Act's effect on civil liberties were not seen in debates in their individual states. Many administrators reflected the position of Tennessee's Robert Eadie that it was "nice to have guidelines for recommended best practice for emergency responses." It was useful to know what the governor's responsibilities were and the obligations and rights of public health personnel during an emergency. If smallpox were to break out, he says, "we would need to know what to do with the infected." Could the public health authorities seize a hotel or shut down a hospital? In Tennessee, state and local officials had been working with civil libertarians since the

mid-1990s to develop communicable disease regulations, so debate was relatively muted about the lengths to which public health officials might go.

For many legislators, as well as state agency officials, the Model Act was seen as at most, in the words of State Representative Melvin Neufeld of Kansas, "just tweaking the system." In North Dakota the Model Act was used as a means to evaluate current statutes. After significant review and debate regarding quarantine and isolation issues, the North Dakota Legislative Assembly enacted the legislation; "however, we anticipate further review of our statutes in upcoming sessions."

In Louisiana the Model Act was used virtually intact as the basis for state legislation. "We also are going through all of our statutes and executive order policy," according to J. Thomas Schedler. It was determined that North Dakota has "a very powerful government by statutes and constitution so a lot of the powers and needs are vested in our governor." The act was useful for the legislators since they were "trying to codify and pull together exactly what we have into one document. It's scattered all over everyplace, and we're trying to match that off with this bill." Schedler believed that "we will find that we have 70 percent of what's in that bill already in place." Missouri, as well, found that it had "incredible powers at the state level already. If the governor declared an emergency," Ronald Cates observed, "he can order anything necessary." From Cates's perspective, the Model Act was useful because it allowed the state to "change language," given that much of the existing law had been drafted in the 19th century when "there was no mention of bioterrorism or terrorism."

Angela Coron, in California, did not see a need for the Model Act at all. The state had been coping with natural disasters for so many years that public health authorities and the legislature "have a lot of experience with this. . . . Public health authorities have legal authority to take action . . . and the state can direct local authorities to act if they are not taking action." On the day she was interviewed, Coron noted that "a plane from Japan was briefly quarantined because a pilot had concerns about SARS," even though at the time SARS was not subject to federal quarantine regulations. According to Coron, county health officials in Los Angeles felt perfectly able to go "to the plane and take some passengers to the hospital. . . . The whole incident took two hours." She noted that there "is the broader question about who has the authority to enter the plane and require passengers to go to a hospital," but this did not seem to be a major issue that would cause public health authorities to refrain from acting.

Texas, as well, had long been prepared for natural disasters, and "the model emergency powers act has been used as a model not to submit to the legislature but to see how we are doing in Texas in terms of policies and actions." The state "did side-by-side comparisons of the Model Act and current Texas statutes, to compare capacities and contents," Dennis Perrotta reported. "We found we were in good shape and only had to do some minor clarifications and updates such as defining what is a public health emergency."

One of the few states that seems to have used the model legislation to make significant changes is Arizona, where a "core of people within the department [led by David Engelthaler] revised their own laws." If the government declares a bioterrorist emergency, the Department of Health Services is "in

the lead," whereas "normally it would be the county." For state officials, "the legislation clarified our role." Catherine Eden thought that, unfortunately, the "model legislation tried to 'throw in the kitchen sink,' but I don't think the legislature or the public were prepared for that. But I think we got a good, decent piece of legislation."

QUARANTINE

One of the reasons that many administrators were not taken aback by the scope of the Model Act's assertions of state power was the experience that the departments had had over the past two decades with TB and HIV/AIDS. Departments of health, such as in Tennessee, had been dealing with "noncompliant TB patients," reports Robert Eadie, and had been "very aggressive" in stemming the spread of TB in Nashville and Memphis. Their authority had evolved over the past five years, and they had always involved civil libertarians so that the state had a basis for discussing the state health department's role in dealing with bioterrorism.

In Minnesota, however, Lee Greenfield reported that it was very hard "selling the legislature . . . [on] a need to look at quarantine laws." Legislators as well as the general population had forgotten that "these previous epidemics required quarantine. That was history." Greenfield said that the "quarantine laws were very simple before they were taken off the books" in the 1980s. "Since everybody in the '80s was saying you can't enforce them anyhow," the legislature removed them. "The commissioner of health had the authority to quarantine, the authority to declare a building a health hazard." He believed that "we had, might even still have, on the books some remnants of the quarantine laws, but when AIDS broke out in the early 1980s and was being addressed by the states, there was a clear belief that courts would not allow us to use general blanket quarantine laws. In fact, I was the chief author in the Minnesota House of the noncompliant disease carrier bill, which was an alternative, which happens to work for HIV. We were one of the first states that did it—created standards and all—and that was fine, and the whole belief at that time was nobody would get back to quarantine laws. Well, very obviously, if you're going to get a smallpox outbreak or it's a possibility, you need some quarantine, there is no other way to address some things if you don't have a way to treat it. Or the new SARS epidemic. And when it came to the legislature it was just like, 'huh, we don't want to do this.' And they barely got a bill through with an agreement that it would be temporary, and we'd have to study it and bring back something next year that'll have to address that."

In Connecticut and Ohio, civil liberties groups were more active in opposing the statutes that gave public health authorities the right to quarantine. Norma Gyle noted that Connecticut's "public health emergency law is being dissected, if you will," in light of these concerns. Similarly, in Ohio, legislators worried about whether "quarantine powers [should] be restricted, which is interesting in light of the SARS epidemic." In Iowa there were no major changes in the law, but the "Christian Science community had worked hard to get religious exceptions under our immunization law, and they were concerned about new immunization and quarantine policies. But right now everyone is feeling okay."

In Louisiana the issue of quarantine was "obviously politically charged," according to J. Thomas Schedler. The act was opposed by "the usual suspects," meaning the ACLU. But, he points out, "this is a very conservative state . . . and the ACLU is usually not successful in most of their projects here. If anything, they're the best people to have against you because if they oppose you, you pretty much know you are going to win." Schedler recognizes that "it sounds horrible—quarantine—but I think most people, if you get them and talk to them, they recognize that that's what has to be done . . . for the betterment of the whole."

Arizona's experiences with TB had muted arguments about quarantine, and those aspects of the Model Act that touched on quarantine were scaled down in light of people's antipathy toward intrusions by state authorities. Catherine Eden recalls that "there were things in there like taking of people's property, confiscating weapons, getting onto people's property, which we thought would not be in the purview of public health, which were modified to make them more acceptable. . . . We put in provisions that people can't be forced to be vaccinated [or get] treatment but may be forced, if sick, to be isolated." Interestingly, the state ACLU was fine with the legislation, but conservatives, including those in Phyllis Schlafly's "Eagle Forum, had spent a lot of energy sending things to legislators all across the U.S. saying 'do not sign off.' It was kind of their [legislators'] big deal to fight it, but as soon as they saw how reasonable it was . . . most of the conservatives signed off on it, and it went through pretty fast."

SURVEILLANCE

The other major civil liberties issue that caused some concern among state health officials was disease surveillance. The Model Act called not only for traditional disease reporting through hospitals and other health centers but also for private physicians as well as pharmacists to reveal to state officials unusual disease patterns and specific patient information. Yet in few states was there much real opposition to these new elements. Most states appear to have been very careful to make sure that there would be no release of personal identifying information, especially in light of the newly implemented Health Insurance Portability and Accountability Act (HIPAA). In April 2003, the Department of Health and Human Services initiated the first federal privacy standards aimed at protecting the health records and other health information of health consumers, which raised questions about the ethics of sharing information about communicable diseases with federal authorities. What was HIPAA's impact on syndromic surveillance? What "amount of data collected exceeds conventional reporting requirements, [and] has the balance of privacy and public health value been appropriately made?" In Ohio the issue of confidentiality was a concern especially for some reporters and for the newspapers' association. Despite significant opposition from the newspapers, the Model Act was adopted in the fall of 2003. The state epidemiologist in Virginia collaborated with Johns Hopkins University to improve disease surveillance, and there has been little concern among civil libertarians about the issue. "Civil libertarians have their hands so full with guns and abortion that there is little time for concern about public health surveillance."

In Kentucky the issue has been affected by an incident in February 2003 when state computers with information regarding AIDS patients were "discarded for sale as surplus equipment." One computer, bought for $25 by the state auditors office, was discovered to contain highly personal—though coded—information. Coming as it did on the heels of widespread attention to the possible civil liberties intrusions of the Model Act, the event gained national attention. Kentucky Auditor Ed Hatchett said that the discarded computers had "a lot of information with lots of names and things like [numbers of] sexual partners of those who are diagnosed with AIDS. . . . It's a terrible security breach." Kentucky's commissioner of public health, Rice Leach, recalls that, despite this very serious breach, "community trust has been sustained. . . . If you give people all the information, they may not agree with you, but they trust you. I think people trust us." Nor did Kansas, North Dakota, Maine, Louisiana, New Jersey, and Texas have any protest regarding surveillance. In some states, "most of the general public did not know or care about what's happening."

For some administrators, the Model Act, far from being a radical statement that could result in dramatic intrusions that undermined personal liberties, was itself a weak political compromise that did not give public health officials the tools they needed to address adequately the threat of bioterrorism or chemical attack. John Chapin had been chastened by his experience with discussion of the Model Act in the Wisconsin State Legislature. "Wisconsin is a classic example of a state with relatively modern public health laws (1993) and strong laws," he observed. "A reasonable set of modifications to the law was proposed." But "it was then thrown into state politics and became a pawn in the partisan budget wars." The legislature responded not to true public health needs but to fear, he says: "The black helicopter conspiracy believers came out of the woods, the anti-immunization crew joined them, the funeral directors feared the government would seize bodies and their businesses, and state emergency government staff expressed concern because they saw their turf threatened. . . . The result," he feared, "is possibly no legal reform in Wisconsin. . . . In the closing days of the budget debate, it now appears that compromise language has been agreed to, but this just shows how subject to political chance all of this is when left to the states."

REGIONAL COORDINATION

Perhaps the most glaring weakness that was revealed by the events of September 11 and the subsequent anthrax episode was the very fragile, virtually nonexistent relationship among the various state health departments throughout the country. Significantly, throughout the 20th century there has been an enormous expansion in the scope of federal power and authority in numerous aspects of American life. Washington, D.C., has assumed responsibilities and powers that were once the province of the states. Federal labor legislation, commerce, environmental regulation, food and drug safety, and a host of other policy concerns have moved from the state and local to the national arena. While public health is addressed in national agencies such as the Public Health Service and the National Institutes of Health within the Department of Health and Human Services, many critical powers and decisions that affect the nation's health and well-being still reside at the state and local level. Practically, this has meant that preparation for bioterrorism and coordination between states is largely nonexistent. For the most part, administrators of each of the state departments of health acted independently of one another. Because of the centrality of the federal government in these issues, it will be the subject of the third and final report.

In the aftermath of September 11, State Senator Betty Sims of Missouri initiated a call to Daniel Fox, president of the Milbank Memorial Fund, at the end of January 2002, asking if Milbank, on behalf of the Reforming States Group, would convene a meeting among officials of legislative and executive branches of states adjacent to Missouri to coordinate their activities. She told Fox that she wanted to bring together legislative leaders, state health officials, and emergency response officials from the eight states surrounding Missouri. The meeting, held on April 4, 2002, was considered so successful that Milbank and the Reforming States Group decided to hold similar meetings in other regions around the country. In the end, seven other meetings were held in the states surrounding Massachusetts, North Carolina, Texas, Wyoming, Nevada, Maryland, and Wisconsin. They included representatives from the executive branches of the various states, including emergency management and public health officials, representatives from the attorney generals' offices, and legislative leaders. The meetings focused on the relationship between and among emergency management personnel, public health officials, and general government. The meetings revealed the wide misperceptions about the state of readiness among and within the various states. Officials in New England, for example, initially assumed that the meeting was probably unnecessary because they had been told that coordination was already in place. It soon became clear that public health and emergency management personnel rarely talked to each other within, much less across, states. In western states, which had a long experience with natural disasters such as tornadoes, droughts, and fires, coordination was better.

One concrete effort at coordination across state lines was the Emergency Management Assistance Compact (EMAC), a "mutual aid agreement and partnership between states that exists" to deal with everything "from hurricanes to earthquakes and from wildfires to toxic waste spills or acts of terrorism." The compact was approved by Congress in 1996 because "all states share a common enemy: the constant threat of disaster." By 2003, 48 states and two territories had passed EMAC-enabling

legislation; only California and Hawaii have not done so. This legislation allows for a process whereby governors can provide assistance to neighboring states without fear of liability for damage to equipment or costs for providing such equipment. Before the meetings for adjacent states, EMAC was virtually unknown to public health people in the states. By and large, the compact was used in the case of natural disasters so that equipment and material could be shared. Until anthrax and smallpox arose as issues, public health was outside the realm of concern of emergency management. But now the compact had to be adapted to address public health concerns. It was one thing to address liability issues for trucks and heavy equipment. But it was another thing to confront issues of liability over malpractice or the sharing of credentialed clinicians across state lines. Who is responsible for the treatment mistakes of a practitioner not licensed to practice in a particular state? What responsibility did states have in supervising nurses or doctors who traveled to a disaster site from across a river or border?

Finally, what has been the result of these efforts? One area that has improved is risk assessment and risk communication. Consider Illinois, for example: If there is an incident in the southwest corner of the state, it is likely that public health officials in neighboring St. Louis, Missouri, will be called upon by local television and radio stations for comment and direction because Missouri media will be the major source of local information in southern Illinois. There is a greater recognition of the need for close contact among officials in neighboring media markets. In some states, lawyers are beginning to speak with each other to resolve liability and licensing issues in order to forestall crises in the event of biological or chemical attacks. The response to SARS and monkeypox outbreaks was better throughout the states and federal government than it might have been before September 11 because of these efforts. Specifically, there was better coordination of who was communicating with the public and what the message they were communicating was. Also, there was better surveillance than might have been likely two years ago, concludes John Colmers, program officer of the Milbank Memorial Fund, especially getting and sharing information from hospitals.

Some very practical steps have taken place. In Virginia the Department of Health has "coordinated with the Metropolitan Washington Council of Governments to develop a Regional Incident Communication and Coordination System, as well as related planning." In addition, the "Division of Consolidated Laboratory Services has established a structure to develop and implement a program to provide rapid and effective laboratory services responses to bioterrorism, other infectious disease outbreaks, and other public health threats and emergencies." Louisiana is setting up a training site that could be used by neighboring state emergency and public health workers to prepare for bioterrorist events. Missouri is coordinating with its eight border states for the organization of cross-border clinics. In Connecticut lawyers are investigating credential and liability issues, and in Ohio mutual aid assistance provisions are being negotiated, and laboratory services are being provided for neighboring Indiana. Ohio also established "contracts with local partners in seven regions to create regional bioterrorism plans."

Texas met with state health and emergency management people in surrounding states at least two times. According to Dennis Perrotta, "public health did not have a long-standing relationship with

emergency management, but it does now. For example, the FBI's five agents in charge of weapons of mass destruction now have my home phone number, and I have their cell numbers." Since September 11, "there are plenty of good examples of different agencies working together, with the most notable example being the [Columbia] shuttle disaster [of February 2003]."

Some states, it appears, have simply gone back to business as usual and remain isolated from their colleagues in other states. In Iowa, for example, the interstate compact was passed, and they "are getting licensure agreements approved," notes State Senator Mary Kramer, "so if there is an emergency and, for instance, a registered nurse comes to us from the next state, we know that [his or her] qualifications are approved." But there are worries that "the costs of assembling teams are high, and this adds a level of complexity to their jobs." In Minnesota, where much of rural Wisconsin is closer to Minneapolis than it is to Madison, Wisconsin's state capital, interstate coordination has not progressed very far despite the fact, as Lee Greenfield observes, that "all of the laws, I think—at least in the Midwest—tend to recognize emergency staff from one state to the next." To deal with these problems, officials in general government will need to do more prodding. The issue of federal coordination and Washington's relationship to the states will be discussed in the next report.

CONCLUSION

This report focuses on the differing perceptions of the events following September 11 among those in state government and in state health departments. Their interpretation and understanding of the events were framed by dramatic changes that affected them on a daily basis. Between September 11, 2001, and September 2003, officials and legislators in state government were buffeted by geopolitical events and federal government decisions that dramatically altered the basic assumptions under which they operated. Rural county officials, often isolated and laboring far from the seats of power at the state or federal levels, could hardly be expected to be fully prepared for their new responsibilities for developing plans for bioterrorist or chemical attack. At the state level, legislators and state officials responsible for population health and well-being focused on a broader array of social service, public health, and health care needs that all demanded scarce state and federal resources. Public health agency heads, both at the county and state level, concentrated on the need to improve traditional public health infrastructural services such as lab capacity, surveillance systems, intra- and interagency communication, protecting the borders, and other specific needs of their agencies.

In the early months after the anthrax episodes in October 2001, public health officials and those in general government believed that the new resources of the federal government could be used to address long-standing weaknesses in the public health infrastructure as well as to meet the new federal mandates to protect citizens from bioterrorist or chemical attack. Many officials understood that "the cause of the day" gets massive funding and that when "the cause of the day" changes, the money may disappear. But this time they believed that it would be different. Because of the pain of September 11, many state officials hoped that the federal government would finally fund public and population health programs at a level that not only would protect the country from narrowly defined bioterrorist threats but would protect the population from SARS and other infectious diseases as well. Some even hoped that essential population health services such as improved health care and health insurance availability would be addressed. There was no intrinsic contradiction between the traditional goals of public health departments to investigate, monitor, and perform laboratory investigations and to provide services for well babies and the uninsured, and the new goal of participating as full members in an emergency response team. Yet while those in general government and those in public health agencies agreed on many of the same goals, those in state legislatures and their staffs were more oriented toward protecting the programs and financing mechanisms necessary to maintain Medicaid and other broader health care programs, whereas those in public health agencies sought to maintain or protect the programs more traditionally associated with preventive services.

It is clear from the interviews and our reading of published and unpublished reports and media coverage that in the two years since September 11, much has been accomplished in terms of providing resources, legal reform, improved surveillance, and communication. The focus of the CDC and HRSA programs has expanded beyond smallpox and preparations for war against Iraq. The CDC and HRSA grant programs are a clear indication that the federal government remains committed to addressing bioterrorism and terrorism in general with the grant awards for FY2003 matching those of 2002. The strengthening of the public health infrastructure has resulted in a modest improvement in access to

health care and health insurance, general childhood inoculation programs, well-baby services, and mental health care services. It has also aided agency and interagency coordination for emergency response and improved laboratory capacity in some communities in the country.

But more generally, according to those we interviewed, it is unclear what rewards will be garnered from the new attention to public and population health. The early optimism regarding the new federal attention and funding has waned as state legislators and public health officials all come up against state and federal budget crises and shifting federal attention in the war against terrorism. This has been particularly true as budgetary crises in most states force legislators to make hard choices about their priorities for education, social welfare, direct health services, and population health more generally. Even level funding is inadequate to build up the public health infrastructure in a manner to address adequately the increased burden shouldered by public health departments to counter terrorism and bioterrorism. Many public health officials were bitterly disappointed that federal attention to upgrading the public health infrastructure has waned as September 11 receded into the historical memory. But it is not unusual for the cause of the day to receive massive funding and for that funding to dissipate when new crises take center stage.

In addition, many perceived that a schism developed between those who privileged the narrow focus on smallpox and those who sought to build up defenses against bioterrorism in general and strengthen long-term population health needs. As Dennis Perrotta of Texas points out, "the smallpox vaccination effort in many jurisdictions was seen as a distraction from basic preparedness and public health activities. The growth of this area seemed incongruent with the significant losses of population health programs as states and state health departments faced fiscal conditions of unparalleled instability."

Some state officials are pessimistic and some are optimistic about their state's ability to ride out the budget problems that are currently hobbling their public and population health programs and to strengthen the public health infrastructure and emergency preparedness. Michael Caldwell, commissioner of the Dutchess County, New York, Department of Health, and president-elect of NACCHO, says, "Most public health professionals do not look at the bioterrorism money to solve all our social ills, but to expand our 'dual-use,' which means surveillance and response functions of communicable diseases." But, as a recent General Accounting Office report confirmed, others worry that the massive shift of resources into traditional emergency response efforts such as fire and law enforcement will detract from the pressing needs of the medical and public health sectors and the use of public health concepts to detect and respond to bioterrorism.

The maintenance of the public health infrastructure is probably the single most important means of preparing the nation for the myriad unpredictable acts from SARS and influenza epidemics, as well as from terrorist attacks. Without a strong permanent infrastructure, the best of emergency planning will be inadequate. The financial crises of the various states, combined with the shifting focus of the federal government from bioterrorism and terrorism in general to smallpox and the war in Iraq more specifically, have lessened the early potential to enhance the system of services that are essential for

the improvement of the nation's efforts to address bioterrorism preparedness and the overall health needs of the American people.

NOTES

INTRODUCTION

p.4 *The newspaper headlines were stark and eerie:* Connoly 2001; Copeland 2001; Schwartz 2001.

4 *By "public health" . . . By "population health":* We have depended on Fox 2003 for these working definitions of the scope of public and population health.

4 *"Firefighters, police officers, and other first responders:* Evans, Clements, and Shadel 2001.

5 *From established academics and public health professionals:* Satel 2001.

5 *In his opening address . . . Tommy Thompson pledged:* Terhune 2001.

5 *One Fellow at the conservative American Enterprise Institute:* Satel 2001.

5 *Mohammed Akhtar, executive director of the APHA, disagreed:* Akhtar quoted in Christian 2001.

THE CHALLENGE OF BIOTERRORISM

7 *September 11 helped galvanize the nation:* Robert Stroube to Kate Frank, "Emergency Preparedness, Bioterrorism, and the States," e-mail, Oct. 30, 2003 (hereafter Stroube to Frank e-mail 2003). See also Etheridge 1992; Fee 1994; King 2002; Langmuir and Andrews 1952.

7 *The events of the past two years:* See King 2003; Rosenkrantz 1972; Rosner 1995; Sellers 2003; Tomes 1998, 2003.

8 *"As new insurance programs were developed:* Stroube to Frank e-mail 2003.

8 *The diminishing stature of the field:* This and the preceding paragraphs are based on the following sources: Colmers and Fox 2003; Coye 1994; Gostin 2002; Rosner 1995, especially Blackmar 1995, Condran 1995, Fox 1995.

9 *"Before, they left public health out:* Anne Harnish, interview, April 1, 2003 (hereafter Harnish interview).

9 *"A lot of people who couldn't spell 'public health':* Ronald Cates, interview, April 4, 2003 (hereafter Cates interview).

9 *Even in Massachusetts, a state with well-established:* Harriette Chandler and Tim Daly, interview, April 15, 2003 (hereafter Chandler and Daly interview).

9 *For Massachusetts state senator Harriette Chandler:* Ibid.

9 *Even in states whose government agencies were vigilant:* Angela Coron, interview, April 2, 2003 (hereafter Coron interview).

9 *Dennis Perrotta, state epidemiologist:* Dennis Perrotta, interview, April 10, 2003 (hereafter Perrotta interview).

9-10 *In Arizona, Catherine Eden, once a state legislator:* Catherine Eden and David Engelthaler, interview, March 21, 2003 (hereafter Eden and Engelthaler interview).

10 *Catherine Eden, perhaps because her background was in politics:* Ibid.

10 *Similarly, Mary Kramer, president of the Iowa State Senate:* Mary Kramer, interview, April 11,

2003 (hereafter Kramer interview).

10 *In Missouri, Ronald Cates . . . believes:* Cates interview.

10 *Rice Leach, commissioner of the Kentucky Department for Public Health, believed:* Rice Leach, interview, March 19, 2003 (hereafter Leach interview).

10 *Public health has "dealt with these things in the past:* Wolfe 2002.

10 *Anthony Moulton, co-director of the CDC's Public Health Law Program:* Anthony Moulton, interview, April 2, 2003 (hereafter Moulton interview).

11 *Finally, public health authorities ideally do:* Ibid.

11 *Rice Leach of Kentucky summarized:* Leach interview.

11 *It is not as if the public health and emergency response:* Inglesby, Grossman, and O'Toole 2001.

11 *Also, in 1999 the federal government had:* Richard Raymond, response to draft report, ca. December 2003.

11 *In June 2001 the nonprofit Center for Strategic and International Studies:* ANSER for Homeland Security, Dark Winter 2003.

12 *For example, Norma Gyle, a former legislator:* Norma Gyle, interview, April 8, 2003 (hereafter Gyle interview).

12 *Also, California was in relatively good shape . . . Colorado's and Nebraska's labs:* Russell 2001. See also Graham 2001 about California and Colorado labs being in better shape than those in other states.

12 *In addition, the Colorado "Department of Public Health and Environment:* Seibert 2002.

12 *Before September 11, the Connecticut Department of Public Health:* Gyle interview.

12 *The department had "made communications:* Condon 2002.

12 *Georges Benjamin, then director of the Maryland Department of Health:* Thompson 2001.

12 *The* Atlanta Journal and Constitution, *citing Benjamin, reported:* Nesmith 2002.

13 *"Public Health funding has been woefully inadequate:* Thompson 2001.

13 *The National Association of County and City Health Officials:* See Christian 2001; http://www.naccho.org/files/documents/chartbook_frontmatter1-2.pdf (accessed Nov. 5, 2003).

13 *Benjamin, now the executive director:* Georges Benjamin, interview, March 12, 2003 (hereafter Benjamin interview).

13 *A CDC report published only months before:* Centers for Disease Control and Prevention 2003.

13 *The CDC lamented that "the U.S. public health infrastructure:* Centers for Disease Control and Prevention 2001, iii.

13 *In summary, the CDC found:* Ibid., 3. See also Eban 2002.

13 *According to Southern California's* North County Times*:* Kampeas 2002.

13-14 *In Illinois the state's three labs:* Graham 2001.

14 *To help remedy the flaws:* Department of Health and Human Services 2002.

14 *The moneys were distributed to the states:* Centers for Disease Control and Prevention 2002. See also State of Maryland, Governor's Press Office 2002; Stolberg 2002b.

14 *To get the money, the governor's office:* Guiden 2002.

14 *In addition, the CDC targeted:* Staiti, Katz, and Hoadley 2003.

14 *In some states such as Virginia:* Stroube to Frank e-mail 2003.

15 *The hiring of trained personnel was:* Guiden 2002.

15 *Secretary of Health Mary Selecky believed:* Ibid.

15 *Melvin Neufeld, a member of the Joint Legislative Budget Committee:* Melvin Neufeld, interview, March 11, 2003 (hereafter Neufeld interview).

15 *Mary Selecky, among many others, raised:* Guiden 2002.

15 *Others asked a similar question:* Christian 2001.

16 *Some state administrators see the efforts:* Bioterrorism Preparedness and Response: A Connecticut Approach, n.d.

16 *California had a CDC grant:* Coron interview.

16 *In Ohio the federal government provided:* Ohio Department of Health 2003b.

16 *Eleven million dollars went to local health departments:* Harnish interview.

16 *Anne Harnish, assistant director:* Ibid.

16 *It was not just the money:* Ohio Department of Health 2003b.

16 *Virginia . . . received over $27 million:* Virginia Department of Health 2003.

17 *Lisa Kaplowitz . . . was hired:* Funds Boost Public Health Preparedness 2002.

17 *Kaplowitz believes that the department was making:* Health Department Reports Progress on Emergency Preparedness 2002.

17 *Kaplowitz recalls that the "Health Department was:* Lisa Kaplowitz, interview, March 11, 2003 (hereafter Kaplowitz interview).

17 *Some of the least populated and most rural states:* Sheila Peterson, interview, April 2, 2003 (hereafter Peterson interview).

17 *Arvy Smith . . . and Brenda Vossler:* Arvy Smith and Brenda Vossler, interview, April 9, 2003 (hereafter Smith and Vossler interview).

17 *In the days following the anthrax episode, bioterrorism became:* Eden and Engelthaler interview.

18 *Kentucky received $16 million:* Kentucky Department of Health 2003.

18 *Rice Leach, commissioner of the Department for Public Health, recalls:* Leach interview.

18 *Leach acknowledges that "the focus:* Ibid.

18 *As part of Kentucky's grant from HRSA:* Wolfe 2002.

18 *In Missouri as well, state officials saw:* Cates interview.

18 *In Colorado federal bioterrorism money:* Seibert 2002.

19 *While many state administrators and legislators were:* Neufeld interview; J. Thomas Schedler, interview, April 17, 2003 (hereafter Schedler interview).

19 *Specifically, Louisiana "for a long time needed:* Neufeld interview; Schedler interview.

19 *But, Schedler points out:* Ibid.

19 *In New Jersey, George DiFerdinando . . . recalled:* George DiFerdinando, Jr., interview, April 4, 2003 (hereafter DiFerdinando interview).

20 *Federal money was especially important:* Ibid.

20 *Eddy Bresnitz, the state epidemiologist, and George DiFerdinando:* Bresnitz and DiFerdinando 2003, 227, 240.

20 *Bresnitz and DiFerdinando learned that in many ways:* Ibid., 243.

20 *Federal money coming into the state following September 11:* DiFerdinando interview.

20 *While New Jersey's experiences with federally allocated bioterrorism money was:* Ibid.

21 *Texas, a huge state with 254 counties:* Jack Colley, interview, April 9, 2003 (hereafter Colley interview).

21 *The problems facing a state:* http://www.county.org/resources/library/county_mag/county/141/5.html (accessed Nov. 23, 2003).

21 *Localities, like the state, were strapped:* Ibid.

21 *Governor Rick Perry "authorized the use:* Mabin 2002; Texas Department of Health Maintaining Readiness in Case of Bioterrorist Act 2001.

22 *Perrotta, who had served as a consultant:* Perrotta interview.

22 *Perrotta points out that Texas was using:* Ibid.

22 *Although there was a "great interest in the legislature:* Ibid.

22 *In short, Colley believes that his "budget:* Colley interview.

23 *In an article in* Washington Technology, *William Welsh noted:* Welsh 2003.

23 *The problem with the failure of the federal government:* Colley interview.

23 *As with public health, the relative poverty of rural county governments was:* http://www.county.org/resources/library/county_mag/county/141/5.html (accessed Nov. 23, 2003).

24 *Within a few months of the World Trade Center disaster:* Stolberg 2002a.

24 *The concern at the time was prompted by the fact:* Ibid.

24 *Benjamin was also concerned about the panicked and erratic reaction:* Stolberg 2002b.

24 *In Connecticut there were worries:* Gyle interview.

25 *In Minnesota Lee Greenfield, former legislative leader:* Lee Greenfield, interview, April 16, 2003 (hereafter Greenfield interview).

25 *In Iowa there were concerns that existing programs:* Kramer interview.

25 *When Angela Coron, associate director of the California Department of Health Services:* Coron interview.

EFFECTS OF BUDGET CRISES ON PUBLIC HEALTH AND EMERGENCY PREPAREDNESS

26 *A few have questioned, however, whether the redirection:* Anonymous comments on draft, Oct. 31, 2003.

26 *"In Iowa we have done much difficult cutting:* Kramer interview.

26 *In Minnesota, Lee Greenfield notes, "the immediate effect of 9/11 was:* Greenfield interview.

26 *In fact, virtually all state agencies, including education, suffered:* Minnesota Council of Non-Profits 2003.

26 *Mary Selecky . . . suggested that:* Mary Selecky to Kate Frank, "Milbank Report Review," e-mail, November 3, 2003.

26 *Arizona's state budget deficit in 2003 was:* http://www.pbs.org/now/politics/budgetmap.html#ar (accessed Nov. 23, 2003).

26 *In California Angela Coron notes:* Coron interview.

26 *By June 2003, the projected deficit was:* California Budget Project 2003.

27 *In Maine, a fairly large state geographically:* Charlene Rydell, interview, April 17, 2003 (hereafter Rydell interview).

27 *The situation in Massachusetts was:* Chandler and Daly interview.

27 *Sheila Peterson . . . described the state's budget:* Peterson interview.

27 *In Minnesota some of the health department's signature programs were:* Greenfield interview.

27 *Minnesota, Greenfield points out, with its long tradition:* Ibid.

28 *In Connecticut the state has ordered:* Gyle interview.

28 *In Ohio the Public Health Department budget was cut:* Harnish interview.

28 *Virginia's "very large deficit" has resulted:* Kaplowitz interview.

28 *In Kentucky the budget had:* Leach interview.

28 *Leach relates that he had "been in public health since 1966:* Ibid.

28 *Kansas faced a particularly difficult period:* Neufeld interview.

29 *In Maine as well, Charlene Rydell:* Rydell interview.

29 *Local communities and the state do not have the resources:* Ibid.

29 *Similarly, in Massachusetts, State Senator Harriette Chandler:* Chandler and Daly interview.

29 *Daly laments the horrible consequences:* Ibid.

30 *Chandler worries that the original commitment:* Ibid.

30 *Angela Coron describes the extensive cuts:* Coron interview.

30 *Even in Texas, where state epidemiologist Dennis Perrotta notes:* Perrotta interview.

30 *In Nashville, Robert Eadie, deputy director of the city's Metropolitan Health Department:* Robert B. Eadie, interview, March 21, 2003 (hereafter Eadie interview).

30 *Similarly, Arizona projects a 10 percent difference:* Eden and Engelthaler interview.

31 *J. Thomas Schedler, chair of the Louisiana Senate's Health and Welfare Committee:* Schedler interview.

31 *This has been particularly difficult, as Schedler observes:* Ibid.

31 *In December 2001 the Bush administration proposed:* Russell 2001.

31 *Schedler points out that Louisiana has:* Schedler interview.

31 *Louisiana, with an extensive charity hospital system:* Ibid.

32 *They needed to develop methods for conferring:* Coron interview.

32 *In Arizona the state was methodical in organizing:* Catherine Eden, comments on draft, ca. December 2003.

32 *"We've taken a very cautious approach:* Eden and Engelthaler interview.

32 *Norma Gyle remembers that in Connecticut:* Gyle interview.

32 *In Arizona Eden recalls that many believed:* Davenport 2002.

32 *Similarly, Lisa Kaplowitz in Virginia notes:* Hostetler 2002.

32 *In Louisiana and New Jersey, health officers agreed:* Schedler interview.

32 *Despite the early optimism and planning:* McNeil 2003.

32 *In California, for example, the initial goal:* Coron interview.

33 *Minnesota quickly "ran into some trouble:* Greenfield interview.

33 *In Ohio there was also concern about potential heart problems:* Harnish interview.

33 *Infectious-disease doctors were concerned:* Ibid.

33 *In Texas epidemiologist Dennis Perrotta:* Roser 2003.

33 *Perrotta remembers that "people throughout Texas asked:* Perrotta interview.

33 *The state had estimated that in phase 1 it would:* Eden and Engelthaler interview; Kaplowitz interview; Leach interview.

33 *The fear about the safety of the vaccine merged:* Greenfield interview.

33 *The movement is difficult to label, Greenfield argues:* Ibid.

34 *Similarly, in Missouri Ronald Cates of the Department of Health notes:* Cates interview.

34 *Some in Texas feared that this was a forced vaccination program:* Perrotta interview.

34 *In Minnesota the health department organized a campaign:* Greenfield interview.

34 *In Maine "the costs of the vaccination campaign" were worrisome:* Rydell interview.

34 *If state officials had been convinced there was an imminent danger:* Ibid.

34 *In Minnesota and other states, a number of hospitals "opted out":* Greenfield interview; Harnish interview.

34 *In some states there was concern over being designated:* Manning 2003.

34 *Even in Kentucky, where Rice Leach:* Leach interview; Public Health Commissioner Gets Smallpox Vaccine 2003.

34 *In mid-November 2002 a survey "found:* Federal Agency Approves Smallpox Vaccinations 2002.

35 *Dennis Perrotta said that there was real resistance:* Perrotta interview.

35 *In Tennessee resistance from hospitals as well as personnel was strong:* Eadie interview.

35 *State Senator Harriette Chandler is also cognizant:* Chandler and Daly interview.

35 *In Arizona some "hospitals came out front saying:* Eden and Engelthaler interview.

35 *Georges Benjamin summarized the problem of compensation:* Benjamin interview.

35 *As Lee Greenfield of Minnesota summarized:* Greenfield interview.

36 *Across the country, state administrators referred to the distortions:* Kaplowitz interview.

36 *Similarly, in California the smallpox campaign was seen:* Coron interview.

36 *Even in states where federal money was seen as a means of buttressing:* Eadie interview.

37 *In Iowa, where "there has just not been a public outcry:* Kramer interview.

37 *All these problems were identified very early in the planning efforts:* State of Wisconsin 2002b, courtesy of John Chapin.

37 *Georges Benjamin takes a long view of the entire recent history:* Benjamin interview.

37 *Benjamin summarizes the general uneasiness of many:* Ibid.

38 *"The approach taken in Indiana and some other states:* Joseph Hunt to Kate Frank, e-mail, Oct. 28, 2003.

38 *As J. Nick Baird, director of the Ohio Department of Health, put it:* J. Nick Baird to Andrew Gyory, e-mail, Oct. 28, 2003.

38 *The state recognized that it had only been able to cope with the growing fears:* Chapin 2001c.

38 *There were too few workers trained in epidemiology:* Murphy 2001.

38 *"We have been stretched," reported John Chapin:* Chapin 2001c.

39 *Chapin recalls the reaction of the public health community:* John Chapin, interview, March 3, 2003 (hereafter Chapin interview).

39 *Chapin notes that "many in the public health community:* Chapin 2001b.

39 *Wisconsin itself "had a budget of $250 million:* Chapin interview.

39 *"At the local, state, and national level [there was] much talk:* Chapin 2001b.

39 *It [is] the capacity of the system rather than its particular focus:* Chapin 2001a. Memo courtesy of John Chapin.

39 *"True public health infrastructure development focuses:* Chapin 2002a.

39 *"Wisconsin spent a lot of time writing a proposal:* Chapin interview.

39 *"September 11, 2001, should have changed the . . . debate:* Chapin 2001a.

40 *Increasing the capacity of and access to hospitals:* Terrorism Experts Speak of Readiness 2001.

40 *For administrators, the line between an "emergency response":* Chapin 2002a.

40 *The Board of the Wisconsin State Lab of Hygiene was:* State of Wisconsin 2002a.

40 *Chapin has a broad view of public health readiness:* Chapin 2002a.

40 *Chapin believes that "both mental health education:* Ibid.

40 *Preparedness was to be integrated into an effort to improve ongoing services:* Chapin interview.

41 *While the governor and some top administrators understood:* Chapin 2001b.

41 *Chapin believes that one of the major shifts occurred:* Chapin interview.

41 *Chapin notes that "smallpox diverted human resources:* Ibid.

41 *On December 13, 2002, President Bush announced the smallpox inoculation campaign:* Chapin 2002b.

41 *Since "bioterrorism funding's second purpose is to deal:* Ibid.

42 *When the federal government ignored this advice . . . Chapin resigned:* Chapin interview.

43 *At the behest of Gene Matthews, legal counsel to the CDC:* Colmers and Fox 2003; Gostin 2002; Gostin et al. 2002.

43 *Anthony Moulton . . . notes that "the approach Gostin and his colleagues took:* Anthony Moulton to Kate Frank, "Review Comments on Rosner-Markowitz Draft," e-mail, Oct. 20, 2003 (hereafter Moulton to Frank e-mail 2003).

43 *The Model Act itself was not the first attempt to recodify:* NACCHO 2003.

44 *Even after September 11, the provisions of the Model Act were perceived:* Guiden 2002; "Law Makers Not Keen on 'Model' Public Health Law," quoted in Bayer and Colgrove 2003, 64.

44 *Organizations such as the National Conference of State Legislatures:* Daniel Fox, "Interview with Ron Bayer," March 7, 2002, quoted in Bayer and Colgrove 2003, 64.

44 *From across the political spectrum, "there appeared to be:* Bayer and Colgrove 2003, 65.

44 *The plan, from the beginning, was to issue a preliminary draft:* Moulton to Frank e-mail 2003.

44 *Many comments were received, some supportive, some critical:* Bayer and Colgrove 2003, 64–5; Hodge and Gostin 2003.

44 *In short, the Model Act would grant broad authority to governors:* Bourne and King to American Legislative Exchange Council, Environmental Health Attendees 2001.

44 *As Lawrence Gostin argued in his important book:* Gostin 2000, 4, quoted in Salinsky 2003, 12.

45 *"Twenty states took action on the legislation:* Moulton interview.

45 *In the national media, opposition to the Model Act appeared intense:* Hall 2002.

45 *Respected health ethicists also weighed in against aspects of the act:* Annas 2002.

45 *For most practicing administrators in the various states:* Eadie interview.

46 *For many legislators, as well as state agency officials, the Model Act was:* Neufeld interview.

46 *In North Dakota the Model Act was used as a means to evaluate:* Smith and Vossler interview.

46 *In Louisiana the Model Act was used virtually intact:* Schedler interview.

46 *Missouri, as well, found that it had "incredible powers:* Cates interview.

46 *Angela Coron, in California, did not see a need for the Model Act at all:* Coron interview.

46 *Texas, as well, had long been prepared for natural disasters:* Perrotta interview.

46 *One of the few states that seems to have used the model legislation:* Eden and Engelthaler interview.

47 *Departments of health, such as in Tennessee, had been dealing with:* Eadie interview.

47 *In Minnesota, however, Lee Greenfield reported that:* Greenfield interview.

47 *Norma Gyle noted that Connecticut's "public health emergency law is:* Gyle interview.

47 *Similarly, in Ohio, legislators worried about whether "quarantine powers:* Harnish interview.

47 *In Iowa there were no major changes in the law:* Kramer interview.

48 *In Louisiana the issue of quarantine was "obviously politically charged:* Schedler interview.

48 *Arizona's experiences with TB had muted arguments about quarantine:* Eden and Engelthaler interview.

48 *The other major civil liberties issue that caused some concern:* O'Brien 2002.

48 *In Ohio the issue of confidentiality was a concern especially:* Harnish interview.

48 *The state epidemiologist in Virginia collaborated with Johns Hopkins University:* Kaplowitz interview.

49 *In Kentucky the issue had been affected by an incident in February 2003:* Kentucky Computer Awaiting Sale Held AIDS Files 2003; Kentucky: Computer Kept Files on Sexual Diseases 2003; Kentucky Department of Health 2003; Wolfe 2003.

49 *Kentucky's commissioner of public health, Rice Leach, recalls that:* Leach interview.

49 *Nor did Kansas, North Dakota, Maine, Louisiana, New Jersey, and Texas have:* DiFerdinando interview; Perrotta interview; Rydell interview; Schedler interview; Smith and Vossler interview.

49 *In some states, "most of the general public did not know:* Neufeld interview.

49 *For some administrators, the Model Act, far from being a radical statement:* Chapin 2002a.

REGIONAL COORDINATION

50 *While public health is addressed in national agencies:* For further discussion of this division among federal, state, and local authorities, see Gostin 2000.

50 *One concrete effort at coordination across state lines was:* http://emd.wa.gov/1-dir/emac/emac-idx.htm (accessed June 27, 2003).

51 *One area that has improved is risk assessment:* John Colmers, interview, June 27, 2003.

51 *In Virginia the Department of Health has "coordinated:* Health Department Reports Progress on Emergency Preparedness 2002.

51 *Louisiana is setting up a training site that could be used:* Schedler interview.

51 *Missouri is coordinating with its eight border states:* Cates interview.

51 *In Connecticut lawyers are investigating credential and liability issues:* Gyle interview.

51 *And in Ohio mutual aid assistance provisions are being negotiated:* Harnish interview.

51 *Ohio also established "contracts with local partners:* Ohio Department of Health 2003a.

51 *Texas met with state health and emergency management people:* Perrotta interview.

52 *In Iowa, for example, the interstate compact was passed:* Kramer interview.

52 *In Minnesota, where much of rural Wisconsin is closer to Minneapolis:* Greenfield interview.

CONCLUSION

54 *As Dennis Perrotta of Texas points out:* Dennis Perrotta to Kate Frank, "Review of Milbank Fund Document," e-mail, Oct. 17, 2003.

54 *Michael Caldwell, commissioner of the Dutchess County, New York, Department of Health:* Michael Caldwell, "Comment on Draft," Oct. 27, 2003.

54 *But, as a recent General Accounting Office report confirmed:* General Accounting Office 2002.

REFERENCES

Annas, G. 2002. Bioterrorism, Public Health and Civil Liberties. *New England Journal of Medicine* 346:1337–42.

The ANSER for Homeland Security, Dark Winter. 2003 (July). Available at http://www.homelandsecurity.org/darkwinter/index.cfm (accessed July 29, 2003).

Bayer, R., and J. Colgrove. 2003. Rights and Dangers: Bioterrorism and the Ideologies of Public Health. In *In the Wake of Terror: Medicine and Morality in a Time of Crisis*, edited by J.D. Moreno, 51–74. Cambridge, Mass.: MIT Press.

Bioterrorism Preparedness and Response: A Connecticut Approach. n.d. Courtesy of Norma Gyle.

Blackmar, E. 1995. Accountability for Public Health: Regulating the Housing Market in 19th-Century New York City. In *Hives of Sickness: Public Health and Epidemics in New York City*, edited by D. Rosner, 42–64. New Brunswick: Rutgers University Press.

Bourne, S.L., and J. King to American Legislative Exchange Council, Environmental Health Attendees. 2001 (Nov. 8). Memorandum on Model State Emergency Powers Act. Available at http://www.alec.org (accessed Dec. 12, 2003).

Bresnitz, E.A., and G. DiFerdinando. 2003. Lessons from the Anthrax Attacks of 2001: The New Jersey Experience. *Clinics in Occupational and Environmental Medicine* 2:227–52.

California Budget Project. 2003 (June 30). The 2003-04 Budget Gap: Where Are We after the May Revision and the Budget Conference Committee? Available at http://www.cbp.org.2003/0305/6wherearewemayrevise.pdf (accessed Feb. 11, 2004).

Centers for Disease Control and Prevention. 2001. Public Health's Infrastructure: A Status Report Prepared for the Appropriations Committee of the United States Senate (March).

Centers for Disease Control and Prevention. 2002. CDC and HRSA Bioterrorism and Response Grants, Illinois Homeland Security. Available at http://www.100.state.il.us/security/ittf/terrorismreport14.htm (accessed Nov. 23, 2003).

Centers for Disease Control and Prevention. 2003. Fact Sheet: Public Health Infrastructure. Fact Sheet, Media Relations, Office of Communication. Available at http://www.cdc.gov/od/oc/media/pressrel/fs020514.htm (accessed Nov. 20, 2003).

Chapin, J. 2001a. Funding Prerequisites for Public Health. Memorandum (Oct. 18).

Chapin, J. 2001b. How Can Public Health Be Funded for Bioterrorism and Still Be Public Health? Memo to Public Health Partners Developing Your Budget on Bioterrorism (Nov. 8).

Chapin, J. 2001c. Presentation to Public Health Assembly Committee, Dr. Frank Urban, chair (Oct. 22).

Chapin, J. 2002a. Reflections on Public Health and the War on Terrorism. Typescript (June 15).

Chapin, J. 2002b. Wisconsin Concerns. Typescript (ca. October).

Christian, S.E. 2001. Anthrax Scare; Health System's Weakness Exposed. *Chicago Tribune* (Nov. 18):1.

Colmers, J.M., and D.M. Fox. 2003. The Politics of Emergency Health Powers and the Isolation of Public Health. *American Journal of Public Health* 93:392–9.

Condon, G. 2002. Hospitals Team Up against Terrorism (Nov. 15). Available at http://www.ctnow.com (accessed June 2, 2003).

Condran, G.A. 1995. Changing Patterns of Epidemic Disease in New York City. In *Hives of Sickness: Public Health and Epidemics in New York City*, edited by D. Rosner, 27–41. New Brunswick: Rutgers University Press.

Connoly, C. 2001. Public Health System Is on a War Footing. *Washington Post* (Oct. 27):A1.

Copeland, L. 2001. Local Public Health Officials Seek Help. *USA Today* (Oct. 23):A3.

Coye, M.J. 1994. Our Own Worst Enemy: Obstacles to Improving the Health of the Public. In *Leadership in Public Health*, edited by M.J. Coye, W.H. Foege, and W.L. Roper. New York: Milbank Memorial Fund. Available at http://www.milbank.org/reports/mrlead.html#fore (accessed Sept. 3, 2003).

Davenport, P. 2002. State Releases Plan to Vaccinate Some Health Workers for Smallpox. *Associated Press State and Local Wire* (Dec. 10). BC Cycle, Lexis-Nexis (accessed Oct. 3, 2003).

Department of Health and Human Services. 2002. HHS Announces $1.1 Billion in Funding to States for Bioterrorism Preparedness. Press Release (Jan. 31). Available at http://www.hhs.gov/news/press/2002pres/20020131b.html (accessed Sept. 3, 2003).

Eban, K. 2002. Waiting for Bioterror: Is Our Public Health System Ready? *The Nation* 275:11–8.

Etheridge, E.W. 1992. *Sentinel for Health: A History of the Centers for Disease Control*. Berkeley and Los Angeles: University of California Press.

Evans, G., B. Clements, and B. Shadel. 2001. We Can't Fight Bioterrorism on the Cheap. *St. Louis Post-Dispatch* (Nov. 28):B7.

Federal Agency Approves Smallpox Vaccinations. 2002. *Associated Press State and Local Wire* (Dec. 28). BC Cycle, Lexis-Nexis (accessed Nov. 22, 2003).

Fee, E. 1994. Public Health and the State: The United States. In *The History of Public Health and the Modern State*, edited by D. Porter, 224–75. Amsterdam: Editions Rodopi B.V.

Fox, D.M. 1995. The Politics of Public Health in New York City. In *Hives of Sickness: Public Health and Epidemics in New York City*, edited by D. Rosner, 197–210. New Brunswick: Rutgers University Press.

Fox, D.M. 2003. Populations and the Law: The Changing Scope of Health Policy. *Journal of Law, Medicine & Ethics* 31:607–14.

Funds Boost Public Health Preparedness. 2002. *Emergency Management Update* (ca. Sept.):6.

General Accounting Office. 2002. HHS Bioterrorism Preparedness Programs: States Reported Progress but Fell Short of Program Goals for 2002. Report #GAO-04-360R, released Feb. 10, 2004. Available at http://frwebgate.access.gpo.gov/cgibin/useftp.cgi?IPaddress=162.140.64.88&filename=d04360r.txt&directory=/diskb/wais/data/gao (accessed March 10, 2004).

Gostin, L.O. 2000. *Public Health Law: Power, Duty, Restraint*. Berkeley: University of California Press; and New York: Milbank Memorial Fund.

Gostin, L.O. 2002. Public Health Law in an Age of Terrorism: Rethinking Individual Rights and Common Goods. *Health Affairs* 21:79.

Gostin, L.O., J.W. Sapsin, S.P. Teret, and S. Burris. 2002. The Model State Emergency Health Powers Act: Planning for and Response to Bioterrorism and Naturally Occurring Infectious Diseases. *Journal of the American Medical Association* 288:622–9.

Graham, J. 2001. Money Woes Plague Nation's Health Labs. *Chicago Tribune* (Nov. 23):3.

Guiden, M. 2002. Public Health Officials Prep for Bioterror with New Hires (Sept. 6). Available at http://www.Stateline.org (accessed July 18, 2003).

Hall, M. 2002. Many States Reject Bioterrorism Law; Opponents Say It's Too Invasive. *USA Today* (July 23):A1.

Health Department Reports Progress on Emergency Preparedness. 2002. *Virginia Town and City* 37:1–2.

Hodge, J.G., Jr., and L.O. Gostin. 2003. Protecting the Public's Health in an Era of Bioterrorism: The Model State Emergency Health Powers Act. In *In the Wake of Terror: Medicine and Morality in a Time of Crisis*, edited by J.D. Moreno, 17–32. Cambridge, Mass.: MIT Press.

Hostetler, A.J. 2002. Virginia Submits Smallpox Plan. *Richmond Times-Dispatch* (Dec. 10):A1.

Inglesby, T.V., R. Grossman, and T. O'Toole. 2001. A Plague on Your City: Observations from TOPOFF. *Clinical Infectious Diseases* 32:436.

Kampeas, R. 2002. States Adjust to Governing with Threat of Bioterror. *North County Times* (June 19). Available at http://www.NCTimes.net (accessed Aug. 2, 2003).

Kentucky Computer Awaiting Sale Held AIDS Files. 2003. *Memphis Commercial Appeal* (Feb. 7):A7.

Kentucky: Computer Kept Files on Sexual Diseases. 2003. *New York Times* (Feb. 7):A17.

Kentucky Department of Health. 2003. State Bioterrorism Preparedness Capacity: Key Accomplishments. Association of State and Territorial Health Officials (March).

King, N.B. 2002. Security, Disease, Commerce: Ideologies of Post-Colonial Global Health. *Social Studies of Science* 32:763–89.

King, N.B. 2003. The Influence of Anxiety: September 11, Bioterrorism, and American Public Health. *Journal of the History of Medicine* 58:433–41.

Langmuir, A.D., and J.M. Andrews. 1952. Biological Warfare Defense 2: The Epidemic Intelligence Service of the Communicable Disease Center. *American Journal of Public Health* 42:235–8.

Mabin, C. 2002. Lawmakers Updated on State's Bioterrorism Plans. *Associated Press State and Local Wire* (Jan. 29). BC Cycle, Lexis-Nexis (accessed Aug. 5, 2003).

Manning, A. 2003. Two Soldiers Develop Bad Reactions to Smallpox Shot. *USA Today* (Feb. 5). Available at http://www.USAToday.com (accessed March 17, 2003).

McNeil, D.G., Jr. 2003. National Programs to Vaccinate for Smallpox Come to a Halt. *New York Times* (June 19). Available at http://www.nytimes.com (accessed June 20, 2003).

Minnesota Council of Non-Profits. 2003. Impact of the Final FY 2004–05 Budget. Available at http://www.mncn.org/doc/fy200405.pdf (accessed Sept. 5, 2003).

Murphy, K. 2001. Preparedness Found Lacking in Rural Areas. *Milwaukee Journal Sentinel* (Oct. 22). Available at http://www.onwisconsin.com (accessed Dec. 12, 2003).

NACCHO. 2003. Turning Point. Available at http://www.naccho.org (accessed July 31, 2003).

Nesmith, J. 2002. Health Systems' Bioterror Readiness Up. *Atlanta Journal and Constitution* (Nov. 13):13A.

O'Brien, D. 2002. Public Health Surveillance. In "Public Health Legal Preparedness Workshop," edited by A. Moulton and J. Hodge, Jan. 13, 2003. Available at http://www.publichealthlaw.net/Resources/ResourcesPDFs/Dec11summ.pdf (accessed Nov. 19, 2003).

Ohio Department of Health. 2003a. Facts about Public Health Disaster Plans.

Ohio Department of Health. 2003b. State Bioterrorism Preparedness Capacity: Key Accomplishments State Bioterrorism Preparedness Capacity. Association of State and Territorial Health Officials (March).

Public Health Commissioner Gets Smallpox Vaccine. 2003. *Associated Press State and Local Wire* (Jan. 30). BC Cycle, Lexis-Nexis (accessed Oct. 20, 2003).

Rosenkrantz, B. 1972. *Public Health and the State*. Cambridge, Mass.: Harvard University Press.

Roser, M.A. 2003. Smallpox: Is the U.S. Vaccination Program a Shot in the Arm for Anti-Terrorism or a Shot in the Dark by the White House? *Austin American Statesman* (Jan. 19):E1.

Rosner, D., ed. 1995. *Hives of Sickness: Public Health and Epidemics in New York City*. New Brunswick: Rutgers University Press.

Russell, S. 2001. Public Health Care under a Microscope: Bioterror Attacks Bring New Focus to Neglected Facilities. *San Francisco Chronicle* (Dec. 2):A6.

Salinsky, E. 2003. Public Health Emergency Preparedness: Fundamentals of the "System." National Health Policy Forum Background Paper (April 3). Washington, D.C.: George Washington University.

Satel, S. 2001. Public Health? Forget It; Cosmic Issues Beckon. *Wall Street Journal* (Dec. 13):A16.

Schwartz, J. 2001. Efforts to Calm the Nation Spin Out of Control. *New York Times* (Oct. 28):4.

Seibert, T. 2002. Bioterror to Be Top Priority for Grant; State Makes Plans for $16.3 Million. *Denver Post* (April 2):B3.

Sellers, C. 2003. September 11 and the History of Hazard. *Journal of the History of Medicine* 58:449–58.

Staiti, A., A. Katz, and J.F. Hoadley. 2003. Has Bioterrorism Preparedness Improved Public Health? Center for Studying Health System Change, Issue Brief no. 65 (July). Available at http://www.hschange.org/CONTENT/588/ (accessed July 30, 2003).

State of Maryland, Governor's Press Office. 2002. Governor Glendening Announces Maryland Awarded More than $19 Million for Anti-Terrorism Efforts. Available at http://www.dhmh.state.md.us/publ-rel/html/pr060602.htm (accessed Dec. 12. 2003).

State of Wisconsin. 2002a. Motions and Actions Taken by the Board, Wisconsin State Laboratory of Hygiene Board Meeting (March 26). *University of Wisconsin Center for Health Sciences.*

State of Wisconsin. 2002b. Smallpox Planning and Vaccination Strategies (Oct. 30). Region V State Health Officials Meeting.

Stolberg, S.G. 2002a. The President's Budget Proposal: Buckets for Bioterrorism, but Less for Catalogue of Ills. *New York Times* (Feb. 5):A20.

Stolberg, S.G. 2002b. U.S. Will Give States $1 Billion to Improve Bioterrorism Defense. *New York Times* (Jan. 25):A11.

Terhune, C. 2001. Public Health Officials Say More Funding, Information Needed to Fight Bioterrorism. *Wall Street Journal* (Oct. 23):B8.

Terrorism Experts Speak of Readiness. 2001. *Beloit* (Wisc.) *Daily News* (Oct. 23).

Texas Department of Health Maintaining Readiness in Case of Bioterrorist Act. 2001. *Associated Press State and Local Wire* (Sept. 28). BC Cycle, Lexis-Nexis (accessed Oct. 23, 2003).

Thompson, S.H. 2001. Knowledge May Serve as Public Health Antidote to Bioterrorism Worries. *Tampa Tribune* (Oct. 21):9.

Tomes, N. 1998. *The Gospel of Germs: Men, Women, and the Microbe in American Life*. Cambridge, Mass.: Harvard University Press.

Tomes, N. 2003. Reflections on September 11: A Symposium. *Journal of the History of Medicine* 58:428–32.

Virginia Department of Health. 2003. State Bioterrorism Preparedness Capacity: Key Accomplishments (March). Association of State and Territorial Health Officials.

Welsh, W. 2003. Homeland Security Gets Shortchanged. *Washington Technology* 17 (March 10). Available at http://www.washingtontechnology.com/news/17_23/statelocal/20257-1.html (accessed Sept. 8, 2003).

Wolfe, C. 2002. Kentucky Plans Possible Bioterrorism Response. *Cincinnati Enquirer* (June 10). Available at http://www.enquirer.com (accessed Feb. 22, 2003).

Wolfe, C. 2003. Discarded Computer Had Confidential Medical Information. *Associated Press State and Local Wire* (Feb. 7). Available at Lexis-Nexis (accessed July 22, 2003).

WEB SITES

http://emd.wa.gov/1-dir/emac/emac-idx.htm (accessed June 27, 2003).

http://www.county.org/resources/library/county_mag/county/141/5.html (accessed Nov. 23, 2003).

http://www.naccho.org/files/documents/chartbook_frontmatter1-2.pdf (accessed Nov. 5, 2003).

http://www.pbs.org/now/politics/budgetmap.html#ar (accessed Nov. 23, 2003).

THE AUTHORS

GERALD MARKOWITZ

Gerald Markowitz is Distinguished Professor of History at John Jay College of Criminal Justice and the CUNY Graduate Center. He is also Adjunct Professor in the Department of Sociomedical Sciences at Columbia University's Mailman School of Public Health. He and David Rosner have recently written *September 11 and the Shifting Priorities of Public and Population Health in New York* (Milbank Memorial Fund, 2003) and *Deceit and Denial: The Deadly Politics of Industrial Pollution* (University of California Press and Milbank Memorial Fund, 2002). He has been awarded numerous grants, including those from the National Endowment for the Humanities, and was a recipient of the Viseltear Prize from the Medical Care Section of the American Public Health Association (APHA) for "Outstanding Contributions" to the history of public health. He is currently Co-Principal Investigator on a Robert Wood Johnson Investigator Award, which provided support for this report. He and David Rosner have written and edited books and articles, including *Deadly Dust: Silicosis and the Politics of Occupational Disease in Twentieth-Century America* (Princeton University Press, 1991, 1994); *Children, Race, and Power: Kenneth and Mamie Clark's Northside Center* (University Press of Virginia, 1996); *Dying for Work* (Indiana University Press, 1987); and *"Slaves of the Depression": Workers' Letters About Life on the Job* (Cornell University Press, 1987).

DAVID ROSNER

David Rosner is Professor of History and Public Health at Columbia University and Director of the Center for the History of Public Health at Columbia's Mailman School of Public Health. He and Gerald Markowitz have recently written *September 11 and the Shifting Priorities of Public and Population Health in New York* (Milbank Memorial Fund, 2003) and *Deceit and Denial: The Deadly Politics of Industrial Pollution* (University of California Press and Milbank Memorial Fund, 2002). He received his MPH degree from the University of Massachusetts and his doctorate in the history of science from Harvard. He was formerly University Distinguished Professor of History at the City University of New York (CUNY). In addition to having received numerous grants, he has been a Guggenheim Fellow, a National Endowment for the Humanities Fellow, and a Josiah Macy Fellow, and is a recent recipient of a Robert Wood Johnson Investigator Award, which provided support for this report. He has been awarded the Distinguished Scholar's Prize from the City University, the Viseltear Prize for Outstanding Work in the History of Public Health from the APHA, and the Distinguished Alumnus Award from the University of Massachusetts. He is the author of *A Once Charitable Enterprise* (Cambridge University Press, 1982; Princeton University Press, 1987), and editor of *"Hives of Sickness": Epidemics and Public Health in New York City* (Rutgers University Press, 1995) and, with Susan Reverby, of *Health Care in America: Essays in Social History*. In addition, he and Gerald Markowitz have written and edited numerous books and articles, including *Deadly Dust: Silicosis and the Politics of Occupational Disease in Twentieth-Century America* (Princeton University Press, 1991,

1994); *Children, Race, and Power: Kenneth and Mamie Clark's Northside Center* (University Press of Virginia, 1996); *Dying for Work* (Indiana University Press, 1987); and *"Slaves of the Depression": Workers' Letters About Life on the Job* (Cornell University Press, 1987).

SELECTED PUBLICATIONS OF THE MILBANK MEMORIAL FUND

A complete list of the Fund's reports may be viewed online at www.milbank.org. Reports published since 1993 are available electronically. Single or multiple copies of reports that have print editions are available without charge while supplies last.

Evidence-Based Mental Health Treatments and Services: Examples to Inform Public Policy
by Anthony F. Lehman, Howard H. Goldman, Lisa B. Dixon, and Rachel Churchill
2004 44 pages

Addressing the HIV/AIDS Pandemic: A U.S. Global AIDS Strategy for the Long Term
co-published with the Council on Foreign Relations
2004 44 pages

Evaluating Health Services: A Reporter Covers the Science of Research Synthesis
by Ray Moynihan
2004 68 pages

Making Sense of the System: How States Can Use Health Workforce Policies to Increase Access and Improve Quality of Care
by Edward Salsberg
co-published with the Reforming States Group
2003
Available electronically only at
http://www.milbank.org/reports/2003salsberg/2003salsberg.html

Food Safety Updated: Developing Tools for a More Science- and Risk-Based Approach
by Michael R. Taylor, Margaret O'K. Glavin, J. Glenn Morris, Jr., and Catherine E. Woteki
co-published with Resources for the Future
2003 56 pages

Implementing the Resident Assessment Instrument: Case Studies of Policymaking for Long-Term Care in Eight Countries
2003
Available electronically only at
http://www.milbank.org/reports/interRAI/030222interRAI.html

September 11 and the Shifting Priorities of Public and Population Health in New York
by David Rosner and Gerald Markowitz
2003 68 pages

Rebalancing Long-Term Care in New Jersey: From Institutional toward Home and Community Care
by Susan C. Reinhard and Charles J. Fahey
2003
Available electronically only at
http://www.milbank.org/reports/030314newjersey/030314newjersey.html

2000-2001 State Health Care Expenditure Report
co-published with the National Association of State Budget Officers and the Reforming States Group
2003 92 pages

Proactive Hazard Analysis and Health Care Policy
by John E. McDonough
co-published with ECRI
2002 36 pages

Achieving Better Health Outcomes: The Oregon Benchmark Experience
by Howard M. Leichter and Jeffrey Tryens
2002 60 pages

2001 Robert H. Ebert Memorial Lecture: Health Care Quality and How to Achieve It
by Kenneth I. Shine
2002 24 pages

Informing Judgment: Case Studies of Health Policy and Research in Six Countries
co-published with the Cochrane Collaboration
2001 212 pages

1998-1999 State Health Care Expenditure Report
co-published with the National Association of State Budget Officers and the Reforming States Group
2001 204 pages

When Care Becomes a Burden: Diminishing Access to Adequate Nursing
by Claire M. Fagin
2001 48 pages

CALIFORNIA/MILBANK BOOKS ON HEALTH AND THE PUBLIC

The following books are co-published with and distributed by the University of California Press. For information or to order, call 1-800-822-6657 or visit http://www.ucpress.edu.

What Price Better Health? Hazards of the Research Imperative
by Daniel Callahan
2003 341 pages
$29.95 cloth

When Walking Fails: Mobility Problems of Adults with Chronic Conditions
by Lisa I. Iezzoni
2003 380 pages
$60.00 cloth; $19.95 paper

Death Is That Man Taking Names: Intersections of American Medicine, Law, and Culture
by Robert A. Burt
2002 256 pages
$29.95 cloth

Big Doctoring in America: Profiles in Primary Care
by Fitzhugh Mullan
2002 302 pages
$29.95 cloth

Deceit and Denial: The Deadly Politics of Industrial Pollution
by Gerald Markowitz and David Rosner
2002 464 pages
$45.00 cloth; $19.95 paper

Public Health Law and Ethics: A Reader
edited by Lawrence O. Gostin
2002 536 pages
$60.00 cloth; $35.00 paper

Public Health Law: Power, Duty, Restraint
by Lawrence O. Gostin
2000 518 pages
$29.95 paper

Experiencing Politics: A Legislator's Stories of Government and Health Care
by John E. McDonough
2000 336 pages
$21.95 paper

The Corporate Practice of Medicine: Competition and Innovation in Health Care
by James C. Robinson
1999 306 pages
$21.95 paper

The Fund also publishes the *Milbank Quarterly*, a multidisciplinary journal of population health and health policy. Information about subscribing to the *Quarterly* is available by calling toll-free 1-800-835-6770, or at www.milbank.org/quarterly/.

Information about other work of the Fund is available from the Fund at 645 Madison Ave., 15th Floor, New York, NY 10022, (212) 355-8400. Fax: (212) 355-8599. E-mail: mmf@milbank.org. On the Web: www.milbank.org.

Design and Typography:
The Boland Design Company

Printing:
Prestone Printing Company, Inc.