Chapter 5

The Needs of the Many:

Biological Terrorism, Disease Containment, and Civil Liberties

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The liberty secured by the Constitution of the United States to every person within its jurisdiction does not import an absolute right in each person to be, at all times and in all circumstances, wholly freed from restraint. There are manifold restraints to which every person is necessarily subject for the common good. . . . Real liberty for all could not exist under the operation of a principle which recognizes the right of each individual person to use his own [judgment], whether in respect of his person or his property, regardless of the injury that may be done to others.

—*Justice John Marshall Harlan,* Jacobson v. Massachusetts *197 U.S. 11 (1905)*

Introduction

Although in the minds of most Americans the 9/11 terrorist attacks signified a watershed event in American history, the less well-remembered anthrax attacks of autumn 2001 represent an omen of potentially more devastating bioterror threats on the American horizon. In an unprecedented bioterrorist attack, letters containing a powder composed of *Bacillus anthracis* (anthrax) were dropped in a mail depository in New Jersey and sent to the corporate offices of the *Sun* tabloid in Florida, the *New York Post*, the offices of CBS News anchor Dan Rather, NBC News anchor Tom Brokaw, and the U.S. Senate offices of Tom Daschle (D-SD) and Patrick Leahy (D-VT).[1] In the wake of these attacks, five individuals were dead, including a photo editor at the *Sun*, two postal workers in Maryland, a hospital supply worker in New York City, and a ninety-four-year-old woman in Connecticut. The latter four deaths resulted from mail that was cross-contaminated by the packages

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bearing the anthrax bacterium or because the victims worked in a mail-sorting facility in which the contaminated mail was processed. Seventeen others were treated for anthrax-related illness, Congress shut down, the U.S. mail system was in disarray, and millions of dollars were spent cleaning up federal buildings contaminated with anthrax spores.[2] A mild panic ensued within the country as public health authorities and physicians were besieged with requests from patients for information about anthrax as well as antibiotics that would protect them from the bacterium.[3] As of this writing, the perpetrator(s) of America's first major act of biological terrorism are unknown and remain at large.[4]

Anthrax is just one of a wide assortment of biological agents that can be used to terrorize or kill. The Centers for Disease Control and Prevention (CDC) in Atlanta lists on its website the sixteen biological agents that are most likely to be used as weapons of terror.[5] The U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) details thirteen biological agents in its seminal handbook (also known as the "Blue Book") on medical management of biological weapons casualties.[6] These lists are certainly not exhaustive. Compounding the threat of bioweapons is the highly mobile nature of modern society. The effects of the anthrax attack stretched along the East Coast, infecting victims as far north as Connecticut and as far south as Florida. Perhaps more frightening, if this particular attack had utilized a highly communicable pathogen such as smallpox or pneumonic plague, the results could have been unimaginable, resulting in death and panic in the United States not seen since the deadly influenza outbreak of 1917–18.[7]

The anthrax attacks are an important wake-up call to an American public that, until recently, had not confronted the realities of biological terrorism. The attacks further energized ongoing governmental attempts to prepare for such a contingency. U.S. policymakers during the cold war were understandably worried about the potential for a nuclear war—the threat of biological weapons was a much lower priority when considering the potential devastation associated with an all-out nuclear confrontation between the superpowers.[8] Given hindsight, considering the lethality of biological weapons and the relative ease with which they can be acquired/produced, this may have been a mistake.

The balance of this chapter will examine the challenges to conventional views of individual civil liberties posed by responses and planned responses to biological attacks on the nation. As the anthrax attacks illustrate, a biological attack is an imminent threat to the United States and is an ideal instrument for terrorists. The variety of biological agents and forms of delivery make response planning a very difficult task. Among the instruments for mitigation are isolation, quarantine, and vaccination; however, these tools can be problematic when considering American notions of civil liberties.[9] The Model State Emergency Health Powers Act (Model Act) is assessed to gain insights into the dilemmas. The recent responses of various countries to severe acute respiratory syndrome (SARS) provide further

lessons. The authors conclude that the Model Act and the SARS experience indicate that disease-containment strategies must be more disease specific than provided for in current plans and training exercises.

Biological Weapons in History

Unlike nuclear weapons, biological weapons have been used throughout the centuries with little hesitation.[10] In 1346, Tartar forces attacking the city of Kaffa (now the city of Feodosia, Crimea) catapulted plague-ridden corpses over the walls of the city in hopes of causing a plague epidemic.[11] British forces used smallpox as a weapon to emasculate Indian forces that were loyal to the French during the French and Indian War (1754–1767).[12]

The twentieth century is rife with examples of the use of biological weapons and the devastation associated with them. In fact, the 2001 anthrax attacks were not the first deliberate use of biological weapons on American soil. During World War I, German saboteurs attempted to infect U.S. horses, cattle, and animal feed headed for Allied forces in Europe with glanders.[13] Japan had an extensive biological weapons program operating in occupied Manchuria from 1932 to 1945. Known as Unit 731 and composed of more than 3,000 scientists and 150 buildings, Japan's biological weapons program resulted in the deaths of over 10,000 prisoners and the attack of at least 11 Chinese villages using weapons such as plague, cholera, anthrax, and other pathogens.[14] Even after completion of the 1972 Biological Weapons Convention (BWC), signatory nations such as the Soviet Union and South Africa continued to produce biological weapons on a grand scale.[15] In fact, during the 1970s, 1980s, and 1990s, South Africa unleashed biological weapons to promote the interests of apartheid in the Rhodesian civil war as well as in other sub-Saharan African states such as Namibia and Mozambique. South Africa's apartheid government also contemplated utilizing biological weapons as both a tool of mass destruction and as a means of individual assassination within South Africa and across the globe as the African National Congress and Nelson Mandela gained in power.[16] The Soviet Union's secret biological weapons program never shut down and in fact increased following the 1972 BWC. The 1979 incident at Sverdlovsk (now Ekaterinburg, Russia), in which anthrax escaped from a biological weapons production plant killing sixty-six residents, exposed a program that many experts suspect continues to this day.[17]

To the present day, a number of countries persist in their efforts to acquire/produce biological weapons, including such pariah states as Iran, Libya, Syria, North Korea, and, until recently, Iraq.[18] Equally (and perhaps more) important are the efforts of rogue groups to acquire a biological weapons capability. Groups such as the Aum Shinrikyo doomsday cult in Japan and Al Qaeda have engaged in efforts (including an Aum Shinrikyo mission to Africa in an attempt to acquire Ebola) to gain such a capacity.[19] It

is likely that a great many more terrorist organizations are seeking such weapons.

For a host of reasons, biological agents are ideal instruments for terrorists or for nations that wish to launch a surreptitious attack on the United States. First, many such agents are indiscriminate in effect and many require no or only limited technologies for deployment. Also, an attack has a low threshold for success and major strategic consequences may be obtained with minimal cost. Many agents have high latency, can be easily spread (often by the victims themselves), and may be difficult to diagnose or treat. Particularly troubling is that detection of an attack may be slow, and as a consequence, mitigation strategies may only be evacuation and isolation—responses that will only enhance the intended terror. Prevention, deterrence, and defense strategies are extremely difficult and costly, and, in fact, there are so many varieties of agents available, and so many different ways each of these agents may be released, that most response strategies or plans may not be appropriate.

From a civil liberties standpoint, biological weapons pose a vexing problem to American policymakers, especially when one considers the great challenges of controlling a potential epidemic and ensuring the public's safety in the wake of a biological attack. During the mitigation phase of a biological incident, the personal liberties of individual American citizens and the needs of the various levels of government to protect the public will no doubt clash. Examining this potential conflict between the rights of the individual and the needs of the many will be the purpose of the rest of this chapter. Before examining the specific civil liberties/public health issues, the nature of the biological weapons threat must be more fully examined.

Biological Agents

Biological terrorism poses several unique challenges to governments that wish to protect their populations from epidemic disease. First, unlike other kinds of terrorist strikes, it may be days or weeks before the country is aware that it is under attack. With a chemical, nuclear, radiological, or conventional event, there will be a discernable event that alerts the public and emergency response personnel that an attack is underway (e.g., an explosion, bodies lying on the ground, fire, high radiation levels). With a biological attack the timetable for identifying the event will be significantly expanded. Diseases most likely to be used in a bioattack have incubation periods of anywhere between one and twenty-four days.[20]

After the disease becomes symptomatic there may be additional delays. Many biological agents resemble the flu in the early stages. Infected individuals may not seek medical attention because they underestimate the severity of their condition. Furthermore, once patients visit their physician or hospital there are additional potential sources of delay: Medical person-

nel may diagnose the patients as having the flu and send them home; patients may arrive at a variety of different hospitals and physicians' offices throughout the city, making it difficult to establish that there was an intentional bioterror attack rather than an isolated case of the disease; and hospitals, medical offices, and clinics may not communicate effectively with national authorities.[21] These factors may increase the impact of the biological attack as infected individuals go about their daily lives potentially spreading the disease throughout the community or across the globe.

An additional complicating factor of biological terrorism for governments to address is the panic and fear that accompany such events. Individuals may not know if they have been exposed and many may fear they were exposed. It may take weeks for officials to determine where the biological agent was actually released. Even if an individual was not in the area of the attack, the fear of contact with victims may keep people at home.[22]

Evidence of the panic that would ensue can be found in a recent naturally occurring epidemic of meningitis. In the spring of 2001, three students in Alliance, Ohio were diagnosed with meningitis. Panic ensued. About 5,800 school employees and students were vaccinated at school. Officials had to turn away some parents and other adults who wanted to get the shot.[23] Another 37,000 fearful citizens lined up to receive antibiotics just in case they had been infected.[24] During this incident, baseball and softball games, other athletic events, and various extracurricular activities were cancelled in the surrounding areas.[25] Schools closed, parents kept their children at home, and local physicians and pharmacies scrambled to keep up with the public demand for their services.[26] This public reaction to three cases of a disease that is not communicable through casual contact hints at the mass hysteria that may ensue in the face of any biological terror event.[27]

The challenge to local, state, and federal authorities during such public panic will be to restore calm. They will need to find ways to inform the public about the situation without worsening the fears of the people. Officials will also have to manage the masses of people that will rush to hospitals or medical offices in search of treatment.[28]

Finally, biological terrorism poses a significant threat in that there are a wide variety of agents that may be used. Each has its own symptoms, progression, mortality rate, and appropriate treatment. Hospitals that want to prepare for a biological terrorist attack are challenged in deciding what kinds of medicines will be best to stock and in what quantities to stock them. Antibiotics that would save individuals from plague may not have any impact on anthrax. A vaccine for smallpox will be of no use if terrorists choose to use Ebola or some combination of different diseases.[29] When public health services are facing constant funding shortfalls and running at 80 to 90 percent capacity, expenditures for supplies to respond to a potential biological terrorist attack are difficult to justify.

Government interactions with the public will also vary based on the kind of agent used. Each potential biological agent poses unique challenges to policymakers and emergency responders. Noncommunicable agents will

require minimal imposition on citizens' conventionally accepted rights as government agencies attempt to decontaminate private property and individuals. It may also require that government agencies intrude into the daily lives of citizens as they conduct a criminal investigation into the source of the contaminant and the perpetrators of the act.

However, the implications of the intentional dissemination of a communicable biological agent is much more significant. When a disease is communicable, issues of isolation, quarantine, and possibly vaccination—perhaps by force—are practically inevitable. This may take the form of asking potentially infected individuals to stay at home, locking infected individuals in or out of hospitals, restricting the movement of individuals in or out of cities or states with large infected populations, and requiring vaccination of the population. One expert has noted that:

> Large-scale biological attacks highlight the conflict between the normal civil rights consideration affecting interference with civil liberties, the law enforcement priorities necessary to obtain evidence and convictions, the need to take every possible measure to prevent follow-on attacks, the need to provide immediate emergency services, and long-standing problems in using U.S. intelligence assets to support defense and response inside U.S. territory when it may involve U.S. citizens.[30]

Compelling a terrified population to comply with these regulations will require officials to impose significantly on the civil liberties of the few in order to protect the health of the many.

Disease Containment and Civil Liberties Issues

Federal, state, and local governments have engaged in training exercises to better respond to a bioterror incident. Many of these simulation exercises have exhibited events quickly spinning out of control leaving a trail of panic, death, and gridlock, while government efforts to control the epidemic through traditional public health actions such as quarantine, mandatory vaccination, and travel restrictions proved to be inadequate in forestalling a health epidemic.[31]

Despite the growing number of exercises, most government officials and first responders lack practical experience in responding to a biological weapons attack. However, laudable efforts have been initiated to generate a nationwide set of procedures.[32]

The Model State Emergency Health Powers Act

The CDC, in cooperation with the Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities, authored a document de-

signed to bring more coherence to state public health laws and regulations: The Model State Emergency Health Powers Act. Originally released October 23, 2001, the revised version of the Model Act (December 21, 2001) has been used by thirty-seven state legislatures that have introduced legislation reforming state public health laws.[33] As of November 1, 2002, twenty-one states had passed legislation based on the Model Act.[34]

The purpose of the Model Act is to provide states with a framework for legislation that will make decision making more efficient following a biological event. Many state public health laws had not been updated since the turn of the last century. Furthermore, because public health laws in the various states have often varied widely, an efficient multistate response in the aftermath of a bioterrorist incident would be problematic where state health laws result in substantially different methods of response. Because of modern travel, diseases often spread quickly as infected individuals travel between states and countries.[35] Thus, some uniformity among state public health laws is needed in order to respond to public health crises more effectively.

Perhaps one of the greatest challenges for coordinating a response to a biological weapons attack is determining jurisdiction. Traditionally, states, and through them local governments, have "police powers" to "promote the public welfare by restraining and regulating private individuals' rights to liberty and uses of property."[36] This power is derived from the Tenth Amendment and at the core of the police power is the states' responsibility to promote public health.[37] Though responsibility for public health had historically rested with the states, in the twentieth century, the federal government increasingly encroached upon those powers.[38]

A major challenge for public health authorities in the event of a biological attack will be to sort out lines of authority and jurisdiction. A communicable biological agent that threatens to cross state lines is surely as much a federal concern as it is a concern of the state where the attack initially occurred, as well as of the state that will be impacted by the spread of the disease. It is also a state and federal crime and, depending upon the nature of the perpetrator(s), may be an act of war as well.[39]

Because of the nature of biological weapons, civil liberties will no doubt be curtailed in the aftermath of an attack. At the core of the Model Act reside issues of great relevance for personal liberties—issues such as isolation, quarantine, and vaccination. The following assesses those issues and outlines many of the civil liberties dilemmas posed by a biological attack.

Isolation, Quarantine, and Compulsory Vaccination

Although there are a number of passages in the Model Act with which civil libertarians could take exception, perhaps no section is more controversial or debated than Article VI: "Special Power During a State of Public Health Emergency: Protection of Persons." It is here that the tactics of isolation, quarantine, and vaccination are explicated. The Model Act defines *isolation*

as: "the physical separation and confinement of an individual or groups of individuals who are infected or reasonably believed to be infected with a contagious or possibly contagious disease from non-isolated individuals, to prevent or limit the transmission of the disease to non-isolated individuals."[40] It defines *quarantine* as: "the physical separation and confinement of an individual or groups of individuals, who are or may have been exposed to a contagious or possibly contagious disease and who do not show signs or symptoms of a contagious disease, from non-quarantined individuals, to prevent or limit the transmission of the disease to non-quarantined individuals."[41] Thus the difference between isolation and quarantine is whether individuals are thought to have been *infected* with a contagious disease versus individuals thought to have been *exposed* to a contagious disease. Regardless, isolation and quarantine involve mandatory confinement and separation of individuals from uninfected/unexposed individuals.

"The history of pestilence is the history of quarantine," and throughout history, the tactics of isolation, quarantine, and vaccination have been used in order to control health epidemics.[42] Perhaps at no time will these tactics be more important than when facing the potential devastation unleashed by a single biological weapon. The courts have acknowledged local, state, and federal governmental powers to isolate, quarantine, and forcibly vaccinate potentially exposed populations. The landmark 1905 U.S. Supreme Court case of *Jacobson v. Massachusetts* recognized the authority of state and local governments to vaccinate, quarantine, and isolate citizens, even against their will, if done for the common good of the population. The case involved an individual who refused a smallpox vaccination during a 1902 outbreak in the city of Cambridge, Massachusetts. The Court ruled that although the U.S. Constitution does guarantee individuals certain autonomy over their own individual health, when faced with the risks of spreading a communicable disease, governments do have authority to curtail individual liberties for the benefit of the public's health. As Justice Harlan stated, "upon the principle of self-defense, of paramount necessity, a community has the right to protect itself against an epidemic of disease which threatens the safety of its members."[43] The Court further noted that:

> There is, of course, a sphere within which the individual may assert the supremacy of his own will and rightfully dispute the authority of any human government, especially of any free government existing under a written constitution, to interfere with the exercise of that will. But it is equally true that in every well-ordered society charged with the duty of conserving the safety of its members the rights of the individual in respect of his liberty may at times, under the pressure of great dangers, be subjected to such restraint, to be enforced by reasonable regulations, as the safety of the general public may demand.[44]

Jacobson has since been cited as the legal justification for public health legislation that curtails liberties for the larger good in a variety of public health settings from quarantine of AIDS carriers in prisons, to control of

tuberculosis, to the passage of mandatory childhood vaccination laws.[45] Later courts have continued to rely on *Jacobson* to support state/local authority in public health regulations; only in cases where isolation/quarantine/vaccination decisions were made based on race or ethnicity were governmental actions found to be unconstitutional.[46]

In the event of a bioterrorist incident, especially one involving a communicable agent, public health officials will move quickly to control its spread through the traditional methods of isolation, quarantine, and vaccination. However, there is no one-size-fits-all instruction manual on how to mitigate a biological attack. Rather, response needs to be tailored in a disease-specific fashion, and planning should be made in such a way that response to a biological weapons attack is flexible enough to adapt to changing and unforeseen circumstances. In some cases, large-scale isolation, quarantine, and vaccination may be appropriate; in others, it may do more harm than good.

Learning from SARS

The spring 2003 outbreak of severe acute respiratory syndrome (SARS) provides public health communities and policymakers with an amazing opportunity to learn about the challenges that may be posed to American civil liberties in the event of a bioterrorist incident. SARS began in Guangong Province of China in November of 2002. By April 2003, it had spread throughout the world, causing thousands of cases of the illness and hundreds of fatalities. China, Hong Kong, Singapore, and Canada all had serious outbreaks of the disease. How these nations responded provides valuable lessons for consideration of civil liberties issues in a biological attack.

SARS is a useful case study to examine the potential impact of a bioterror incident. It is a communicable disease that has a two to seven day incubation period and initially exhibits flu-like symptoms.[47] These characteristics are shared with many known bioterror agents. As of April 2003, the Centers for Disease Control and Prevention published a mortality rate for the disease of 5.9 percent; however, by May 8, 2003, the World Health Organization established a 15 percent mortality rate for SARS—particularly frightening when compared with the 1918–19 Spanish influenza outbreak which killed more than 20 million people in 18 months with a mortality rate of 3 percent.[48] There is some question about the way that the disease is spread. Some individuals (dubbed "super-spreaders") produce an abundance of the virus and are highly contagious; however, most people contracting the disease are only moderately contagious and infect people only with whom they have close contact, including medical personnel.[49] In some cases, there is evidence that the disease may linger for as long as twenty-four hours on infected surfaces, and up to four days in human waste.[50]

Governmental Response to SARS

China has been criticized for concealing the spread of the disease and the extent of its impact on that country from November of 2002 through April of 2003. In January 2003, China acknowledged that there was an epidemic, but little effort was made to stop the spread of the disease within China or throughout the rest of the world. In fact, as late as April 7, the Chinese government was claiming that the disease was contained and life in China was normal.[51] Quarantine in China was not discussed extensively until the end of April 2003. At that time it was announced that 4,000 people living in Beijing alone were ordered to quarantine themselves. That action caused incidents of hoarding among those who felt that the government was preparing to initiate martial law.[52] By May 1, the quarantine figure had risen to 11,000 individuals, including workers and patients at 128 medical facilities around Beijing.[53] In a truly remarkable challenge to civil liberties, the Chinese government announced on May 16, 2003 that the death penalty would be a possible punishment for violating quarantine or "deliberately spreading" SARS.[54]

Through April 2003, Hong Kong suffered the second-highest number of cases and fatalities. In late March, a quarantine of 1,080 people who were believed to have had close contact with infected individuals was ordered. People were ordered to stay in their homes and were informed that failure to do so could bring a fine of approximately $650 and six months' imprisonment.[55] Members of the Amoy Gardens apartment complex's Block E, where the disease had produced an inordinate number of patients, were initially quarantined at home but were later moved to government-owned resorts so that their apartments could be disinfected. They were moved under armed guard.[56] Those under quarantine were required to stay at home and report in at regular intervals about their health. Once the quarantine was enacted, the government had to initiate a search to find families that had left the Amoy Gardens Block E complex in anticipation of the quarantine. Regional missing person units were given the task of finding the families that had fled. In part, this difficulty may have resulted from Hong Kong's announcement of a quarantine three days prior to its actual implementation. In all, 113 families from Block E left in advance of the quarantine order. Most of those families gave themselves up voluntarily, but fifty-eight required special efforts by the government to locate them.[57]

Of the known actions to try to control the spread of the disease, those taken by Singapore likely are the most objectionable to traditional American notions of civil liberties. Individuals placed under quarantine in Singapore were initially asked to enter quarantine for the good of society. Once an individual violated that quarantine order, the government's efforts to control the spread of disease became more invasive. As the disease progressed, Internet-linked cameras were issued to supervise those under quarantine. Those with the cameras were expected to turn on the camera at specific intervals and report their health status to monitors. Violators were charged $2,840 for the first offense and $5,663 for the second.[58] Electronic

bracelets normally used to monitor individuals who were under house arrest were also imposed on those who did not comply with the orders. In spite of such penalties, several people violated home quarantine. By April 23, Singapore announced that prison isolation was ordered for repeat offenders.[59] Finally, thermal-imaging scanners were used at all major entry points to detect the presence of fever in individuals. A goal of Singapore authorities was to distribute digital thermometers to all school children and households so that every resident could monitor his or her temperature daily for the foreseeable future.[60]

Canada experienced more incidences of SARS than any other country outside of Asia. By April 20, 2003, Canada had quarantined 10,000 and placed 1,500 Toronto residents in home isolation. Canada also took an extraordinary step in the case of a public health official who had come into contact with an infected individual and failed to comply with the quarantine order. The Ontario Superior Court of Justice issued what is known as a Section 35 order, which authorized police to forcibly escort the individual to a mandatory quarantine in a secure hospital. The order also carried a fine of $5,000 for each day the man remained at large.[61] In another case, an employee of Hewlett-Packard continued to go to work in spite of receiving a quarantine order. After he became symptomatic and infected another worker, all 200 employees at the firm had to be quarantined.[62] Toronto authorities also considered the use of electronic monitoring devices for those who break the quarantine.[63] Public health officials placed at least one person under police guard in the hospital and hired private security firms to check on those in isolation.[64] In another major move, Ontario health officials purchased a full-page ad in all major newspapers requesting that anyone with even one symptom of the disease quarantine him or herself for at least a few days until the symptoms had passed. Tony Clement, Ontario's health minister, was quoted as saying "This is a time when the needs of a community outweigh those of a single person."[65]

The impact of the disease on the United States has been relatively limited, with only thirty-seven reported cases, most of whom traveled to Asia or cared for someone with the disease.[66] As of this writing, no Americans have died of the disease. However, on April 4, 2003, President Bush signaled the seriousness of the disease's spread when he signed Executive Order 13295, which revised the U.S. list of quarantinable diseases to include SARS. This marked the first time that the list had been expanded since the addition of Ebola in 1983.[67] However, primarily due to the slight impact on the United States, the national response has been rather limited and has included voluntary cancellation of business and educational trips to Asian locations, the screening of patients entering the U.S. from Asian locations, and voluntary quarantine of a relatively small number of people. Some states have taken a more aggressive response to the issue of quarantine even in advance of the SARS epidemic. In December 2002, Washington state passed regulations that allow for mandatory quarantine for those who are exposed to infectious diseases or mandatory isolation for those who are sympto-

matic. In such cases, police are required to support public health officials and will need no court order to do so. The new regulations actually served to address civil rights concerns about the existing state laws, which some believed violated the due process rights of individuals.[68]

Lessons From SARS

Several important conclusions relevant to a potential bioterrorist attack can be drawn from the above case studies. First, it must be recognized that SARS provides us with insight into the potential impact that fear of a spreading disease may have on a society.[69] In fact, the fear of disease may have a greater impact than the disease itself. SARS is frightening because it is an incurable new disease that is rapidly traversing the globe. Smallpox, Marburg virus, Ebola, and other potential biological agents may be expected to have a comparable impact. Interestingly, the impact of SARS has been geographically limited as compared to common, endemic diseases such as influenza, which kills about 36,000 globally each year, and malaria, which kills approximately 3,000 African children daily.[70] As of this writing, SARS had killed fewer than 1,000 people; however, the impact of the disease on the international economy and individuals' perceptions of their safety is undeniable.[71]

SARS also illustrates that the vast majority of individuals will voluntarily comply with quarantine and isolation orders. As one man in Singapore stated, "it is no longer a matter of privacy. It is a matter of national security."[72] Only a very small proportion of those quarantined have violated the order. When violations have happened, they have largely been based on economic worries (e.g., individuals felt the need to continue working) or on health concerns.

Civil liberties issues are clearly evident in each country where SARS has been spreading. The institution of quarantine, whether voluntary or forced, necessarily infringes on the liberties of the individual. Isolation of individuals who are obviously ill or showing symptoms is rarely problematic. However, placing people under quarantine merely because they have been exposed to someone who has the disease, or someone who was around someone with the disease, just in case they caught it, is far more problematic.[73] For instance, a flight attendant in Singapore was harshly criticized by a neighbor who thought she should put herself under quarantine because she sometimes flew to Hong Kong. The flight attendant declared, "She has no right to demand that I be quarantined as I'm not sick. I have a job to do and a rice bowl to keep. If SARS goes on for the next six months and I stop work because of it, how do I feed my children?"[74] Such reactions may be common in a bioterror incident. It is difficult to convince people that they should disrupt their lives, stay home from work, and cut themselves off from society just in case they have contracted the disease. For this reason, it may be necessary that government intervene with more forcible options than voluntary quarantine.

Toward a Disease-Specific Containment Strategy

It is clear that subnational governments and public health officials are not well prepared to encounter an attack with biological agents. Funds allocated by Congress to improve preparedness at the subnational level are only slowly reaching state and local planners. In many cases, cities and states cannot afford to devote significant time or other resources to develop plans or exercise those plans without assistance from Washington, D.C.[75]

While the Model State Emergency Health Powers Act may help states prepare for a bioterror incident, it does not provide sufficient structure for state plans. Furthermore, it pays insufficient attention to the diversity of biological agents that may be used and the differing efforts that would be required to contain the spread of such diseases. Instead, the Model Act provides a one-plan-fits-all strategy that is inconsistent with the wide variation in disease characteristics.[76]

A different approach is required to become more prepared to encounter diverse agents. The recommended approach would be guided by the characteristics of specific diseases. Some diseases such as smallpox would require isolation, quarantine, and vaccination, and perhaps other intrusive measures to halt the spread of the disease. Others, such as Ebola or Marburg, require isolation of infected individuals but have no quarantine requirement. Finally, others such as anthrax or cholera require neither quarantine nor isolation but have a significant requirement for decontamination.

The authors propose a nationally sponsored plan that would identify for states and localities the differing requirements for specific types of agents that may be used. What is recommended is a "policy pack" that could be implemented piecemeal and broken down into parts, depending upon the specific disease that was spreading. A direction guide would be provided that would instruct the localities on what response measures were required for each disease. For instance, if smallpox were used in a terrorist attack, the local response officials could turn to the appropriate page and find which elements of the policy will be relevant to smallpox. They would be directed to gather the policies on inoculation, isolation, quarantine, and communicating with the public. Had the disease instead been anthrax, they would be directed to the sections for decontamination, distribution of antibiotics, and communicating with the public.

The challenge of developing a response plan that can be implemented across states is striking a balance between providing too much autonomy and providing too much guidance and direction. States need to have the freedom to draft and implement response plans that are appropriate to local conditions, including population demographics, existing medical infrastructure, and the number of personnel that are trained to assist in the response effort. The recommended approach would allow policymakers to achieve that kind of balance.

In terms of civil liberties, the plans would require the participation of first responders, public health officials, and other legal authorities from cities and states to assist in planning for quarantine breakers and the potential need for

mass quarantine. While it is unlikely that public health officials would intentionally plan to violate civil liberties, providing legal representation to the planning process would help protect against inadvertent violation.[77] Furthermore, criminal justice structures of states and cities would be called upon to control potentially hysterical populations in the aftermath of a bioterror event. Informing them of the plans after the tragedy occurs could cause a breakdown in public order and, at a minimum, complicate their participation in response efforts.[78]

The nature of disease containment requires government to intervene in the lives of its citizens. A major bioterror incident would necessitate government action to protect society from the actions of the few individuals that would likely attempt to go about their daily lives even if they had been contaminated with a truly terrible disease. Today, American government at all levels is unprepared to face and mitigate the consequences of such activities. Careful planning before such an event is the only hope to avoid significant panic, public disorder, and a public health epidemic. Given the American sense of civil liberties, it is likely that public health authorities in the United States would encounter resistance to attempts to quarantine, isolate, and forcibly vaccinate individuals in the interest of public health. A strong and adaptable policy pack that anticipates the potential ways that such efforts may impinge upon American notions of civil liberties will aid officials in coping with the terror that would doubtless ensue.

Chapter 5

1. For our definition of bioterrorism or biological weapons attack, we borrow from Gostin et al.: "the intentional use of a pathogen or biological product to cause harm to a human, animal, plant, or other living organism to influence the conduct of government or to intimidate or coerce a civilian population." See Lawrence O. Gostin et al., "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, no. 5 (August 7, 2002): 622–8.
2. For example, it took well over a year and $100 million to clean up two mail processing facilities in Brentwood, D.C. and Hamilton, NJ. The Brentwood project alone was "the most ambitious reclamation of a biohazardous building in U.S. history." See Manny Fernandez, "A Patient Assault on Anthrax," *Washington Post*, 18 December 2002, p. A1. See also Daniel B. Jernigan et al., "Investigation of Bioterrorism-Related Anthrax, United States, 2001: Epidemiologic Findings," *Emerging Infectious Diseases* 8, no. 10 (October 2002): 1019–28 and Thomas V. Inglesby et al., "Anthrax as a Biological Weapon, 2002: Updated Recommendations for Management," *Journal of the American Medical Association* 288, no. 17 (May 1, 2002): 2236–52.
3. Joshua A. Mott et al., "Call-Tracking Data and the Public Health Response to Bioterrorism-Related Anthrax," *Emerging Infectious Diseases* 8, no. 10 (October 2002): 1088–92.
4. Previous acts of biorelated domestic terrorism have been perpetrated on U.S. soil, but not to the magnitude seen with the anthrax attacks of 2001. For example, in 1984, a religious cult intentionally contaminated a number of salad

bars with *Salmonella* in The Dalles, Oregon, in an attempt to impact the November 6 local elections. Though a total of 751 individuals were afflicted with gastroenteritis following the attack, no one died and details of the attack did not emerge for years. For details see Judith Miller, Stephen Engelberg, and William Broad, *Germs: Biological Weapons and America's Secret War* (New York: Simon and Schuster, 2001) and Thomas J. Torok et al., "A Large Community Outbreak of Salmonellosis Caused by Intentional Contamination of Restaurant Salad Bars," *Journal of the American Medical Association* 278, no. 5 (August 6, 1997): 389–95.

5. "Biological Diseases/Agents List," Centers for Disease Control and Prevention. Available at http://www.bt.cdc.gov/Agent/agentlist.asp.
6. Mark Kortepeter et al., eds., *USAMRIID's Medical Management of Biological Casualties Handbook*, 4th ed. (Fort Detrick/Frederick, MD: U.S. Army Medical Research Institute of Infectious Diseases, February 2001). Available at http://www.usamriid.army.mil/education/bluebook.html.
7. See Gina Kolata, *Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused It* (New York: Touchstone, 1999).
8. Christopher J. Davis refers to this oversight as "nuclear blindness." See Christopher J. Davis, "Nuclear Blindness: An Overview of the Biological Weapons Programs of the Former Soviet Union and Iraq," *Emerging Infectious Diseases* 5, no. 4, (July-August 1999): 509–12.
9. The Federal Emergency Management Agency defines mitigation as "To cause something to become less harsh or hostile, to make less severe or painful." Available at http://www.fema.gov/doc/fima/how1_appendix_a.doc (retrieved April 24, 2003).
10. For a comprehensive list of the use of biological weapons in history, see "Chronology of State Use and Biological and Chemical Weapons Control," *Center for Non-Proliferation Studies, Monterey Institute of International Studies*. Available at http://cns.miis.edu/research/cbw/pastuse.htm (retrieved January 21, 2003).
11. This did, in fact, result in the conquest of Kaffa, as well as perhaps the second plague pandemic (known more commonly as the Black Death) as a result of ships carrying plague-infected refugees and possibly rodents to major Mediterranean ports such as Constantinople, Genoa, and Venice. See George W. Christopher et al., "Biological Warfare: A Historical Perspective," *Journal of the American Medical Association* 278, no. 5, (August 6, 1997) and Kortepeter et al., *USAMRIID's Medical Management of Biological Casualties Handbook*. See also Norman F. Cantor, *In the Wake of the Plague: The Black Death and the World It Made* (New York: Perennial, 2001).
12. One particular incident involved the British Army purposely giving two smallpox-tainted blankets and a handkerchief to a delegation of Delaware Indians at Fort Pitt in an attempt to spread the disease among the native peoples. See Jonathan B. Tucker, *Scourge: The Once and Future Threat of Smallpox* (New York: Grove Press, 2001), Christopher et al., "Biological Warfare: A Historical Perspective," and Kortepeter et al., *USAMRIID's Medical Management of Biological Casualties Handbook*.
13. Christopher et al., "Biological Warfare: A Historical Perspective," and Kortepeter et al., *USAMRIID's Medical Management of Biological Casualties Handbook*.
14. Christopher et al., "Biological Warfare: A Historical Perspective," and Tom Mangold and Jeff Goldberg, *Plague Wars: The Terrifying Reality of Biological Warfare* (New York: St. Martin's Griffin, 1999).

15. The official name for the BWC is the "1972 Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological and Toxin Weapons and on Their Destruction."
16. Mangold and Goldberg, *Plague Wars*.
17. Christopher et al., "Biological Warfare: A Historical Perspective," and Kortepeter et al., *USAMRIID's Medical Management of Biological Casualties Handbook*. See also Ken Alibek and Stephen Handelman, *Biohazard* (New York: Delta Trade Publications, 1999).
18. For a comprehensive list of the current possession of biological weapons, see "Chemical and Biological Weapons: Possession and Programs Past and Present," *Center for Non-Proliferation Studies, Monterey Institute of International Studies*. Available at http://cns.miis.edu/research/cbw/possess.htm (retrieved January 21, 2003). See also the "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions," Central Intelligence Agency. Available at http://www.cia.gov/cia/publications/bian/bian_jan_2002.htm (retrieved January 21, 2003).
19. For examination of Aum Shinrikyo efforts, see David E. Kaplan and Andrew Marshall, *The Cult at the End of the World* (New York: Crown Publishers, 1996), pp. 96–97. For evidence of Al Qaeda's attempts, see such articles as Michael Gordon, "U.S. Says It Found Qaeda Lab Being Built to Produce Anthrax," *New York Times*, 23 March 2002 and Bill Gertz, "U.S. Says Al Qaeda Exploring Russian Market for Weapons," *Washington Times*, 8 October 2002.
20. Terry Gander, ed., *Jane's NBC Protection Equipment, 1996–97* (Alexandria, VA: Jane's Information Group Inc., 1997).
21. Jeff Nesmith, "Nation Ill-Prepared for Warfare against Germs," *Palm Beach Post*, 31 August 1998; Laurie Garrett, "The Nightmare of Bioterrorism," *Foreign Affairs* (2001): 77; and Scott Nance, "Expert: Government Should Build Complex Chem-Bio Warning Network," *Defense Week*, 24 June 2002.
22. E.g., see Harry C. Holloway et al., "The Threat of Biological Weapons: Prophylaxis and Mitigation of Psychological and Social Consequences," *Journal of the American Medical Association* 278, no. 5 (August 6, 1997): 425–7.
23. Tracy Wheeler and Andale Gross, "Thousands Vaccinated Against Meningitis," *Akron Beacon Journal*, 11 June 2001.
24. Cheryl Powell and Dave Ghose, "About 37,000 Line up for Drugs to Prevent Meningitis," *Akron Beacon Journal*, 7 June 2001.
25. Andale Gross, "Many Stark Sports Groups Cancel Practices, Games," *Akron Beacon Journal*, 7 June 2001.
26. Andale Gross and Barbara Galloway, "Disease Scare Alters Everyday Life," *Akron Beacon Journal*, 5 June 2001.
27. Additional evidence of this tendency toward hysteria can be found in the anthrax attacks of 2001, in the reaction to West Nile Virus when it entered the U.S. in 1999, and in the international response to SARS in early 2003.
28. E.g., see Holloway et al., "The Threat of Biological Weapons."
29. In fact, many biological weapons have no antitdote or vaccine that prevents or cures them. These include a class of genetically modified (GM) weapons that have been manipulated by biological weapons scientists to increase virulence, morbidity, and other characteristics. Included in this class of genetically modified weapons are so-called chimeras or biococktails, which combine two distinct weapons (e.g., smallpox and Ebola), as well as genetically modified

variants of standard biological weapons (e.g., GM smallpox strains that are resistant to the smallpox vaccine; anthrax strains which are highly antibiotic resistant). See Mangold and Goldberg, *Plague Wars*; Miller, Engelberg, and Broad, *Germs*.

30. Anthony Cordesman, "Biological Warfare and the 'Buffy Paradigm,'" Center for Strategic and International Studies, September 29, 2001, p. 33. Available at http://csis.org/burke/hd/reports/Buffy012902.pdf.
31. Some scenario-based training exercises include: the "Dark Winter" simulation of a smallpox attack on the U.S. staged by the Johns Hopkins Center for Civilian Biodefense Studies in June of 2001 and "TOPOFF," which was a series of exercises held by the Department of State and Department of Justice in May 2000 and May 2003 to better train top U.S. government officials to respond to a weapons of mass destruction attack.
32. For our purposes, *public health system* will be defined as "the organized system of federal, state, and local governmental authorities with primary responsibility for the health of the community." See Lawrence O. Gostin, "The Resurgent Tuberculosis Epidemic in the Era of AIDS: Reflections on Public Health, Law, and Society," *Maryland Law Review* 54 (winter 1995) 45.
33. For a copy of the Model Act, see "The Model State Emergency Health Powers Act," *Center for Law and the Public's Health, Georgetown and Johns Hopkins Universities*. Available at http://www.publichealthlaw.net (retrieved January 21, 2003).
34. See "The Model State Emergency Health Powers Act: State Legislative Activity," *Center for Law and the Public's Health, Georgetown and Johns Hopkins Universities*. Available at http://www.publichealthlaw.net (retrieved January 21, 2003).
35. The recently discovered Severe Acute Respiratory Syndrome (SARS) provides a good example of the rapidness with which disease spreads in modern society. Beginning November 16, 2002, China reported the first cases of an atypical pneumonia that sometimes results in death, now known as SARS, to the World Health Organization (WHO). By February 2003, SARS had spread to several other Asian countries and by March had traveled to North America. According to the WHO, as of May 8, 2003, 7,053 cases of SARS had been reported, resulting in 506 deaths, and was present in 33 countries including China (4698), Hong Kong (1661), Singapore (204), Canada (146), Taiwan (131), Vietnam (63), and the United States (63). Since the disease has a mortality rate of 15 percent and has spread to other continents in a short period of time, SARS shares many characteristics with known bioweapons. In comparison with smallpox, a highly communicable disease with a 30 percent mortality rate and a known weaponized disease, SARS represents the tip of a very alarming iceberg in terms of global spread of disease. For current information about SARS, see both the CDC (www.cdc.gov) and WHO (www.who.int) websites.
36. James G. Hodge, Jr., "Implementing Modern Public Health Goals through Government: An Examination of New Federalism and Public Health Law," *Journal of Contemporary Health Law & Policy* 14 (fall 1997): 100.
37. Hodge, "Implementing Modern Public Health Goals through Government," p. 101–2.
38. Beginning with the Federal Maternity and Infancy Act of 1922, the monopoly that states held on public health powers began to crumble. It is no surprise that following the tenure of President Franklin D. Roosevelt, the Supreme Court and Congress would reinterpret the national government's role in public health, via

the Commerce Clause, thus granting the federal government "national police powers." The federal government, through grants, regulations, and the creation of federal public health agencies such as the Centers for Disease Control and Prevention and Food and Drug Administration, among others, now impacts many areas of the public health that were once the sole province of the states, including air and water quality, food and drug safety, consumer product safety, occupational health and safety, and disease control, research, and epidemiology. See Hodge, "Implementing Modern Public Health Goals through Government," pp. 106–7.

39. George J. Annas, "Bioterrorism, Public Health, and Civil Liberties," *New England Journal of Medicine* 346 no. 17. (April 25, 2002): 1337.
40. "The Model State Emergency Health Powers Act," *Center for Law and the Public's Health*, p. 10.
41. "The Model State Emergency Health Powers Act," *Center for Law and the Public's Health*, p. 11.
42. John A. Gleason, "Quarantine: An Unreasonable Solution to the AIDS Dilemma," *University of Cincinnati Law Review* 55 (1986): 220.
43. *Jacobson v. Massachusetts*, 197 U.S. 11 (1905).
44. *Jacobson v. Massachusetts*, 197 U.S. 11 (1905).
45. E.g., see George J. Annas, "Control of Tuberculosis: The Law and the Public's Health," *The New England Journal of Medicine* 328 (February, 25 1993): 585–88; Gleason, "Quarantine"; James G. Hodge and Lawrence O. Gostin, "School Vaccination Requirements: Historical, Social, and Legal Perspectives," *Kentucky Law Journal* 90 (2001/2002); Paula Mindes, "Tuberculosis Quarantine: A Review of Legal Issues in Ohio and Other States," *Journal of Law and Health* 10 (1995/1996); Wendy E. Parmet, "Aids and Quarantine: The Revival of an Archaic Doctrine," *Hofstra Law Review* 14 (fall 1985); Kristine M. Severyn, "Jacobson v. Massachusetts: Impact on Informed Consent and Vaccine Policy," *The Journal of Pharmacy and Law* 5 (1995).
46. In the case *Wong Wai v. Williamson et al.* (103 F. 1 [1900]), the U.S. Circuit Court for the Northern District of California found that a mandatory vaccination program instituted by the board of health of the city and county of San Francisco, which targeted only Chinese residents of San Francisco, violated the equal protection clause of the Fourteenth Amendment. In a related case that followed, *Jew Ho v. Williamson et al.* (103 F. 10 [1900]) the same court found that a quarantine imposed based solely on race again violated the equal protection clause of the Fourteenth Amendment. Thus, though state and local governments are granted great leeway in terms of their authority to impose isolation, quarantine, and vaccination, that authority disappears if these measures are applied in a discriminatory fashion, at least concerning race, ethnicity, or religion. See also Parmet, "Aids and Quarantine."
47. "Preliminary Clinical Description of Severe Acute Respiratory Syndrome," *Morbidity and Mortality Weekly Report*. Available at www.cdc.gov/mmwr/preview/mmwrhtml/mm5212a5.htm (retrieved April 11, 2003).
48. The 15 percent mortality rate includes a 50 percent or greater chance of death in persons age sixty-five and older. "Frequently Asked Questions," Centers for Disease Control and Prevention. Available at http://www.cdc.gov/ncidod/sars/faq.htm (retrieved on April 24, 2003); Lawrence K. Altman, "W.H.O. Doubles Its Estimate of Death Rate From SARS," *New York Times*, 8 May 2003; Rob Stein and Ceci Connolly, "Estimated SARS Death Rate Rises to 15 Percent," *Washington Post*, 8 May 2003.

49. E.g., see M. A. J. McKenna, "Super-Spreaders Fan SARS Fears: Scientists Probe Why Some Infect So Many," *Atlanta Journal Constitution*, 27 April 2003 and Philip P. Pan, "A 'Superspreader' of SARS: How One Woman Touched Off Beijing Outbreak," *Washington Post*, 29 May 2003. See also Michael D. Lemonick and Alice Park, "The Truth About SARS," *Time* (May 5, 2003).
50. Rob Stein, "SARS Virus Revealed to Be a Tough Survivor," *The Guardian (London)*, 8 May 2003; "SARS—Experts Say Virus May Be More Contagious Than First Thought," *AFX News Limited*, 2 April 2003.
51. "SARS Spread Contained—Premier," *China Daily*, 7 April 2003.
52. John Pomfret, "China Seals Hospitals to Fight SARS," *Washington Post*, 25 April 2003.
53. Catherine Armitage and Glenda Korporaal, "Beijing Hospitals Sealed Off as Crisis Gets Worse," *The Australian*, 29 April 2003; "More Than 11,000 Quarantined in Capital," *South China Morning Post (Hong Kong)*, 1 May 2003.
54. Gady A. Epstein, "China Revives Intrusive Practices for SARS," *Baltimore Sun*, 20 May 2003 and "China Threatens the Death Penalty for Deliberately Spreading SARS," *Los Angeles Times*, 16 May 2003.
55. Cannix Yau and Michael Ng, "Tung Orders Quarantine," *The Standard*, 29 March 2003.
56. Matthew Lee and Cannix Yau, "300 Moved to Camps," *The Standard,* 2 April 2003.
57. Michael Ng, "Hung On For 58 Families," *The Standard*, 5 April 2003.
58. "Singapore Puts 740 in Home Quarantine," *China Daily*, 26 March 2003. See also Natalie Soh Wong Sher Maine, "Electronic Tag for Offender," *The Straights Times*, 13 April 2003.
59. Bertha Henson, "Government Draws Up Virus Battle Plan," *The Straights Times*, 20 April 2003.
60. Richard C. Paddock, "A Hotbed of SARS Warfare," *Los Angeles Times*, 8 May 2003
61. Michael Friscolanti and Mary Vallis, "Nine New Cases Appear; 23 Patients Released; Court Orders Two Suspected Carriers into Forced Isolation," *Ottawa Citizen*, 5 April 2003.
62. Betsy Powell, "Another 1,268 in Quarantine," *Toronto Star*, 10 April 2003 and Anita Manning, "In Crisis Mode," *USA Today*, 10 April 2003.
63. Erika Niedowski, "Toronto Sees Setbacks in SARS Battle; Some Refusing to Comply with Quarantine Orders," *The Baltimore Sun*, 14 April 2003 and Helen Branswell, "You Don't Want to Cause Panic . . . It's a Tough Time," *Toronto Star*, 17 April 2003.
64. Lawrence Altman, "Fearing SARS, Ontario Urges Wider Quarantines," *The New York Times*, 18 April 2003.
65. Altman, "Fearing SARS, Ontario Urges Wider Quarantines."
66. "Cumulative Number of Reported Probable Cases of Severe Acute Respiratory Syndrome," World Health Organization. Available at http://www.who.int/csr/sarscountry/2003_04_24/en (retrieved on April 25, 2003); U.S. Centers for Disease Control and Prevention, "Frequently Asked Questions." Available at http://www.cdc.gov/ncidod/sars/faq.htm#outbreak (retrieved on April 25, 2003).
67. Rob Stein, "Bush Puts New Disease on U.S. Quarantine List," *The Washington Post*, 5 April 2003 and M. A. J. McKenna and David Wahlberg, "Outbreak Patients Could Be Isolated," *The Atlanta Journal-Constitution*, 5 April 2003.
68. Carol Ostrom, "Trips to Asia Trigger SARS Jitters," *The Seattle Times*, 6 April 2003.

69. E.g., see Holloway et al., "The Threat of Biological Weapons."
70. E.g., see "Malaria is Alive and Well and Killing More Than 3,000 African Children Every Day," World Health Organization. Available at http://www.who.int/mediacentre/releases/2003/pr33/print.html (retrieved April 29, 2003).
71. For examples of articles on the economic impact of SARS, see Bayan Rahman and Mariko Sanchanta, "Japan Escapes SARS but Not Its Effect," *Financial Times*, 8 May 2003; Doug Struck, "Virus Takes Toll on Asian Dynamos," *Washington Post*, 26 April 2003. For information on the social and psychological consequences of bioterrorism, see Holloway et al., "The Threat of Biological Weapons."
72. Nawaz Marican, "Webcam Check on Singapore Suspects," *South China Morning Post* 22 April 2003.
73. See Annas, "Bioterrorism, Public Health, and Civil Liberties," p. 1337; Joseph Barbera et al., "Large-Scale Quarantine Following Biological Terrorism in the United States: Scientific Examination, Logistic and Legal Limits, and Possible Consequences," *Journal of the American Medical Association* 286, no. 5 (December 5, 2001): 2711–7.
74. Theresa Tan, "Fear . . . Anxiety . . . Optimism," *The Straits Times*, 7 April 2003.
75. E.g., see Dale Russakoff and Rene Sanchez, "Begging, Borrowing for Security: Homeland Burden Grows for Cash-Strapped States, Cities," *Washington Post*, 1 April 2003.
76. Barbera et al. argue that "political leaders . . . need to understand that a single strategy for limiting the spread of all contagious diseases is not appropriate and will not work." Barbera et al., "Large-Scale Quarantine Following Biological Terrorism in the United States."
77. Richard E. Hoffman, "Preparing for a Bioterrorist Attack: Legal and Administrative Strategies," *Emerging Infectious Diseases* 9, no. 2, (February 2003): 241–5.
78. Holloway et al., "The Threat of Biological Weapons."