Chapter 12
Public Health Law and Biological Terrorism

Lance Gable and James G. Hodge, Jr.

12.1 Introduction

The recent emergence of new disease threats has acted as a powerful reminder of the dangers that infectious biological agents can pose to the population. Over the past decade, public health and medical communities have been challenged by several novel infectious disease outbreaks. Some of these outbreaks have been naturally occurring, such as the international SARS outbreak in 2003 [1]. Other outbreaks originated from biological agents that were intentionally released into the population, such as the anthrax letters sent to several persons in the United States in the fall of 2001 [2]. These incidents, as well as simulated bioterrorism exercises such as Dark Winter and the TOPOFF drills, have led to increased awareness of potential shortcomings of our public health and health-care systems to respond to emerging disease threats [3–7]. The specter of future outbreaks has prompted Americans to consider a number of legal and ethical issues associated with preparation for and response to biological terrorism.

Bioterrorism involves the intentional use of an infectious agent (e.g., micro-organism, virus, infectious substances, or biological product) to cause death or disease in humans, plants, or other organisms to negatively influence the conduct of government or intimidate a population [8]. Infectious agents provide an attractive tool for potential terrorists. Unlike explosives, bombs and other conventional weapons of terror, the bioterrorist's weapon is often less expensive to obtain, easier to smuggle, easier to spread across a wide segment of the population, and in some cases easier to deploy. Moreover, a highly infectious microorganism can spread rapidly across borders and boundaries, affecting multiple areas. The invisibility of biological weapons further adds to their ability to create fear and havoc. Biological agents may be difficult to detect until after they have exacted serious damage. Most experts agree that there is a plausible risk in the United States of a large-scale bioterrorism attack that could

L. Gable
Assistant Professor of Law, Wayne State University Law School, 471 W. Palmer, Detroit, MI 48202, USA
e-mail: lancegable@wayne.edu

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result in significant illnesses or casualties [9–17]. Consequently, proactive preparations for bioterrorism, even more so than other types of terrorism, involve systematic planning, ongoing training, and redistributions of resources.

The prospect of bioterrorism has galvanized widespread support for improved preparedness within federal, state, and local governments and the health care sector throughout the United States. These efforts have targeted a wide range of relevant and intersecting areas. Strengthening the public health workforce, infrastructure, and capacity available to respond to an outbreak associated with biological terrorism, is critical. Policy-makers have responded by increasing training and funding to these areas [18–20]. Similarly, planners within the public and private sectors have established tactics and procedures to respond to various emergency scenarios. These plans frequently consider methods to improve communications between various emergency responders and others who must have sufficient capability to contact each other in an emergency situation. Preparedness planning efforts targeting bioterrorism have occurred concurrently with initiatives to bolster public health infrastructure for other public health emergencies including natural disasters (e.g., hurricanes) and naturally occurring disease outbreaks (e.g., pandemic influenza). Finally, preparedness planners have considered some of the ethical concerns raised by bioterrorism attacks and their potentially devastating consequences.

A foundational component of these preparedness efforts has been the potential modernization of state and federal public health and emergency response laws. Law is a critical component of a well-developed public health system [21]. Public health law grants public health agencies powers to detect, track, prevent, and contain health threats resulting from bioterrorism and other public health emergencies. However, many existing public health and emergency response laws at the state and federal levels may not be sufficient to address biological terrorism. These laws often do not grant public health authorities the necessary powers to stop an outbreak. Public health laws vary widely across different jurisdictions. As a result, the legal powers ascribed to public health officials may be different in scope and function in different locales. These laws are also commonly targeted to specific diseases or conditions that may not relate to emerging threats [22].

Public health powers typically lie at the state and local levels of government. The federal government plays a more limited role for practical and legal reasons. Public health falls within the state's police powers, an area of state power traditionally reserved to the states under the Tenth Amendment to the United States Constitution [23]. The federal government will normally become involved in localized public health matters only at the request of the state or if the disease has the potential to cross state or international borders, or affect interstate interests. From a practical perspective, this gives state and local officials greater autonomy to enact laws and policies conducive to the needs of their communities, without interference from the federal government.

Responses to bioterrorism, however, will almost certainly involve the federal government, since an infectious disease will rarely be contained within the

borders of one state. Indeed, an outbreak may traverse international boundaries as well, which would clearly entail the input of the federal government. Bioterrorism implicates additional concerns beyond public health, including national security and law enforcement considerations. Federal public health and legal authorities may specifically respond to multiple components of a bioterrorism attack, as well as offer guidance and expertise to assist state and local governments in their responses. Thus, responses to bioterrorism require sufficient legal powers at both the federal and state levels, in addition to a well-conceived plan for coordinating these powers to maximize public benefit.

The debate around bioterrorism preparedness has raised salient questions about the role of law in responding to biological threats, highlighted by inherent tensions between protecting the public and upholding individual rights of liberty, privacy, and freedom of association [24]. Balancing these goals requires difficult choices that are further complicated when public health laws are unclear, poorly drafted, or confusing. To assist state and local law- and policy-makers, public health law scholars at the Center for Law and the Public's Health at Georgetown University Law Center and the Johns Hopkins Bloomberg School of Public Health drafted two model state public health acts. The Model State Emergency Health Powers Act (MSEHPA) was drafted quickly after September 11, 2001, with input from the Centers for Disease Control and Prevention (CDC) and multiple national partner organizations [25, 26]. Completed on December 21, 2001, MSEHPA has served as a valuable template for states to modernize their public health laws to address public health emergencies, including emergencies caused by bioterrorism. It provides a modern framework for public health powers, authorizing state and local authorities to engage in a range of activities to address a public health emergency. These measures may restrict temporarily the liberty or property of affected individuals or groups to protect the public's health [27]. To date, 44 states and the District of Columbia have introduced bills based on some or all of the provisions of the MSEHPA, and 38 states and the District of Columbia have passed their respective bills [28].

The Turning Point Model State Public Health Act (Turning Point Act) (completed on September 16, 2003) provides a more comprehensive prototype for state public health law reform [29]. It covers a broad array of topics that extend well beyond emergency situations, including (1) defining and authorizing the performance of essential public health services and functions; (2) improving public health infrastructure; (3) encouraging cooperation between public and private sectors on public health issues; and (4) protecting the privacy of identifiable data acquired, used, or disclosed by public health authorities [29].

A third model law, the Uniform Emergency Volunteer Health Practitioners Act (UEVHPA), as drafted in 2006 by the National Conference of Commissioners on Uniform State Laws, provides a further model for emergency public health governance, organized around the challenge of accommodating health professionals who show up spontaneously at the site of a public health emergency or nearby health facilities in order to provide emergency assistance [30].

The aforementioned Model Acts recognize that an effective public health response to a bioterrorism-related outbreak will demand strong and clear legal powers. In the following sections, we focus predominantly on two specific areas of public health powers authorized under law: (1) restrictions on personal liberty (quarantine, isolation, travel restrictions, privacy) and (2) restrictions on property (decontamination, use of supplies and facilities, disposal of remains). While other areas of law are also relevant to the legal framework needed to address bioterrorism, these two areas feature the most sustained debates and controversies. Each of these powers will be considered in the following sections from a legal and ethical perspective.

12.2 Restrictions on Personal Liberty: Quarantine, Isolation, Travel Restrictions, and Privacy

The release of a highly infectious disease into the population presents government officials with a difficult quandary. Within the climate of fear that may surround such an outbreak, public health authorities must quickly and accurately assess the risk to the population and take measures accordingly to protect the public's health. Under such circumstances, public health authorities may resort to liberty-limiting measures such as quarantine, isolation, travel restrictions, and privacy limitations. Personally restrictive actions are particularly likely when the disease is readily communicable, exceptionally virulent, or is of unknown origin. Restrictions on personal liberty to respond to a public health crisis are constitutionally permissible, but the scope of restrictions and attendant protections against their misuse varies significantly across different jurisdictions.

12.2.1 Quarantine and Isolation

Quarantine and isolation are among the oldest of public health tools. Their use predates modern scientific advances in disease testing and treatment, not to mention modern conceptions of civil liberties. They operate on the most basic principle of infectious disease control—keeping healthy individuals separated from those who have been exposed or infected. In modern times, the mass use of quarantine or isolation has faded as rapid medical tests and effective treatments have become available. When quarantine and isolation have been used, they have been directed predominantly at specific infectious individuals, for example, to control recalcitrant tuberculosis patients [31–34]. Nevertheless, for a disease of unknown etiology or a disease that poses a significant threat to a vulnerable population, quarantine and isolation may still be effective techniques to contain an outbreak. Depending on the scope of the outbreak, large-scale quarantine measures may have to be considered. Modern logistics

surrounding enactment of a large-scale quarantine would be complex and possibly unworkable [35].

The terms *quarantine* and *isolation* have engendered a great deal of confusion. The two terms are often used interchangeably, but in actuality represent distinct concepts. The term *quarantine* denotes a compulsory physical separation of an individual or a group of healthy people who have been exposed to a contagious disease to prevent transmission during the incubation period of the disease [21]. Historically, quarantine restrictions were often imposed on travelers to insure that they did not introduce a contagious disease into a country or town. The word itself derives from the Latin term *quadragina* and the Italian term *quarante*, which refer to the 40-day sequestration period enforced on merchant ships during plague outbreaks [21]. The term *isolation*, by contrast, means the separation, for the period of communicability, of known infected persons so as to prevent or limit the transmission of the infectious agent [21]. Precise usage of and differentiation between these terms is vital to insure that those subject to these powers receive appropriate treatment and protection.

The current legal framework authorizing the use of quarantine and isolation in the United States stretches across multiple jurisdictions and levels of government. Quarantine powers were first implemented at the local level, and later the state level, during the colonial period. The federal quarantine statute, first enacted in 1796, authorized the president to assist states in their use of quarantines [36]. The federal government subsequently took control over maritime quarantines [37]. This expanded federal role prompted a debate over whether the federal or state government should administer quarantines—a debate which continues to this day. As discussed below, states claim that their quarantine authority derives from their police power, while the federal government argues that its authority arises from its constitutionally – granted power to regulate interstate commerce.

12.2.1.1 State and Local Quarantine and Isolation Laws

State and local jurisdictions have the primary responsibility for quarantine within their borders. The state quarantine power is derived from the state's inherent police power, reserved to the states under the Tenth Amendment of the United States Constitution. Most public health powers have traditionally been recognized as falling under the jurisdiction of state and local governments. The United States Supreme Court has found that the police powers of the state allow the state to enact regulations to protect the health and safety of its citizens [23]. The use of quarantine and isolation by state and local governments is therefore legally and constitutionally acceptable, provided that these powers are used appropriately to protect public health and safety.

The specific scope of state and local quarantine authority varies considerably between jurisdictions. These differences are evident in the structural distribution of power between the state and local governments and the substantive criteria (or lack thereof) for placing an individual under quarantine. Some states have a centralized public health system that retains most public health powers at the

state level, including quarantine and isolation decisions. Other states delegate these decisions to local public health agencies. In these states, quarantine will generally be under the jurisdiction of local public health officials when the disease is confined to a discrete local area. If the outbreak affects more that one community within the state, the state public health authority will usually have the power to implement quarantine or isolation orders. Very few jurisdictions have articulated explicit procedures and policies to determine whether or not an individual should be subject to quarantine. Both the MSEHPA and Turning Point Act propose a systematic process for making this determination that considers the exigencies of the situation. Furthermore, they allow for an appeal of the decision if possible under the circumstances [25, 29].

12.2.1.2 Federal Quarantine and Isolation Law

Federal quarantine powers are much more limited than comparable powers at the state level. The federal government may only apply powers delegated to it under the Constitution. Pursuant to these delegated powers, federal authorities have the ability to prevent the introduction, transmission, and spread of communicable diseases between states and from foreign countries into the United States. The federal quarantine power stipulates that if there is a risk that disease transmission will cross state lines, the federal government has the authority to implement quarantine [38]. The federal government is additionally authorized to cooperate with state and local authorities to enact quarantine to contain an interstate disease outbreak [39]. The federal quarantine response is conducted by the CDC, with assistance from other agencies if necessary, including the Department of Homeland Security (DHS), the Department of Defense (DOD), and the Department of Justice (DOJ).

Federal law establishes a role for a number of federal agencies and departments in the execution of a quarantine order. The Secretary of Health and Human Services (HHS) has statutory responsibility for preventing the introduction, transmission, and spread of communicable diseases from foreign countries into the United States and within the United States and its territories/possessions [40]. Regulations grant the CDC authority to detain, medically examine, or conditionally release individuals reasonably believed to be carrying a communicable disease [41]. The CDC's Division of Global Migration and Quarantine has the specific authority to quarantine individuals seeking to enter the United States. U.S. Customs and Border Protection (CBP) (formerly the U.S. Customs Service) and officers of the U.S. Coast Guard are authorized to assist in the enforcement of federal quarantine orders [42]. Personnel from the U.S. Citizenship and Immigration Services (USCIS) (formerly the Immigration and Naturalization Service [INS]), the CBP, the U.S. Department of Agriculture (USDA), and the U.S. Fish and Wildlife Service (USFW) all assist the CDC in identifying travelers or other persons who may be infected with illnesses that pose a risk to public health [43]. Federal quarantine authority only extends to specific diseases enumerated by executive order [44]. However, this

list of diseases can be amended quickly when necessary (e.g., as with SARS in 2003, and pandemic flu in 2005) [45, 46].

The federal quarantine power has rarely been used in modern times. Therefore, it is unclear how widely it could be used to combat a bioterrorism outbreak. Public health law experts have demonstrated concern that the existing legal structures for initiating and managing a large-scale quarantine are inadequate at the federal and state levels [35]. This is problematic because the imposition of a large-scale quarantine will almost certainly involve the use of federal and state powers. Under these circumstances, there is the possibility of confusion and controversy over who is in charge. As past bioterrorism simulations and real emergencies like Hurricane Katrina have demonstrated, if the lines of authority are not clear to officials at all government levels, the public health response can be paralyzed and undermined [3, 4, 47, 48]. Thus, in addition to improving the legal framework within federal and state/local jurisdictions, serious efforts should focus on establishing a coordinated public health response between these jurisdictions.

12.2.1.3 Key Quarantine Considerations

When should public health authorities use quarantine or isolation to restrict individuals during a bioterrorism emergency? The response to this question requires the decision-maker to balance the need for restrictive intervention with the effect it may have on the civil liberties of affected individuals. Modern commentary on the acceptability of quarantine asks whether the risk to the population posed by the disease justifies such a serious loss of liberty [21, 49, 50]. In addition to restrictions on liberty, imposing a quarantine temporarily deprives individuals of their economic livelihood, their right to travel or associate freely with others, and may subject them to stigma and discrimination. In a time of great crisis, public sentiment may strongly support such measures, but public sentiment alone is an insufficient justification to use quarantine powers. These powers may be warranted to prevent the continued transmission of a disease that presents a serious risk to the population. It is important, however, that restrictive powers are not used unnecessarily or as an artifice for discrimination [51]. Past quarantines in the United States have led to violence [52], increased disease transmission among the quarantined population [53], and biased decision making [54]. In one case, a federal court invalidated a quarantine imposed on an area of San Francisco comprised mostly of persons of Chinese descent, finding that the public health officials had used an "evil eye and an unequal hand" in issuing their quarantine order [55].

Restrictive public health powers such as quarantine and isolation should be used as a last resort to halt the spread of an infectious disease. The law can provide a useful normative framework for making quarantine decisions. The MSEHPA, for examples, sets out a list of criteria that should be considered when making a quarantine or isolation decision [25]. In many situations, particularly where the disease is readily diagnosable and treatable, other

options may be more defensible from a medical and civil rights perspective. Barbera et al. list three key questions to consider when evaluating a quarantine decision: "(1) do public health and medical analyses warrant the imposition of large-scale quarantine? (2) are the implementation and maintenance of large-scale quarantine feasible? and (3) do the potential benefits outweigh the possible adverse consequences? [35]."

Gostin has outlined several criteria for exercising restrictive public health powers under modern constitutional law [21, 51]:

- *Compelling state interest in confinement*. Public health authorities must only resort to restrictive powers when there is a compelling interest that is substantially furthered by civil confinement. Only truly dangerous individuals (i.e., posing a significant risk of transmission) can be confined. Whenever possible, risks should be assessed through scientific means.
- *Targeted intervention*. Individually restrictive measures should be well targeted to achieving public health objectives. Interventions that deprive individuals of liberty or equal protection without justification may be constitutionally impermissible. For example, placing everyone within a geographic area under quarantine is overinclusive if some members would not transmit infection. Underinclusive interventions that confine some, but not all, potentially contagious persons may be found to be arbitrary or intentionally discriminatory.
- *Least-restrictive alternative*. Public health authorities should not implement extremely restrictive measures such as quarantine and isolation if they can accomplish their objectives through less drastic means (although it is not likely that they would be required to enact extreme or unduly expensive means to avoid confinement).
- *Safe and habitable environment*. Quarantine and isolation are intended to promote well-being rather than to punish. Therefore, individuals being confined should have access to clean living conditions, food, clothing, water, adequate health care, and means to communicate with others outside the quarantine.
- *Procedural due process*. Individuals subject to confinement for public health purposes must be able to access some form of procedural due process depending on the nature and duration of the restraint. Where possible, this process should occur before confinement. If emergency circumstances demand immediate confinement, individuals have the right to request a speedy hearing and counsel to contest their confinement.

12.2.2 Restrictions on Privacy

Public health authorities may also take actions during a public health emergency that limit the right to privacy, including public health surveillance, reporting, and contact tracing. The ability to identify and track the spread of

infection is a vital component of the public health response to an infectious disease outbreak. Public health authorities need access to valid and useful information to accomplish these tasks.

In this context, public health surveillance and case reporting are indispensable techniques. Surveillance allows public health authorities to collect, analyze, and interpret health information to search for concentrations of disease [21]. A bioterrorism outbreak could be detected through monitoring large increases in purchases of certain medications from pharmacies, clusters of cases detected by emergency rooms or managed care organizations, or spikes in absenteeism from workplaces and schools. Case reporting is a form of passive surveillance involving the routine submission of data to a public health agency by external sources such as health care professionals and laboratories, often pursuant to mandatory legal requirements [56, 57]. Through disease surveillance and reporting, public health authorities may assess the magnitude of the outbreak and appropriately target resources and tactics [21]. Surveillance and case reporting raise privacy concerns since the reports usually contain identifiable data, which could include a person's name or other identifying characteristics. While using anonymous data instead of identifiable information is preferable to protect privacy, personal identifiers may be necessary to effectively track cases in some circumstances.

Public health authorities responding to bioterrorism may also wish to engage in contact tracing. Contact tracing uses identifiable information to identify and contact persons who have been exposed to potentially infected individuals [21]. Surveillance and contact tracing efforts may be utilized in conjunction with quarantine and isolation measures. This permits public health officials to determine the scope of the outbreak and take necessary measures to reduce the risk of further transmission.

Activities such as public health surveillance, reporting, and contact tracing test the boundaries of the right to privacy. Public health authorities must balance the rights of the individual to control information about their infected status with the rights of the public health authority to collect and use this information to protect others in the community. These tensions may be particularly acute when the biological agent is not well understood. Persons who may have come into contact with the agent may choose to not cooperate with public health officials, fearing that the outcome of their cooperation will be a loss of privacy or liberty. They may also fear the stigma that often accompanies persons or groups subjected to coercive public health powers.

The use of identifiable information in a public health response to bioterrorism is particularly controversial if public health authorities share information with law enforcement agencies. Information sharing between public health and law enforcement agencies may be justified to facilitate a swift response to bioterrorism threats and to apprehend the perpetrators of the outbreak. However, access by law enforcement personnel to identifiable information gathered through public health surveillance further jeopardizes the privacy of these data [58]. Members of the community may be less likely to cooperate with

public health officials if they suspect that their data may be revealed to law enforcement officials for purposes unrelated to their health. Furthermore, this type of data sharing may undermine the credibility of the public health system by calling into question its fundamental goals and the justifications for engaging in surveillance activities and data collection in the first place [59].

A bioterrorism outbreak may justify interventions subordinating privacy interests to the common good, but the state must meet several rigorous standards. It must demonstrate that the need for the information is necessary to serve a legitimate public health interest. Also, it must attempt to use the least amount of information necessary to achieve this interest. Finally, it must conduct its activities openly and transparently, and consult with the affected community.

12.3 Restrictions on Property

Law must allow for public health authorities to use coercive powers to manage property under certain circumstances. There are numerous situations that might require management of property in a public health emergency—for example, decontamination of facilities; acquisition of vaccines, medicines, or hospital beds; or use of private facilities for isolation, quarantine, or disposal of human remains. During the anthrax attacks, public health authorities had to close various public and private facilities for decontamination. Consistent with legal fair safeguards, including compensation for takings of private property used for public purposes, clear legal authority is needed to manage property to contain a serious health threat [25].

Once a public health emergency has been declared, the MSEHPA and Turning Point Act allow authorities the power to seize private property for public use that is reasonable and necessary to respond to the public health emergency. This power includes the ability to use and take temporary control of certain private sector businesses and activities that are of critical importance to epidemic control measures. Authorities may take control of landfills and other disposable facilities and services to safely eliminate infectious waste such as bodily fluids, biopsy materials, sharps, and other materials that may contain pathogens that otherwise pose a public health risk. The Model Acts also authorize public health officials to take possession and dispose of all human remains. Health care facilities and supplies may be procured or controlled to treat and care for patients and the general public [25, 29].

Whenever health authorities take private property to use for public health purposes, constitutional law requires that the property owner be provided just compensation. That is, the state must pay private owners for the use of their property [21]. Correspondingly, the Acts require the state to pay just compensation to the owner of any facilities or materials temporarily or permanently procured for public use during an emergency. Where public health authorities,

however, must condemn or destroy any private property that poses a danger to the public (e.g., equipment that is contaminated with anthrax spores), no compensation to the property owners is required although states may choose to make compensation if they wish [25, 29]. Under existing legal powers to abate public nuisances, authorities are able to condemn, remove, or destroy any property that may harm the public's health [21].

Other permissible property control measures include restricting certain commercial transactions and practices (e.g., price gouging) to address problems arising from the scarcity of resources that often accompanies public health emergencies. The MSEHPA and Turning Point Acts allow public health officials to regulate the distribution of scarce health care supplies and to control the price of critical items during an emergency. In addition, authorities may seek the assistance of health care providers to perform medical examination and testing services [25, 29]. While the proposed use of these property control measures is not without controversy, they may provide public health authorities with important powers to more rapidly address an ongoing public health emergency.

12.4 Conclusion

The complex and unpredictable threat of bioterrorism demands a serious effort to comprehensively strengthen all areas of public health preparedness. Ongoing changes in public health practice help improve preparedness. Public health authorities at the national, state, and local levels must also be prepared to work together to build a stronger public health infrastructure, ensure adequate training for emergency responders and other necessary personnel, and use new and existing technologies to combat future outbreaks. Moreover, these authorities must understand the role of public health law. Laws are essential to the empowerment, and restriction, of authorities to act in the interests of protecting the public's health prior to, during, and following a bioterrorism event.

Public health law provides the necessary authority for government to engage in public health activities. Likewise, it limits government authority to infringe individual rights related to liberty, privacy, and property. Many existing public health laws do not sufficiently clarify the contours or extent of public health powers. Thus, legal reformation is needed to reflect modern conceptions of public health practice and contemporary constitutional norms.

The MSEHPA and Turning Point Act provide templates for public health law reform. These acts present clear criteria for governmental actions during public health emergencies. They delineate the scope of government public health power, the limits on this power, and the relationships between governments and other actors in emergency response situations. The roles of federal, state, and local governments in utilizing public health powers during public health emergencies must be considered and solidified in advance to avoid confusion or redundancy. Public health authorities need to be able to

implement a full range of strategies to combat the spread of infectious diseases through bioterrorism while respecting civil liberties. Revision of state public health laws consistent with this balance will support and strengthen public health responses to future acts of bioterrorism.

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