

## Law and Ethics in Medicine

# Big Enough to Drive a Car Bomb Through: The Need for New Quarantine Laws and Procedures to Combat Bioterrorism

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### Background

Throughout recorded history, medical personnel have had to deal with epidemics. In doing so a number of practices, among them the use of quarantine, became established as standard practice. Quarantine has been used in the Western world to combat the plague epidemics of the 1200s and the influenza epidemics in the early 1900s. During the past century, however, the spread of effective antibiotic and anti-viral treatment coupled with vastly improved sanitation and nutrition standards has meant that familiarity with this technique has grown distant. For example, a review of the medical literature found no large scale human quarantine implemented within US borders during the past eight decades.<sup>1</sup> Despite this lack of recent experience, manuals on bioterrorism training exercises frequently present statements such as “until it is determined that no communicable agents are involved, quarantine precautions should be observed”.<sup>2</sup>

Moreover, many of the ethical underpinnings of the use of quarantine are no longer an intrinsic part of our society. For example, prior to the 1990s, tuberculosis health workers in New York City encountered little resistance to the involuntary confinement and treatment of persistently non-compliant individuals. However, even as New York (and indeed the whole world) recently witnessed a surge of multi-drug resistant strains of this highly infectious disease, AIDS activists and other civil liberties advocates argued that medical isolation should not be used to punish people unable to adhere to the prescribed therapy.<sup>3</sup> This expansion in the power of civil rights, while in other contexts a great force for good, stands at odds with quarantine laws as they were written tens, sometimes hundreds, of years ago. Indeed, Terry O'Brien, a former assistant attorney general for Minnesota and now an acknowledged expert in the field of American quarantine law, has gone so far to say: “If somebody tried to enforce a quarantine today, the response might be ‘screw you’.”<sup>4</sup>

### Definition of Quarantine

Before examining the modern legal and ethical framework of quarantine, it is important to first establish some definitions. Historically, quarantine has been defined as detention and enforced

segregation of persons suspected to be carrying a contagious disease. Travelers were sometimes subjected to quarantine before they were permitted to enter an area and interact with inhabitants.<sup>5</sup>

In more recent times, the term has become less clear. During modern bioterrorism response exercises, this term has been used in a very general and confusing way to encompass a variety of public health disease containment measures, such as travel limitations, restrictions on public gatherings, and isolation of individual patients. This article will use the word ‘quarantine’ to refer either to compulsory physical separation, including restriction of movement, of populations or groups of people who have been potentially exposed to a contagious disease, or to efforts to segregate these persons within specified geographic areas. This definition has been used in previous works and should serve to lessen confusion.<sup>6</sup>

### Flaws in the Current Legal Framework

The moral authority for the quarantine of human beings is based on the idea of the ‘public health contract’. Under this principle, individuals agree to waive certain liberties, if necessary, in order to prevent risks to other persons, who are often large in number. Civil rights and freedoms are temporarily curtailed because each person benefits from living in a healthier society.<sup>6</sup>

Most quarantine laws in the Western world, including Canada and the United States, date back to a different era in medicine when infectious childhood diseases were rampant, before antibiotics and vaccines. Moreover these laws were written and implemented in an era before expansion of civil-rights in the 1960s. Would the enforcement of these laws be construed as an impingement on civil rights? What about the right to travel, or seek medical care of one’s choosing? How much force should be used to enforce quarantine regulations?<sup>7</sup>

The laws themselves are confusing at best. They are scattered across innumerable statutes at all levels of government. In particular, problems associated with antiquity, inconsistency, redundancy, and ambiguity render these laws ineffective or even counter-productive in achieving their primary goal of advancing the health of the population.<sup>8</sup>

Antiquity is perhaps the most striking characteristic of public health law and one which underlines many of its defects. While some laws are new, especially those relating to the regulation of drugs and genetically-modified foods, others date back to the founding of Canada and earlier.<sup>9</sup> Old laws reflect the times in which they were written and often do not reflect modern scientific knowledge of injury and disease. Today, society faces different risks and deploys different methods of assessment and intervention. Epidemiology, biostatistics, and the behavioral sciences were still in their infancy (or non-existent) when these laws were enacted. Modern prevention and treatment methods simply did not exist.<sup>8</sup>

Additionally, many public health laws predate the vast constitutional changes (e.g., the Charter of Rights and Freedoms) and statutory (e.g., disability discrimination) law that have in many ways radically transformed social and legal precepts regarding individual rights. In failing to reform these laws, public health officials and agencies may be vulnerable to legal challenge. Even if they were not challenged, they may feel hesitant about the manner and scope of application of old laws within a very different social environment.<sup>4</sup>

A related problem is the problem of many layers of law. Given the long time span over which public health laws were enacted, many active laws may prescribe contradictory remedies for the same situation. This is particularly true with infectious diseases, which form a substantial portion of the public health law of American states and Canadian provinces. The disparate legal structure can significantly undermine effectiveness. Laws enacted piecemeal over long periods of time are inconsistent, redundant, and ambiguous. Even the most astute lawyers in public health agencies have difficulty understanding these contradictory laws and applying them to contemporary health threats.<sup>8</sup> Indeed, this confusion often appears very quickly in bioterrorism exercises where there is often conflict between the military, civilian law-enforcement agencies, and civilian health officials at all levels of government.<sup>10</sup>

Thirdly, public health laws are fragmented not only within provinces and states, but between them as well. This leads to immense variation in procedure, structure and substance for detecting, controlling, and preventing injury and disease. Indeed, statutes and regulations among American jurisdictions, for example, vary so significantly in all aspects that they defy meaningful categorization.<sup>8</sup> This is particularly relevant, as the health threats from bioterrorism in all likelihood would rarely be confined to a single jurisdiction, but would instead present risks to whole regions or even entire countries or continents.

Government agencies and authorities can do a great deal to promote public health (such as voluntary testing, education campaigns, etc.) without resorting to coercion. Yet there is much that it cannot do without the power to enforce publicly established standards of conduct by writ of compulsory law, especially if the actions of some cause harm to others. In doing so, governments have the power to inspect, regulate, tax and imprison. Certainly there may be disagreements as to the degree of coercion necessary to safeguard public health. Striking the balance is an issue for political or judicial resolution.<sup>11</sup>

The protection and preservation of community health is impossible without the constraint of private actors and their activities. Individuals, groups, and corporations may engage in activities that are pleasurable (uninhibited sexual activity) or profitable (ignoring the effect of pollution) yet in doing so, they may threaten others. In the absence of a governmental authority and a concomitant willingness to coerce, these and other threats to public health and safety could not easily be reduced.

Though public health authorities are empowered to restrict human freedoms and rights to achieve a collective good, they must act in a manner consistent with current legal constraints upon governmental action. This monopoly power of the state to protect and promote the public health, safety, and welfare (“police powers”) is limited by individual rights to autonomy, liberty, property, and other legally protected interests. Achieving a just balance between the powers and responsibilities of the state to defend and advance the public health and the legally protected rights of individuals and groups poses an enduring problem for public health law.<sup>11</sup> This problem can only be solved with a complete re-examination and re-codification of public health statutes as it pertains to the modern environment in general and to bioterrorism in particular.

#### Problems in the Historical Application of Quarantine

In the historical context, quarantines have on occasion been improperly or ineffectively applied and can themselves cause harm. Barbera, *et al.* describe three situations in the United States where this has happened. The first case describes a quarantine imposed on European arrivals in New York harbour in 1892 to prevent the arrival of cholera. This led to a disproportionate death rate amongst the would-be immigrants of lower socio-economic status as no sanitary provisions were provided during their confinement. Subsequently, many previously healthy people in the arrival population were being infected. Another case describes how the complete non-cooperation of the population in Muncie, Indiana during an 1893 smallpox epidemic led to utter failure, despite attempts at mandatory vaccination and sequestration. Lastly the authors describe how ethnic bias against the San Francisco Chinese population in 1900 during a plague epidemic led to the quarantine of only ethnic Chinese homes and businesses, causing severe economic damage. A subsequent federal court found this quarantine unconstitutional and determined that local health authorities acted with an “evil eye and an evil hand”.<sup>6</sup>

#### Towards a New Framework for Quarantine Implementation

Quarantine, an often used procedure in times past, need not be the only tool in our current legal and epidemiological armamentarium. Other options may be more medically defensible, more likely to effectively contain the spread of the disease, less difficult to implement, and less likely to generate unintended consequences. Decisions to invoke quarantine against the threat of bioterrorism, therefore, should be made only after consideration of three main questions within the context of a given attack.

- 1) Does epidemiological and medical analysis warrant quarantine, and will doing so substantially diminish the spread of the disease?

There are times when there is simply no medical basis for quarantine. For example, since anthrax is rarely passed from person-to-person, quarantine would be ineffective in the case of an anthrax attack. It is certainly possible that a large-scale smallpox outbreak would generate justification for quarantine in the case of

a bioterrorist attack.<sup>12</sup> However, even in the setting of a bioterrorist attack with smallpox, the long incubation period (10-17 days) almost ensures that some infected individuals in a society with excellent transportation will have traveled great distances from the site of exposure before the disease is recognized or quarantine can be implemented.<sup>6</sup> If this factor, for example, overwhelms any positive aspects of putative quarantine, alternative strategies at disease limitation should be pursued.

2) Are the logistics of implementing a quarantine attainable?

Plausible ways need to be found to determine who should be quarantined. In today's highly mobile society, it would not be medically logical to confine a quarantine to the immediate locale of the attack. However expanding its scope to a much larger area risks including many people who have not been exposed. As yet, there is no proposed or functional health surveillance system that can rapidly and accurately determine disease distribution.

Secondly, there must be sufficient resources to enforce the quarantine. Forcibly confining even a relatively small number of people, perhaps against their will, would require a large amount of manpower in the form of police or military. It is entirely possible that personal or public reasons on the part of law enforcement officials (such as fear of disease or sympathy with members of the quarantined population) may compromise willingness to enforce compliance.

Thirdly, the quarantined group must be confined during the period which individuals are infectious. Quarantine in the event of a bioterrorist attack would not be short, and indeed may take days or weeks depending on the specific agent. The development of illness among the detainees could require a time-extension of the quarantine.

Lastly, the needs of the detainees need to be met in a systematic manner. American courts, for example, have required that quarantined individuals be kept in safe and hygienic locations, with adequate food and other necessities of life. Effective medical care would be an ethical and perhaps a legal requirement. Moving supplies into quarantined areas would be difficult, as could recruiting qualified medical personnel. Indeed the shortage of trained medical persons to adequately care for quarantine detainees should be anticipated and was clearly demonstrated during the influenza epidemic of 1918.<sup>6</sup>

3) Do the potential benefits of quarantine outweigh the possible adverse consequences?

Even if the previous two conditions are met, the potential negative consequences must also be considered. For example, the health risks to those who are quarantined are an important factor. The previously cited example of the New York City harbour tuberculosis outbreak simply could not be dealt with in the same manner today given current legal restrictions. Perhaps in that situation it would be advisable to provide one set of facilities to those who manifested signs of the disease, and another to those who appeared asymptomatic.

As well, the consequences of mass disobedience must also be factored in. In early twenty-first century Western society, it is unclear

how those who were quarantined would react to involuntary confinement. Indeed, the mere fact of dealing with the numbers of expected infected people to begin with would very likely overwhelm the medical system as currently constructed.<sup>13</sup> Non-compliance would further hinder public health action and conceivably become violent, with wholesale disregard for public authority. Such conditions led to riots in Montreal during a smallpox epidemic in 1885. Conversely, there could be civilian vigilantism to enforce quarantine, as occurred in New York City in 1892. Additionally, protection of police personnel and their families against infection would be essential to police cooperation.<sup>6</sup>

Lastly, the consequences to commerce and transportation are an important consideration. With today's 'just-in time' inventory control cycles, halting the movement of goods for even a short time could rapidly deplete existing stocks of food, medicines, fuel, etc., unless adequate provisions were taken. Post-quarantine stigmatization of the geographic region and the population quarantined should be expected and ameliorated.<sup>6</sup>

### Conclusions and Recommendations

Public health law, as it currently stands, is woefully outdated as it relates to quarantine. As the early twenty-first century witnesses a time when bioterrorism is an increasingly important concern, the laws unfortunately reflect a time in the nineteenth and early twentieth century before antibiotics and the development of the science of epidemiology. The expansion in civil liberties and freedoms that has occurred in the past two generations is not reflected in the law, and many of the actions which might have been taken one hundred years ago would be considered unethical today. A balance must be struck between the rights and responsibilities of the group and those of the individual.

Moreover, there needs to be greater standardization of law within and between jurisdictions so that there is greater certainty of 'who is in charge'. This would add necessary clarity and coherence to legal regulation and would have the added benefit of reducing the opportunity for politically motivated disputes about how to classify newly emergent health threats in a setting when every moment counted.<sup>11</sup>

Quarantine measures must also be based on scientific and disease-specific analysis, and the logistics of implementation must be feasible. The adverse consequences of involuntary confinement must also be considered. Currently, modern disaster response has focussed on assistance to those who are directly affected. Bioterrorism response will also focus its efforts on those who are *potentially* affected. Care must be taken to prevent the perception that people have been secondarily harmed.

Even if quarantine is not used, other actions are possible and may be easier to achieve. Depending on the specific situation, these might include rapid treatment or vaccination programs, widespread use of disposable masks (with appropriate instructions), short-term voluntary home curfew, restrictions on assembly of groups (e.g., schools, shopping malls), or closure of mass public transportation (buses, airplanes, trains, and subway systems). These actions are likely to result in diminished disease spread, are more practically achievable, and associated with less adverse consequences.<sup>6</sup>

Modern responses to infectious disease outbreaks, including bioterrorism, will also require access to up-to-the-minute data on what

is happening, allowing for better decisions regarding what is feasible and desirable. Expedient communication between the clinical and public health communities may be quite valuable and in most places is currently not standard practice, neither by electronic means nor through routine, frequently used channels.<sup>6</sup>

Positive incentives may encourage the lay public to take actions that limit the spread of disease. The ready provision of medical care, equipment (e.g., face masks), etc. may encourage the population to promote outbreak containment. Additionally, allowing family members to voluntarily subject themselves to a known risk of infection might encourage participation in a community's disease containment plan.<sup>6</sup> The distribution to the public of barrier personal protective equipment and education aimed at discouraging potentially dangerous burial rituals, for example, were successful interventions in controlling an Ebola outbreak in Uganda.<sup>14</sup>

Another incentive should be the provision of accurate and timely information to the public. Information, distributed through multiple reliable sources, should include information on how to minimize the spread of the illness and information on how to seek treatment. In any terrorist attack, the public desire for information will be insatiable, and health authorities must be willing to provide information on a near continuous basis. Anticipatory planning for such an event would be vital, as once public credibility is lost, it will be difficult or impossible to recover. Proper information distribution would function to discredit rumours, diminish anxiety, and engender community support.<sup>15</sup>

Thus quarantine, in the modern context, is quite different than at previous times. Medical practice and ethico-legal mores have changed – as well as the nature of the threat. Law and practice must change to reflect this new reality. The multidisciplinary nature of this problem demands input from experts in medicine, emergency medicine, law, ethics, mental health, and other fields.

Alternatives to quarantine should also be considered, especially when they may be just as effective (or perhaps more so) than this historical method used before there was a great deal of scientific understanding about infectious disease processes. The results of this effort could help to provide a more complete and inclusive approach to disease containment resulting from bioterrorist attack.

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