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What You Will Learn

• Today’s most urgent public health issues
• How health agencies define bioterrorism and “new” diseases, and what forms they are likely to take
• How health agencies responded to the anthrax attack and SARS
• The legal and ethical questions that will shape the response to future emergencies

Introduction

In this chapter, we explore the two threats that dominate contemporary discussion in public health emergency law: bioterrorism and the emergence of new infectious diseases for which there may be no effective treatment. We will examine them through the lens of the legal issues they raise. In particular, we focus on three topics: the legal and ethical principles for approaching the problem of how to ration and distribute medications when there is not enough to treat everyone in the population; how a mass quarantine in today’s society could be effective and what its cost would be; and the questions raised by the possibility of imposing domestic and international travel restrictions. We will begin by describing the most important underlying facts related to bioterrorism and emerging infectious diseases.

Definitions of Bioterrorism

There are multiple definitions of bioterrorism, whether generated by government agencies such as the CDC or found in federal and state law. They generally include some or all the following factors:

• The intentional use or threat of use of any biological agent to cause harm in a human, animal, plant, or other living organism
• The same use or threat of use to degrade the quality of food, air, or the water supply
• With the goal of influencing government conduct or policy
• With the goal of intimidating or coercing a civilian population

The Most Feared Pathogens
The CDC has identified the six most dangerous pathogens that could be used in a bioterrorist attack (see Table 7.1).

| Name               | Description                                                                 | Symptoms                                           | Treatment                                      |
|--------------------|-----------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------|
| Anthrax (excluding cutaneous) | Transmission by inhaling; kills 85% of those infected often within 1 to 3 days | Fever and fatigue; Progresses to chest pain, cough, rapid decline | Antibiotics (cipro) before symptoms appear; vaccine not widely available |
| Smallpox          | Physical contact with infected fluids or objects or inhalation of droplets; fatal in 30% of unvaccinated patients | Fever, aches, vomiting; Rash develops into pustules | No treatment, but vaccine within 4 days after exposure may mitigate |
| Pneumonic plague  | Airborne; almost 100% fatality rate if untreated                             | Fever, headache, bloody cough; Progresses to respiratory failure and death | Antibiotics within 48 hours of exposure |
| Viral hemorrhagic fevers | Viruses spread by mosquitoes, rodents and ticks; Ebola death rate up to 90%, Dengue rate 1% | Some variance; include fever, aches, exhaustion, internal bleeding | Antiviral treatments vary for the specific form |
| Botulism          | Transmission by inhaling, could be aerosolized; too few cases to know fatality rate | Toxin blocks nerve signals and muscle movement; paralysis; inability to swallow | Ventilator; antitoxin given quickly may stop progression |
| Tularemia          | Inhaling or contact with contaminated substances; could be aerosolized; overall mortality low but untreated severe cases from 30 to 60% fatalities | Fever, headaches, chills, infection of eyes, skin, mucosal tissue | Antibiotics usually successful in naturally occurring cases |

Source: CDC, Gostin 2003.
Table 7.2 lists events throughout history that involved biological weaponry and bioterrorism.

**Table 7.2  Select Historical Events Involving Biological Weapons and Bioterrorism**

| Date       | Event Description                                                                 |
|------------|-----------------------------------------------------------------------------------|
| <1000 B.C.E | Scythian archers tipped arrows with blood, manure, and tissue from dead bodies.   |
| Fifth century | Assyrians poisoned enemy wells with rye ergot *(Claviceps purpurea)*, a fungus containing mycotoxins. |
| 590 B.C.E   | Athenians poisoned enemy water supplies with hellebore, an herb purgative, during the Siege of Krissa. |
| Third century B.C.E | Persian, Greek, and Roman Literature describe the use of dead animals being used to contaminate enemy water supplies. |
| 184 B.C.E   | Carthaginian General Hannibal ordered his sailors to hurl clay pots filled with poisonous snakes onto the decks of enemy ships during a naval battle. Hannibal won the battle. |
| 1155        | Holy Roman Emperor Barbarossa poisons wells with decomposing human bodies.         |
| 1346        | Tartur army catapulted deceased bodies of plague victims over city walls during the siege of Caffa. |
| 1495        | Spanish sell wine mixed with the blood of lepers to their enemies.                |
| 1763        | British distribute variola virus contaminated blankets to Native Americans resulting in a smallpox outbreak. |
| 1797        | Napoleon floods fields around Mantua to promote malaria.                         |
| 1915 to 1918 | Germans attempt to infect Allied horses with anthrax and glanders.               |
| 1932 to 1945 | Japanese operate Unit 731 in Manchuria conducting experiments that included infecting prisoners with a variety of lethal pathogens. |
| 1942        | British test anthrax bombs on Gruinard Island off the coast of Scotland.         |
| 1950 to 1969 | U.S. and U.S.S.R. grow offensive biological weapons programs.                    |
| 1969        | U.S. President Nixon ends the U.S. offensive biological weapons program.          |
| 1972        | U.S. and U.S.S.R. sign the Biological Weapons Convention agreeing an end to offensive programs. |
| 1978        | Assassination of Bulgarian exile Georgi Markov in London with an injected ricin pellet. |
| 1979        | Accidental anthrax release from a secret Soviet facility in Sverdlovsk kills 66. |
| 1984        | In Dalles, Oregon, the Rajneesh cult contaminated local salad bars with salmonella sickening more than 750 people. |
The Anthrax Attacks of 2001

... On 4 October 2001, health officials in Florida announced that Robert Stevens, a tabloid photo editor at American Media, Inc (AMI), had been diagnosed with pulmonary anthrax – the first such case in the United States in almost 25 years. Initially, the patient’s condition was attributed to a natural source. However, after two of the victim’s co-workers fell ill and anthrax spores were discovered throughout the building in which they worked, these initial assessments soon gave way to apprehension. Other cases began to appear at media outlets in New York City. These new cases revealed the possible source of the exposure: almost all of those infected in New York had come into direct contact with letters containing a mysterious powder.

In mid-October, the crisis reached Washington, D.C., when an anthrax-laden letter was opened in the office of Senator Tom Daschle. Several workers at the postal facility that processed the letter fell ill with pulmonary anthrax. Congressional office buildings were evacuated and virtually all federal government mail delivery in the nation’s capital

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Table 7.2  Select Historical Events Involving Biological Weapons and Bioterrorism (Continued)

| Year | Event                                                                 |
|------|----------------------------------------------------------------------|
| 1990 | Japanese Aum Shinrikyo cult unsuccessfully attempts botulinum toxin releases in Tokyo. |
| 1991 | U.S. troops receive anthrax vaccinations.                             |
| 1991 | After the first Gulf War, U.N. inspectors begin inspections of biological weapons capability in Iraq. Iraqi government officials confirm that they had researched the use of anthrax and botulism. |
| 1993 | Aum Shinrikyo cult unsuccessfully attempts a second botulinum toxin attack on the wedding of the Crown Prince. Later the same month, they unsuccessfully attempted to release anthrax from a Tokyo high rise. |
| 2001 | Anthrax contaminated letters mailed to U.S. Senate offices and media outlets, sickening 22 and killing five. |
| 2004 | Ricin sent to U.S. Senate Majority Leader Bill Frist’s office.        |
was halted as a result. An additional letter, addressed to Senator Patrick Leahy, was found during a search of quarantined mail, bringing the total number of anthrax-laden letters sent to at least four. With the realization that these infections stemmed from a deliberate act, what originally started out as public health response increasingly became a law enforcement investigation.

By the end of November 2001, ... the outbreak had run its course, and no additional letters were discovered. The results were sobering: a total of 22 people had been infected with either cutaneous or pulmonary anthrax, and five of those infected with the pulmonary form died. ...

The first bioterrorist attack on the United States in the 21st century is revealing in many respects. The government’s response to the attacks proved to a difficult undertaking characterized by a significant amount of on-the-job learning ... From the unconventional delivery mode and conflicting estimates of exposure to questions over the appropriate timing and nature of treatment, government agencies frequently provided substantially different, sometimes contradictory, information and advice to those potentially exposed, to the media, and to the public as a whole. ...

[T]here were only 18 reported cases [of pulmonary anthrax] in the United States between 1900 and 1978, and none through the turn of the century. As a result, very few physicians had any direct experience with anthrax, its identification, and its symptomology. ... [T]he initial cases in Florida were initially diagnosed with pneumonia. ...

[A] large number of hoaxes and false alarms ... followed the actual attacks. Laboratories across the continent were deluged with requests to conduct tests on everything from suspicious-looking white powder to plant seeds to stuffed animals. According to statistics from the CDC, its laboratories and other [labs] tested over 125,000 samples during the period following the first reports of the outbreak. In several cases, some state and local laboratories were so overloaded with testing requests that they contemplated setting up triage procedures to prioritize tests. ...
A key feature of the public health response to the anthrax letters was the widespread use of antibiotic prophylaxis. Shortly after the contamination at AMI was confirmed, the CDC airlifted enough antibiotics for 1,000 people to Florida ... With Congress, major television networks and newspapers targets of the attacks, this aspect of the response received considerable attention. The brand name “Cipro” became a household word almost overnight ... In prescribing antibiotics, the CDC identified approximately 10,000 people ... as at risk due to potential exposure. However, the number of people on antibiotics extended far beyond the population immediately at risk. At the peak of the outbreak, more than 30,000 people were taking various types of antibiotics. This figure does not include the “worried well” who obtained prescriptions from their private physicians or over the Internet. While specific data are unavailable, some sources of antibiotics reported increases as high as 300 to 600 per cent compared to previous sales. ... [P]harmacies in Florida and later in New York reported skyrocketing demands ...

Center for Counterproliferation Research, National Defense University (2002)

Figure 7.1 shows one of the anthrax-tainted letters that was mailed in the fall of 2001.
Figure 7.2 shows an example of a cutaneous anthrax lesion.

Emerging Infectious Diseases

The University of Iowa’s Center for Emerging Infectious Diseases defines this term as “infectious diseases whose incidence in humans has increased in the past two decades or threatens to increase in the near future.” The National Institute of Allergies and Infectious Diseases of the National Institutes of Health offers this explanation of the threat they pose to public health:

Despite remarkable advances in medical research and treatments during the 20th century, infectious diseases remain among the leading causes of death worldwide for three reasons: (1) emergence of new infectious diseases; (2) re-emergence of old infectious diseases; and (3) persistence of intractable infectious diseases. Emerging diseases include outbreaks of previously unknown diseases or known diseases whose incidence
in humans has significantly increased in the past two decades. Re-emerging diseases are known diseases that have reappeared after a significant decline in incidence. Within the past two decades, innovative research and improved diagnostic and detection methods have revealed a number of previously unknown human pathogens. For example, within the last decade, chronic gastric ulcers, which were formerly thought to be caused by stress or diet, were found to be the result of infection by the bacterium *Helicobacter pylori*.

New infectious diseases continue to evolve and “emerge.” Changes in human demographics, behavior, land use, etc. are contributing to new disease emergence by changing
transmission dynamics to bring people into closer and more frequent contact with pathogens. This may involve exposure to animal or arthropod carriers of disease. Increasing trade in exotic animals for pets and as food sources has contributed to the rise in opportunity for pathogens to jump from animal reservoirs to humans. For example, close contact with exotic rodents imported to the United States as pets was found to be the origin of the recent U.S. outbreak of monkeypox, and use of exotic civet cats for meat in China was found to be the route by which the SARS coronavirus made the transition from animal to human hosts.

In addition to the continual discovery of new human pathogens, old infectious disease enemies are “re-emerging.” Natural genetic variations, recombinations, and adaptations allow new strains of known pathogens to appear to which the immune system has not been previously exposed and is therefore not primed to recognize (e.g., influenza). Furthermore, human behavior plays an important role in re-emergence. Increased and sometimes imprudent use of antimicrobial drugs and pesticides has led to the development of resistant pathogens, allowing many diseases that were formerly treatable with drugs to make a comeback (e.g., tuberculosis, malaria, nosocomial [resulting from hospital care], and food-borne
infections). Recently, decreased compliance with vaccination policy has also led to re-emergence of diseases such as measles and pertussis, which were previously under control.

National Institutes of Health, National Institute of Allergy and Infectious Diseases, “Emerging and Re-Emerging Infectious Diseases,” available at http://www3.niaid.nih.gov/topics/emerging/introduction.htm

Does the discovery of a new virus always signal the threat of a pandemic? No – three characteristics must be met before the situation becomes a public health emergency:

- The virus infects humans
- There is human-to-human transmission
- The virus causes serious disease in humans

The First Post-9/11 EID: SARS

The CDC describes SARS as follows:

Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus, called SARS-associated coronavirus (SARS-CoV). SARS was first reported in Asia in February 2003. Over the next few months, the illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained. ...

According to the World Health Organization (WHO), a total of 8,098 people worldwide became sick with SARS during the 2003 outbreak. Of these, 774 died. In the United States, only eight people had laboratory evidence of SARS-CoV infection. All of these people had traveled to other parts of the world with SARS. SARS did not spread more widely in the community in the United States.

In general, SARS begins with a high fever (temperature greater than 100.4°F [>38.0°C]). Other symptoms may include headache, an overall feeling of discomfort, and body aches. Some people also have mild respiratory symptoms at the outset. About 10 percent to 20 percent of patients have diarrhea. After 2 to 7 days, SARS patients may develop a dry cough. Most patients develop pneumonia.
The main way that SARS seems to spread is by close person-to-person contact. The virus that causes SARS is thought to be transmitted most readily by respiratory droplets (droplet spread) produced when an infected person coughs or sneezes. Droplet spread can happen when droplets from the cough or sneeze of an infected person are propelled a short distance (generally up to 3 feet) through the air and deposited on the mucous membranes of the mouth, nose, or eyes of persons who are nearby. The virus also can spread when a person touches a surface or object contaminated with infectious droplets and then touches his or her mouth, nose, or eye(s). In addition, it is possible that the SARS virus might spread more broadly through the air (airborne spread) or by other ways that are not now known.

In the context of SARS, close contact means having cared for or lived with someone with SARS or having direct contact with respiratory secretions or body fluids of a patient with SARS. Examples of close contact include kissing or hugging, sharing eating or drinking utensils, talking to someone within 3 feet, and touching someone directly. Close contact does not include activities like walking by a person or briefly sitting across a waiting room or office.

The SARS Outbreak of 2003: Timeline

2002 – November 16: First known case of SARS is discovered in Guangdong province, China.
2003 – February 11: The Chinese Ministry of Health reports that there have been 300 cases including five deaths in Guangdong province from an “acute respiratory syndrome” that is consistent with atypical pneumonia.
March 11: Hong Kong health officials report an outbreak of an “acute respiratory syndrome” among hospital workers. There are also reports of a severe form of pneumonia among staff at a hospital in Hanoi.
March 15: The World Health Organization (WHO) confirms that there is a new “worldwide health threat” and that possible cases have been identified in Canada, Indonesia, Philippines, Singapore, Thailand, and Vietnam. The WHO issues guidelines warning travelers to Southeast Asia about the dangers of SARS.
March 19: The United Kingdom, Spain, Germany, and Slovenia report cases.
March 27: WHO recommends screening departing travelers from the worst affected areas.
March 30: Based on a sharp increase in cases in an apartment complex, the Hong Kong Department of Health issues an isolation order requiring residents of one 35-story building in the complex to remain in their apartments for 10 days. These persons are subsequently moved to rural isolation camps.
April 2: WHO recommends postponement of all nonessential travel to Hong Kong and the Guangdong province of China.
April 5: China issues an apology for its slow response to the SARS outbreak. The press reports allegations that Chinese officials covered up the true extent of the disease.
April 9: First SARS case reported in Africa.
April 14: Canadian scientists announce that they have sequenced the genome of the SARS virus.
April 16: The WHO announces that a new pathogen, a member of the coronavirus family never before seen in humans, is the cause of SARS.
April 17: First SARS case confirmed in India.
April 23: WHO recommends postponement of nonessential travel to Toronto. Beijing closes all schools for 2 weeks.
April 26: Health ministers from 13 Asian countries call for all international travelers to be screened for SARS.
April 27: Beijing closes all entertainment venues, including movie theaters, cafes, and clubs.
May 5: Chinese authorities quarantine 10,000 people in Nanjing.
May 15: China threatens to impose the death penalty or life imprisonment on anyone who breaks quarantine orders.
May 22: Taiwan reports 65 new cases in 1 day. More than 150 doctors and nurses have left hospital jobs because of fear of contracting SARS, shutting down or cutting services at nine hospitals.
June 13: The WHO withdraws travel warnings for four Chinese provinces but maintains the warning for Beijing.
June 17: WHO lifts its travel warning for Taiwan. Singapore and Vietnam have also been declared SARS-free, after 20 consecutive days without new cases.
June 24: Hong Kong and Beijing are removed from the WHO’s list of infected areas.
July 2: WHO declares that Toronto is SARS-free.
July 5: Taiwan is the last country to be removed from the WHO’s list of infected areas.

September 2003 – May 2004: New cases of SARS are reported in Singapore, Taiwan, and China, but there is little spread of the disease.

July 2004: The director of China’s main disease control agency and the Hong Kong Health Secretary resign after criticism that they failed to adequately report and contain the initial outbreak.

Sources: BBC News, CDC, and WHO.

Critical Thinking

How did anthrax and SARS present different legal and management problems for public health officers? Evaluate the official responses described above. What were the best and worst actions taken in each case? What are the bases for your characterizations?

Rationing Medications

Should an outbreak occur of a highly infectious pathogen – whether it is intentionally caused as part of a bioterrorist attack or a naturally occurring phenomenon such as SARS – there will be great urgency surrounding the issue of distribution of medications or vaccines. Scientists anticipate that if a new strain of influenza takes hold in humans, it will take several months to develop and produce a drug that can counteract it. For anthrax or smallpox, there are pharmaceutical countermeasures available, but the initially available quantities may be inadequate.

States have developed plans to coordinate with federal public health authorities to disseminate “push packs” of existing drugs from the Strategic National Stockpile (SNS) managed by the CDC. The SNS is a national repository of antibiotics, chemical antidotes, antitoxins, life-support medications, IV administration, airway maintenance supplies, and medical/surgical items. Push packs contain pharmaceuticals, antidotes, and medical supplies designed to provide rapid delivery of medical resources in the early hours of a public health emergency. Push packs are stored in strategically located, secure warehouses, and can be delivered within 12 hours after a state’s request. It is then up to state and local health officials to distribute them in the affected areas. If the cause of the disease is quickly identified and there are known medications, the SNS program will arrange shipping of pharmaceutical products specific to that disease.
If there are not enough medications or vaccines available to protect an entire population, enormous ethical and legal questions arise. University of Virginia bioethicist John Arras has summarized the problem as follows:

[T]he ethical challenges posed by a possible pandemic ... are nearly as formidable as the scientific and public health challenges. Assuming a high degree of mortality associated with the viral strain, a genuine pandemic would claim millions of lives worldwide and threaten the integrity of key medical, public health, social and political infrastructures. ... In the absence of social consensus on priorities, adhering to fair processes becomes critical for the public legitimation of rationing scarce life-saving resources ... [T]he rational principles we develop must remain vigilant against the ever-present temptation to discriminate against the poor and dispossessed, whether here at home or in the far reaches of the developing world.

Arras (2006)

The Ethics Subcommittee of the Advisory Committee to the Director of the CDC prepared a set of ethical guidelines geared to a likely shortage of medications in the event of pandemic influenza. For the allocation of resources, they recommended the following analysis to the CDC:

We have concluded that a classic utilitarian approach to defining priorities, “the greatest good for the greatest number,” is not a morally adequate platform for pandemic influenza planning. We recommend an approach to ethical justification, that, like utilitarianism, evaluates the rightness or wrongness of actions or policies primarily by their consequences, but, we further recommend that planning should take into account other checks ... grounded in the ethical principles of respect for persons, non-maleficence and justice. For example, a classic utilitarian approach, which might accept imposing suffering on the few for the greater benefit of all, would be tempered by such principles as:

• Refrain from harming or injuring individuals or communities.
• Equal opportunity to access resources should be assured to those within agreed upon priority groups.
Respect for individual autonomy by, for example, employment of the least restrictive interventions that are likely to be effective.

Distribution plans should also specify:

- What scarce goods are involved in the distribution plan? …
- Who (or what agency) will decide about prioritization and distribution? A mechanism for authoritative interpretations of the rules in the case of a dispute or an appeal is needed.
- Who is eligible to be a recipient (for example, visitors to the local community or only residents)? …
- What morally relevant criteria will be employed to assign higher or lower priorities to groups of individuals or individuals within the determined goal (preserving the functioning of society)? For example, are certain key services more essential than others? Within the organization or group of individuals who provide an essential service, are there justified criteria for determining further order of priority (e.g., those with more years of experience or those who have dealt with crises in the past)? …

... [I]n planning for a pandemic where the primary objective is to preserve the function of society, it is necessary to identify certain individuals and groups of persons as "key" to the preservation of society and to accord to them a high priority for the distribution of certain goods such as vaccines and antiviral drugs. ... Care must be taken to avoid extension of the evaluation of social worth to other attributes that are not morally relevant. ...

Kinlaw and Levine (2007)

Critical Thinking

Would a first-come, first-served approach be consistent with these ethical guidelines?

The CDC prepared a guide to rationing vaccines during a pandemic influenza outbreak (see Table 7.3). What do you think are the risks of breaching or omitting the ethical principles set out above if this order is followed? Would you change any of the CDC’s priority rankings? If so, on what ethical or legal basis?
Contemporary Mass Quarantine

Traditionally, isolation and quarantine orders have been issued to individuals or, in some cases, to relatively small groups of people (for example, passengers on a particular ship or flight). Should a pandemic level of transmission be reached, however, public health officials would not be able to catch up by identifying and trying to trace transmission on a case-by-case basis. On the other hand, complete enforcement of a mass quarantine order would probably overtax the capacity of local law enforcement.

Table 7.3  The CDC’s Guide to Rationing Vaccines During a Pandemic

| Priority rank | Group to receive vaccine                                                                 | Approximate number in group |
|---------------|-----------------------------------------------------------------------------------------|-----------------------------|
| 1-A           | Persons involved in manufacturing and distributing vaccines and antiviral medications; health care workers | 9 million                   |
| 1-B           | Persons with multiple influenza high-risk conditions or history of hospitalization for pneumonia or influenza | 26 million                  |
| 1-C           | Pregnant women and household contacts of infants and of persons who cannot be vaccinated for medical reasons | 10.7 million                |
| 1-D           | Essential public health emergency response workers and key government leaders             | 200,000                     |
| 2-A           | Infants to age 2, adults up to 65 with a single high-risk condition, healthy adults 65 and older | 59 million                  |
| 2-B           | Remainder of public health emergency responders and essential workers in public safety, utilities, transportation and telecommunications | 8.5 million                |
| 3             | Other key government health officials and funeral home workers                            | 200,000                     |
| 4             | Remainder of population                                                                  | 179 million                 |

Source: www.hhs.gov.
One lesson that public health agencies learned during the 2003 SARS outbreak was that a menu of large-scale quarantine strategies could be effective. Governments were able to implement a number of social distancing mechanisms, such as cancellation of public events, closure of shopping malls and some public transportation, and other “snow day” measures. Persons who had been exposed to SARS but were not ill were asked to adhere to “home quarantine.” Officials also developed the concept of “working quarantine,” in which providers of essential services are permitted to work but must observe activity restrictions while off-duty. When schools, workplaces, and transportation facilities were not closed, infection control measures included fever screening before entry or the requirement of wearing face masks.

One result of these measures was the realization that quarantine did not have to be mandatory to be effective. Voluntary compliance with social distancing measures was greater than 90 percent in most settings (HHS Pandemic Influenza Plan 2005). However, the financial, social, and psychological impact of such policies was substantial. Moreover, their success required a high degree of cooperation involving not only government officials but also employers, media, and various service providers (see Chapter 8 for more discussion of the role of the private sector).

Figure 7.3 defines the principles of modern quarantine.

**Figure 7.3** Principles of Modern Quarantine

A collective action for the common good predicated on aiding individuals infected or exposed to infectious agents while protecting others from the dangers of inadvertent exposure

**Public good**  **Civil liberties**
Critical Thinking

When a person is incarcerated, including being placed in a quarantine facility, the government assumes responsibility for providing food, medication, and other necessaries for so long as the incarceration lasts. Would that apply to persons in “home quarantine”? What would the criteria be? If the government does have that duty, how would it be fulfilled?

Travel Restrictions

The rapid transcontinental spread of SARS in 2003 eliminated any doubt that international travel would likely be a major vector of transmission for infectious disease in the future. Some have even speculated that bioterrorists might release a lethal pathogen in airports around the world, making the points of origin extremely difficult to trace and enhancing the odds for rapid dissemination of disease. If one of the characteristics of the disease is that persons who are infected but asymptomatic can transmit the infection, health officials will face major challenges in curbing its spread.

During the 2003 global response to SARS, the control strategy for the United States included issuing travel notifications, distributing ... Alert Notices to travelers arriving from areas with SARS, and conducting visual inspections of arriving travelers ... CDC staff met more than 11,000 direct and indirect flights from SARS-affected areas and distributed more than 2.7 million Travel Health Alert notices to arriving passengers as well as to persons arriving at 13 U.S. land border crossings near Toronto and departing passengers bound for the United States from the Toronto airport. ...

... CDC quarantine staff [also] met planes reporting an ill passenger ... If the ill passenger was determined to be a possible SARS case, the locating information was forward to state and local health departments for contact tracing.

Border and travel-related activities implemented in countries more seriously affected by SARS included pre-departure temperature and symptom screening, arrival screening, “stop lists” ... of persons who were possible SARS cases or contacts ..., quarantine of travelers returning from other SARS-affected areas.

HHS Pandemic Influenza Plan (2005)
Based on its experiences with SARS, CDC developed a new set of four levels of advisories to issue to travelers:

**In the news** – notification of an occurrence of a disease of public health significance affecting a geographic area, but no increased risk of disease exposure if standard guidelines are followed

**Outbreak notice** – notification that a disease outbreak is occurring in a limited geographic area or setting, creating an increased risk for disease exposure but one that is limited to specific settings

**Travel health precaution** – notification that a disease outbreak of significant scope is occurring in a large geographic area and identifying specific precautions that travelers should take

**Travel health warning** – notification that a widespread outbreak is expanding outside the area or populations that were initially affected, including the recommendation that nonessential travel be canceled.

Source: HHS Pandemic Flu Plan, 2005

### Critical Thinking

Note that none of the CDC alert levels forbid people from traveling. How effective do you think this advisory approach will be in curbing travel? Can you think of other legal measures that might be used as well?

Review the proposed federal quarantine regulations from Chapter 5. They were not in effect during the SARS outbreak. How would they have been helpful? Can you think of any disadvantages to having them in force for a new disease like SARS?

### Important Terms

- Anthrax
- Bioterrorism
- Emerging infectious disease
- Push packs
- Re-emerging infectious disease
- SARS
- Social distancing
- Strategic National Stockpile
- Utilitarianism
Review Questions

1. What is the difference between bioterrorism and emerging infectious diseases?
2. What lessons did public health officials learn from the anthrax attacks? From SARS?
3. What factors are necessary for a new virus to be classified as a public health emergency?