

# **QUARANTINE AND ISOLATION: LESSONS LEARNED FROM SARS**

**A Report to the Centers for Disease Control and Prevention**

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## **FOREWORD**

During the SARS outbreak of spring 2003, quarantine and isolation were used as tools to limit disease transmission on a scale unprecedented in several decades. To improve understanding of quarantine and isolation, including issues surrounding their application in the United States, the Centers for Disease Control and Prevention (CDC) requested and supported this study. The research was funded through a cooperative agreement with the University of Louisville School of Public Health and Information Sciences, No. U90/CU422056. The views and opinions expressed in this report are solely those of the authors and do not necessarily reflect those of the CDC.

## EXECUTIVE SUMMARY

This report uses the experience with Severe Acute Respiratory Syndrome (SARS) to highlight the broad legal and policy challenges in preparing for an outbreak of infectious disease or similar public health emergency. Based on an analysis of the history of quarantine and isolation, relevant U.S. law, and the roles of various governmental bodies in infectious disease control, as well as lessons learned from detailed case studies of the six jurisdictions at the center of the SARS epidemic (Canada, China, Hong Kong, Singapore, Taiwan, and Vietnam), we identified twelve key issues for public health officials and other policy makers within three broad categories:

Legal and Public Health Systems. To respond promptly and effectively to SARS, affected countries needed public health laws that established a mechanism for regulating travel into and out of affected areas; case surveillance, reporting, and analysis; and a range of increasingly coercive measures including quarantine and isolation. They also needed the political will to enforce these measures.

Public Health and Health Care Infrastructure. To minimize the toll from SARS through quarantine and isolation, affected countries needed the public health infrastructure to coordinate the public health response among all levels of government domestically and internationally, as well as a health care system with adequate levels of providers, facilities, equipment, and medications.

Law Enforcement and Ancillary Services. To implement successful programs of quarantine and isolation, affected countries needed ancillary services and logistical support, including law enforcement and other measures to ensure compliance, wage replacement systems, delivery systems for food and medical supplies, and public education and communication measures to inform and gain the support of the public.

These broad “lessons learned” provide the framework for considering the issues to address in preparing the U.S. for a serious outbreak of infectious disease or similar public health emergency.

### Legal and Public Health Systems

1. Political/legal system

#### *Lessons Learned*

The countries we studied differed in size, population, political system, and legal system, but each found its existing statutes and/or regulations inadequate and so had to amend its laws to empower public health agencies. In achieving a strong, coordinated response to SARS, good working relationships among governmental officials were exceedingly important. SARS also highlighted problems with the World Health Organization (WHO) as a regulatory body versus a facilitator of information gathering

and sharing. Finally, the SARS experience underlined the need for vigilance and restraint in the use of the political and legal systems to address emergencies

*Issues to Consider*

**A.1.1 Clear delineation of authority and responsibility for the various public health functions in an epidemic needs to be undertaken among federal, state, and local officials.**

**A.1.2 Because political boundaries are not barriers to infections, regional coordination should be supported and increased among all agencies with public health functions, including departments of public health, health care providers and hospitals, law enforcement, federal and state emergency preparedness officials, and the legal system.**

**A.1.3 Public health measures adopted in response to an emergency that restrain civil liberties should be reviewed periodically and should not be extended to other conditions unless previously established criteria are satisfied.**

2. Travel restrictions

*Lessons Learned*

Restrictions on travel are essential in limiting the geographic range of an epidemic, yet travel restrictions involve the difficult balancing of public health with human rights and economic interests. Further, the marginal public health benefit from ratcheting up restrictions may not be predictable. All of the countries we studied followed the WHO recommendation concerning exit and entrance screening for SARS, addressing ground and sea as well as air travel. Under the intense pressure of the SARS outbreak, many countries were forced to adopt novel approaches to population risk assessment and disease containment, including thermal screening to identify febrile persons at risk for SARS. The countries we studied placed restrictions of varying stringency on domestic travel. News of the global SARS epidemic caused the voluntary curtailment of international travel to affected areas. Travel advisories and travel alerts from WHO and individual countries helped to provide timely and accurate information.

*Issues to Consider*

**A.2.1 In the event that an international traveler develops an infectious disease, there is an urgent need to be able to locate crew members and other passengers from the same flight or ship. Public health officials must have immediate access to passenger manifests or be able to require all arriving passengers to complete a public health form containing, for example, the individual's health status, seat number, countries visited, and contact information. The information must be in electronic form.**

**A.2.2 Affected countries felt compelled to adopt thermal imaging and other screening methods before they were able to conduct rigorous research to assess their effectiveness. Various new public health assessment tools should be carefully evaluated before the next epidemic strikes.**

**A.2.3 The authority of the United States government to control foreign and interstate travel is established by the Constitution and federal statute. It is less clear, however, the circumstances under which states may restrict interstate travel to prevent the spread of infection, and this issue should be thoroughly researched and resolved through memoranda of understanding or other means.**

3. Surveillance, reporting, and epidemiology

*Lessons Learned*

Early identification of case clusters, expert laboratory and pathology analysis, timely tracking of contacts, and prompt reporting of findings to public health officials at all levels are the first lines of defense. The public health significance of the slowness of the initial response in China is perhaps the greatest lesson of the SARS epidemic. State and local public health departments must have surveillance systems and sufficient numbers of epidemiologists to detect suspicious patterns and conduct investigations. Laboratories must have adequate staffing and expertise, as well as quality control, to identify the suspected pathogen, and reporting channels must be in place to trigger large-scale investigations and public health alerts. In light of the September 2003 case of a laboratory worker infected in Singapore, it is important to develop international standards for certifying laboratories and their personnel in infection control measures.

*Issues to Consider*

**A.3.1 The U.S. would benefit from undertaking a nationwide public health human resource needs assessment, and measures should be taken to increase training programs, recruitment, and staffing levels to meet these needs. Prior assessments by the Council of State and Territorial Epidemiologists and the Association of Public Health Laboratories need to be updated and expanded.**

**A.3.2 There should be a greater emphasis on public health in medical school curricula and continuing medical education programs to provide the training essential for prompt identification and reporting of suspicious cases. Health professionals also need to have a clear understanding of the laws related to public health reporting so that, for example, misunderstanding the requirements of the Health Insurance Portability and Accountability Act (HIPAA) does not lead to a failure to report cases of infectious disease to public health officials.**

**A.3.3 Signing comprehensive international agreements for cooperation on public health and developing public health infrastructure should be a high priority**

**for U.S. foreign policy. International agreements must be sufficiently flexible to permit a quick response to emerging infections and other public health emergencies.**

4. Quarantine and isolation

*Lessons Learned*

Although public health laws were on the books in all of the jurisdictions we studied before the outbreak of SARS, the legal authority to order quarantine was limited to specific diseases. Hence, the SARS epidemic required amending the existing legal authority. China adopted the most extensive quarantine; it is not clear that such measures would be acceptable in the U.S. Taiwan illustrates the delicate balance between public health and political considerations in quarantine. Officials in Taiwan now believe that its aggressive use of quarantine contributed to public panic and thus proved counter-productive. In virtually all jurisdictions there were some incidents of violation of quarantine. In Toronto, the two groups most likely to violate quarantine were teenagers and health care workers.

*Issues to Consider*

**A.4.1 The decision whether to order a large-scale quarantine requires a complex analysis of scientific, political, and social considerations. Public health officials need to be able to present comprehensive, understandable assessments of the options to other government officials in a timely manner. Contingency planning for emergencies through simulations and establishing vertical and horizontal lines of communication are extremely valuable in ensuring a prompt response to a public health emergency.**

**A.4.2 Public health laws need to be flexible enough to permit appropriate responses to new epidemics and new circumstances, and public health officials and professionals need to be familiar with the statutory and regulatory procedures for invoking their (or the governor's) authority for quarantine and isolation as well as the mechanisms to enforce directives.**

**A.4.3 Legal authority and public health strategies need to be in place for dealing with individuals who violate the law, and judges and law enforcement officials should be educated about the relevant enforcement provisions of public health laws. Studies need to be undertaken to determine if incentives or penalties promote compliance with quarantine.**

B. Public Health and Health Care Infrastructure

1. Public health officials and health care providers

*Lessons Learned*

The SARS epidemic highlighted an acute shortage of epidemiologists and other essential public health professionals. In Toronto, it took an average of over nine hours per case to perform contact tracing, and there were 2,282 cases to investigate. Bringing in staff from other jurisdictions was not a solution because knowledge of local conditions was essential in contact tracing. Owing to the strain of SARS on local resources, WHO played a crucial role in several countries. Further, while epidemics always place burdens on health care providers, SARS, by infecting health care workers at a high rate, presented enormous challenges. The immediate one was maintaining adequate staffing levels during outbreaks. Not only were health care workers incapacitated due to illness or quarantine, in every country we studied, physicians and nurses avoided caring for infected patients, and officials responded with penalties and/or incentives. Long-term repercussions for health care staffing follow from reports of psychological problems (e.g., exaggerated and disabling fear of infectious disease) and, as in Toronto, departures from the health professions and declining enrollment in training programs.

#### *Issues to Consider*

**B.1.1 The current shortage of epidemiologists, public health nurses, and other personnel in the U.S. will reach a crisis stage in the event of an epidemic. Budget cuts in state and local health departments have further depleted the human resources needed to deal with a public health emergency, and if these positions are not restored an otherwise containable epidemic may spread rapidly.**

**B.1.2 Contingency planning and cross-training are needed to ensure that sufficient numbers of health care workers trained in infectious disease, emergency medicine, pulmonology, toxicology, and other specialties are available in an epidemic or bioterrorism event.**

**B.1.3 Training to diagnose, treat, and report infectious diseases as well as to take precautions for their own protection must become an essential part of the continuing education of front-line health care professionals.**

**B.1.4 Ongoing studies in Toronto of the long-term effects of SARS on health care workers need to be followed closely and a range of psycho-social and educational interventions should be assessed.**

**B.1.5 More fundamental and comprehensive measures may be necessary to deal with the unwillingness of health care providers to treat infected patients. Some options include a greater emphasis on teaching professional responsibility in professional schools and continuing education, and more closely linking licensure with public service obligations. We also need to study whether fragmentation of the health care system and its effects on the provider-patient relationship would have adverse consequences in a public health emergency.**

## 2. Hospitals and other facilities

### *Lessons Learned*

The SARS epidemic demonstrated the lack of surge capacity for isolation and treatment in hospitals and the lack of adequate residential facilities for quarantine. In China, new hospital facilities were built rapidly to respond to SARS; in the U.S. context, an alternative might be standby hospital facilities available for use in the event of an emergency. In any event, quarantine plans should be in place, and periodically updated, that designate certain facilities for use in a public health emergency. Planning needs to be coordinated with local emergency management agencies and the Red Cross. Quarantine areas also need to be identified for other special facilities, including jails, prisons, and military installations. Unlike the jurisdictions we studied, many of the hospitals in the U.S. are privately owned, hence advance consideration of issues of cost and compensation is important. There must be a plan for ensuring the viability of institutions shouldering the burden of patient care and for allocating financial responsibility among governmental entities.

### *Issues to Consider*

**B.2.1 Surge capacity hospital space for public health emergencies needs to be developed for every area of the country.**

**B.2.2 Every public health district needs to develop an emergency quarantine and isolation plan with local facilities that could be used to house people in the event of a large-scale quarantine. The plan should be coordinated with local emergency management agencies and the Red Cross.**

**B.2.3 Legislation should be considered to provide for the funding of health care institutions during public health emergencies. One possibility is to award grants to hospitals in each area to develop and maintain a public health emergency capacity. The Health Resources and Services Administration has begun programs in this area.**

### 3. Medication and equipment

### *Lessons Learned*

Shortages of protective equipment were common in the countries we studied. Public health planning includes stockpiling medical supplies and equipment, which may be expensive, meaning government assistance will be required. The Strategic National Stockpile is reportedly expanding its supply of ventilators and other equipment, but logistics also need to be in place for distribution to health care providers. Many of the countries affected by SARS also distributed a vast amount of medical supplies, such as digital thermometers, directly to the population.

### *Issues to Consider*

**B.3.1 A public health preparedness inventory should be undertaken for each public health district, noting needs and available supplies.**

**B.3.2 Emergency distribution plans should be developed among federal, state, and local public health and disaster preparedness officials.**

4. Coordination

*Lessons Learned*

All of the countries we studied made concerted efforts to coordinate their response to SARS among all of the departments of government, both horizontally and vertically. There was no advance planning for the coordination, however, and measures undertaken “on the fly” led to problems. For example, in Canada, early coordination efforts among city, provincial, and federal officials were weak, thereby delaying an effective, unified response to SARS.

*Issues to Consider*

**B.4.1 Joint response plans involving all appropriate government agencies should be developed for a range of public health emergencies, including natural disasters, infectious diseases, and bioterrorism events.**

**B.4.2 To conserve state and local public health resources and ensure consistency, there should be a single, integrated, public health response plan for all public health threats, including SARS, bioterrorism, and West Nile virus, rather than layering a new plan for responding to the threat onto prior response plans.**

C. Law Enforcement and Ancillary Services

1. Law enforcement

*Lessons Learned*

Law enforcement was very important in controlling SARS. For example, in Toronto law enforcement personnel were used to enforce the isolation of patients with SARS at hospitals, to serve quarantine orders, to conduct spot checks on people in quarantine, and to track down people who broke quarantine. Traditional law enforcement functions also were affected by SARS. In Singapore, the police were directed not to arrest individuals with SARS engaged in certain illegal acts lest infected individuals be “driven underground.” While voluntary compliance with quarantine was high in the countries we studied, it is not clear that a largely voluntary approach would work in the U.S. with its cultural notions of individuality, due process, and skepticism of government. Securing large numbers of quarantine orders, however, would severely strain the resources of public health agencies, prosecutors, and the courts.

### *Issues to Consider*

**C.1.1 Public health law training should be provided to all health care providers and government officials charged with obtaining and enforcing orders for quarantine and isolation of individuals, including police officers, prosecutors, public health officials, and judges. Public health law training also should be incorporated into law school curricula.**

**C.1.2 Because federal and state health officials have concurrent jurisdiction in many quarantine cases, memoranda of understanding should be developed setting forth the responsibilities of various agencies and departments.**

**C.1.3 Appellate courts with jurisdiction to hear appeals of quarantine and isolation cases should review their procedures for emergency appeals so that a trial court's granting or denying an order of quarantine may be appealed immediately, before an individual is wrongly denied his or her liberty or wrongly permitted to infect other people. In jurisdictions that issue quarantine orders administratively, procedures for emergency judicial review need to be in place.**

### 2. Delivery of food and medicine

#### *Lessons Learned*

A large-scale quarantine requires a wide range of services to be provided to confined individuals. In all of the countries we studied, food and supplies were delivered by public and private social service agencies. Special precautions were required for waste disposal and mortuary services. And in several countries a special ambulance service transported those who became symptomatic to a designated SARS hospital. All of these “ancillary” services must be provided with regard for cultural and religious diversity. In the U.S., questions to be addressed include: How would financial responsibility be shared among federal, state, and local governments? Would individuals in quarantine be required to pay for some of the food and supplies they received? Would only “authorized” delivery services be permitted?

### *Issues to Consider*

**C.2.1 Public health planning for a large-scale quarantine needs to consider the wide range of logistical issues involved in providing food, medicine, and essential services for thousands of people in quarantine. Planning should be coordinated with the Red Cross.**

**C.2.2 Representatives of people from all racial, ethnic, religious, linguistic, and cultural groups as well as people with disabilities and other special needs in each geographic area need to be involved in the quarantine planning process so that a plan appropriate to the needs of each group is developed in advance of an emergency. Policies need to be developed on the appropriate site for quarantine of**

**individuals who have mental illness, mental retardation, substance abuse problems, or other conditions that make home quarantine infeasible.**

**C.2.3 Legislation is needed to further address the responsibility for funding ancillary services in a quarantine.**

3. Nondiscrimination and wage replacement

*Lessons Learned*

Quarantine resulted in the confinement of thousands of individuals who were well enough to work and who needed to work to support themselves and their families. Because the success of quarantine depended on compliance by the affected individuals, all of the countries we studied took some steps to provide for income replacement and employment security of individuals in quarantine. SARS-based discrimination in employment was a problem in all of the countries we studied; health care workers were among those suffering the most discrimination. Bad economic conditions associated with SARS also resulted in unemployment. Governmental responses varied. For example, in Hong Kong, sick leave was granted to individuals in home confinement. Canada passed a law prohibiting the discharge of employees under quarantine absent proof that a business downturn necessitated the elimination of positions and providing compensation for individuals absent from work for at least five days and physicians affected by hospital closures due to quarantine.

*Issues to Consider*

**C.3.1 In general, under current U.S. law, employees without a contrary contractual provision may be discharged for being in quarantine. Laws need to be enacted to prohibit discrimination and to provide for the job security of individuals in quarantine.**

**C.3.2 With the exception of those contractually entitled to paid sick leave, employees in the U. S. are not eligible for income replacement due to quarantine under any federal or state law. Providing income replacement for employees and self-employed persons is essential to ensure a high rate of compliance with quarantine.**

**C.3.3 To promote adherence to quarantine, individuals in quarantine need to be held harmless for various consequences of lost income, and therefore measures need to be explored that would, for example, provide for insurance and rent payments and protect against repossession for missed car payments.**

4. Public education and communication

*Lessons Learned*

Public education and communication played an essential part in preventing panic and flight, protecting against discrimination, and promoting sanitary practices and adherence to quarantine. Features of communication and education programs varied by country; examples of specific measures include a 24-hour SARS television channel and a SARS telephone hotline staffed by public health nurses. In many jurisdictions special outreach programs were developed for minority populations. Not all of the efforts to allay public fears were successful, and some countries took action based on exaggerated public fears rather than public health considerations.

*Issues to Consider*

**C.4.1 Additional research and funding are needed to study and improve programs for public health education and communication.**

**C.4.2 Prior communication involving public officials, public health experts, public health lawyers, business officials, and other civic leaders is essential in implementing a quarantine.**

**C.4.3 Frequent communication by a single, or a very limited number of credible spokesperson(s) throughout an epidemic is essential to improving public understanding of and maintaining public support for quarantine, isolation, and other public health measures.**

## INTRODUCTION

Testifying before the Senate Committee on Health, Education, Labor and Pensions on April 29, 2003, Dr. Julie L. Gerberding, Director of the Centers for Disease Control and Prevention (CDC) stated: “The kinds of things we are doing for SARS we can anticipate we are going to do again and again.” This report, prepared at the request of the CDC, is intended to highlight the broad challenges in preparing for the large-scale use of quarantine and isolation in response to an epidemic of infectious disease of any type.

It is important to delineate the scope of the report. Although it reviews the epidemiology of SARS in countries especially hard hit, the focus is not on the biology or epidemiology of SARS, or the clinical care of infected individuals. Although it reports on the epidemic of 2003 in Asia and Canada, it is not an in-depth investigation of the public health efforts of particular countries. Although it discusses the implementation of large-scale programs of quarantine and isolation, it is not a scientific evaluation of the efficacy of quarantine and isolation as a public health strategy. Finally, although it discusses areas in which legislative action is needed, it does not present or endorse any specific laws or model statutes.

The report describes the political, legal, public health, and health care response to SARS in Canada, China, Hong Kong, Singapore, Taiwan, and Vietnam, and it attempts to identify broad “lessons learned.” Virtually all of these countries have done their own detailed assessments, and therefore our review is more limited. The report has been drafted with an eye toward public health law and policy in the United States, and it identifies essential areas of federal and state public health law and related laws of direct relevance to large-scale quarantine. The report also addresses the human resource and infrastructure needs of public health, health care, law enforcement, and social service agencies.

Part VI of the report identifies twelve key issues for SARS policy. For each one, we include “lessons learned” followed by “issues to consider.” It is our hope that this report will stimulate discussion, additional research, and prompt action by public officials to prepare for a public health crisis in the United States.

The views expressed in this report are solely those of the authors and do not necessarily reflect those of the CDC.

## I. QUARANTINE AND ISOLATION

### A. History

#### 1. Europe and Asia

Concern over and the practice of avoiding persons with contagious diseases has been documented in the most ancient of texts and writings, including the Old Testament (avoiding lepers) and the works of Thucydides (c. 460-400 B.C.E.), Hippocrates (c. 460-370 B.C.E.), and Galen (c. 130-200 C.E.).<sup>1</sup> One of the earliest uses of quarantine - and isolation-type measures to control the movement of sick persons is said to have taken place in 532 C.E., when the Emperor Justinian of the Eastern Roman Empire commanded that persons arriving into the capital city of Constantinople (current day Istanbul, Turkey) from “contaminated localities” be housed in special facilities to be “cleansed.”<sup>2</sup> Similar quarantine and isolation measures have been used often over the succeeding centuries—particularly in seventh century China and other parts of Asia and in the Middle Ages in Europe<sup>3</sup>—to protect coastal cities from epidemics of plague and other communicable diseases.

The term *quarantine* is derived from the Italian words *quarantina* and *quaranta giorni*, which were used during the fourteenth and fifteenth centuries and referred to a 40-day period in which certain ships that entered the port of Venice were obliged to wait in isolation before any person or good was permitted to go ashore.<sup>4</sup> The measure was later applied to other Mediterranean ports under Venetian control, as well as to land quarantine, under which both sick persons and healthy individuals arriving into Venice from plague-infected areas were placed for 40 days or more in a special isolation station called a *lazaret* (derived from Lazarus or leper).<sup>5</sup> The use of 40 days as a quarantine period is thought by some to be based upon the observation at the time that “after forty days, people stricken with the plague either died or recovered without further spread to others.”<sup>6</sup>

Other examples of past uses of quarantine and isolation in response to the spread of plague are similar to those used in Venice.<sup>7</sup> For example, in 1622 in the port city of Marseille (France) a law was passed that prohibited the landing of persons arriving from other locations or countries without first undergoing a medical examination.<sup>8</sup> In 1683, new laws were passed in Marseille that required all persons suspected of having plague to be quarantined and disinfected; similar laws were later passed that applied to all ports along the French coast, particularly in response to the spread of yellow fever from the West Indies.<sup>9</sup> In Germany, considered vulnerable to the “invasion of plague” from Italy and Turkey, a law was enacted in 1666 in Frankfort that prohibited persons who lived in “infected” houses from visiting markets or churches.<sup>10</sup> In England, a royal ordinance was issued to require the building of *lazaret*-type facilities for the isolation and detention of all ships, their cargo and persons, both English and non-English, to determine if the ship had arrived from a plague-infected location; if so, the ship, including its cargo, passengers and crew, were sent back out to sea.<sup>11</sup>

Later epidemics, particularly yellow fever and cholera, began to galvanize international interest in quarantine and isolation in an attempt to control the spread of these and other diseases. A number of countries (e.g., Britain, France, Russia, Spain, Italy, and Greece) with significant maritime trade organized quasi-governmental entities in Asian and Middle Eastern countries (including Morocco, Egypt, and Turkey) that were considered the conduits or sources of cholera—and through which passed a large volume of trade—and established multinational “sanitary councils” in an attempt to coordinate and oversee the establishment and maintenance of a system of quarantine institutions.

Many of these early efforts at multinational control and coordination were not successful, however, in large part because of the political bickering between European powers with competing interests in preserving or enlarging their commerce and trade with the Middle East and Asia, as well as the questionable effectiveness of traditional quarantine measures (e.g., detention alone) as a response to the spread of cholera.<sup>12</sup> It was not until the mid-to-late nineteenth century that intensive efforts were made at exploring international cooperation and coordination in controlling contagious diseases, with the development of proposed quarantine rules for implementation by signatory countries.<sup>13</sup> The proposed rules included, for example, requiring ships to present “bills of health” upon arrival in port; prohibiting port authorities to deny ships entry; providing different periods of quarantine depending upon disease; standardizing quarantine dues and fees; and appointing responsible officers to head up quarantine facilities.<sup>14</sup>

Unfortunately, no meaningful consensus emerged until after the Seventh International Sanitary Conference in 1892. It concluded with a convention, eventually signed by many countries, containing recommendations and measures pertaining to the control of cholera in Egypt and Europe. Yet even these measures were not enough to arrest the next cholera epidemic in Europe, and so other conferences followed to address the ongoing weakness of communicable disease control.

The Eleventh International Sanitary Conference, held in 1903 in Paris, adopted a broad range of measures to control plague and cholera. These measures included prompt notification among countries of outbreaks, including reports of the course of epidemics; uniform measures of control by all countries in infected localities, including ports; publication of control measures and disinfection; maximum anti-epidemic measures that were to be uniform for all countries; and recommendations for the establishment of permanent medical organizations for supervision, management and observation over the ships and population of all ports, including isolation facilities for sick persons and suspected cases, disinfection facilities, bacteriology laboratories, supervision of water and sewage systems, and other related measures.<sup>15</sup>

The Eleventh Sanitary Convention was seen as the “first comparatively effective international convention” that was credited with introducing meaningful uniformity for the control of epidemic diseases, and was also considered historically important for having led to the establishment of the first permanent international health organization, which became known as the International Office of Public Hygiene (IOPH) and which

functioned as an important international center for epidemiological information for many years.<sup>16</sup> Although it became defunct as the result of World War II, the IOPH's many functions and international focus were later assumed by the United Nations and the World Health Organization.<sup>17</sup>

## 2. United States

Quarantine and isolation measures in the U.S. were at first similar to those used in Europe and were not uniform or coordinated. The control of communicable diseases that were largely attributed to immigration or trade from abroad was dealt with primarily by local authority, and only secondarily by state or federal authority.<sup>18</sup> In Boston, for example, a city ordinance required that all ships attempting to disembark in the harbor first stop at the harbor entrance to be checked for sick persons; somewhat later, a "house" on Rainsford's Island in the harbor was designated for the detention of persons with "contagious diseases."<sup>19</sup>

In New York City, a more elaborate system of medical inspection and detention was developed, centered off Staten Island, that included the inspection of all incoming ships, cargo, and passengers for contagion. Persons considered to have a disease at the time considered "quarantinable" (e.g., cholera, yellow fever, plague, leprosy, smallpox) by a quarantine officer were admitted for mostly palliative care to an isolation hospital located at the quarantine station, staffed by physicians, nurses, and orderlies.<sup>20</sup> Persons with less serious contagious diseases (e.g., measles, scarlet fever) were sent to a Marine Hospital on Ellis Island.<sup>21</sup> The detention or isolation period was usually determined by the disease at issue, including what was known about the disease's incubation period and degree of infectiousness.<sup>22</sup> A similar disease control system was established by the New York City Health Department, with the department's staff of inspectors, physicians, and special police force having the authority to inspect all persons within the city who were reported to be sick and to remove to the city's quarantine island certain persons with contagious disease.<sup>23</sup>

The early lack of federal involvement with quarantine does not mean that the federal government was without any concern about the control of epidemics or their effect upon commerce and trade. In 1798, a federal law (titled "An Act for the Relief of Sick and Disabled Seamen") was enacted requiring that every "master or owner of every ship or vessel of the United States" that arrived into a U.S. port from a foreign port first provide an account of the number of seamen, and pay a fee for every seaman aboard to the U.S. Secretary of Treasury to provide for the care of sick and disabled seamen in port or other hospitals or institutions.<sup>24</sup>

In the late 1870s, the need for a more centralized or coordinated response to the persistent yellow fever epidemics resulted in the enactment of federal laws establishing a more prominent role for the federal government in controlling epidemics and instituting quarantine measures, including the passage in 1878 of "an Act to Prevent the Introduction of Contagious or Infectious Diseases in the United States."<sup>25</sup> This law prohibited the entry into a U.S. port or the passage across the U.S. border of any vessel or vehicle from

a country where “any contagious or infectious disease may exist,” or of a vessel or vehicle conveying any person, merchandise, or animal “affected with any infectious or contagious disease,” contrary to the quarantine law of the state into or through which the vessel or vehicle might pass or be destined.<sup>26</sup> The law also charged the U.S. Marine Hospital Service (the forerunner of the U.S. Public Health Service) with responsibility for carrying out the provisions of the Act, including assisting in the enforcement of the national quarantine rules and regulations of the Surgeon General.<sup>27</sup> To provide support to the individual states in their own quarantine efforts, the law also extended to the officers of any state or municipality’s quarantine system the authority and power to act as an agent of the federal government for “quarantine purposes.”<sup>28</sup> Interestingly, and no doubt as an acknowledgement of traditional local and state control in these matters, the 1878 Act stipulated that the federal law “shall not conflict with or impair any sanitary or quarantine laws or regulations of any State or municipal authorities now existing or which may hereafter be enacted,” and that there “shall be no interference [by federal officers or its agents] in any manner with any quarantine laws or regulations as they now exist or may hereafter be adopted under State laws.”<sup>29</sup>

It was not until 1944, with the enactment of the Public Health Service Act, that the federal government assumed preeminent authority and power with regard to quarantine activities for the purposes of controlling the spread of communicable diseases. Under the Act, the U.S. Surgeon General is authorized to “make and enforce such regulations as in his judgment are necessary to prevent the introduction, transmission, or spread of communicable diseases from foreign countries into the States . . . or from one State . . . into any other State. . . .”<sup>30</sup> Legal authority and power with regard to the control of communicable diseases *wholly within* states, however, remains primarily the preserve of the states rather than the federal government.

## B. Modern Uses

In the twentieth century there were many cases in which quarantine and isolation—including both mandatory and voluntary measures—were used by public health officials in the U.S. and other countries in an attempt to control communicable diseases. Sometimes these measures were quite controversial.<sup>31</sup> A sample of some of the more prominent cases illustrates the varying ways that public health officials have used quarantine and isolation.

In 1907, an apparently healthy woman, Mary Mallon, was involuntarily admitted to the New York City Health Department’s Detention Hospital, and held there, with the subsequent affirmation of a New York court, for a total of three years based upon concerns about her infectious state for typhoid fever.<sup>32</sup> The conditions for her release specified that she not engage in any occupation that would bring her into contact with food, but she accepted a job as a cook at a hospital, which later had dozens of cases of typhoid. Mary Mallon was again involuntarily admitted to a number of New York area hospitals and institutions “without any prospect of again being released.”<sup>33</sup> In Ms. Mallon’s case, public health officials concluded that only isolation for the remainder of her life would effectively control the risk of typhoid transmission.

In the fall and winter of 1918, divergent approaches to quarantine and isolation were used in response to an influenza pandemic (often referred to as the “Spanish Flu”) that killed between 20 and 40 million persons worldwide, including hundreds of thousands in the U.S.<sup>34</sup> Inconsistent control measures were implemented in most U.S. jurisdictions, including mass graves for the dead; suspension or closure of public gathering places (e.g., churches, schools, shops); prohibitions on public gatherings (e.g., funerals, meetings); ordinances against spitting, coughing, or sneezing in public; and the quarantine of suspected influenza cases or the isolation of sick persons.<sup>35</sup> On the University of California-Berkeley campus, where 1,200–1,400 persons contracted influenza, for example, the fear of influenza led the supervisor of the campus-based volunteer Student’s Army Training Corps to involuntarily quarantine the entire corps, not just those suspected of having the illness.<sup>36</sup> In other cities, irrationality about some of the control measures, such as orders to close some public gathering places (e.g., churches), but not others (e.g., saloons),<sup>37</sup> appeared to undermine the public’s confidence in health officials and their policies.

The prospect of venereal diseases being spread by persons convicted of prostitution also served as a basis for the use of involuntary quarantine-like measures by public health authorities, measures that were affirmed by criminal courts. Under New York law, for example, persons charged with and convicted of vagrancy (then defined as including prostitution), and who pursuant to mandatory medical examination were found by a physician to be “afflicted with any venereal disease, which is contagious, infectious or communicable,” could be ordered by a criminal court to involuntary commitment to a public hospital for treatment until they were cured.<sup>38</sup>

In other states, criminal conviction was not required before such confinement was effected. Under the laws of Ohio in 1919, for example, courts found that persons who were *neither* charged with nor convicted of acts of prostitution could be ordered by public health authorities into quarantine by involuntary hospitalization “for the protection of the public health” if such persons have “been shown to be one of the class known as common prostitutes” and a health officer has a “reasonable belief that the person ordered into confinement is afflicted with a malignant, infectious or contagious disease.”<sup>39</sup>

More recently, outbreaks of tuberculosis, Human Immunodeficiency Virus (HIV), and even Ebola Hemorrhagic Fever have been cause for the quarantine and isolation of persons so infected. In the case of tuberculosis and HIV, both mandatory and voluntary quarantine and isolation measures have been used, with the decisions of some courts, combined with public health policy, appearing to suggest that voluntary rather than mandatory measures may better further public health interests.

For example, in *State v. Snow*,<sup>40</sup> the Arkansas Supreme Court affirmed, albeit reluctantly, a lower court’s ruling that authorized the involuntary commitment of W. F. Snow to the Arkansas Tuberculosis Sanatorium under the state’s Act No. 161 (“an Act to Require Isolation of Recalcitrant Tuberculosis Patients”), who state and local health department officials had claimed had active tuberculosis, was unwilling to “voluntarily submit to medical treatment,” and was living at home under conditions not suitable for

isolation.<sup>41</sup> The court, however, carefully noted that the evidence put forth by public health officials to support their claim for the involuntary commitment of Mr. Snow was “meager,” because the officials had failed to provide the evidence (chest x-ray, sputum tests, or other approved diagnostic procedures) required under the Act for ascertaining Mr. Snow’s “active tuberculosis.”<sup>42</sup> Presumably, had Mr. Snow been able to show satisfactory voluntary adherence to tuberculosis treatment and acceptable isolation within his home, his involuntary hospitalization in the Arkansas Tuberculosis Sanatorium might have been avoided altogether.

In the 1980 case of *Greene v. Edwards*,<sup>43</sup> the West Virginia Supreme Court of Appeals decided an appeal brought by William Arthur Greene, who claimed that a lower court’s ordering his involuntarily confinement to the Pinecrest Hospital under the West Virginia Tuberculosis Control Act violated his rights under both the West Virginia and U.S. Constitutions.<sup>44</sup> The court did not discuss whether sufficient evidence had been provided by public health officers to support Mr. Greene’s involuntary commitment to a state tuberculosis facility. It concluded that the lower court proceedings that resulted in his confinement improperly denied Mr. Greene his rights under both the West Virginia and U.S. Constitutions, primarily because Mr. Greene’s attorney was appointed only after the commitment proceeding had begun, Mr. Greene and his appointed attorney were given no time to consult privately, and Mr. Greene’s attorney could not have been adequately prepared to defend him.<sup>45</sup> On this basis, the court ordered Mr. Greene’s release from Pinecrest Hospital, but it was delayed for 30 days to provide the state with the opportunity to conduct further proceedings consistent with the court’s findings.<sup>46</sup>

The *Snow* and *Greene* cases suggest that public health officers and the lower courts that approved the orders for involuntary commitment made little effort to examine the potential for pursuing *voluntary* isolation measures rather than involuntary commitment. Examples of voluntary measures include the use of in-home isolation as an alternative to commitment to state or other public facilities, and the use of less restrictive means of treatment or control before the use of detention, which some states require.<sup>47</sup>

The case of quarantine and isolation for persons with HIV is somewhat different than that of tuberculosis control, in that few persons with HIV in the U.S. (other than prisoners) have ever been involuntarily quarantined or isolated for the express purpose of controlling HIV transmission, and quarantine and isolation for persons with HIV or their contacts is generally not a recommended course of action.<sup>48</sup> Some other countries, however, have been far more draconian in their response to HIV. In Cuba, for example, a program of mass population screening for HIV was implemented in 1985, first with persons who had traveled out of the country, then with blood donors and persons whose work involved extensive travel, and when diagnostic kits became more widely available, with other persons including pregnant women, persons with sexually transmitted diseases, inpatients, prisoners, and other population subgroups.<sup>49</sup> The most controversial aspect of Cuba’s response to HIV is the mandatory quarantine in the Santiago de las Vegas Sanatorium of persons who test positive for HIV, the benefits of which have been subject to much debate in the public health literature. Nevertheless, some quarantined

“trustworthy” patients are permitted to leave the Sanatorium for brief periods of time, and eventually, patients may be discharged to their home.<sup>50</sup>

In sum, modern uses of quarantine and isolation have often, but not always, varied by the location (or perhaps more accurately, jurisdiction) of the disease outbreak. Quarantine and isolation have usually been driven by the nature of the particular disease at issue and the degree of risk of transmission from the infected individual to others, as evidenced by the response to, first, tuberculosis, and later HIV.

### C. Quarantine and Isolation for SARS

“The modern definition of quarantine is the restriction of activities of healthy persons who have been exposed to a communicable disease, during its period of communicability, to prevent transmission during the incubation period if infection should occur.”<sup>51</sup> “In contrast, isolation is the separation, for the period of communicability, of known infected persons in such places and under such conditions as to prevent or limit the transmission of the infectious agent.”<sup>52</sup> During the SARS epidemic, the nomenclature sometimes did not fit the established definitions, but the concepts were familiar. For example, in Chinese, there is no word for quarantine; it is all “isolation.” “Home isolation” and “home confinement” were used to refer to the confinement of asymptomatic contacts of infected persons.

During the SARS outbreak, different types of quarantine and isolation measures were used by public health authorities to control SARS transmission. Isolation was used for persons who posed the greatest risk of transmission, persons who met the criteria used by public health officials for probable SARS cases. Almost all probable SARS cases were isolated in health facilities, generally inpatient acute care hospitals, in which these individuals were actually diagnosed.<sup>53</sup> Often, persons in quarantine, such as persons who met the criteria used by public health officials as suspect SARS cases (e.g., persons who may have been in recent contact with a probable SARS case and are experiencing fever and a cough or breathing difficulty),<sup>54</sup> were subsequently placed in isolation when their symptoms met the criteria for probable SARS case.<sup>55</sup> Unfortunately, many SARS cases were only diagnosed upon investigation of death or autopsy.

In contrast to isolation, quarantine methods varied greatly, often simply because a particular quarantine method appeared to be the most intuitive and timely response in light of how little was known about the actual risk of transmission. For example, the quarantine of definitive “contact” cases<sup>56</sup>—or persons who were known to have been in close physical proximity and who had inadequate or no protection from possible exposure to a probable SARS case or setting—such as household or family members, was perhaps the most intuitive, and in retrospect, rational measure, given what became known about the likely route of transmission (i.e., droplets). This was often referred to as home quarantine or “home isolation,” in which the contact cases were urged to remain at home for a 10-day period, with follow-up, usually by telephone, by a local public health worker.<sup>57</sup>

The quarantine of contact cases was also used for health care workers (e.g., emergency medical services or ambulance personnel), under circumstances in which health care workers may have had “either an exposure to a SARS patient or a setting where SARS has been transmitted” while lacking adequate protection from such exposure. These quarantines were called “work quarantines.” Health care workers could continue to work in the health facility where they were exposed as long as they remained well. Persons who were subject to work quarantine were required to follow home quarantine rules during the time they were not at work.<sup>58</sup> Persons who were not health care workers but who may have been exposed within a health care facility were also subject to quarantine. For example, any person who entered Toronto’s Scarborough Hospital (Grace Division) after March 16, 2003 was asked to adhere to a 10-day home quarantine due to their potential exposure to a probable or suspect SARS case before adequate infection control measures had been implemented. Similar quarantines were imposed on other worksites where persons who, although not in the position of providing health care services, were nonetheless known to have been in proximity to and had inadequate or no protection from possible exposure to a probable SARS case. Persons were required to remain in quarantine for the 10-day period, and in some cases, their workplaces were closed for business.

In situations where persons’ proximity or possible exposure to probable or suspect SARS cases was less certain, less coercive measures were used. These quarantine methods included “snow days,” the closure of schools, child care facilities, or other buildings or locations at which large numbers of people usually gathered (e.g., markets, public services, homeless shelters), and the cancellation or postponement of public events.<sup>59</sup> At the other extreme, highly restrictive measures were used in China, including the cordoning off of certain neighborhoods and villages and restrictions on travel, including the closure of public transit.<sup>60</sup>

While legal authority may have existed or was thought to exist for these quarantine methods, the use of so many different quarantine measures, often without apparent regard to the particularized risk for which control was sought, may have served to undermine public credibility. It is clear that a more considered, careful, and evidence-based approach to quarantine and isolation is needed.

Regardless of the wisdom of quarantine and isolation in particular circumstances, these measures are only part of the public health response to an epidemic. Typically the ordering of quarantine for SARS triggered a whole system of public health measures. Contact tracing was an essential part of the strategy, and this required a staff of trained epidemiologists, public health nurses, and other professionals. Quarantine orders had to be served, and public health officers and law enforcement personnel were used in the countries we studied. Some individuals did not want to stay at home during quarantine because they were afraid of infecting family members. In Singapore, individuals under quarantine had a choice of staying at home or at a designated center (a resort taken over by the government). Taiwan used a public housing center that had not yet opened, military facilities, and a home for the elderly as quarantine facilities. In Hong Kong, “holiday camps” were used for homeless people and those who did not want home

confinement. On the other hand, some people did not want to leave their homes because there would be nobody to care for their pets. Every country developed a system for providing meals and other social services.

The vast majority of people under quarantine in all of the countries obeyed requests to stay at home without requiring a court order. Some individuals, however, attempted to escape their confinement, and a variety of means were needed to ensure compliance. For example, in Singapore, three telephone calls were made per day to the home of each individual in quarantine to confirm that the individual was there. People who were known to work at night were called at night. Electronic cameras were used to verify that people were at home, and people in quarantine were required to take their temperature on camera. Anyone initially violating quarantine had an electronic tag put on his or her leg (there were 26 cases). In all of the countries, police officers were charged with locating and confining individuals who violated quarantine.

#### D. Political Aspects

Isolation is relatively straightforward scientifically, politically, and socially. It seems to make sense to confine individuals who are ill with a communicable disease and to limit their contacts. Neither the affected individuals nor potential contacts of the person are likely to object to such measures. Similarly, it will not be complicated to decide whom to isolate, where to do so, or for how long. Quarantine, however, is very complicated, and it raises a series of difficult questions of public health, public health law, and public policy.

At the outset, it should be clear that the purpose of quarantine is not to stop immediately all transmission of infection. Not only is this likely to be nearly impossible, but the severity of the measures needed would be extremely unpopular and therefore the necessary level of compliance would be difficult to achieve. The purpose of quarantine is to reduce the incidence of new cases to below the total rate of deaths plus patients who have recovered. As a result, the total number of infected individuals will peak, decline, and then reach zero.

The contours of quarantine will vary depending on a variety of factors, including the mode of transmission (e.g., close contact, airborne), the likelihood of transmission per contact event, the length of communicability, and the recovery rate. In the case of SARS, as a new infection, quarantine policy needed to be designed and implemented in the absence of definitive scientific information about the infection rate or the course of the illness.

Although scientific considerations will inform the policy decisions surrounding quarantine, they should not necessarily dictate the results. For example, as the definition of “close contact” is broadened, more people will be quarantined. As the criteria for quarantine are broadened, the absolute number of infected (presymptomatic) people in quarantine will increase, but the percentage of infected people in quarantine will decline.

This is analogous to a screening test with a high degree of sensitivity and a low degree of specificity generating numerous false positives.

Putting large numbers of people in quarantine may be politically unpopular.<sup>61</sup> It also strains the resources of health care, public health, social service, and law enforcement agencies and may seriously damage the local and national economy. The length of the quarantine period, both on an individual and jurisdictional basis, also is more than a narrow issue of infection control. As the time for quarantine is increased, the rate of compliance will decline. Furthermore, a long period of quarantine may lead to substantial morbidity and mortality from the inability to provide health care services for other conditions.

There seems to be general public support for quarantine if it is applied fairly and reasonably. A complicating factor, however, is that it is often impossible to tell when the need for quarantine will end. Thus, in Toronto, the second wave of quarantine was the most difficult for a variety of psychological and social reasons.

A lack of alternatives made the use of quarantine and isolation an important element of controlling SARS in Canada, China, Hong Kong, Singapore, Taiwan, and Vietnam. These jurisdictions had a high rate of compliance with quarantine and isolation. It is not clear whether the United States would have the same compliance rate in a comparable epidemic. Many of the Asian countries are well known for their communitarian culture, and Canada is also known for its commitment to social solidarity as evidenced by its health care system. By contrast, the United States is a heterogeneous society with a strong tradition of individualism and skepticism about government.

## II. GOVERNMENTAL ROLES IN SARS

### A. WHO

#### 1. Background

The World Health Organization (WHO) was established in 1948 under the auspices of the United Nations. The United Nations Charter and the WHO Constitution grant WHO the authority to monitor world health. The WHO Constitution allows WHO to address various public health issues by adopting conventions, agreements, and regulations through its supreme decision-making body, the World Health Assembly (Health Assembly).<sup>62</sup> Any member of the United Nations may become a member of WHO by accepting its Constitution. Membership is available to other countries by application, if approval is given by a majority vote of the Health Assembly. There are currently 192 WHO member countries.<sup>63</sup>

Each WHO member sends a delegation to meetings of the Health Assembly, typically held in Geneva in May of each year.<sup>64</sup> A 32-member Executive Board meets in January to set the agenda for the upcoming meeting. The Secretariat of WHO is responsible for implementation. The Secretariat has a staff of approximately 3500 at its Geneva headquarters, in six regional offices, and in specific countries. Its head is the Director-General, who is appointed by the Health Assembly on the nomination of the Executive Board.

Articles 19-22 of the WHO Constitution delineate the specific areas of authority of the Health Assembly. Article 21 empowers the Health Assembly to adopt regulations in areas including sanitary and quarantine requirements and other procedures designed to prevent the international spread of disease; nomenclature with respect to diseases, causes of death and public health practices; and standards for diagnostic procedures. After notice of adoption is given, regulations come into force for all member countries, with the caveat that the notice of adoption will specify a period for members to reject or register reservations with the Director-General.<sup>65</sup> The member countries are bound by a set of regulations, and any reservations are typically listed in annexes to the official text.

The control of infectious diseases is one of the areas in which international law has been developed and implemented by WHO. These efforts have culminated in the body of regulations referred to as the International Health Regulations (IHRs). The precursors of today's IHRs were adopted in 1951 as the International Sanitary Regulations (which had existed in one form or another since 1851) and were given their current name in 1969. The IHRs have been modified twice since their enactment, in 1973 and in 1981. The IHRs are intended to maximize security against the global spread of disease while minimizing interference with global movement.

The IHRs require member countries to notify WHO of all cases of certain infectious diseases in humans. Currently, the list of notifiable diseases is limited to cholera, plague, and yellow fever. The IHRs also provide health-related rules for travel

and commerce; require health documentation of those traveling from infected to non-infected places; require other travel documentation, such as maritime declaration of health; and establish guidelines for deratting, disinfecting, and adopting other hygiene measures related to travel and commerce. The IHRs not only mandate certain public health activities; they also set limits on the measures member countries may take to protect public health, especially if these impede international traffic.<sup>66</sup> For example, with respect to quarantine, the IHRs allow for surveillance or isolation of infected persons only for the duration of the incubation period based on the date of last exposure or arrival.<sup>67</sup>

A number of revisions to the IHRs have been recommended that are intended to enhance the capabilities of the global public health network in areas such as the early detection of unusual disease events.<sup>68</sup> Proposed changes include establishment of a real-time event management system and development and enhancement of national core surveillance capacities. The revisions would also broaden the IHRs beyond the three diseases of current focus to encompass all public health emergencies of international concern; projects subsumed under this heading include the refinement and implementation of an instrument that will aid member states in assessing the notifiability of an event.

In addition, in a resolution adopted at its May 2003 meeting, the Health Assembly urged member countries:

Establish immediately a national standing task force or equivalent group and, within it, to designate an official or officials having operational responsibilities and accessible at all times by telephone or electronic communication, to ensure the speed, particularly during emergencies, of both reporting to WHO and consultation with national authorities when urgent decisions must be made[.]<sup>69</sup>

Further, requests have been made to the Director-General to accept all sources of information regarding disease outbreaks with potential for international impact and to collaborate with national governments in handling and devising control measures as well as communicating rapidly with the international community.

For many years, there has been debate on the need to revise and strengthen the IHRs to reflect the current concerns about the rapidity with which infectious disease can spread under contemporary social conditions as well as the emergence of new and dormant infections.<sup>70</sup> The SARS outbreak has given a new impetus to the effort needed to update provisions and standards related to reporting and controlling infectious disease on a global level.

2. The Department of Communicable Disease Surveillance and Response (CSR) and the Global Outbreak Alert and Response Network (GOARN)

The Department of Communicable Disease Surveillance and Response (CSR) at WHO houses its global alert and response activities. The mission of CSR is to provide support for global health security and epidemic alert and response.<sup>71</sup> The strategy of CSR is threefold: contain known risks; respond to the unexpected; and improve preparedness. The IHRs provide the basic framework for CSR and are the only “set of binding international legal rules on infectious disease control.”<sup>72</sup> During the SARS outbreak, the WHO CSR division worked closely with the WHO Western Pacific Regional Office.

The Global Outbreak Alert and Response Network (GOARN) was established by WHO in 2000 with the assistance of the Canadian government. GOARN is a collaboration of institutions and networks around the world that provides coordination and logistical support in the form of standardized protocols, agreed standards, procedures for alert and verifications process, communications, coordination of response, specialist equipment, medical supplies, emergency evacuation, research, evaluation, and relations with media. It is supported administratively by the office of Alert and Response Operations within CSR. Through GOARN “WHO and partners aim to enhance the coordinated delivery of international assistance in support of local efforts; strengthen local infrastructure and capacity to reduce illness, death and prevent disease spread; and to make a difference to those affected by outbreaks by initiating long term local and national preparedness and capacity building projects.”<sup>73</sup>

GOARN provides “an operational framework to link this expertise and skill to keep the international community constantly alert to the threat of outbreaks and ready to respond.”<sup>74</sup> The specific objectives of the network are to fight the international spread of outbreaks; ensure that appropriate technical assistance is provided to affected countries; and contribute to the long-term epidemic preparedness and capacity building.<sup>75</sup> GOARN functions under guiding principles developed through international consensus with the IHRs as the overarching framework. Protocols are developed for specific operational issues.

Although GOARN has played a central role in keeping the global community informed and updated as to changes and progress regarding SARS, its effectiveness has been limited by the voluntary nature of country reporting beyond the three notifiable diseases under the IHRs. As discussed below, China failed to report the early cases of atypical pneumonia and therefore delayed a global response to a new infectious disease. This experience has again highlighted the need to update the IHRs and to adapt the existing detection and reporting networks to the challenges created by communicable diseases in an interconnected global community.

WHO maintains a number of specific mechanisms that assist member countries in detecting, responding to, and sharing information about disease outbreaks. The Global Public Health Intelligence Network is an electronic system that continuously searches websites, newswires and media sites, public health e-mail services, national government websites, public health institutions, non-governmental organizations, and specialized discussion groups to identify information regarding epidemic threats and rumors. WHO has developed six criteria to determine if an outbreak constitutes an international concern: unknown disease; potential for spread beyond national borders; serious health impact or

unexpectedly high rates of illness or death; potential for interference with international travel or trade; strength of national capacity to contain the outbreak; and suspected accidental or deliberate release.

Support for effective response to threats comes from Global Alert and Response Teams, which draw on the expertise of personnel from WHO country offices, WHO regional response teams, alert and response operation center teams, and disease specialists. Under the heading of technical assistance, WHO can provide rapid assistance to affected states at a level according to need, hold daily response coordination of meetings, and offer advice and supplies. Specific support may include on-the-spot investigations and assistance with confirmation of diagnosis, handling of dangerous pathogens, case detection, patient management, containment measures, and logistics.

Information sharing is facilitated by a number of publications. Three are of particular importance. The *Outbreak Verification List* is a weekly electronic report of confirmed and unconfirmed reports of outbreaks of international public health importance. Recipients of this report include key public health officials of the 192 WHO member countries, disease experts, institutions, agencies, and laboratories. The *Disease Outbreak News* is a web-based system providing public information about officially confirmed outbreaks of international importance. The *Weekly Epidemiological Record* is a bi-lingual (French/English) weekly publication available in print and electronically. It provides information on cases and outbreaks of diseases covered by the IHRs as well as other infectious diseases of public health importance.

### 3. WHO Responses to SARS

On March 12, 2003, WHO issued a global SARS alert in response to information generated by its alert and response systems. On March 15, WHO issued an emergency travel advisory; such advisories are extremely rare. On March 17, WHO convened a Collaborative Multi-Center Research Project on SARS Diagnosis, which consists of 11 laboratories in nine countries working on a diagnostic test for SARS.<sup>76</sup> The group is using various communication methods to share data from SARS cases in real time.<sup>77</sup>

WHO's response to SARS represented a new level of assertiveness in controlling an international epidemic.

Typically, WHO refrains from publicly criticizing its member states because such criticism puts the intergovernmental organization in a difficult position in its work with member governments. WHO's public criticism of the Chinese government [in April 2003, for insufficient reporting on the scale of the epidemic] represented a radical break with the traditional diplomacy that characterizes relations between the Organization and member states.<sup>78</sup>

WHO received broad support for its aggressive stance, and the Chinese government changed its policy. WHO appears to have assumed the essential, but possibly expanded, role of not only assisting member states to control the spread of epidemics, but also

assessing the adequacy of control measures and the forthrightness of surveillance and reporting.

At its May 2003 meeting, the Health Assembly approved a resolution on SARS, prepared by an informal drafting group made up of representatives of 37 member countries. The resolution urges member countries:

- (1) to commit fully to controlling SARS and other emerging and re-emerging infectious diseases, through political leadership, the provision of adequate resources, including through international cooperation, intensified multisectoral collaboration and public information;
- (2) to apply WHO recommended guidelines on surveillance, including case definitions, case management and international travel;
- (3) to report cases promptly and transparently and to provide requested information to WHO;
- (4) to enhance collaboration with WHO and other international and regional organizations in order to support epidemiological and laboratory surveillance systems, and to foster effective and rapid responses to contain the disease;
- (5) to strengthen, to the extent possible, capacity for SARS surveillance and control by developing or enhancing existing national programmes for communicable disease control;
- (6) to ensure that those with operational responsibilities can be contacted by telephone or through electronic communications at all times;
- (7) to continue to collaborate with and, when appropriate, provide assistance to WHO's Global Outbreak Alert and Response Network as the operational arm of the global response;
- (8) to request the support of WHO when appropriate, and particularly when control measures employed are ineffective in halting the spread of disease;
- (9) to use their experience with SARS preparedness and response to strengthen epidemiological and laboratory capacity as part of preparedness plans for responding to the next emerging infection, the next influenza pandemic, and the possible deliberate use of a biological agent to cause harm;
- (10) to exchange information and experience on epidemics and the prevention and control of emerging and re-emerging infectious diseases in a timely manner, including among countries sharing land borders; [and]
- (11) to mitigate the adverse impact of the SARS epidemic on the health of the population, health systems and socioeconomic development[.]<sup>79</sup>

The resolution further states that the Director General should “collaborate with Member States in their efforts to mobilize financial and human resources on technical support in order to develop or enhance national, regional and global systems for epidemiological surveillance and to ensure effective responses to emerging and re-emerging diseases, including SARS.”<sup>80</sup>

GOARN has been of particular significance during the SARS outbreak. It has provided “an operational platform to mobilize clinicians, data managers, infectious disease experts, epidemiologists, laboratory experts, logistics experts, medical epidemiologists, microbiologists, media experts, pathologists, public health specialists and virologists as part of the international effort to address [a] global public health emergency.”<sup>81</sup> It has coordinated the provision of essential supplies and assistance to hospitals caring for SARS patients. It has flown experts into countries requesting help in areas such as field support and logistics coordination. Its networks of electronically-connected clinical and laboratory experts have worked on the development of case definitions for SARS and identification of the causative agent, development of diagnostic tests, generation of knowledge concerning the mode of transmission, and development of treatments. GOARN has developed and disseminated specific and detailed measures for surveillance of SARS, and it receives daily reports on the disease situation in affected countries. It has also issued advice to travelers.

In addition, a public-private initiative on surveillance has been created by WHO in response to SARS in order to build capacity in surveillance, epidemiology, and public health laboratories in Asia. The initiative was funded through the business community with interests in Asia.

## B. National Public Health Agencies

### 1. U.S. Centers for Disease Control and Prevention (CDC)

Although the United States has not experienced a major outbreak or epidemic of SARS cases, the CDC has played a vital role in informing the U.S. public and in providing technical assistance as well as resources to countries affected by SARS. Nationally, the CDC has set up a public response hotline; held daily response team briefings and conference calls; coordinated a number of SARS satellite broadcasts; and made a SARS webpage available with constant updates. A total of 84 employees from a variety of disciplines traveled to SARS-affected countries. The CDC has also collaborated with WHO to provide laboratory assistance in the search for the pathogen responsible for SARS and in confirming cases of SARS.

Were the U.S. to experience a major outbreak, the federal system in the U.S. would present a challenge, since “the CDC has no regulatory powers to implement prevention and control measures outside the national quarantine system, as those powers reside with the states.”<sup>82</sup> In most countries affected by SARS, the central government had the power to implement and enforce control measures such as quarantine and isolation at the local as well as national level. In the U.S., individual states are responsible for public health control measures within their borders as part of the police power recognized by the U.S. Constitution. Significant variation exists among states and localities in terms of laws governing quarantine and isolation measures.<sup>83</sup> The fact that state and local authorities have power over quarantine and isolation within their borders but the federal government is responsible for interstate and international control of the

spread of disease makes cooperation and clear communication among the various levels of government essential to effective management of an infectious disease outbreak.

Title 42 U.S.C. Section 264 (Section 361 of the Public Health Service Act) gives the Secretary of Health and Human Services responsibility for preventing the introduction, transmission, and spread of communicable diseases from foreign countries into the U.S. and within the U.S. and its territories/possessions, and CDC has the authority to “detain, medically examine, or conditionally release individuals suspected of carrying a communicable disease”<sup>84</sup> under regulations found at 42 C.F.R. Parts 70 and 71. Violation of a quarantine and isolation order is a federal criminal misdemeanor.<sup>85</sup> In response to the SARS outbreak, and by recommendation of the Secretary of Health and Human Services, President Bush added SARS to the list of reportable diseases on April 4, 2003. Executive Order 13295 effectively revised the existing list of quarantinable communicable diseases by adding SARS to cholera, diphtheria, infectious tuberculosis, plague, smallpox, yellow fever, and viral hemorrhagic fevers.<sup>86</sup> During the 2003 outbreak, the CDC recommended, but did not compel, the isolation of individuals with SARS.<sup>87</sup>

The CDC’s Global Migration and Quarantine Division has coordinated efforts to prevent and control the spread of infectious diseases with other federal agencies, state and local health departments, the travel industry, and other organizations. The Division has eight permanent quarantine stations at major points of entry staffed by 30 permanent quarantine inspectors. During the SARS outbreak staffing and presence were augmented to 23 quarantine stations (15 new ports of entry) and 150 additional staff in order to provide information to travelers arriving from SARS-affected countries via airplanes, ships or land; distributing health alerts to travelers with information regarding symptoms of SARS and what to do if they should develop SARS-like symptoms; examining travelers aboard airplanes and ships who have been reported as being ill with SARS-like symptoms; providing updates to other government agencies; and working with the CDC SARS investigation team and local and state health departments. SARS-specific yellow health alert cards were distributed to over 2.7 million arriving passengers disembarking from over 11,000 flights and 62 ships over a three-month period.

The CDC has issued a number of guidelines for the management of SARS cases. The following are some of the guidelines provided by the CDC and available through the CDC website: Interim Guidelines for Air Medical Transport; Interim Guidance for Airline Disinfection and Cleaning; Interim Guidance About SARS for Airline Crew Members; Interim Travel Advice for Flight Crews Who Lay Over in Areas Affected by SARS; Interim Guidance About SARS for Transportation Security Administration Personnel; Interim Guidelines About SARS for Bureau of Customs and Border Patrol; Interim Guidelines about SARS for Persons in the General Workplace Environment; Health-Care Workers; Laboratory Safety; and Human Remains. Also, the CDC (along with state and local health departments) has a free registry system, the Health Alert Network, that provides clinicians with real-time information on emergency events and bioterrorism.

## 2. Other Countries

The United Kingdom Health Protection Agency issued a report called “Legal Powers That Would Assist in Controlling Severe Acute Respiratory Syndrome (SARS) in England and Wales: Would Making SARS Notifiable Assist?” exploring the issues raised by the SARS epidemic.<sup>88</sup> According to the report, in a May 2003 survey conducted by the European Commission, 17 European Community countries reported making SARS a notifiable condition. The level of certainty required to trigger the notice requirement, i.e., whether cases had to be confirmed or merely suspected or probable in order to be notifiable, was not assessed by the survey. Additionally, 15 countries reported that they had some form of legal provision for implementing quarantine.

The European Commission has formed a SARS expert group with multidisciplinary membership to advise the Commission and national authorities on issues regarding and related to SARS and issued two reports regarding the SARS situation, “Measures Taken by Member States and Accession Countries to Control the Outbreak of SARS” and “Employment, Social Policy, Health, and Consumer Affairs.” The first report was undertaken in response to a Health Council request for information regarding member states’ actions in response to SARS. The report relied on a survey of 27 countries prepared by the European Union Expert Group on SARS. The survey found that “on the whole, European countries have adopted rapid and consistent measures on early detection of cases, implementation of isolation measures and guidance to health professionals, and the public on the identification of possible SARS cases.”<sup>89</sup> It also found that information was made available to health professionals electronically and on paper; that public information had been widely and rapidly distributed; and that travel advice was more or less consistent among European countries. As a response to SARS, some European countries have included mandatory quarantine measures in their legal framework, and others are currently working on modifying their legislation.<sup>90</sup> Other measures adopted in European countries as a result of the SARS epidemic addressed research, humanitarian assistance, anti-discrimination actions, mass gatherings, and import-export of goods.<sup>91</sup> Specifically, the report found that 22 countries added SARS to their list of diseases with obligatory reporting. Nineteen countries added quarantine as a mandatory measure in their national legislation. The second report includes a checklist on SARS that enumerates the areas of action for national authorities.<sup>92</sup>

It is apparent that numerous national and international measures are necessary to prevent, detect, and control infectious disease outbreaks. National and international measures need to be coordinated and the free flow of information is imperative to achieve coordination. Additionally, a strong and effective public health infrastructure is essential. A July 2003 report from the U.S. General Accounting Office concludes that although the level of international scientific cooperation was strong and unprecedented during the SARS outbreak, lessons learned should be applied now in preparation for a future outbreak. The report names early identification of cases and their contacts, safety precautions and protective measures for health care workers, control measures—including quarantine and isolation, and “swift and unfettered communication among

health care workers, public health officials, government agencies, as well as the public” as key in the effort to contain an infectious disease.<sup>93</sup>

### III. LAW OF QUARANTINE AND ISOLATION

#### A. United States

On April 4, 2003, at the request of the CDC, President Bush signed Executive Order 13295, adding SARS to the list of communicable diseases for which federal isolation and quarantine is authorized.<sup>94</sup> Thus, SARS joined cholera, diphtheria, infectious tuberculosis, plague, smallpox, yellow fever, and viral hemorrhagic fevers as communicable diseases detainable by the federal government.

Although public health law is generally thought of as a state function within the United States federal system, SARS is an example where the flexibility of federal law allowed the CDC to exercise leadership. With only 164 total confirmed, suspected, or probable SARS cases in the entire country, the United States relied heavily on “public education” and “voluntary” quarantine and isolation to contain the outbreak. The legal system for implementing quarantine and isolation in the United States, however, may become more important if an outbreak of SARS or another disease became more widespread.

#### 1. Federal Authority

##### a. Statutory Authority

Under Section 361(b) of the Public Health Service Act,<sup>95</sup> the list of diseases for which quarantine or isolation is legally authorized must be specified in an Executive Order signed by the President.<sup>96</sup> With the signing of the executive order on April 4, 2003 the federal government created the legal authority to prevent the introduction, transmission, or spread of *suspected* cases of SARS in the United States through control of entry at its borders. With this grant of power, the CDC established a set of interim rules regarding interstate and foreign quarantine to include SARS. These rules allow the CDC to “isolate, quarantine, or place the person under surveillance and may order disinfection” based on a reasonable belief that a person arriving in the United States or traveling in interstate commerce is infected or may have been exposed to SARS.<sup>97</sup> These interim rules were in place by April 10, 2003, a little more than a week after the WHO issued a global health alert on April 2, 2003.

The “interstate commerce” jurisdiction of the CDC gives it the authority to intervene in what might be a local outbreak or case of SARS on the theory that the infected individuals are likely to move across state lines. The statute authorizes the CDC to promulgate regulations that provide “for the apprehension and examination of any individual reasonably believed to be infected with a communicable disease ... and (A) to be moving or about to move from a State to another State; or (B) to be a probable source of infection to individuals who, while infected with such disease..., will be moving from a State to another State.”<sup>98</sup> The interim rules thus gave the CDC ample legal authority to respond to a SARS outbreak anywhere in the country. For that authority to be effective, federal resources would have to be increased in the event of a SARS epidemic.

The Federal Emergency Management Agency (FEMA) was created in 1978 in a government reorganization, in which the function of agencies from the Departments of Defense, Commerce, Housing and Urban Development, and the General Services Administration were merged into one new agency. Under regulations for securing FEMA assistance,<sup>99</sup> when an “incident occurs or threatens to occur in a State” that would not qualify as a major disaster (generally a natural catastrophe), a Governor of a State may request that the President of the United States declare an “emergency.”<sup>100</sup> An “emergency” is defined as “any occasion or instance, for which, in the determination of the President, [f]ederal assistance is needed to supplement State and local efforts and capabilities to save lives and to protect property and *public health and safety* . . . .”<sup>101</sup> The basis for a governor’s request must include, among other information, the finding that the situation is of “such severity and magnitude that effective response is beyond the capability of the State and the affected local government(s),” and that the situation requires “supplementary Federal emergency assistance to save lives and to protect property, *public health and safety* . . . .”<sup>102</sup> If an epidemic meets these and other conditions, the epidemic would almost certainly constitute an “emergency.”

Once the President makes an emergency declaration in response to a governor’s request, the FEMA Associate Director or Regional Director “may provide assistance,” including directing “any federal agency, with or without reimbursement, to utilize its authorities and the resources granted to it under federal law (including personnel, equipment, supplies, facilities, and managerial, technical and advisory services) in support of State and local emergency assistance efforts to save lives, protect property and *public health and safety* . . . .”<sup>103</sup> Available assistance also may include, for example, provision of health and safety measures; management, control, and reduction of immediate threats to public health and safety; and emergency assistance under the Stafford Act through federal agencies.<sup>104</sup>

Closely mirroring FEMA regulations, the Stafford Act<sup>105</sup> authorizes the President, pursuant to a declaration of an emergency, to direct any federal agency to use its authority and resources granted to it under federal law to, among other things, support state and local emergency assistance efforts; coordinate all relief assistance; provide technical and advisory assistance; and provide emergency assistance through federal agencies.<sup>106</sup> Neither the federal statute nor regulations limit or otherwise specifically define such “support” or “emergency assistance” to mean only *non-financial* support. Presumably, a federal agency may exercise its discretion to provide state and local governments with financial support in lieu of or in addition to other types of assistance authorized under the law. It may be important to note that the Stafford Act specifically provides for financial support to state and local governments, as well as individuals and businesses, in cases of major disasters and emergency preparedness. Similar reference to financial support is not included in sections of the Stafford Act pertaining to “emergency” situations, but this omission has apparently not been interpreted to limit assistance in “emergency” situations under the Stafford Act to non-financial assistance.<sup>107</sup>

Finally, under the Stafford Act, whenever the federal assistance in an “emergency” may be “inadequate,” the President may also provide “assistance with respect to efforts to save lives, protect property and public health and safety, and lessen or avert the threat of a catastrophe.”<sup>108</sup> The intent of this provision is to permit the President to authorize any other assistance necessary, conceivably including financial assistance.

The Department of Health and Human Services, through the CDC, has the primary responsibility within the federal government for tracking and overall management of the public health response in the event of an outbreak of SARS or comparable public health threat. However, the CDC will support rather than supplant the disease surveillance, epidemiologic response, diagnostic laboratory services, and efforts of containment of state and local public health agencies.<sup>109</sup> Because of the CDC’s concurrent jurisdiction with the states on quarantine and isolation, it will play a back-up role as a safety net where the state fails to act, but the CDC and U.S. attorneys’ offices (which would be responsible for obtaining judicial orders) lack the staff to replace the states in leading quarantine and isolation efforts. In other words, if a state is unable to obtain an order of quarantine or isolation against an individual in a state court, the CDC acting through the local U.S. attorney, would have the legal authority to obtain such an order in federal court under federal law, but the federal government does not have the resources to replace state public health officials to obtain and enforce (via the federal marshal service) numerous orders.

## 2. Constitutional Issues

There is little basis to question the constitutionality of the revised CDC regulations regarding SARS, at least as directed at non-United States citizens seeking entry into the country. The federal government’s authority to exclude non-citizens attempting to enter the United States through recognized ports of entry is quite broad.<sup>110</sup> The only constitutional challenge to the federal government’s power to control immigration is a procedural due process claim,<sup>111</sup> such as lack of notice, hearing, or statutory authority. At present, the CDC could detain and order medical examination of any alien suspected of having SARS seeking entry into the United States without violating the Constitution because of President Bush’s Executive Order of April 4, 2003. Ironically, those individuals in the country illegally would have more standing to challenge the constitutionality of a detention or deportation order than those seeking to enter the United States legally because once in the country the alien is treated more like a citizen or permanent resident.<sup>112</sup>

Efforts to control the interstate spread of SARS would likely have to clear two kinds of constitutional hurdles. First, the federal government, like the states, has to exercise its broad public health power to detain individuals in a manner consistent with the constitutional protections afforded individuals. The United States Supreme Court’s landmark 1905 decision of *Jacobson v. Massachusetts*<sup>113</sup> is significant not only for its upholding the constitutionality of compulsory vaccination, but also for the Court’s statement about the need for a scientific basis for the use of coercive public health

measures. In the case of SARS, this implies that the power to detain individuals must be utilized carefully and consistent with the best available scientific knowledge. An example of how such power was carefully utilized in the past, in the case of an American couple who visited Sweden during an outbreak of smallpox in the 1960s, is one of the few cases where an individual challenged a federal detention order in federal district court. The district court judge upheld an isolation order in a public health hospital against the wife who had not been vaccinated, but not against the husband who the court noted had been vaccinated.<sup>114</sup>

A second issue, not yet resolved, is at what point the federal government's power to prevent the spread of SARS among the states preempts the traditional police power of states with respect to public health. This is both a theoretical and a practical issue in the event of a large outbreak of SARS or other pathogens in the United States. There is probably concurrent jurisdiction between federal and state health authorities, for instance, when a person suspected of having SARS lives in one state, for instance, New Jersey, but works in New York City. We know of no reported instances where the issue of federalism had to be resolved. At a practical level, the federal and state public health officials would depend on each other in the face of a widespread SARS-like outbreak. If the federal government issued a detention order against such a hypothetical commuter, it is not clear how and by whom the order would be enforced. Federal statutes authorize the Coast Guard and customs agents to aid in the enforcement of federal quarantine rules and regulations.<sup>115</sup> The CDC is authorized to seek the assistance of state and local officials in the enforcement of federal quarantine orders,<sup>116</sup> and probably would do so.

Involuntary detention by the federal government for SARS or any communicable disease would have to consider a possible constitutional challenge. With notions of liberty and privacy protected by the United States Supreme Court as constitutional rights,<sup>117</sup> federal and state officials must apply quarantine and isolation laws with an eye towards a constitutional challenge by an individual. At a minimum, there must be, in the case of involuntary isolation, a written order directed at the individual. There must be adequate evidence to justify the conclusion that the individual represents a threat and meets a previously established "case definition." For instance, an order might use the CDC guidelines to allege the person is a "probable case" of SARS because of recent travel to a SARS-infected area and symptoms such as a fever and cough. The requested order must be specific and time-limited, and there must be an opportunity to be heard by a neutral fact-finder and eventually a judge. It is probably constitutional for the hearing to follow detention in the case of isolation of a probable infected person, provided the hearing is held promptly after detention and the detainee has the right to representation and appeal to a court.<sup>118</sup>

Quarantine, on the other hand, requires a slightly more complicated constitutional analysis because of two factors. First, the individual, by definition, is not yet infected. Second, quarantine could apply to a large number of people, rather than focus on a particular individual. Courts also might apply greater scrutiny to quarantine orders because at least some justices have recently used a broader "liberty" analysis rather than the more limited fundamental rights analysis to invalidate a state criminal statute.<sup>119</sup>

## B. State and Local Law

Protection of patient privacy seems to have guided the few reports of the actual use of quarantine and isolation by state and local officials in the United States to contain the spread of SARS. According to media reports, New York City public health officials involuntarily detained a tourist who became sick with flu-like symptoms in early April 2003. The tourist had stopped in Hong Kong on his way to New York and refused to remain in a hospital in New York where he received treatment. It is significant that the public health officials never released the name of the individual, the hospital, or the man's country of origin in an attempt to protect his privacy. This was only the second time in over 25 years that the New York City Public Health Department involuntarily detained a person suspected of having a communicable disease other than tuberculosis. At the time of the incident, New York City had 18 suspected cases and two probable cases of SARS, using the CDC definitions. Unresolved, however, was who would pay for the tourist/patient's 10 days of involuntary detention and isolation in a New York City hospital.<sup>120</sup> No one in the media has yet asked, what would happen if the undisclosed New York hospital had demanded payment in advance before accepting the detained tourist as an involuntary patient?

The answer to that question in New York City or elsewhere in this country would require examining New York state and city ordinances to determine if public health officials have the authority to "seize" a hospital and perhaps compensate later. By coincidence, at the time of the SARS outbreak, New York City was in the process of revising its public health code to deal with a possible bioterrorist attack. These amendments clarify the authority to detain suspected cases of diseases in either their home or a hospital and provide some procedural protections for those detained. Consistent with U.S. notions of due process, these regulations are built on the assumption that individual orders will be issued to restrict movement.<sup>121</sup>

These New York City rules could be adopted because the Charter of the City of New York grants the Board of Health the authority to amend the rules. It is unlikely that all local boards across the country have such rulemaking authority because of the great variation among state and local laws regarding quarantine and isolation. Utah's code, for instance, grants the health commissioner the authority "to require quarantine, vaccination or treatment of any individual when he determines any such measures to be necessary to control the spread of any disease of public importance."<sup>122</sup> Indiana, by contrast, has a very detailed statute for determining when involuntary treatment, isolation, and quarantine can be used, with authority vested in local health departments.<sup>123</sup> Some states have detailed regulations for each disease, along with concurrent jurisdiction between the state and local legislative bodies. It is not clear in some of those jurisdictions whether the New York-type detention of a suspected case of SARS would be possible without interpreting old statutes and new regulations, none of which refer to SARS.

Lawyers for public health departments at the state and local levels who draft quarantine and isolation orders that conform to statutory and constitutional requirements

face another obstacle. The rules of procedures of trial and appellate courts in many states, even provisions for expedited proceedings, could lead to unacceptable delays. For example, if a trial judge refused to sign an order for quarantine or isolation, it is not clear how long it would take for the public health authorities to appeal. If the normal time for an “expedited appeal” in the state is seven days, this may be totally inadequate to contain the spread of infection (in the case of a wrongfully denied order) or to redress a deprivation of liberty (in the case of wrongfully issued order). Because quarantine and isolation case law in most jurisdictions is so old, today’s judges may be unaware of the time needs of effective public health containment in a global economy. More generally, the role of the judiciary in state public health law needs careful study because courts are crucial in ensuring the proper balance between public health needs and the civil liberties and dignity of individuals and the community.

In the end, quarantine and isolation in the United States must be studied from the perspective of state administrative law. Principles of delegation and the scope of judicial review may be used to limit an overly broad public health statute or to bring coherence to an overly detailed one. The overlap between state and local jurisdiction in public health matters in a given state is not simply a matter of municipal law, but require reading into any decision involving quarantine and isolation principles of constitutional law that balance the rights of individuals with the community’s interest in public health. Thus, whether a local public health official could legally detain a person suspected of having SARS and seek judicial review after the detention is a matter of untangling statutory authority, principles of state administrative law, and constitutional principles that constrain government control over individuals.<sup>124</sup>

### C. Travel

The spread of SARS from China to the rest of the world, largely through travelers staying at a single hotel in Hong Kong, demonstrates the importance of limiting the mobility of infected individuals. As noted in Section II, under the Public Health Service Act,<sup>125</sup> the Division of Global Migration and Quarantine of the Center for Infectious Diseases of CDC has been delegated the responsibility for preventing the introduction, transmission, and spread of communicable diseases into the U.S. CDC health officers are stationed in major gateway cities throughout the world to assess the health of travelers before they enter the U.S. The CDC is also responsible for operating quarantine stations in Atlanta, Chicago, Honolulu, Los Angeles, Miami, New York, San Francisco, and Seattle.

During the SARS epidemic, widespread efforts were made to identify symptomatic international travelers and to prevent them from entering the U.S. and infecting others. This was accomplished through temperature checks of passengers at airports upon arrival, in some countries through the use of thermal imaging of passengers, and information given to all arriving international passengers to monitor their health and promptly report any symptoms to public health authorities. Similar measures were undertaken for maritime crews, passengers on cruise ships and ferries, as well as individuals at border crossings.

Despite best efforts, it may not be possible to identify all infected individuals before they enter the country. Once identified, however, as when they become symptomatic, it is imperative that public health officials have the ability to respond quickly to isolate or quarantine the individual's contacts. It is essential that the CDC and other public health authorities have access to complete, contemporaneous passenger manifests for international flights in electronic form. Past attempts to do this, involving tuberculosis, were complicated. At present, legal restrictions limit such access to law enforcement and national security agencies. It will also be necessary to coordinate contact tracing and intervention activities with state and local public health authorities, and such arrangements must be firmly in place before any serious public health event.

#### D. Eminent Domain

Public health measures to deal with SARS have required the governments in affected countries to have the exclusive use of certain health care and related facilities. For example, in Toronto, during the second wave of the epidemic, four hospitals were designated as SARS hospitals, and patients with other health problems were forced to seek medical care elsewhere. Residential facilities also were needed for quarantined individuals who were homeless or who were away from home at the time of their exposure to SARS. Requisitioning of private facilities for public health purposes is not, of course, unique to SARS. In Paris, in August 2003, after 11,000 deaths were caused by a heat wave, the government took over refrigerated warehouses and similar facilities to use as temporary morgues. These actions lead to the question of what U.S. legal principles would apply to the compelled public use of private property in a public health emergency.

All sovereign states possess the power of eminent domain, the power to appropriate private property for public use. The power is based on the natural law principle of necessity, and it is recognized in all states as well as the federal government. The key constitutional provision is the "takings clause" of the Fifth Amendment, applicable to the federal government, and extended to the states through the Fourteenth Amendment. These provisions set the three constitutional prerequisites for application of eminent domain: (1) public use; (2) just compensation; and (3) procedural due process surrounding the taking. The purpose of the takings clause is to prevent the government from forcing some people to bear the entire responsibility of a public burden that should be borne by the public as a whole.

The first requirement of a public use would be easy to establish in the case of the taking of a hospital or building to fight an epidemic of infectious disease. With an occupied hospital, however, the "taking" involves a serious dislocation. The use of property need not be permanent to qualify as a "taking" for constitutional purposes.<sup>126</sup> The second requirement, just compensation, is based on the market value of the property taken. Depending on the size of the epidemic and the amount of property taken, this could be a substantial amount of money. Third, procedural due process requires the property owner to have a reasonable opportunity to be heard on the issue of the

compensation, but a trial-type hearing is not constitutionally required and the hearing need not precede the taking.

## IV. INTERNATIONAL CASE STUDIES

### A. Canada

#### 1. Introduction

Canada was among the countries hardest hit by SARS. Only the People's Republic of China, Hong Kong, and Taiwan had more probable SARS cases. Toronto was the Canadian city most affected the outbreak.<sup>127</sup> The first (index) SARS case in Toronto was a 78-year-old woman, Mrs. K, who returned home to Toronto on February 23, 2003 from a trip to Hong Kong to visit relatives. Mrs. K, who was never hospitalized, died on March 5 after the onset of an illness later determined to be SARS. Her son, Mr. T, became ill on February 27, was admitted to Scarborough Hospital (Grace Division) on March 7, and died on March 13.<sup>128</sup> Transmission of SARS traceable to Mrs. K is thought to have included 224 other persons in Toronto alone. In all of Canada, there were 438 SARS cases, including 251 probable (1 active) and 187 suspect (0 active) cases.<sup>129</sup> All of the probable cases were reported in two provinces, Ontario, which includes Toronto, and British Columbia. Suspect cases were reported in four other provinces (Alberta, New Brunswick, Prince Edward Island, and Saskatchewan).

In an apparent (but in retrospect, premature) sign that the SARS situation had stabilized, Premier Eves of Ontario lifted the SARS provincial emergency on May 17, stating that "Toronto, and Ontario, are safe places to live, work and visit."<sup>130</sup> Unfortunately, on May 23, the second phase of the SARS outbreak began. Opinions differ about the capability of the Canadian government to respond to SARS or other SARS-like outbreaks. As one commentator stated, "I have a concern about whether or not in the long run our public health-care system will be able to meet the demands placed by new illnesses like SARS.... [N]o one is directly accountable or responsible for public health."<sup>131</sup> Concerns like this may be related, in part, to the decentralized nature of Canadian public health governance, with authority formally delegated to a multitude of federal, provincial, and local entities.

#### 2. Political and Legal Systems

Canada is somewhat larger geographically than the U.S., but its population is only slightly more than a tenth the size of the U.S.<sup>132</sup> Canada is a confederation of 13 provinces and territories, with powers delineated among the federal (or national) and provincial governments. The powers of government are established by the Constitution Act of 1867 ("Constitution Act"). Under the Constitution Act, a number of powers are exclusively reserved to the provincial governments; matters not exclusively vested with provincial governments are by default conferred upon the federal government.<sup>133</sup>

Canada is also a constitutional monarchy in which both provincial and federal executive authority rests with the British Crown (currently the Queen of England, who is also designated the Queen of Canada), but which is exercised by democratically elected

provincial and federal executive governments (or “cabinets”). The provincial and federal executive governments are formed by the political party that wins the largest number of seats in the provincial legislative assembly (or “provincial parliament”) or federal legislative House of Commons, respectively.<sup>134</sup> Generally, the leader of the majority political party is designated as the Prime Minister (federal executive government) or premier (provincial executive government). Both the Prime Minister of Canada and the provincial premiers appoint members of their cabinets, who will in turn head up the various ministries. The British Crown is represented in Canada by the Governor General, and in the provinces by Lieutenant Governors, without whose royal assent neither federal nor provincial legislation may become law. Acts of the executive government are undertaken in the name of the Queen, although authority for executive government acts is said to derive from the Canadian people. At the federal level, legislative authority rests with the Parliament, consisting of a Senate and House of Commons, while legislative authority at the provincial level rests with the legislative assemblies.

The Canadian judicial system is divided into four different levels, including the provincial courts (which hear the majority of cases that come into the judicial system, and which often have more specific names based upon their subject matter jurisdiction); provincial and territorial superior courts (whose jurisdiction covers more serious crimes as well as appeals from the provincial courts, and which usually have subject matter divisions), as well as the Trial Division of the Federal Court (considered to be on the same level as the provincial and territorial superior courts but has jurisdiction for different issues, and is basically a superior court with civil jurisdiction); the provincial courts of appeal and the Federal Court of Appeal (whose jurisdiction includes appeals from the lower superior courts or Federal Court—Trial Division, respectively); and the Supreme Court of Canada, the final court of appeal from all other Canadian courts.<sup>135</sup>

### 3. Public Health Structure and Laws

#### a. Federal level

The Constitution Act does not specifically address public health. However, the Constitution Act does provide for the national Parliament’s exclusive legislative authority for matters of “Quarantine and the Establishment and Maintenance of Marine Hospitals.”<sup>136</sup> Pursuant to its authority, the federal government has enacted two statutes with significant public health implications, the Department of Health Act<sup>137</sup> and the Quarantine Act.<sup>138</sup>

The Department of Health Act establishes the executive branch’s Department of Health, including the position of Minister of Health, and provides that the “powers, duties and functions of the Minister extend to and include all matters over which Parliament has jurisdiction relating to the promotion and preservation of the health of the people of Canada not by law assigned to any other department, board or agency of the Government of Canada.”<sup>139</sup> These powers, duties, and functions include, but are not limited to, the

following: “the protection of the people of Canada against risks to health and the spreading of disease”;<sup>140</sup> “investigation and research into public health, including the monitoring of diseases”;<sup>141</sup> “the protection of public health on railways, ships, aircraft and all other methods of transportation, and their ancillary services”;<sup>142</sup> and “cooperation with provincial authorities with a view to the coordination of efforts made or proposed for preserving and improving public health.”<sup>143</sup>

The executive branch of the federal government, through the Governor in Council, is empowered to “make regulations that give effect to and carry out the objects” of the Department of Health Act; persons who “contravene” these regulations are “guilty of an offence punishable on summary conviction.”<sup>144</sup> The Department of Health Act further provides that neither the Minister nor any other officer or employee of the Department may exercise jurisdiction or control over the health authorities of the provinces.<sup>145</sup> Consistent with the affirmative grant of the power to regulate, the Department of Health (now generally referred to as “Health Canada”), has the responsibility for administering a number of health laws and health related programs, including, for example, laws pertaining to food, drug, and medical device safety, regulation of tobacco products, the federal health insurance (Canada Health Act) program, control of hazardous workplace products, and reduction of the incidence of disease.

As part of its many ministerial responsibilities related to public health, the Department of Health has established the Population and Public Health Branch. The diverse activities of the branch include injury surveillance, prevention and control of sexually transmitted diseases, field epidemiology training, and biosafety. Within the branch is the Center for Emergency Preparedness and Response, charged with coordinating public health security issues by developing national emergency response plans, assessing public health emergency risks, developing federal rules for quarantine, and collaborating with other international, federal, and provincial agencies.

As a product of the constitutional structure of the Canadian government and contemporaneous but delineated authority among the federal, provincial, and local governments in matters related to public health, the legal authority for quarantine and isolation for purposes of public health may rest with federal, provincial, and/or municipal governments, depending upon the specific activity or context in which a public health issue is raised. For the federal government, the legal authority for quarantine and isolation appears limited to public health risks posed by travel or trade into or out of Canada, while for provincial and municipal governments, quarantine and isolation for purposes of public health are based on their broad police power over persons, businesses, or other entities that reside in or are located within their jurisdictions.

Canada’s single most comprehensive law related to the control and prevention of contagious disease may be the Quarantine Act.<sup>146</sup> The purpose of the Quarantine Act is to “prevent the introduction into Canada of infectious or contagious diseases.”<sup>147</sup> Under section 5 of the Quarantine Act, a duly designated quarantine officer is authorized to board any conveyance (air, train, motor vehicle, ship) arriving into or departing from

Canada to inspect for infectious or contagious diseases (enumerated on a schedule of diseases that included cholera, plague, smallpox, and yellow fever, and that now includes SARS), and to inspect persons arriving into Canada for “dangerous diseases” (discussed below). The Quarantine Act does not apply to persons who are not at a Canadian point of entry or departure.

Under section 8(1) of the Quarantine Act, a quarantine officer may request that a person arriving into or departing from Canada undergo a medical examination if the officer has reasonable grounds to believe that: such person is ill; may have or may be the carrier of an infectious or contagious disease; is infested with insects that may be carriers of an infectious or contagious disease; or has recently been in close proximity to a person who may have or may be the carrier of an infectious or contagious disease.<sup>148</sup> Detention must take place in a designated quarantine station, hospital, or other place having suitable quarantine facilities or, for persons arriving into Canada on a vessel, on that vessel.<sup>149</sup> The period of detention may not to exceed the prescribed incubation period for the disease at issue.<sup>150</sup> In lieu of detention, a quarantine officer may permit the person to proceed directly to his or her destination in Canada, but only if the person agrees in a signed writing to be placed under surveillance by a duly designated public health officer for the destination location for a period not exceeding the prescribed incubation period for the disease at issue.<sup>151</sup>

Under section 8(2), a quarantine officer may detain persons who refuse a quarantine officer’s request to undergo a medical examination; persons who undergo the medical examination and who the quarantine officer suspects have an infectious or contagious disease; persons arriving into Canada who are unable to produce the requisite and satisfactory evidence of immunization for an infectious or contagious disease; or other persons at the port of entry who the quarantine officer believes on reasonable grounds have been in close proximity to a person fitting the description in section 8(1).<sup>152</sup> Persons detained pursuant to section 8(2) who are later determined by a quarantine officer to have an infectious or contagious disease may be detained “until the quarantine officer is satisfied that that person is not capable of infecting any other person with that [infectious or contagious] disease.”<sup>153</sup> Any person detained under section 8(2) must be immediately informed by the quarantine officer of the reason for the detention, and the person’s right to appeal to the Deputy Minister of Health or his or her designate.<sup>154</sup>

Under section 13, a quarantine officer may detain—in a quarantine station, hospital or other place with suitable quarantine facilities, or, in the case of persons arriving into Canada on a vessel, on that vessel—any person arriving into or departing from Canada who the officer determines has an infectious or contagious disease. In line with the standard set forth for section 8(2) detentions with a later determination of disease, and unlike section 8(1) detentions (limited to the incubation period), section 13 detentions may continue “until the quarantine officer is satisfied that that person is not capable of infecting any other person with that [infectious or contagious] disease.”<sup>155</sup>

The detention procedure is somewhat different for cases involving a “dangerous disease,” defined under the Quarantine Act as “any disease, other than a disease included

in the schedule, the introduction of which into Canada would, in the opinion of the quarantine officer concerned, constitute a grave danger to public health in Canada.”<sup>156</sup> Under section 11, a quarantine officer may request that persons arriving in Canada undergo a medical examination where the quarantine officer believes on reasonable grounds that such persons may have or may be the carrier of a dangerous disease, or have recently been in close proximity to a person who may have or may be the carrier of a dangerous disease.<sup>157</sup> A quarantine officer may detain—for a period of time not to exceed 14 days—any person described under section 11 who refuses the medical examination, or a person who undergoes the medical examination and who the quarantine officer suspects has a dangerous disease.<sup>158</sup>

A quarantine officer who intends to detain a person under section 11 must, subject to the Minister of Health’s approval, “make an order in prescribed form for the detention.”<sup>159</sup> For detentions longer than 48 hours, a quarantine officer must provide the detainee with a copy of the order, and inform the detainee of the right to a hearing.<sup>160</sup> Additionally, the Minister of Health must within 48 hours of the order make an application with notice in writing (with a copy served upon the detainee) to a judge of a superior court of the province in which the detainee is held, to confirm the quarantine officer’s order of detention.<sup>161</sup> The judge must hear the application within one day of the application, and must make an order to revoke, vary, or conform the detention order.<sup>162</sup> If the application is not made within the requisite 48-hour period, the quarantine officer must immediately release the detainee.<sup>163</sup>

In lieu of detention, a quarantine officer may permit the person described in section 11(1) to proceed directly to his or her destination in Canada, but only if the person agrees in writing to surveillance by a public health officer for the destination location for a period not exceeding 14 days; submits to being vaccinated against the dangerous disease; or both.<sup>164</sup> However, vaccination is not an option if it is apparent to the quarantine officer that the person should not be vaccinated, or if the quarantine officer has been informed that there are medical reasons not to vaccinate, and the quarantine officer is of the opinion that the person should not be vaccinated.<sup>165</sup>

If required by a quarantine officer to enforce any provision under the Quarantine Act, “peace officers” must provide necessary assistance.<sup>166</sup> Persons who violate any provision of the Quarantine Act or any regulation made under the Quarantine Act, for example, by failing to comply with any order of a quarantine officer made under the Act or failing to comply with the signed undertaking (in lieu of detention), is guilty of an offense punishable on conviction.

#### b. Provincial level

One of the exclusive powers of the provinces under the Constitution Act relates to public health. Provinces have authority over “[t]he Establishment, Maintenance, and Management of Hospitals, Asylums, Charities, and Eleemosynary Institutions in and for the Province, other than Marine Hospitals.”<sup>167</sup> Consistent with these constitutional powers, each of the provincial governments has enacted its own body of laws pertaining

to public health. These laws operate independently of the laws of the other provinces. For example, each of the provinces has enacted a statute to create a distinct provincial public health authority, as well as statutes or regulations that address specific public health matters.

Ontario, the epicenter of the SARS outbreak in Canada, enacted the Ministry of Health and Long-Term Care Act<sup>168</sup> and the Health Protection and Promotion Act.<sup>169</sup> The Ministry of Health and Long-Term Care Act provides for the establishment of a provincial Ministry of Health and the office of the Minister of Health. One of the functions of the Minister of Health is to “oversee and promote the health and the physical and mental well-being of the people of Ontario.”<sup>170</sup> The minister also has the power to enact regulations necessary to carry out the ministry’s functions. These include regulations to “prescribe and govern the standards” for health care facilities and regulations to govern the establishment and use of, and the treatment provided in, facilities for tuberculosis diagnosis, surveillance and treatment, as well as “facilities for the diagnosis and surveillance of other respiratory diseases.”<sup>171</sup>

The Ministry of Health of Ontario has established a number of offices and programs to pursue its public health functions. Some of these offices and programs have responsibility for the regulation of hospitals, nursing homes, and medical laboratories. Others are charged with carrying out health promotion and disease prevention activities. The ministry also provides or coordinates health insurance and drug benefits. Other Canadian provinces have similar ministries responsible for public health matters within their respective provinces and political subunits. In British Columbia, for example, the Health Act provides for the appointment of a provincial health officer and other staff as may be “necessary for the supervision and enforcement of this [Health] Act and the regulations.”<sup>172</sup> The Lieutenant Governor of Council is provided with the broad authority to make regulations for the “prevention, treatment, mitigation and suppression of disease,” including regulations covering the isolation and quarantine, reporting by medical practitioners, and compulsory examination and treatment.<sup>173</sup>

The Health Protection and Promotion Act, Ontario’s most important source of public health authority, is intended to “provide for the organization and delivery of public health programs and services, the prevention of the spread of disease and the promotion and protection of the health of the people of Ontario.”<sup>174</sup> Under the Act, local boards of health are required to provide certain programs and services in health promotion, health protection, and disease and injury prevention.<sup>175</sup> The Act provides for, among other things, the reporting of communicable diseases by physicians, hospital administrators, and school principals. It grants the provincial Minister of Health the authority to make regulations specifying diseases as communicable diseases. It authorizes the provincial Lieutenant Governor to make additional regulations governing the handling of bodies of persons who have died of a communicable disease and local medical officers to order isolation and treatment. It also addresses enforcement and penalties for persons who contravene an order or regulation.

Under the Health Protection and Promotion Act, a local medical officer of health (who must be a physician, has the requisite qualifications to hold the position, and is appointed by the Minister of Health)<sup>176</sup> is vested with considerable authority with regard to communicable disease management. This authority may be executed through the use of a “written order,” by which the medical officer of health *may* “require a person (or a class of persons) to take or to refrain from taking any action that is specified in the order in respect of a communicable disease.”<sup>177</sup> A medical officer of health’s use of a written order to compel a person is discretionary, not obligatory. The use of a written order under these circumstances is conditioned upon reasonable and probable grounds, that (1) a communicable disease exists or may exist, or that there is an immediate risk of an outbreak of a communicable disease within the medical officer of health’s jurisdiction; (2) the communicable disease presents a risk to the health of persons within the medical officer of health’s jurisdiction; and (3) the requirements specified in the written order (to which requirements the person who is subject to the order must conform) are necessary to mitigate the health risk posed by the communicable disease.<sup>178</sup>

A medical officer of health’s written order may include isolation from other persons (note that the term “quarantine” is not used in the Health Protection and Promotion Act) and medical examination by a physician for purposes of determining communicable disease status. An order may also contain an instruction to act so as not to expose other persons to infection.<sup>179</sup> For persons with a “virulent disease,”<sup>180</sup> care and treatment by a physician may be required. The Health Care Consent Act of 1996, which generally prohibits the administration of treatment in the absence of a patient’s consent, does not apply to a physician’s examination or care and treatment of a person pursuant to a written order.<sup>181</sup>

A medical officer of health’s written order may be directed to persons who reside or are present at or own or occupy certain premises or are engaged in or administer an enterprise or activity in a health unit served by the medical officer of health.<sup>182</sup> An order may be directed to a class of persons instead of each member of a class of persons, but notice of the order must be provided to each class member where the provision of such a notice is practicable and can be carried out in a reasonable amount of time.<sup>183</sup> If providing a written order to each individual is likely to cause a delay that could significantly increase the risk to the health of any person, then a general notice to the class may be provided through any “appropriate” communications media and posted at a location “most likely to bring the notice to the attention” of members of the class.<sup>184</sup> Parents or legal guardians must ensure compliance with orders directed to their children or wards who are less than 16 years of age.<sup>185</sup>

Orders must contain sufficient information so that members of the class understand that the order is directed to them, including: the reason for the order; the terms or requirements of the order, including the period within, by or for which compliance with the order is required; and information about where inquiries about the order may be directed, such as information about how to request a hearing.<sup>186</sup> Persons to whom an order is directed, including members of a class who are the subject of an order, have a right to a hearing by the Board of Health under whose jurisdiction the medical officer of

health's order was issued, but must request such a hearing in writing within 15 days of receiving the order.<sup>187</sup> The Act provides additional details related to hearings, including requirements for extending a hearing, matters of evidence, and the appeal process.<sup>188</sup>

In addition to serving an order, a medical officer of health may also require others to act with regard to a person who is the subject of the medical officer of health's order. For example, a medical officer of health may direct persons who also work for or who are agents of the board of health for the medical officer of health's jurisdiction to take such actions as the medical officer of health may determine are necessary, if the "medical officer of health is of the opinion, [based] upon reasonable and probable grounds, that a communicable disease exists" and the person who is the subject of the order (1) has refused to comply or is not complying with an order; (2) is not likely to promptly comply with an order; (3) cannot be readily identified or located and as a result the order would not be promptly carried out; or (4) requests the assistance of the medical officer of health.<sup>189</sup>

Special provisions may apply where persons fail to comply with orders with regard to the specifically enumerated virulent diseases. These circumstances would include a person's: (1) failure to isolate himself or herself and remain in isolation from other persons; (2) failure to submit to a medical examination; (3) failure to place himself or herself under the care and treatment of a physician; or (4) failure to conduct himself or herself in such a manner as to avoid exposing another person to infection.<sup>190</sup> In such a case, a medical officer of health may apply to the Ontario Court of Justice for an order that the person be taken into custody and detained in a hospital or other facility; be examined by a physician to determine if the person is infected with a virulent disease; and, if found to be infected, be treated for the disease.<sup>191</sup> It is interesting to note that a judge may not name a specific hospital or other facility in an order unless the court is satisfied that the hospital or facility is able to provide the requisite detention, care, and treatment.<sup>192</sup> Applications to the court automatically stay or halt proceedings regarding the same matter before the Board of Health until the judge has disposed of the application.<sup>193</sup>

An order made pursuant to section 35 of the Act provides "any person" (which term is not further defined or clarified) with the authority to locate and apprehend a person who is the subject of the order, or to deliver such a person to a hospital or facility named in the order.<sup>194</sup> The order may also be provided to a law enforcement agency for purposes of locating, apprehending, and delivering the person who is the subject of the order.<sup>195</sup> Without specifically indicating the class of persons to whom such authority is granted (but presumably meaning health care providers), an order issued under section 35 also provides the authority to "detain," "care for," "examine," and "treat the person" subject to the order consistent with "generally accepted medical practice."<sup>196</sup>

The period of detention and treatment specified in an order may not exceed four months.<sup>197</sup> However, if, upon motion by the medical officer of health, a court is satisfied that a person continues to be infected by a virulent disease and that the person's discharge would present "a significant risk to the health of the public," a judge of the Ontario

Superior Court may by order extend a period of detention and treatment, including subsequent periods of detention and treatment, for up to four months.<sup>198</sup> The Act provides that a person detained based upon a court order shall be released upon receipt of a medical officer of health's certificate authorizing release, and such a certificate must be issued as soon as the medical officer of health is "of the opinion that the person is no longer infected with a virulent disease or that release will not present a significant risk to public health."<sup>199</sup> As with a written order prepared by a medical officer of health, the Health Care Consent Act, which generally prohibits the administration of treatment in the absence of a patient's consent, does not apply to a court order made under section 35.<sup>200</sup>

An order issued by a judge of the Ontario Court of Justice may be appealed to the Ontario Superior Court of Justice; however, the appeal does not stay (or halt) the lower court's order unless a judge of the Superior Court of Justice so decides.<sup>201</sup> In turn, a decision on a question of law made by the Superior Court of Justice may be appealed by any party to the lower court proceeding to the Ontario Court of Appeal, but no leave for the appeal may be granted unless a judge of the Court of Appeal determines that granting a leave is "essential in the public interest or for the due administration of justice."<sup>202</sup>

Finally, the Health Protection and Promotion Act provides sanctions. Any person who fails to obey an order made under the Act, or otherwise contravenes a regulation promulgated under the Act, is guilty of an offense, and is liable upon conviction to a fine of not more than \$5000 (Canadian) for every day or part of a day on which the offense occurs or continues.<sup>203</sup>

British Columbia, the Canadian province with the second highest number of probable or suspect SARS cases ( $n=50$ , with 4 probable cases and 46 suspect cases), had many fewer SARS cases than did Ontario. No other province had any probable SARS cases. Alberta, New Brunswick, Prince Edward Island, and Saskatchewan had among them a dozen or so suspect cases.<sup>204</sup> Because of the similarity of these provinces' public health laws to those of Ontario, we have omitted any discussion of these provinces' legal authority for quarantine and isolation. Nonetheless, each of the Canadian provinces' laws on matters related to public health, including regulations, provide provincial and local public health officials with the means to isolate and essentially quarantine persons with certain communicable diseases within their respective jurisdictions.

### c. Local level

Local governments below the provincial level, such as municipal governments, may also be authorized by provincial law under certain conditions to act in the interest of public health. For example, the government of Ontario, under the Municipal Act, 2001, provides that "a municipality may regulate matters not specifically provided for by this [Municipal] Act or any other Act for purposes related to the health, safety and well-being of the inhabitants of the municipality."<sup>205</sup> This is done largely through the use of "by-laws" passed by municipal (city) councils, sometimes upon the advice of municipal executive officers or entities. However, the Municipal Act only came into force on

January 1, 2003, and it is not clear that any municipality in Ontario has taken action pursuant to this statute.

Other relevant law empowers specific municipalities. The City of Toronto Act, in addition to establishing the powers of the various governmental entities of the City of Toronto, provides for the establishment of Toronto's Board of Health and its jurisdiction, which is deemed a board of health established under Ontario's Health Protection and Promotion Act.<sup>206</sup> The City of Toronto Act also requires the Toronto City Council to establish the Board's size through by-law and provide the Board with the staff, including public health nurses, necessary to carry out its functions.<sup>207</sup> Those functions are established in the Health Protections and Promotion Act.<sup>208</sup>

#### 4. SARS Response

##### a. Amendments to laws and guidance documents

On June 12, 2003, SARS was added to the Quarantine Act's schedule of infectious and contagious diseases, together with an established incubation period, thereby bringing SARS cases within the ambit of federal public health authority.<sup>209</sup> As described above, the Act provides the Minister of Health with a multitude of powers related to the control of infectious disease. One important means of exercising public health authority in the wake of the SARS outbreak was to develop, coordinate, and provide specific guidance for both public and private entities, including public health workers and health professionals, in identifying and managing SARS cases and related health matters within their jurisdictions. At the federal level, the Department of Health has developed a large number of guidance documents intended to assist both public and private entities respond to specific SARS-related health matters. These include the following: definition of persons under SARS investigation;<sup>210</sup> definition of a SARS case;<sup>211</sup> interim guidelines for public health authorities in the management of probable and suspect SARS cases;<sup>212</sup> definitions of geo-linked persons for hospital surveillance for SARS;<sup>213</sup> public health protocol for persons meeting the "geo-linked person" definition;<sup>214</sup> recommended laboratory testing for probable SARS cases and SARS contact cases;<sup>215</sup> advisory for laboratory biosafety;<sup>216</sup> guidelines for health care providers in the identification, diagnosis, and treatment of adults with SARS;<sup>217</sup> guidelines for the use of respirators (masks) among health care workers;<sup>218</sup> and recommendations and guidelines for public health officials for managing probable or suspect SARS cases among air travelers.<sup>219</sup>

On April 1, 2003, British Columbia amended its Health Act Communicable Disease Regulation by means of an order-in-Council, adding SARS to the regulation's schedule of reportable communicable diseases.<sup>220</sup> The province of Newfoundland and Labrador has a similar Communicable Diseases Act, and has also recently added SARS to the regulation's schedule of communicable diseases.<sup>221</sup> By most appearances, the different provincial and local governments' responses have been proportionate to the prevalence of SARS cases within their respective jurisdictions, with little evidence of formal government activity in provinces or municipalities with no SARS cases. In

contrast to other provincial and local governments—with the exception of British Columbia and to a lesser extent Alberta—only Ontario and the municipality of Toronto have had to invoke their public health authority in a significant and large-scale manner to respond to the SARS outbreak within their jurisdictions.

There are many examples of efforts to provide guidance at the provincial and federal levels. In Ontario, the Ministry of Health and Long Term Care developed and distributed: a memorandum to hospital administrators regarding reportable disease requirements, including the reporting of SARS cases;<sup>222</sup> a screening tool for all patients entering health care facilities, including a Chinese language version;<sup>223</sup> a clinical decision guide for community clinicians in the diagnosis of SARS;<sup>224</sup> directives and procedures for community health care agencies and other health care providers;<sup>225</sup> and transition directives and procedures for acute care facilities, addressing matters such as screening, protective equipment, visitors, and physical plant.<sup>226</sup> Other, extensive SARS-related information was made available to health professionals and the public through provincial and municipal government web sites, including web sites for the Ontario Ministry of Health,<sup>227</sup> the Municipality of Toronto's Board of Health,<sup>228</sup> and Toronto's Department of Community and Neighbourhood Services (which subsumes Toronto's Public Health Service).<sup>229</sup>

In British Columbia, the Office of the Provincial Health Officer and a provincial SARS Scientific Committee developed and distributed: guidelines for managing SARS cases in acute care settings;<sup>230</sup> a list of frequently asked questions together with detailed answers about SARS;<sup>231</sup> and guidelines for infection control in the use of respiratory equipment.<sup>232</sup> Similar to Ontario, other SARS-related information was made available by both provincial and municipal governments in British Columbia to health professionals and the public through web sites, including web sites for the British Columbia Ministry of Health Planning,<sup>233</sup> the British Columbia Centre for Disease Control,<sup>234</sup> and Vancouver Coastal Health (the municipality of Vancouver's public health authority, including the Vancouver Health Board).<sup>235</sup>

#### b. Use of quarantine and isolation

On March 25, 2003, in the face of a rising number of SARS cases in the Toronto area, the Ontario government took the critical step of designating SARS as a reportable, communicable, and virulent disease under the province's Health Protection and Promotion Act, which authorized public health authorities to issue orders to detain and isolate persons for purposes of preventing SARS transmission.<sup>236</sup> Eventually, about 30,000 persons in Toronto were quarantined. That number is similar to the number of persons who were quarantined due to the SARS outbreak in Beijing, China, but for the latter the number of probable SARS cases (2,500) was ten times larger than Toronto's (about 250).<sup>237</sup>

*Health facilities.* The first use of isolation in Toronto occurred early in the SARS outbreak, when the physician treating the index case's son, Mr. T, had Mr. T placed in hospital isolation for suspected tuberculosis (at no time before Mr. T's death was his

SARS established) and requested that other family members isolate themselves at home as they, too, might be at risk for tuberculosis infection.<sup>238</sup> Unfortunately, these control measures occurred too late to contain the spread of SARS in Toronto. Mr. T, who had entered Scarborough Hospital through the emergency department, was left in the emergency department for 18-20 hours despite a physician's hospital admission order, and only later admitted to the hospital's Intensive Care Unit (ICU). When he was finally examined by a physician, a tuberculosis isolation order was issued and Toronto Public Health was notified as a routine matter of a possible tuberculosis case.<sup>239</sup> During Mr. T's long wait in the Scarborough Hospital emergency department for admission to the ICU and his short time in the ICU before tuberculosis was suspected, other patients and staff were exposed to SARS. At the time there was no indication that these individuals were at risk of contracting or spreading any communicable disease, let alone SARS.<sup>240</sup>

When tuberculosis was ruled out and public health officials and physicians began to understand the implications of Mr. T's case, steps were taken to remove other members of Mrs. K's family, some of whom were reporting illness, to negative pressure isolation rooms in other area hospitals. These steps undoubtedly limited the spread of SARS.<sup>241</sup> Combining the information from the WHO's international health alert for atypical pneumonia with reports of the Scarborough Hospital cases, both Toronto Public Health and provincial public health authorities activated their emergency response plans. A "Code Orange" (which required all area hospitals to go into emergency mode) was issued, under which area hospitals were required to suspend non-essential services, limit visitors, issue protective equipment for staff, and establish special isolation units for "potential SARS patients."<sup>242</sup> Asymptomatic contacts of SARS patients were not isolated within health facilities, but were asked to adhere to a 10-day home quarantine.<sup>243</sup>

The risk of acquiring SARS was greatest for persons (staff, patients, and visitors) within rather than outside of health care facilities, including doctors' offices; health care workers accounted for over 40% of all SARS patients in Toronto.<sup>244</sup> Tragically, the early SARS patients who were seen in health care facilities were simply not identified in time to implement more rigorous infection control procedures. Moreover, it is not clear that health care workers were always provided with uniform or consistent advice or guidelines regarding the quarantine or isolation of persons with or suspected of having SARS, that adequate protective equipment was provided to health care workers within these hospital or clinic settings, or that health care administrators or workers were diligent about adhering to infection control precautions or procedures.<sup>245</sup> Concerns about a lack of uniform guidance for quarantine were expressed by an *ad hoc* Scientific Advisory Committee of volunteer experts, which found that "different public health units seemed to have different thresholds for the use of quarantine."<sup>246</sup>

Directives issued by Ontario health authorities instructed hospitals to isolate all patients with fever and respiratory symptoms in the hospital or in the hospital emergency department until SARS had been ruled out. Most hospitals took special precautions for inpatients with respiratory symptoms suggestive of infectious diseases. In Phase I of the Toronto SARS outbreak (March 13-25, 2003), over 20 Toronto area hospitals admitted and cared for SARS patients. No single facility was designated as a "SARS hospital,"

because both provincial and Toronto area officials feared that such a step would overwhelm the facility so designated. For this reason, capacity for SARS clinical management, including isolation of SARS patients and adequate infection control measures, was built into multiple facilities throughout the Greater Toronto area. Two hospitals (Sunnybrook and Woman's) in the Greater Toronto area appeared to carry the largest volume of SARS patients during Phase I. Unfortunately, many of these two hospitals' physicians with relevant expertise or experience in SARS clinical management were themselves ill or in quarantine. Despite the hospitals' requests for staff support, other Toronto area hospitals were either unable or unwilling to provide assistance. Needed support was obtained only after provincial authorities retained a private placement agency to help with recruitment of health care workers.

In Phase II of the Toronto SARS outbreak (May 23-June 30, 2003), four hospitals (later termed the SARS Alliance) were designated as SARS facilities. The "Code Orange" described above for Toronto area hospitals was later extended to all Ontario hospitals, meaning they, too, were required to suspend non-essential services, limit visitors, create isolation units for SARS patients, and issue protective equipment (gowns, masks, and goggles) for exposed staff. Some concern was expressed over whether the Code Orange was justified or overly broad.<sup>247</sup>

*Airports, ports and other entry points.* No persons in transit into or out of Canada were actually quarantined or isolated, although clearly the federal government has the authority to take such measures in appropriate cases. In 2002, Health Canada transferred its airport quarantine responsibilities to the Canada Customs and Revenue Agency, but at the time of the SARS outbreak, neither Health Canada nor the Customs and Revenue Agency appeared prepared to discharge their quarantine responsibilities under the federal Quarantine Act Regulations, which soon after the SARS outbreak in Canada had been amended to include SARS.<sup>248</sup> For ships, particularly cruise ships, Health Canada's protocol for handling SARS cases was not released until mid-June, after the SARS outbreak had begun to fade.

SARS screening for airline passengers took place at Canadian airports, but this screening relied primarily upon information cards that were distributed to and completed by both incoming and outbound passengers. In-person screening questions and secondary assessments were conducted only as needed. Thermal scanners were used in a pilot project at the Toronto and Vancouver (British Columbia) airports. As of August 27, 2003, 6.5 million screening transactions had taken place at Canadian airports, with about 9,100 passengers referred for further SARS assessment by screening nurses or quarantine officers. None of the passengers who underwent further assessment was found to meet the criteria for a probable or suspect SARS case. The pilot thermal scanner screened 2.4 million passengers, with 832 referred for further assessments, and none met the criteria for a probable or suspect SARS case.

*Workplace and home quarantine.* In Toronto, home and workplace quarantines were often imposed for what were definitive "contact" cases, meaning cases in which persons were known to have been in close physical proximity to a probable SARS case

with inadequate or no protection from possible exposure. Contact cases included family and household members of SARS patients, hospital visitors and other non-SARS patients within hospitals who may have been exposed to SARS patients, health care staff who provided treatment to SARS patients without adequate protective equipment, and persons at workplaces who may have been exposed to co-workers with SARS. Provided they were timely identified and contacted, these persons were urged to remain at home for a 10-day period, with monitoring, usually by telephone, by a local public health worker.

## 5. Coordination Issues

It should be noted that once the provincial emergency was declared by the Ontario Prime Minister's office, provincial authorities assumed the lead for delivery of all main SARS messages to the public. However, this public information function was often delegated by provincial authorities to the Toronto municipal government. One concern among some commentators was that there were too many "talking heads," including government officials, whose opinions on the SARS outbreak appeared to diverge. According to these critics, there often appeared to be no coherent official or governmental communications strategy aimed at "dispelling the sense of deepening crisis" posed by the SARS outbreak. Interestingly, one of the most apt characterizations of the capacity of the federal and provincial governments to work collectively in their response to the SARS outbreak was provided by the Canadian federal government:

Only weak mechanisms exist in public health for collaborative decision making or systematic data sharing across governments. Furthermore, governments have not adequately sorted out their roles and responsibilities during a national health crisis. The SARS outbreak has highlighted many areas where inter-jurisdictional collaboration is suboptimal; so far from being seamless, the public health system showed a number of serious gaps.<sup>249</sup>

Given the acknowledged deficiencies in cross-jurisdictional coordination in the response to the SARS outbreak, it is quite likely that the coordination with the international community and the U.S. with respect to the SARS outbreak could likewise be considered suboptimal. As the report further noted, it "is unlikely that most other provinces [aside from Ontario] are in a better position, and the federal capacity to support one or more provinces facing simultaneous health crises is limited."<sup>250</sup>

## 6. Public Reaction

The federal, provincial, and local governments used a variety of means to convey up-to-date information regarding the SARS outbreak to the public, as well as to health professionals. Features of the public health education and communication measures taken by the government generally and by public health authorities specifically included regular updates to their own websites.<sup>251</sup> Additionally, Toronto Public Health established a SARS Hotline. Hotline staff, primarily public health nurses, provided callers with health information and counseling and case and contact identification, and the recognition and follow-up of emerging issues in SARS-affected institutions and communities. At the

height of the outbreak the Hotline had 46 staff on the day shift and 34 staff on the evening shift, including individuals with special language skills. The Hotline received over 300,000 calls between March 15 and June 24, 2003, with a peak of 47,567 calls in a single day. Most calls were complex, with three or more issues identified per call, including self reports of illness or SARS contact, needed access to emergency supplies of food, masks, and other supplies, and concerns about loss of income, loss of housing, and business failure.<sup>252</sup> In addition, the agency convened local community meetings and conducted other community outreach to address specific concerns in schools, workplaces, and among community groups.

Toronto Public Health translated updated SARS information into 14 languages and posted this information on the City of Toronto's official web site. Both Health Canada and the Ontario Ministry of Health also set up and maintained web sites for the dissemination of SARS-related information for members of the public and health professionals. In British Columbia, SARS-related information was made available to both the public and health professionals through web sites for the British Columbia Ministry of Health Planning, the British Columbia Centre for Disease Control, and the Vancouver Coastal Health authority.

Both federal (the Quarantine Act) and provincial laws (e.g., Ontario's Health Protection and Promotion Act, British Columbia's Health Act) regarding quarantine and/or isolation authorize—and may even require—law enforcement agencies to assist public health authorities to effect the quarantine and/or isolation of persons subject to quarantine orders. During the SARS outbreak in Toronto, law enforcement personnel were used to enforce the quarantine of patients with SARS at area hospitals, serve orders as needed, and conduct “spot checks” on persons who were quarantined. On at least one occasion, law enforcement personnel were also used to investigate and try to apprehend and charge a person who broke quarantine and subsequently infected a co-worker, but the person died from the illness. Almost all persons who were asked to submit to quarantine did so voluntarily. In only 27 cases was a written order mandating quarantine issued under Ontario's Health Protection and Promotion Act.

Certain actions taken by the federal and provincial governments may have had the effect of increasing public acceptance of SARS-control measures. For example, the federal government has amended its employment insurance regulations under the Employment Insurance Act to remove the waiting period for sickness benefits for certain persons placed under SARS quarantine, as well as to remove the requirement that certain persons under SARS quarantine obtain a medical certificate as a condition of receiving sickness benefits.<sup>253</sup> The federal government also provided special employment insurance coverage for health care workers who were unable to work because of SARS and who were not otherwise eligible for benefits under the government's Employment Insurance Act, as well as tax and mortgage payment relief to persons who were facing difficulties making tax or mortgage payments because of SARS.<sup>254</sup> The Ontario government enacted the SARS Assistance and Recovery Strategy Act,<sup>255</sup> which provides certain qualified persons with unpaid leave in the event the person is unable to work due

to a SARS-related event, such as being under individual medical investigation or having to provide care for or assistance to a person due to a SARS-related matter.

## 7. Current Situation

The use of quarantine and isolation measures in Toronto cannot be characterized as a uniform, coordinated (and perhaps optimal) response to the SARS outbreak, which is not surprising given the highly decentralized way in which public health functions in Canada are organized. The recently released federal Canadian government report mentioned earlier, *Learning from SARS: Renewal of Public Health Canada*, appears to confirm this, stating, “[t]he SARS experience illustrated that Canada is not adequately prepared to deal with a true pandemic.”<sup>256</sup> The report suggests comprehensive, large-scale reorganization of public health systems within Canada, including the prospect of establishing a national, federal public health agency with the requisite authority to respond to disease outbreaks and emergencies similar to SARS, and with appropriate linkages to other government departments and agencies engaged in public health activities.<sup>257</sup> However, concerning public health activities at the local level, it is argued by officials of Toronto Public Health that at least with respect to Toronto, the “isolation of people who were symptomatic with SARS (i.e., “cases”) served to protect the public from infection by separating those who were ill from those who were well.”<sup>258</sup> The same might be said of the quarantine of persons who were not symptomatic with SARS but who may have been at increased risk of acquiring or transmitting SARS.

## B. China (People's Republic of China)

### 1. Introduction

The first case of what was reported among scientists as “atypical pneumonia,” later determined through blood and other diagnostic tests done in 2003 to be severe acute respiratory syndrome (SARS), occurred in China in Guangdong Province on November 22, 2002, in the city of Foshan.<sup>259</sup> The second case occurred in the city of Heyuan on December 17, 2002. The third case was in Zhongshan on December 26, 2002. The first official report to public health officials of an atypical pneumonia was not made until January 21, 2003. It is not clear if any report was sent to the central government as this was near the time of the Chinese New Year. At this point, over half the clinically recognized cases (13) in Zhongshan were among health care workers. The further development of the SARS epidemic in China will be described in Section 4 below.

To learn from the use of quarantine and isolation in the PRC during the outbreak of SARS, it is necessary to understand the legal structure supporting the public health system. Three contextual factors are especially significant. First, the population density of the PRC has a dramatic impact on living conditions. As of 2001, the population of the PRC was nearly 1.2 billion people living in a land area about the size of Canada that has, by comparison, 31.5 million people. From a public health perspective, this population density means that most individuals in the PRC live in multiple-family dwellings. Beijing, where over 50% of the cases of SARS were reported, has a population of nearly 13 million. As a result, “When one talks about China, the numbers will always appear large, particularly to Westerners raised in the United States.”<sup>260</sup>

Second, the legal system of modern China is closer to the legal systems of France, Italy, or Germany than the common law-based legal systems of the United States, Canada, and England. In addition, the legal structure governing public health in the PRC was refined under a peculiar form of socialism that is undergoing change. Drawing “lessons learned” from the PRC requires an understanding of comparative law, an admittedly under-developed area in American legal education and public health law practice.

Third, globalization, particularly over the past quarter of a century, has caused the legal system and the public health infrastructure of the PRC to change. Under the socialist regime led by Mao Tse-tung, the PRC made considerable efforts to deal with the conditions leading to the spread of infectious diseases such as cholera. From 1946-1976, life expectancy increased from 35 years to 68 years without any appreciable increase in per capita income. Market-oriented reforms during the 1980s and 1990s led to increased wealth and some dramatic improvements in health status. For instance, during the 1990s, the infant mortality rate in urban areas dropped from 17.3 to 11.8 per 1,000. Health status has also improved in rural areas, although the rural population suffers from general disadvantage vis-à-vis the urban population. For example, between 1991 and 2000, the drop in the infant mortality rate in rural areas was from 58.0 to 37.7. At the same time,

these market-oriented reforms have also led to income inequalities comparable to the United States that translate into insecure or inadequate access to health care for much of the population. The percentage of employment-based health insurance declined from 68% to 53% in urban areas from 1993-1998. In rural areas, insurance coverage that had been based on a collectivist economy nearly collapsed in the 1980s. Only 8% of the rural population had health insurance by 1998. While gains in health status and wealth have enhanced the capacity of the PRC to deal effectively with many infectious diseases, it now faces the challenge of dealing with chronic conditions among its population.<sup>261</sup>

## 2. Political and Legal Systems

In the case of the PRC, familiarity with recent changes in the legal culture is key to understanding the current political and legal situation. There was no formal organization of lawyers in the PRC as recently as 1959. The Ministry of Justice had been abolished, and those few law schools remaining open following various political upheavals after 1949 could best be characterized as state sponsored schools of political administration. The few students enrolled in these so-called law schools received very little in the way of professional legal training because law was viewed, at the time, as irrelevant to the future of the PRC. The reestablishment of legal institutions was part of the economic, political, and cultural transformation taking place in the PRC in the 1980s.

The government began to reassemble the legal system in 1979. The Ministry of Justice was re-established and law schools were re-opened. Over 20 universities and institutes offered some form of four-year undergraduate legal training by 1982. A massive codification project paralleled the re-opening and redevelopment of law schools. A seven-year process of discussion and study involving jurists and political officials led to the adoption of a Code of Civil Procedure in 1986. A host of new substantive codes were enacted: the Marriage Law (1980); Economic Contract Law (1981); Trademark Law (1982); Patent Law (1984); and Inheritance Law (1985).<sup>262</sup> The basic public health statute that provided the framework for the response to SARS, the Prevention and Treatment of Infectious Disease Law, discussed in detail in Section 3, was enacted in 1989.

International law was a major focus of legal scholars and legal reforms during the early 1980s.<sup>263</sup> A planning conference on the study of law listed international law as a priority area for China in March 1979. Not a single article on international law was published in China in 1979; over 100 articles were published by 1984, and 20 senior Chinese jurists collaborated in publishing a definitive textbook on international law in 1981. This build up of legal capacity was important as the PRC began in the 1980s to participate in international institutions such as the International Monetary Fund and the World Bank. An indication of China's growing reliance on law and legal institutions during 1980s to deal with its future, as well as forces outside of China, is illustrated by the negotiations with Great Britain over the future of Hong Kong in 1983 and 1984.

The government of the PRC rests on a four-fold division at each of three hierarchical levels: national or central government, provincial government, and local

units. This structure has significant impact on how political and legal authority is distributed and implemented. This method of organizing governmental functions should be understood on its own terms, with no assumption that there are precise equivalents in China to the familiar legislative, executive, and judicial functions. The importance of this point will become clear in the analysis of the government's exercise of control over the movement of persons, goods, animals, and the provisions of services in the name of public health.

The national government consists of four institutions—the National People's Congress (NPC), the State Council, the Supreme People's Court, and the Supreme People's Procuratorate—that are woven into a system of authority by provisions of the Constitution and statutes of the PRC. The NPC theoretically has ultimate legislative authority, including the power to amend the Constitution. This body, consisting of approximately 2,000 representatives, only meets once a year for two or three weeks.<sup>264</sup> During these yearly sessions, the NPC can enact basic statutory provisions governing the country. The Standing Committee has the authority to “amend” laws enacted by the NPC and to enact other forms of legislation, but not to amend the Constitution. As a subsidiary body of the NPC, the Standing Committee's legislative enactments are likely to be in accordance with the prevailing wishes of the NPC. The major codes of the 1980s were enacted through a combination of actions by the Standing Committee and the NPC. The Standing Committee enacted the Prevention and Treatment of Infectious Disease Law in 1989.

The State Council, headed by the Premier, is the major administrative arm of the central government. The various ministries, such as the ministries of Health, Justice, and Public Security, are part of the State Council. Within the framework of statutes enacted by the NPC or the Standing Committee, these ministries have the authority to enact regulations governing their respective areas of responsibility.

Judicial authority is lodged in the Supreme People's Court in two forms. First is the power to interpret what the law means in a particular case before the court. Second is the power to give advisory opinions to provide guidance to lower courts. On the one hand, some advisory opinions might limit the authority of lower courts to act, and thus remove constraints on individual actions. On the other hand, this advisory power could be used to strengthen the power of state entities, as was the case during the SARS outbreak (see Section 4 below).

There are no provisions in the Constitution specifically authorizing courts to protect the “rights” of individuals against the state. An individual's ability to challenge a state ruling or action is governed by statutory enactments, rather than constitutional documents. Under the Administrative Procedure Law enacted by the NPC in 1989, courts can examine the legality of certain administrative actions. Article 2 of that statute specifically provides for a citizen or a legal corporation to challenge a concrete action of a governmental body, but the citizen or the corporation cannot challenge the administrative regulations.

The Procuratorate, the fourth institution in the PRC system, was re-established by the Constitution of 1982 as an independent entity for supervising a number of governmental functions: (1) prosecuting crimes; (2) supervising the police and prisons; (3) representing the government in civil and administrative matters; (4) protecting the right of individuals to lodge complaints against state officials who violate the law as well as deal with citizen accusations against fellow citizens; and (5) appealing sentences and verdicts in criminal cases. Conceptually, the Procuratorate is viewed as being independent of the Ministry for Public Security, the major law enforcement agency or police, for instance, and must carefully investigate before it acts. In theory, the Procuratorate collaborates with other agencies, such as the police, even though the Procuratorate has responsibility for determining the legality of the actions of those agencies. The authority to prosecute crimes is thus not an executive function, as it might be viewed in a common law system, but a purely legal function.<sup>265</sup> The broad public functions of the Procuratorate in the government allowed it to participate along with the Supreme People's Court in an important ruling during the SARS outbreak.

These four institutions share legal authority at the central level based on the theory that the law is embodied in certain specific legislative enactments, be they statutes or constitutional provisions. Individual rights as such are given appropriate legal protection by ensuring that government action adheres to legal requirement. Thus, the notion of equality of all citizens before the law exists in the Chinese legal system, supported by a formal constitutional provision, section 2 of Article 33. The use of governmental authority to constrain the movement of individuals, goods, or animals is thus mediated by a balance of power between four institutions—with the fourth branch, the Procuratorate—having an obligation to work with the other three institutions.

The four-part division of political and legal authority is reproduced at the next level of government—the provincial level. (For convenience, the level of government directly responsible to the central government is called the “provincial level” because the PRC's 23 provinces are the principal entities at this level. But it is important to note that four municipalities— Tianjin, Shanghai, Chongqing, and Beijing—have the same legal authority as any one of the 23 provinces, and thus have their own legislative, judicial, administrative, and procuracy units. Furthermore, the five autonomous regions—Inner Mongolia, Tibet, Xinjiang, Guangxi, and Ningxia—have a greater degree of control than the 23 provinces or the four municipalities, but nonetheless are thought of as being at the same level vis-à-vis the central government. The relationship among these various units is hierarchical with authority flowing from the central government downwards. Finally, the two special administrative units of Hong Kong and Macao have greater authority than the provinces.

The local level consists of entities akin to counties and cities within the provinces, and within the cities, districts. Essentially, the horizontal structure of administrative agencies, legislative bodies, courts, and the Procuratorate is replicated at the local level. Some of the People's Congresses at the local level appear to have legislative authority. Certain big cities clearly have legislative authority, including the capitals of the provinces, for example, the capital of Guangdong province, Guangzhou. Some special

economic zones, such as Shenzhen, Zhuhai, Xiamen, and those big cities approved by the State Council, also have legislative authority. Thus, when asking the question of what regulations might be in place to control infectious diseases, one should consider the level of regulations—central, provincial, or local.

### 3. Public Health Structure and Laws

The first principle underlying the structure of the Law on Prevention and Treatment of Infectious Disease of 1989 (Prevention and Treatment Law<sup>266</sup>) is that prevention and control methods are disease-specific. Article 3 classifies diseases into three basic categories: Type A, the most deadly of infectious diseases historically in China, which includes pestilence and cholera; Type B, which includes serious infectious diseases, such as hepatitis, dysentery, typhoid fever and paratyphoid, AIDS, gonorrhea, syphilis, poliomyelitis, epidemic encephalitis B; and Type C, which includes tuberculosis, measles, leprosy, influenza, mumps, and rubella.<sup>267</sup> Not surprisingly, when there is an A or B type epidemic, Articles 24 and 26 of the law provide for the use of emergency measures including the quarantine of people, goods, and transportation vehicles and the declaration of epidemic zones with special control measures. At the most basic level, the first question for public health law analysis in the PRC is: what type of infectious disease is in need of control or prevention measures?

The second principle underlying the Prevention and Treatment Law is that the infectious disease categories are dynamic and subject to change. Thus, Article 3 also provides mechanisms for changing the classification of a particular infectious disease. The State Council as a whole can change the classification of Type A diseases without having to go back to a legislative body. The Ministry of Health, an agency within the State Council, has the authority to change the classifications of types B and C diseases. This built-in flexibility implies that for new infectious diseases, the question is: which instrument of government has the legal authority to classify the infectious disease?

More important, the legislation is based on the assumption that the relationship among the three tiers of government is hierarchical. Thus, national legislation can impose duties on provincial and local health departments without encountering problems of federalism. The general rules found in Chapter 1 contain specific provisions (in Article 7) making all units of government and all individuals subject to inspection and verification of infectious diseases by public health authorities. Furthermore, under the same provisions, any individual or unit of government can report violations of the Prevention and Treatment Law or any regulations adopted under the Law's authority. These broad obligations under the public health law are constrained by the system of disease classification and the provisions for actually announcing the existence of an epidemic.

The remaining chapters contain provisions on the prevention of diseases (Chapter 2); the mechanisms for reporting epidemic situations (Chapter 3); the control measures that can be taken (Chapter 4); the supervision of those measures (Chapter 5); penalties for violations (Chapter 6); and authority to adopt implementing regulations (Chapter 7).

Health care workers and those engaged in disease prevention are required to report infectious diseases to local health departments in accordance with the Ministry of Health's regulations. Local public health officials are required to report the existence of the infectious disease to the local government and the higher levels of health administration.<sup>268</sup> Both health care workers and public health officials are prohibited from giving false information or concealing information regarding infectious diseases.<sup>269</sup> Violations of any of these reporting and disclosure obligations can lead to a variety of sanctions under Article 39.<sup>270</sup> Once this information has been reported to the central government, the Ministry of Health can either announce the existence of an epidemic or authorize officials at lower levels to make the announcement.<sup>271</sup> This level of detail for how public health information should flow is an example of the legal system's adaptation to the complex hierarchical and horizontal political structure.

Quarantine and isolation of individuals with various types of infectious diseases, and those suspected of having those diseases, are authorized in Article 24. There are specific provisions allowing the local government to restrict assemblies, to close factories, stores, and schools, and to temporarily confiscate residential dwellings in the event of a properly declared emergency or epidemic.<sup>272</sup> Provincial governments have the authority to stop the movement of goods and people during a declared outbreak.<sup>273</sup> The law even has provisions dealing with human resource requirements during an outbreak (Article 27), the handling of corpses infected with diseases (Article 28), and for requiring pharmaceutical companies to supply medicine in a timely fashion (Article 29). A host of prevention measures are outlined in Chapter 2 (Articles 9-20) that include everything from vaccination to sewage and designation of special hospitals for the treatment of infectious diseases.

This elaborate set of provisions for prevention and control of infectious diseases also contains measures for enforcement, ranging from administrative penalties (Articles 32-34 in Chapter 5) to fines and criminal sanctions (Articles 35-39 in Chapter 6). Article 40 allows the Ministry of Health and, by implication, its counterparts at the two lower levels of government, to engage in ongoing development of public health measures by an explicit provision authorizing the enactment of implementing regulations.

There have been several implementing regulations over the past decade that provide a sense of the range of regulatory activity at the central level of government. The Ministry of Health issued regulations on the prevention and treatment of tuberculosis in 1991, and on statistical reporting in 1992. In general, the regulations provide a modernized legal infrastructure for implementing public health measures. Whether the existing public health law structure was adequate to deal with a deadly infectious agent of unknown origins such as SARS remains open to debate. It is clear that a host of public health laws were adopted in response to SARS. On the one hand, one could surmise that political leadership in the PRC, perhaps in response to international pressure, considered the existing laws inadequate. On the other hand, the existing public health laws provided the infrastructure for contact tracing and other control measures that helped to stop the spread of SARS in China. It is thus possible that emerging microbial infections require a

new approach to public health law in China and elsewhere that builds on, but moves beyond, established measures.

Legal analysis with respect to China should not be limited to the national level. A few provinces, such as Sichuan (1985), had some form of public health measures even before 1989.<sup>274</sup> With the passage of the Prevention and Treatment Law in 1989, more provinces (Hebei, Jiangsu, and Heilongjiang) enacted regulations on infectious disease control.<sup>275</sup> Other provincial level governments, such as the city of Tianjin, issued a special notice on epidemic situations requiring any citizen or public health staff member to report an outbreak of a disease of unknown origin.<sup>276</sup> Shanghai passed the Punishment for Supervision of Infectious Diseases Prevention and Treatment Law in 1995 (amended and reissued in 1997); this provincial law sets the administrative punishment for violations of the national law.<sup>277</sup> Finally, at the local level, a few cities passed measures in the 1990s designed to implement the Prevention and Treatment Law: Guangzhou City of Guangdong Province; Hefei and Bangbu City of Anhui Province; Guiyang of Guizhou Province; Qingdao Municipality of Shandong Province; and Huhehote of Inner Mongolia.

Given the size of China, provincial and local measures to support public health measures exist in only a small percentage of the total number of provinces and local units. It is impossible to determine if this small percentage is a function of lack of interest on the part of lower levels of government or the effective “preemption” of the field by the Prevention and Treatment Law. The latter explanation seems most plausible, because the hierarchical legal structure allows for the central government to impose obligations on local officials and the basic public health statute is relatively recent. It cannot be determined at this time whether this hierarchical and horizontal method of authorizing legal authority has enough flexibility for an infectious disease outbreak in modern China that now includes a major world transportation hub—Hong Kong.

#### 4. Response to SARS

According to WHO, by July 14, 2003, there were reported cases of SARS in nearly every province and autonomous region in the PRC. Only Hainan Province, Guizhou Province, Yunnan Province, Qinghai Province, Xinjiang, and Tibet Autonomous Regions did not report cases of SARS.<sup>278</sup> Among those 26 provinces, Beijing, Guangdong Province, Shanxi Province, Inner Mongolia Autonomous Region, Hebei Province, and Tianjin were the most heavily affected areas. It is important to avoid “hindsight bias”<sup>279</sup> in understanding the development and spread of SARS in China.

The investigation into the Zongshan outbreak led to several hypotheses by January 21, 2003. First, the outbreak was caused by an unknown pathogen, probably of a viral nature. Second, the disease was infectious, and family members and health care workers who had contact with an infected person were at the greatest risks. Scientists investigating the outbreak in Zongshan recognized the importance of documenting how to treat and prevent the spread of the disease and recommended that a case reporting system for the unknown disease be established.

Chinese scientists continued to engage in various methods of contact tracing and epidemiological studies in Guangdong Province. On January 31, 2002, the eve of the Chinese New Year, the first case of the unknown illness outside of the hospital setting appeared in the city of Guangzhou. Apparently this patient had visited Zongshan during the holiday travel period and was later determined to have infected more than 100 people before precautionary measures could be taken. When this patient was admitted to a hospital on January 31, over 30 members of the medical staff were infected within 24 hours. When the patient was transferred to another hospital from February 1-8, he infected 26 members of that hospital staff before being transferred to the Guangzhou Infectious Disease Hospital, where apparently some precautions were taken to deal with a person with an infectious disease. In the meantime, 19 family members and relatives of the patient became infected. Between November 16, 2002 and February 9, 2003, there were 305 cases, later classified as SARS according to WHO standards, with five deaths. At the peak of the outbreak there were 50 new SARS cases reported on February 9, 30 reported on February 12, and five reported on February 19, 2003. It is possible that the declining figures were caused by precautions starting to arrest the spread of the disease.

Scientists from the University of Hong Kong began an investigation into the outbreak in Guangdong Province on February 11, 2003. (At about the same time, one of the physicians who had treated patients with the unknown illness in Guangdong Province made a trip to Hong Kong in order to attend a wedding.) The research team started by asking whether there had been some type of transfer of the avian influenza (H5N1) virus to humans as in 1997. The team obtained 18 patient samples on February 12, and an additional 22 patient samples on February 18. These early efforts focusing on the H5N1 influenza virus led to the isolation of the influenza virus in one Hong Kong family and in one of the later-determined SARS patients from Guangdong Province. Although the scientists conducting the Guangdong Province investigation readily admit they failed to isolate the coronavirus, their efforts contributed to the work being done in Hong Kong and elsewhere. These collaborative efforts eventually led to the isolation of the coronavirus in cell cultures from a nurse, hospital clerk, and physician.

Once the viral nature of the symptoms health care workers had been treating was established, the investigation turned to determining where this new coronavirus—a family of infections common among several domestic and wild animals and in humans—came from. The isolation of the genome of the virus through international scientific collaboration played an important role in the ability to work backwards from cases to the source(s). The following facts about the early cases supported the hypothesis that the virus originated in some wild animals: early cases developed independently, in five different cities in Guangdong Province; early patients were more likely to report living near agricultural markets, so called “wet markets,” where wild and domestic animals are slaughtered and sold as food; and 39% (9 of 23) of the early cases were individuals employed as food handlers in these markets.

Accordingly, eight different species of live domestic and wild animals being sold in markets in Shenzhen, a city in Guangdong Province, were tested on May 7, 2003. Two

of the species were found to contain the same virus as the human patients. Thus, this laboratory work in China, in conjunction with the work coordinated by the WHO, established a baseline of scientific knowledge about the disease, and more importantly what was not known about the disease. With this growing level of knowledge (and uncertainty) about the nature of SARS, the Chinese were able to establish a number of specific control measures restricting the movement of individuals, goods, and animals in the spring of 2003. Meanwhile, the disease had spread through the country, with Beijing having more than 5,000 cases of SARS.

The legal and political response to the spread of SARS was primarily national in scope. After April 2003, a number of agencies within the State Council took actions to control the spread of SARS. From a legal perspective, the most significant of these actions was the Ministry of Health's approval of the listing of SARS as an infectious disease on April 8, 2003.<sup>280</sup> As a result of this action by the Ministry of Health, all the provisions of the Prevention and Treatment Law could be used to control the spread of SARS through Decree 84 from the Ministry of Health. That notice informed all public health departments and related agencies throughout the country of the listing of SARS and ordered the following four measures: (1) local governments should inspect and report the number of SARS cases on a daily basis and all medical institutions should take control measures when encountering patients suspected of having SARS; (2) SARS patients and those suspected of having SARS should be isolated for treatment and those having close contacts with either patients or suspects should be monitored; (3) the control measures under Article 24 of the Prevention and Treatment Law were authorized as necessary; (4) use of communication and education to achieve compliance with control measures was also authorized. Given the vertical integration of health departments, this action by the Ministry of Health was the legal authority for all the measures taken to control SARS, including the use of quarantine and isolation.

After this notice and authorization, a number of other actions were taken by the central government. The Ministries of Health, Finance, Railway, and Transportation and Civil Aviation took steps on April 12, 2003 to prevent the spread of SARS through the country's transportation system.<sup>281</sup> A government-issued notice instructed various governmental units to cooperate in order to prevent the spread of SARS through the transportation system. The local governments, for instance, were instructed to establish quarantine stations at railway stations and airports for people suspected of having SARS. The transportation agencies were instructed to enact emergency procedures for handling SARS patients and those suspected of having SARS. Public health agencies were to provide the necessary training of the medical staffs and technical support to the local governmental and transportation officials. Once a person with SARS was discovered in a vehicle or transportation station, those facilities and vehicles were to be disinfected immediately after the person or persons were removed. Furthermore, the operators of the transportation systems were to discourage people with SARS from traveling and train their respective staffs about ways of preventing the spread of SARS.

The State Council enacted regulations for the Handling of Public Health Emergencies (Public Health Emergencies) on May 9, 2003.<sup>282</sup> This ordinance differed

conceptually from the Prevention and Treatment Law, which sought to classify infectious diseases into three categories. The Public Health Emergencies ordinance recognizes that public health situations can arise unexpectedly from mass food or occupational poisoning and other sources, and that diseases of unknown etiology exist. Once an emergency as defined in the ordinance exists, the State Council and the provincial and local government must develop a coordinated approach to handling the emergency.

Provisions in the new ordinance referring specifically to “diseases of unknown origins” appear to reflect some of the “lessons learned” from the prior five months in China and elsewhere. For instance, provincial and local governments were required to report the possible occurrence of infectious diseases of unknown origin to the central public health administration within one hour under Article 19. Health care institutions were required to report to the appropriate level of government under Article 20. Local government units were directed to investigate these reports under Article 22, as well as fulfilling their own obligations under Article 19. Other provisions of the new ordinance require any unit of government or person to report the neglect of disease reporting duties by various instrumentalities of government under Article 24, as well as the neglect of obligations to provide timely information about the emergencies under Article 25.

This highly detailed set of provisions for dealing with emergencies, ideally based on the best scientific information available, is reinforced by a long list of sanctions for violations *by public officials* in Articles 45-52. Failures of local public health officials to carry out their duties could lead to demotions or dismissals and to criminal charges in some limited circumstances. Similar provisions establish possible sanctions for officials at the higher levels of government for dereliction of duties under the new ordinance. Health care and sanitation officials had a separate provision that allowed for the revocation of their licenses to practice as well as job sanctions and possible criminal sanctions (Article 50). Finally, there were sanctions for failure to report and cooperate on the part of officials, and sanctions applicable to any person who spreads rumors, raises prices, or misleads customers during an emergency (Article 52).

The Ministry of Health used its authority under the ordinance on Public Health Emergencies and the Treatment and Prevention Law to take two important steps. First, the Ministry issued a complex set of regulations dealing with the prevention and treatment of SARS.<sup>283</sup> The effect of this regulation was to establish SARS, an infectious disease of unknown origins, as one of the statutory infectious diseases for which control measures are permissible.<sup>284</sup> In addition to the measures regarding sanitation, there are several provisions dealing with health education and what is called “propaganda.”<sup>285</sup> In this context, the term “propaganda” should be understood to be closer to its archaic meaning of “a group or movement organized for the spreading of ideas; a particular doctrine of systems of principles.”<sup>286</sup> There is thus an entire chapter of the regulations (Articles 9-13) on reporting of SARS through the hierarchy of the government and the obligations on units of government and individuals to report information in a timely fashion and not to falsify any information about SARS. These legal obligations are perhaps necessary in such a vast government with a massive population and are the backbone of the Prevention and Control Measures in Chapter III (Articles 14-22) and the

Treatment Measures in Chapter 4 (Articles 23-29). Under the former, health care institutions are required to adopt control measures as soon as suspected cases of SARS appear at those facilities.<sup>287</sup> Under the latter, health care facilities are required to treat without regard to the prospect of payment from a SARS patient or a person suspected of having SARS.<sup>288</sup> These prevention and control measures, special treatment measures, and communication obligations for SARS are reinforced by the sanctions in Chapter 4 (Articles 35-39).

Second, the Ministry of Health issued a set of standards on May 8, 2003, for defining persons with close contacts with SARS patients and thus subject to prevention and control measures.<sup>289</sup> For instance, the standards for airplanes are different from the standards for trains, buses, railroads, and ships. For airplanes, passengers within a certain number of rows are defined as having close contact, whereas on a ship, those sharing the same cabin are defined as having close contact.<sup>290</sup> There are specific provisions for medical staffs, schools, cohabitants of SARS patients, and relatives and friends.<sup>291</sup>

The quarantine periods for those defined as having close contact is 14 days since the last contact with a patient or a suspected patient. The notice provides a legal basis for what is called “collective quarantine” if the contact occurs after the patient demonstrates symptoms. If the contact occurred before symptoms appeared, the person could be quarantined at home. More significant are provisions for keeping records of those having contact with SARS patients in the transportation system and instructions to individuals with contacts with SARS patients to reduce their contacts with others and to take their temperature twice a day.

The Ministry of Health joined with the Ministry of Civil Affairs, Ministry of Agriculture, National Development and Reform Commission, and National Population and Family Planning Commission to issue some special regulations for dealing with SARS in rural areas on May 20, 2003.<sup>292</sup> These provisions, for instance, authorized the quarantining of entire villages in order to prevent the spread of the disease to other villages or towns, as occurred in Hebei Province from April 21 to May 13. It is impossible to determine how effective such a quarantine order was, but a ruling by the Supreme People’s Procuratorate and Supreme People’s Court allowed for the use of the police to enforce such quarantine orders.

On May 15, 2003, the Supreme People’s Procuratorate and the Supreme People’s Court issued a judicial interpretation of how criminal law could be used by prosecutors and police to enforce the prevention and control measures established for emerging infectious diseases such as SARS.<sup>293</sup> The form of the ruling will appear to lawyers trained in a common law tradition as a set of regulations or codes, but given the statutory power of the Supreme Court and the inter-institutional role of the Procuratorate, the ruling establishes specific guidelines for when particular provisions of the criminal code can be used. For instance, infected persons or those suspected of having the disease who refuse voluntary isolation or quarantine can be sentenced to up to 10 years in prison under Article 114 of the Criminal Code if their spread of the pathogen is viewed as purposeful and endangers the public health.<sup>294</sup> Even more stringent punishments are authorized for

those who sell fake prevention drugs or violate the national standards of medical production during an epidemic.<sup>295</sup> Persons who obstruct state officials or Red Cross staff engaged in prevention and control activities, such as quarantine or forced isolation, can be imprisoned for up to three years.<sup>296</sup>

The controversial portion of Article 9, authorizing the death penalty in some instances, must be understood in the context of the statute. Under Article 9, individuals who gather to engage in “beating, smashing, or looting” while measures to prevent and control the spread of an emerging infectious disease such as SARS are in place are subject to penalties increasing in severity with the seriousness of the offense. The ring leaders of such “rioting”<sup>297</sup> could be subject to the death penalty if their behavior otherwise constituted “capital murder” under the criminal code. In other words, a person instigating a riot on a train quarantined during an epidemic might be sentenced to death if that person had destroyed property and used a gun to rob and kill someone during the disturbance.<sup>298</sup> The more important point to remember is that this ruling provides guidance to prosecutors and the police for how to use the existing criminal code to enforce the public health measures taken to control and prevent the spread of SARS.

The number of instances in which law enforcement was actually involved in enforcement of the quarantine and isolation articles is difficult to determine without direct access to data in the PRC. The enactment of regulations for emerging infections in May 2003 could represent an entirely new approach to public health law that creates some uncertainty as to how the various legal rules operate in practice. The PRC may have adopted a two-tier approach towards control and prevention. Were SARS to re-emerge in the PRC, one would expect the May 2003 regulations to apply. Once the nature of the disease and its cure and treatment are well established, the State Council and the Health Ministry might then classify the disease under the Prevention and Treatment Law of 1989.

By the end of May 2003, the central government had taken a number of steps to ensure that quarantine and isolation could be used to combat the spread of SARS. The ruling from the Procuratorate and Supreme Court provided guidance to law enforcement officials on how to use the criminal law as a tool to enforce public health measures adopted by various state officials. Acting first through the ministries under the State Council, all levels of government were, in theory, engaged in a systematic approach to control and prevent the outbreak of SARS.

It is perhaps not surprising that the provinces did little in terms of issuing formal regulations regarding SARS, given the exhaustive nature of the central government’s response. Beijing—a municipality directly under the Central Government in the PRC—did enact a number of regulations consistent with the national ordinances enacted by the State Council in the spring of 2003. These include more detailed provisions for controlling the spread of SARS by restricting the movement of patients and suspected patients and establishing rules for quarantine and isolation measures for individuals coming in and out of the city. Beijing, which had over 47% of all the cases of SARS in the country,<sup>299</sup> also used its provincial authority to designate certain areas as isolation

areas for SARS. According to the statistics provided by the Supervision Office of SARS Prevention and Control of Beijing City, 30,173 persons were isolated and quarantined in 18 districts (counties) through June 21, 2003. Among them, 12,131 persons were isolated or quarantined collectively and 18,042 persons were isolated or quarantined individually.

From April 22 to the end of October 2003, four hospitals were isolated as seriously affected zones, People's Hospital, Dongzhimen Hospital, Luhe Hospital of Tongzhou, and Herbalist Doctors' Hospital. Seven residential communities and buildings were totally isolated; two were residential buildings of the Beijing Science and Technology Research Institute, and the others were the residential community of People's Hospital, Xita Building #29 of National Economics and Finance University (a student dormitory), the students' residential building # ABC of Beifang Jiaotong University (now Beijing Jiaotong University),<sup>300</sup> the residential courtyard #15 of Dongsishitiao, Gonghua Residential Community #1 section 2 of Shahe, and a residential community of Yanhua Corporation located in Pangshan District. Also, seven construction sites were isolated: Jinggang Mansion construction site at Dongcheng District, Zhonghua Jiayuan construction site at Xuanwu District, alteration construction of Dewai Road at Xicheng District, Xiyuan construction site at Chongwen District, Yunchao Jiayuan construction site at Tongzhou District, Huguangshanshe construction site of the Second Engineering Bureau of China Irrigation and Electricity Company and Beimei Taidu (North American Attitude) construction project.

The Jinggang Mansion construction site was the first quarantined place in Beijing, from April 22 to May 18, 2003, affecting 399 persons in succession. People's Hospital, affiliated with Peking University, was isolated on April 24, 2003, and was the first unit isolated as a whole in Beijing,<sup>301</sup> with 1,563 persons affected. According to news reports, the decision to isolate was made by the Xicheng District Government.<sup>302</sup> A city like Beijing has the authority to set up districts or counties within the city with legislative, judicial, and other units of government.

By contrast, another city directly under the central government, Shanghai, used isolation and quarantine on an individual basis. In addition, it is worth noting that Shanghai provided some mechanism for compensating those quarantined who were not in fact infected with SARS. The Shanghai Labor and Social Security Bureau issued a notice that the suspected patients or people having close contact with patients who were quarantined or received medical examinations and later were found not to be SARS patients were to be treated as if they had worked during the quarantine period and were entitled to the wages and benefits for that period. If the employers failed to provide the wages and benefits, the quarantined employees could sue the employer in the Labor Arbitration Commission. A few other cities enacted local measures, but the central government was the main source of new legal measures to control SARS.

## 5. Coordination Issues

The nature of SARS as a global threat caused two extraordinary events in the PRC. First, WHO took the unusual step in April 2003 of publicly challenging the PRC's

report of the number of SARS cases in Beijing, even though in the past the WHO had refrained from criticizing member states.<sup>303</sup> This public rebuke led to greater cooperation by the PRC. By late April, political leaders in the Communist Party had declared war on SARS and several public officials, including the Mayor of Beijing and the Minister of Health, were removed from their Communist Party positions.

Second, in early May, the PRC allowed a WHO team to provide assistance with the SARS outbreak in Taiwan. Early in the outbreak, the United States provided assistance to Taiwan because China had blocked WHO assistance.<sup>304</sup> The visit by the WHO team was the first visit by any representatives of any UN-affiliated organization since the PRC took Taiwan's UN seat 30 years before. China's willingness to bend its traditional notions of sovereignty in the face of the epidemiological facts and international political pressures was probably significant in its ability to stop the spread of the disease.

It is significant for a strictly legal analysis that China had no obligation under the WHO treaty to report anything regarding SARS to WHO. Technically, the PRC's obligation was to report only three diseases—cholera, plague, and yellow fever. But international political and economic realities led the PRC to institute massive isolation and quarantine and other measures to contain the spread of SARS. Despite rapid advances in the scientific understanding of the SARS virus, the PRC used traditional public health measures of isolation and quarantine on a massive scale to contain the disease.

## 6. Public Reaction

How public health officials in the PRC communicated information about SARS became a matter of considerable international media attention during the spring of 2003. The term “cover-up” may or may not be appropriate for the actions of PRC officials, but it is clear that government and public health officials in the PRC were not in control of how the general public in the PRC or the international community was supplied with essential public health information. With the growth of the Internet and mobile phone communication within and outside of China, official announcements about the extent of the SARS outbreaks often followed non-governmental release of information to the media and WHO.<sup>305</sup> The globalization and open communication needed to modernize the economy had a major effect on the government of the PRC to change the way it dealt with and reported about the SARS epidemic.

Although press reports document resistance to some of the measures implemented by the government, it is too early to determine the ultimate legal resolution of the prosecutions brought in many cases. The following selected case studies may provide the basis for researching the impact of these new SARS-based regulations for dealing with emerging pathogens while also providing a glimpse of how public health measures were enforced in the PRC.

### *Inner Mongolia*

Li Song was a doctor in the emergency room of Railway Hospital of Linhe City, Bayanchuoer Meng, Inner Mongolia. He was infected with SARS while studying in a hospital in Beijing in the spring of 2003. He received treatment for several days in Beijing and returned to Linhe City on March 27, 2003. He was the first SARS patient in Linhe City, where he was treated in the individual clinic managed by his father; he was later transferred to Ba Meng Hospital on March 30. Ba Meng Hospital suspected that he was a SARS patient and isolated him for treatment. On April 8, Dr. Li, well aware of his disease, forced his way out of the Isolation Ward and went to the public area for eight hours. Dr. Li also violated the provisions for isolation and went out of the isolation ward. Because of Dr. Li's behavior, many of his relatives became infected; his parents and wife died. On May 1, 2003, the People's Procuracy of Linhe City arrested Li Song, after investigation for violation of Article 114 (endangering public security with dangerous means) and Article 330 (violating infectious disease prevention and treatment) of the Criminal Law. There is no report of the outcome of the prosecution.

#### *Hebei Province*

On April 24, 2003, the people's government of Xiong County, Baoding City of Hebei Province set up a SARS medical inspection (quarantine) station in Xiongfeng Hotel of Guzhuang. In the afternoon of April 25, some villagers in Guzhuang assembled in the Hotel and obstructed the work of the government. A few people even set fires to and smashed government vehicles. On May 1, the public security bureau of Xiong County arrested six individuals on the basis of warrants issued by the Xiong County People's Procuracy. On May 15, the Xiong County Court ruled that their conduct constituted the crime of group distribution of social orders, arson, and willfully damaging public and private properties, and sentenced them to fixed-term imprisonments for periods ranging from one to five years.

On May 3, 2003, Zhuozhou Municipality government dispatched a construction team to remodel Tongji Hotel in Dashiqiao Village of Shuangta District into a SARS quarantine station. Immediately after the construction began, some inhabitants of Dashiqiao village started obstructing the construction and hurt one construction worker. When the policemen arrived, villagers beat the policemen and damaged several police vehicles; nine villagers were later arrested on the basis of warrants issued by Zhuozhou Municipality People's Procuracy.

On May 3, 2003, three individuals of Baimiao Village, Xuanhua District of Zhangjiakou District, Hebei Province led a crowd of nearly 300 villagers in obstructing the construction of a SARS hospital in the village. On June 8, the three leaders were convicted of the crime of obstructing the state official's work and sentenced to fixed-term imprisonments of 1.5 years, one year, and six months respectively.

#### *Jiangsu Province*

A resident of Ganyu County of Jiangsu Province returned from Beijing to Ganyu County on April 25, 2003. He was quarantined until May 6, 2003. The staff at the

quarantine and isolation station told him explicitly that he would be quarantined at home for another few days. On May 10, 2003, he was found going out in violation of the quarantine regulation. When some government officials were trying to persuade him to go back, he threatened an official with a pair of scissors. The Ganyu County Court found that the individual obstructed state officials from carrying out their duties and disturbed the SARS prevention and treatment work. He was convicted and sentenced to a fixed-term imprisonment of 10 months.

### *Beijing*

On May 1, 2003, a taxi driver drove his taxi back to Miyun County, Beijing from Huairou County, Beijing. He refused to wait in the line to be examined and disinfected at the SARS prevention and disinfection station, located on the “border” of Huairou and Miyun, and injured the policeman who was examining him. The Miyun County Court found that the taxi driver did not comply with the instructions, refused to disinfect the taxi that he drove, and obstructed the state officials from carrying out their duties with force. On June 4, 2003, he was convicted and sentenced to a fixed-term imprisonment of six months.

### *Dujiangyan City*

Six individuals, residents of Dujiangyan City of Sichuan Province, were dissatisfied with the fact that their houses were located in the People’s Hospital of Dujiangyan, which belonged to an Isolation Region of Dujiangyan City. They spread disparaging words about the government and induced the public to obstruct the construction work at the hospital, which resulted in a three-hour traffic jam in the city and an economic loss of 14,000 yuan and aroused the public’s dread of SARS. They were charged with the crime of defiance and affray. They were convicted and sentenced to fixed-term imprisonments of 1 year, 8 months, and 2-3 months detention respectively.

Some Chinese legal scholars have questioned the legality of the new measures taken by the Ministry of Health to control SARS under the Prevention and Treatment of Infectious Diseases Law of 1989. The basis of these objections is that the statute limits the use of certain types of control measures to Type A diseases or a limited number of Type B diseases. Since only the State Council, rather than the Ministry of Health, can add to the Type A diseases, these critics have argued that the new regulations issued by the Ministry of Health are illegal.<sup>306</sup> Until the SARS crisis, it is likely that very little scholarly attention was devoted to Chinese public health law. In any event, these criticisms have not impeded the implementation of the measures. Newspaper accounts of the use of quarantine and isolation in the SARS crisis indicate that the government treated the regulations as legitimate and acted accordingly.

## 7. Current Situation

In China, the SARS notification system came back into effect on September 19, 2003 after it was stopped on August 16, 2003, when there were no more SARS patients in

China.<sup>307</sup> Since September 15, 2003, the major hospitals across the country have begun using the SARS case reporting system, which can report just-detected SARS patients or suspected patients to the Center for Disease Control of China and the Ministry of Health.<sup>308</sup> Each province has submitted its preliminary plan for SARS prevention and control to the Ministry of Health. In addition, the state will allocate 11 billion yuan to establishing a public health emergency treatment system. Different prevention measures have been taken in various provinces and cities.<sup>309</sup> For example, Beijing adopted a preliminary plan for SARS prevention and control on August 28, 2003.<sup>310</sup> Shanghai Bureau of Health issued an urgent notice providing that every suspected case is to be treated as SARS before being ruled out as SARS and summarizing six alerting situations for SARS so that officials can decide whether to trigger the SARS emergency handling system in a timely manner.<sup>311</sup>

## C. Hong Kong

### 1. Introduction

In March 2003, a physician who had been treating patients for atypical pneumonia at a hospital in Guangzhou traveled to Hong Kong and stayed in room 901 of the Metropole Hotel. It is thought that he was the first to transmit the SARS virus in Hong Kong. Seven others staying on the same floor of the hotel also became infected with SARS. This index patient was transferred to the Prince of Wales Hospital, where it is believed he spread the disease to nearly 100 hospital workers.

Another widespread outbreak of the virus occurred in April at the Amoy Gardens Apartment Complex where nearly 130 residents were diagnosed with SARS.<sup>312</sup> An additional 241 residents, free from symptoms of the virus, were quarantined for 10 days.<sup>313</sup> The source of the virus is thought to have been a visitor to the Amoy Gardens who had previously received treatment at the Prince of Wales Hospital. These two incidents and the continued threat of the spread of the SARS virus led to a range of responses by the Hong Kong government. In the case of Hong Kong, understanding of the response to SARS rests in part on knowledge of the complicated political and legal relationship between Hong Kong and China. That relationship is addressed in the section that follows.

### 2. Political and Legal Systems

Located at the southeastern tip of China, Hong Kong is a Special Administrative Region of the People's Republic of China. On July 1, 1997, after 150 years of British rule, the PRC assumed sovereignty over Hong Kong, according to the Joint Declaration of 1984 between China and Great Britain. Under the Joint Declaration, Hong Kong's special status will be protected for a period of 50 years from the transfer of power.<sup>314</sup> This has led to the development of a government structure referred to as "one country, two systems."

Under the current division of power, the central government of the PRC exercises authority over foreign affairs and defense. Annex III to what is referred to as the "Basic Law," a constitutional document developed in connection with the transfer of sovereignty, details the laws that can be applied to Hong Kong.<sup>315</sup> Authority over other areas of government rests with the Special Administrative Region. For example, the Special Administrative Region is responsible for maintaining public order in Hong Kong. This arrangement allows for Hong Kong to retain a legal system based on English common law for internal affairs and certain external affairs, as well as its non-socialist economic system.

The government of the Hong Kong Special Administrative Region is broken down into two levels, central and district. At the central level, authority is shared by the Chief Executive, the Executive Council, and the Legislative Council. The Basic Law states that the Chief Executive is accountable to the Central People's Government (the

government of the PRC) and the Hong Kong Special Administrative Region. This dual responsibility is reflected in numerous aspects of the position. The Chief Executive is selected by the Election Committee, a committee made up of residents of Hong Kong, but appointed by the Central People's Government. The Chief Executive's charge to implement the Basic Law and legislation emerging from the Legislative Council is complemented by a charge to implement directives from the Central People's Government. The Chief Executive not only implements; he or she has the power to make decisions about government policies, issue executive orders, and nominate or appoint other officials. The Chief Executive oversees a number of secretaries who head bureaus, including the Secretary of Health, Welfare, and Food, and the Secretary of Security.

The Executive Council is appointed by the Chief Executive and advises the Chief Executive on important policy decisions. The Legislative Council is responsible for legislating, monitoring the administration, and overseeing fiscal matters such as taxation and public expenditures.<sup>316</sup> The Legislative Council is also charged with receiving and handling complaints from Hong Kong residents. At the district level, Hong Kong has 18 district councils whose duties include advising the government on district-level issues; setting priorities for their district; and performing environmental, cultural, and community activities for their districts.

As noted above, the legal system created during British occupation will remain largely undisturbed until 2047. A legacy of British rule is a strong commitment to the rule of law. The website for the Hong Kong Special Administrative Region discusses the concept and proclaims: "The Rule of Law begins with individuals and their right to seek protection from the courts where justice is administered by impartial judges."<sup>317</sup> Structurally, members of the judiciary are independent of both the executive and legislative branches, and judgments made in courts in Mainland China are not binding on Hong Kong. Further, the Basic Law lays out fundamental rights to individuals which include the right to equality before the law; freedom of speech, of the press, and publication; freedom of association, of assembly, of processions, and of demonstration; and the right and freedom to form and join trade unions, and to strike; freedom of movement; freedom of conscience; and freedom of religious belief.<sup>318</sup>

### 3. Public Health Structure and Laws

The Department of Health, under the Secretary for Health, Welfare, and Food, is the government's health advisor and the government agency with authority to execute health-related policies and regulations. The department provides a range of health promotion and prevention services as well as treatment and rehabilitation services. The Hospital Authority is responsible for all public hospitals in Hong Kong. It currently manages a head office, 43 public hospitals/institutions, 47 specialist outpatient clinics and 13 general outpatient clinics. The Hospital Authority is independent of the Department of Health, but like the Department of Health is accountable to the Secretary for Health, Welfare, and Food.<sup>319</sup>

In July 2000, Hong Kong established the Disease Prevention and Control Division within the Department of Health. The mission of this division is to create and implement strategies for surveillance, prevention, and control of communicable and non-communicable diseases. The division carries out this mission by developing intervention programs, conducting research and evaluation, and identifying health needs in the community. The division is also constructing a public health information system, with completion anticipated by the end of 2003. This system will collect, coordinate, analyze, and disseminate health information. It is intended to improve the division's ability to develop policies, allocate resources, and plan, implement and evaluate services and programs.<sup>320</sup> The division also regularly conducts surveillance on 27 statutorily notifiable diseases and other infections of public health concern.<sup>321</sup> The division works closely with the Hospital Authority, other government departments, and health professionals and authorities in other countries.<sup>322</sup>

#### 4. Response to SARS

The Quarantine and Prevention of Disease Ordinance provides a framework for the quarantine and prevention of infectious diseases relevant to the public. It is the basis for the Prevention of the Spread of Infectious Diseases Regulations. Under Regulation 4, medical professionals must report suspected cases of notifiable diseases to the Director of Health. Legal authority for quarantine and isolation is found in Chapter 141 of the Prevention of the Spread of Diseases Regulations. Persons arriving from infected places other than by sea and air may be medically inspected or examined by a health officer (Ch. 141, sec. 21). Additionally, Section 22 allows any vessel arriving in Hong Kong to be visited by a health officer. A health officer has the discretionary authority to detain in a quarantine station any person seeking to land in Hong Kong who upon arrival is found to have an infectious disease (Ch. 141, sec. 38). The Commissioner of Police is directed to furnish assistance to any health officer for the purpose of enabling the exercise of these powers (Ch. 141, sec. 42).

On March 27, 2003, the First Schedule of the Quarantine and Prevention of Disease Ordinance was amended to include SARS on the list of infectious diseases. Another order was issued to amend the Prevention of the Spread of Infectious Diseases Regulations in 2003 to include SARS in the notification form for the reporting of infectious diseases.<sup>323</sup> Surveillance has been enhanced through distribution of a clear case definition to all health care providers, active case contacting, and prompt laboratory investigation of virus samples. Use of current technology, such as the Internet, an e-SARS database, and a Major Incident Investigation and Disaster Support System (MIIDSS) has facilitated prompt case investigation and contact tracing. MIIDSS allows linkage of the contact person, location, and event.

The government of Hong Kong also broadened and strengthened existing quarantine and isolation laws, and various agencies have been aggressive in using the powers granted under these laws. Initially, visitors were allowed in hospitals where SARS patients were housed, which resulted in spread to the community. This led to a policy of isolation of patients. Visitors were prohibited from entering SARS wards and

visitation to non-SARS wards was severely restricted and closely monitored. Also, special training in infection control was provided to hospital staff and all hospital employees were required to wear protective gear. Four medical centers were designated as treatment facilities for SARS patients.

The government also instituted home quarantine for households of individuals with SARS. Further, close contacts of confirmed SARS patients were placed under a 10-day home quarantine and monitored by public health nurses through telephone and unannounced home visits. As an alternative to home quarantine, some close contacts were placed in isolation camps outside the city of Hong Kong. The camps were holiday villages run by the Leisure Department of the government.<sup>324</sup>

As noted in the introduction, the second major SARS outbreak in Hong Kong occurred at the Amoy Gardens housing complex. This was the first instance in which the government issued a quarantine order for an entire housing complex.<sup>325</sup> Residents were not permitted to leave the complex without written permission from a Department of Health officer.<sup>326</sup> At first, the Hong Kong government resorted to the use of barricades and tape to prevent residents from leaving. Hundreds of residents of the Amoy Gardens were eventually relocated to isolation camps.<sup>327</sup> Residents of Amoy Gardens who were under the 10-day quarantine were provided with three meals a day and with emotional and psychological support through a special hotline established by the Home Affairs Department. Additional services were also available by calling a hotline set up by the Social Welfare Department. Others under home quarantine were also provided with home treatment and assistance with provision of daily necessities including financial assistance.<sup>328</sup>

Because of their increased vulnerability to infection, the elderly received heightened attention. Residential care homes were given special support in the form of written guidelines for infection control, training for caregivers, and a requirement that all residents recently discharged from the hospital be placed in isolation at the facility for 10 days. The government also closed schools and universities for three weeks. When students and teachers were permitted to return, they were asked to wear surgical masks and continue temperature screens on a daily basis.

Compliance with home quarantine was enforced by interdepartmental teams of police and officials from immigration, social welfare, home affairs, and the health department. Hong Kong imposed strict penalties for breaking quarantine orders. Penalties for violations include fines of HKD\$2,500 plus HKD\$250 for every day the offense continues. (HKD=1.29 USD.) Increased penalties apply to subsequent offenses. If a second offense occurs within one year, imprisonment may result in lieu of or in addition to the fine. Additionally, an individual may be stopped and detained by any health officer or police officer and if his or her name and address are not provided, he or she may be arrested.

Other measures taken to control SARS involved travelers and those crossing borders. Screening, monitoring, and quarantining of vessels and arriving and departing

individuals was instituted at seaports and airports. In mid-March, shortly after the initial outbreak of SARS, the government set up medical posts at all border points and began to require that all incoming visitors complete a health declaration. By April, health control measures at border points were increased to include temperature checks for all airport passengers and travelers by land, train, and sea. Additionally, infrared devices were installed throughout points of entry in Hong Kong to assist with temperature screening.

On April 17, 2003, the Director of Health, under the authority of Chapter 141 of the Prevention of the Spread of Diseases Regulations, granted immigration officers and members of the auxiliary medical service or civil aid service the power “to stop and detain any person seeking to leave Hong Kong in contravention of Regulation 27A...and remove the person to an infectious disease hospital...”<sup>329</sup> Under Regulation 27A, persons cannot leave Hong Kong without receiving prior written permission from a health officer. Further, the Director of Health authorized any “member of the civil aid service on duty to take the body temperature of any person arriving in Hong Kong or leaving Hong Kong.”<sup>330</sup> Medical practitioners or health officers are also authorized to perform medical examinations on anyone entering or leaving Hong Kong to curtail the spread of SARS.<sup>331</sup>

Hong Kong International Airport is one of the busiest in the world and a hub for many airlines, and therefore it was an important site for control efforts. All in-bound, out-bound, and transit passengers had to undergo temperature checks. In-bound and transit passengers had to complete a health declaration stating whether they had fever, cough, shortness of breath or breathing difficulties, and they were required to list all countries and cities they visited within 10 days of their arrival in Hong Kong. Passengers with no fever or other symptoms were permitted to proceed to immigration. Passengers with no fever but other symptoms were advised to consult with a physician and permitted to proceed to immigration. Passengers with a fever were taken for a medical examination; if the examination revealed a suspicion of SARS, they were transported to a hospital selected by the Hospital Authority. Out-bound passengers were asked by airline employees about fever and contact with persons having SARS. Passengers with fever were sent to an airport medical clinic and were not permitted to proceed unless a certificate declaring them “fit for travel” was issued by a physician. Those with close contact with a SARS patient were sent to the Airport Health Authority. Hong Kong International Airport also implemented preventive health measures in terminals, including frequent air filter replacement, cleaning of courtesy and pay phones, daily cleaning of check-in counters, and sealing of drinking fountains.<sup>332</sup>

In Hong Kong, infection control efforts backed by the threat of force were complemented by voluntary measures. A public education program was aimed at increasing awareness of SARS symptoms and recommending prompt medical treatment for anyone experiencing any symptoms of SARS, and included elements such as a SARS information hotline. Additionally, authorities in Hong Kong provided residents with disinfectant to use in their homes.<sup>333</sup> The Hygiene Declaration of 2003 was the basis for a broad-based educational campaign. The strategy under the declaration was location-specific and addressed hygiene standards and measures in various categories and settings, such as the home, food supply, medical, school, industrial, hotel, and sewage. The

objectives included setting standards and renewing a culture of public hygiene, instilling a sense of individual responsibility for hygiene, and improving the image of Hong Kong internationally. Health and hygiene promotional materials addressing basic sanitary measures to reduce the spread of infectious disease include: “Health Advice for People Who Have Been in Contact with SARS Patients;” “Wearing Mask;” “Flush Toilet Properly;” and “Make Sure the Trap is Not Dry.”

Hong Kong also established multi-disciplinary response teams composed of those with expertise in public health, building management, and environmental issues. The role of the teams was two-fold: investigating buildings and drainage and other systems, and taking remedial actions including disinfection, pest control, and cleansing.

The response to SARS was supported by large allocations of funds including: HKD\$200 million for infectious disease prevention, public health, and treatment of disease; HKD\$200 million for training and support for the welfare of health care workers; HKD\$1.3 billion to strengthen public health work and research on infectious disease; and HKD\$500 million to establish a CDC-type organization.<sup>334</sup> As result of the impact that SARS had on employment, the Chief Executive has announced plans for a HKD\$715 million job package to create over 30,000 short-term jobs and training opportunities.<sup>335</sup>

## 5. Coordination Issues

The Hospital Authority established a Central Task Force on Infection Control on SARS to make decisions regarding a range of professional and technical issues. This group of experts also provided assistance in the implementation of hospital control measures and the enforcement of such measures. A Central Task Force on Supplies was established to track the need for hospital supplies, oversee distribution of supplies, and assess the needs of various hospitals for protective gear and other precautionary items.<sup>336</sup> The SARS outbreak at the Amoy Gardens Housing Complex required the coordination of numerous government agencies. The Department of Health led the investigation in conjunction with eight other governmental entities.<sup>337</sup>

Another example of coordination was the government’s use of various media outlets to provide broad outreach. Television, radio, the Internet, and public presentations provided updated information for residents of as well as travelers to Hong Kong. Radio and television announcements and billboards indicated how to wash hands properly, put on gloves, and wear masks.<sup>338</sup> The mass-transit railway system joined with the medical faculty of the University of Hong Kong to implement a campaign on how to combat the disease, distributing informational brochures produced by the Department of Health and answering questions for the public.<sup>339</sup> The campaign ran for two days at six of the busiest transit stations.<sup>340</sup>

Looking beyond its borders, the Hong Kong government participated in a meeting with the Shenzhen municipal government. Shenzhen is the main transit point between Hong Kong and Mainland China. The meeting was intended as a forum for the exchange

of experiences and ideas regarding border control points and the prevention of SARS.<sup>341</sup> Each government agreed to install infrared imaging at the Lowu control point and each side agreed to screen incoming passengers. Both governments also agreed to hold regular meetings to exchange information.

An international group of experts was selected to review the Hong Kong government's work in containing SARS. Experts from the United Kingdom, United States, Australia, Hong Kong, and China comprised the committee that was charged with making recommendations for the improvement of Hong Kong's public health and medical systems.<sup>342</sup> In addition, Hong Kong recognized that to effectively control communicable diseases collaboration was required with China, neighboring countries, WHO, and other international bodies.<sup>343</sup>

## 6. Public Reaction

As noted above, the government of Hong Kong used public education as one of the key means for preventing the spread of SARS as well as to inform the public about individual responsibility in containing the spread of the virus. Still, broad-based educational campaigns were not sufficient to ease public fears. Government officials addressed public concerns about contamination, especially in large housing complexes, by making public the names of all buildings in which SARS cases were confirmed.<sup>344</sup>

There is also some evidence of resistance to government policies, especially in the area of quarantine. After the Amoy Gardens housing complex was quarantined, police discovered that more than half of the apartments were empty with residents having breached the 10-day quarantine order issued by the Secretary for Health, Welfare, and Food. In order to locate the residents who left Amoy Gardens during the quarantine period, the police department formed a task force.<sup>345</sup>

To some degree, the harsh effects of quarantine were mitigated by a law, the Occupational Safety and Health Ordinance, that obligated employers to make reasonable efforts to protect the health and safety of employees.<sup>346</sup> This obligation is quite general, but it may have implications for the SARS epidemic. Some legal experts maintain that under the Employment Ordinance, "where an employee has contracted the disease, he or she should be granted sick leave by the employer," meaning the employee is entitled to receive payment of four-fifths of normal wages during the leave period.<sup>347</sup> Additionally, the government recommended that employers not terminate employees during sick leave and that employers not dismiss employees because they had an affected family member.<sup>348</sup>

Additional information bearing on the public reaction to SARS and to government control efforts comes from an AC Nielsen Poll comparing the impact of SARS on Hong Kong and Singapore. The survey found that 35% of Hong Kong residents cancelled or postponed travel plans due to concerns about the SARS outbreak.<sup>349</sup> When respondents were asked "What have you done to protect yourself/family from contracting the SARS virus?" 65% of respondents said that they wore a mask, 58% had adopted a more cautious

approach toward personal hygiene, and 34% were avoiding crowded areas.<sup>350</sup> The findings of this survey indicate that approximately 56% of Hong Kong residents found the SARS virus to be of most concern as compared to such things as the economy, unemployment, war in Iraq, and personal health.<sup>351</sup>

## 7. Current Situation

It is too soon to tell how effective Hong Kong's strategies have been in combating the spread of SARS. However, on June 23, 2003, WHO removed Hong Kong from the list of areas with a recent transmission.<sup>352</sup> According to Professor Lee Shiu Hung of Hong Kong University, many of the measures taken (e.g., contact tracing, wearing of masks, strict personal hygiene measures, and temperature screening) were effective in raising the public awareness, but enforcement of some measures was an issue.<sup>353</sup> Professor Hung suggests that because the disease spread so rapidly, preparedness was an issue with shortages of masks and other protective gear for health workers, inadequate control measures, and poor communication with the public leading to panic.<sup>354</sup>

Hong Kong suffered serious economic losses linked to SARS. During the height of the outbreak, nearly 60,000 restaurant and hotel workers lost their jobs or were put on unpaid leave.<sup>355</sup> The Standard & Poors Rating Agency estimated that SARS could cut Hong Kong's gross domestic product as much as 1.5%.

A memo issued by the Secretary of Health, Welfare, and Food on the day WHO removed Hong Kong from the list announced the need to prepare for future outbreaks. The need to strengthen the public health system and the management of infectious diseases was acknowledged, with "\$200 million allocated for treatment of diseases, strengthening infection control, and public education."<sup>356</sup> Three committees were established to address certain issues based on the experience with SARS. One committee was to work on overall cleaning campaigns and environmental improvements at housing complexes, another on developing plans and programs for economic redevelopment including promoting tourism, and a third on promoting community involvement in improving the physical, social, and economic environments of the city.<sup>357</sup>

The international group of experts published its findings in a lengthy report. The report delineated some of the shortcomings in Hong Kong's response to the SARS epidemic.<sup>358</sup> One problem identified was the inadequate communication between the Hospital Authority, the Department of Health, and university health experts.<sup>359</sup> Additionally, the report concluded that health care workers were not trained appropriately and facilities were not adequately equipped to deal with the outbreak.<sup>360</sup>

Hong Kong has, however, developed a response mechanism to be better prepared if such an event occurs again. The Hospital Authority established a three-stage SARS warning system to allow hospitals and outpatient facilities to detect SARS patients early and monitor the spread of the disease.<sup>361</sup> Other plans include providing over 1,000 isolation beds in public hospitals and ensuring a three-month supply of protective clothing and equipment for medical professionals.<sup>362</sup>

## D. Singapore

### 1. Introduction

Singapore is a city-state located in Southeast Asia with a population just slightly over 4 million. Singapore's population is largely made up of descendents of Chinese, Malaysian, and Indian immigrants. Although English is the official language of administration, numerous languages are spoken in Singapore, including Mandarin, Malay, and Tamil. Singapore was first confronted with the SARS virus on March 14, 2003, when the Ministry of Health was informed that six persons at Tan Tock Seng Hospital/ Communicable Disease Center (Tan Tock Seng) were admitted with atypical pneumonia.<sup>363</sup> By the time the epidemic subsided, Singapore had a total of 238 cases of SARS with 32 deaths. Three index cases were identified, all of whom had stayed at the Metropole Hotel in Hong Kong during the time that a SARS-infected person was a guest. Singapore found five SARS cases to be responsible for transmitting SARS to a larger than expected number of persons. These people were named "superspreaders" and the fact that SARS could be spread to a large number of persons by one patient strengthened the government's decision to take prompt and strong measures in containing the disease. Additionally, health officials in Singapore found evidence that casual contact, such as encounters in elevators, taxis, and hallways, had resulted in contagion. Although most secondary spread of SARS was initially hospital-related, no additional nosocomial cases were observed after March 22 in Tan Tock Seng (the date when this hospital was designated the official SARS hospital) or after April 17 in other hospitals.

The country's actions and responses to SARS were widely publicized as a result of Singapore's stringent and comprehensive approach to controlling the epidemic. Of greater relevance here, the country's ability to initiate rapid and sweeping public health and legal measures was facilitated by Singapore's political and legal systems and, more particularly, its existing public health structures and laws.

### 2. Political and Legal Systems

Singapore's governmental structure is based on the British Westminster system, consisting of a democratically elected Parliament of 84 members, a Prime Minister who is appointed by the President, an elected President, and a Cabinet appointed by the President. The President and the Cabinet are vested with executive authority.

The Cabinet is responsible for the general direction and control of the government, including the administration of the affairs of state. It is responsible to the Prime Minister, and includes the ministers of Community Development and Sports, Defense, Education, the Environment, Finance, Foreign Affairs, Health, Home Affairs, Information, Communications and the Arts, Law, Manpower, National Development, Trade and Industry, and Transport.

At the local level, community development councils (CDCs) function as a local administration of each district. CDCs were implemented to devolve authority from the

national housing authority to the local level and are responsible for “initiating, planning and managing community program[me]s to promote community bonding and social cohesion.”<sup>364</sup> CDCs are managed by a council consisting of anywhere from 12 to 80 members and includes the mayor of the community. CDCs are governed by the Community Development Council Rules of 1997 and were in charge of administering the SARS Home Quarantine Order Allowance Scheme.<sup>365</sup>

The legal system of Singapore is based on English common law and customs. The Singapore Constitution provides the basis for the country’s laws and delineates the functions of the governmental organs including the judiciary. It also sets forth individual rights within the context of the authority of the state.

### 3. Public Health Structure and Laws

The Ministry of Health enforces strict sanitation and public health regulations. As a result, the health conditions and health infrastructure of Singapore are comparable to some developed countries. The country has a broad-based system for surveillance of communicable diseases requiring that all infectious diseases reported to the Quarantine and Epidemiology Department of the Ministry of Environment be investigated.<sup>366</sup> The Ministry of Health also has surveillance responsibilities as part of its disease outbreak prevention capacities.

The Ministry of Health’s mission is to “promote good health and reduce illness; to ensure that Singaporeans have access to good and affordable healthcare that is appropriate to needs; and to pursue medical excellence.”<sup>367</sup> Singapore provides public health services for its residents through three ministries—Ministry of Health, Ministry of the Environment, and Ministry of Manpower-- as well as the private sector. Health care services are provided through a dual system of delivery. The public system is managed by the government and the private system is provided by private health facilities and providers. Residents can choose between the two systems for their care and are provided with some level of subsidization for the public health care system. The majority of primary health services in Singapore are provided by the private sector, whereas the majority of the hospital care is provided by the public sector.<sup>368</sup> Emergency services are provided through the Accident and Emergency Departments at public hospitals. Public hospitals and clinics receive subsidies from the government and the private sector is subject to regulation by way of licensing through the Ministry of Health. There is no free health care in Singapore, and individuals are expected to provide co-payments for services. Patients can choose among different levels of service but have to pay more out-of-pocket for the higher level of care. Additionally, the government requires all working people to contribute 6-8% of their income into the Medisave account that can be used to cover the cost of hospitalization by individuals or their immediate family. In addition to Medisave, Medishield provides catastrophic illness insurance and Medifund provides coverage for the indigent so that no patient can be denied care by a public hospital for inability to pay.<sup>369</sup>

Singapore bases its authority to quarantine and isolate individuals on two key pieces of legislation, the Infectious Disease Act and the Environmental Public Health Act as amended in 2002.

The Infectious Disease Act was enacted in 1976 to control and prevent the spread of scheduled infectious diseases. The Act is administered jointly by the Ministry of Health and the Ministry of the Environment. It allows for medical examinations and treatment, surveillance, and investigation of infectious diseases. It also requires physicians to report specified infectious diseases to government authorities.<sup>370</sup> According to the Ministry of Health's official website:

The Act empowers the Director of Medical Services to order the treatment of premises or vessels, destruction and disposal of infected food, animals, water and corpses, closure of food establishments if the establishment is suspected to be the source of or responsible for the transmission of infectious disease, or the prohibition of meetings and public entertainment if such gatherings are likely to increase the spread of the infectious disease.<sup>371</sup>

Under the Infectious Disease Act, Chapter 137, the Minister of Health and the Minister of the Environment are empowered to declare an area to be an outbreak area in Singapore and elsewhere if a dangerous infectious disease could be introduced into Singapore.<sup>372</sup> The Act allows for certain amendments by the relevant public officials. Section 69 states that the "appropriate Minister may, from time to time, by notification in the *Gazette*, amend any of the Schedules."<sup>373</sup>

The Environmental Health Act is administered by the Director-General of Public Health who is appointed by the Minister of the Environment. The Environmental Public Health Act regulates, among other things, food stalls and vendors. More specifically, under Part IV of the Act:

(1) The Director-General [of Public Health] may require any person to whom a license has been issued under this Part . . . or any assistant or employee of the licensee or any applicant for a license under this Part to submit to medical examination. (2) If such licensee, assistant, employee or applicant is suffering from or is suspected to be suffering from an infectious disease or is suspected to be a carrier thereof, the Director-General may require him to undergo treatment. (3) The Director-General may require treatment to be obtained at any hospital as he may think fit. (4) The Director-General may require any licensee or any assistant or employee of the licensee to submit to immunization against any infectious disease. (5) Every licensee shall ensure that his assistant or any person employed by him is immunized against any infectious disease as required by the Director-General. (6) The Director-General may, at any time, revoke or suspend any license issued under this Part if – (a) the licensee is suffering from an infectious disease; (b) the licensee knowingly employs

any person who is suffering from or suspected to be suffering from an infectious diseases; obtained at any hospital as he may think fit. . . .<sup>374</sup>

Under Part X of the Act, the Director-General may direct the immediate execution of any act which in the Director General's opinion is necessary for public health or the safety of the public. The Environmental Public Health Act has had a tremendous impact on curbing the spread of such infectious diseases as cholera, salmonella, and typhoid by requiring street vendors to move indoors.<sup>375</sup>

#### 4. Response to SARS

Singapore relied upon the Infectious Disease Act-- as amended in 2002-- and the Environmental Public Health Act in its effort to stem the spread of SARS. Both the Ministry of Health and the Ministry of the Environment were instrumental in educating the public and in enforcing isolation and quarantine measures.

In March 2003 the Minister of Health exercised the authority to amend the schedules to the Infectious Disease Act. The Minister of Health, in a statement in support of his action, remarked that SARS presented "an unprecedented public health crisis."<sup>376</sup> One of the key amendments was to include SARS on the list of First, Second, Fifth and Sixth Scheduled Infectious Diseases. In fact, SARS is the first disease to be listed in the Fifth Schedule, which addresses diseases in relation to the control of occupation, trade, or business. It is also the first disease listed in the Sixth Schedule, which allows information to be disclosed by the Director of Medical Services to a person to enable him to take steps to prevent the spread of disease.

The process for issuing these amendments was expedited through Parliament with the use of a Certificate of Urgency, a special condition allowed for by the Constitution that makes it possible for vital legislation to be passed in one rather than two Parliamentary sittings.<sup>377</sup> The amendments were made within five categories: home quarantine orders, quarantine of premises, prevention of persons acting irresponsibly in a manner leading to the spread of infectious disease, compliance with disease control measures, and the handling of corpses when SARS is the suspected cause of death.

The Infectious Disease Act, as amended, gives the Minister of Health the power to quarantine any premises for the purpose of controlling or preventing the spread of any infectious disease; to make it an offense to refuse to cooperate with disease control measures or to provide false information and to allow for compounding of fines for offenses; to address disposal of a deceased's remains when SARS is the suspected cause of death and to allow for post-mortem examinations of persons suspected of being a carrier or contact of an infectious disease; to allow for medical examination of persons if they are suspected of carrying an infectious disease; to allow disclosure of information to any person necessary to assist in the prevention of the spread of disease; to make the process of issuing home quarantine orders clearer, allowing for home quarantine of suspect cases, contacts, or carriers of an infectious disease; and to make it an offense for

someone to “act irresponsibly” by exposing others to infection by his presence in a public place, with the exception of seeking medical treatment. SARS is the first disease under this new civic responsibility provision allowing for a finding of irresponsibility for being in a public place while knowingly suffering from an infectious disease.

On March 24, 2003, the Ministry of Health used its power under the Infectious Disease Act to quarantine persons to prevent the spread of SARS.<sup>378</sup> The Ministry of Health developed a mechanism for obtaining home quarantine orders under Section 15(2) of the Infectious Disease Act. Home quarantine was mandatory for 10 days for contacts of all probable and suspected cases of SARS and contacts of pneumonia patients who might turn out to be SARS cases. Persons recovering from SARS or who had been treated for SARS were required to undergo a mandatory 14-day home quarantine. Discharged patients under home quarantine also were subject to check by hospital workers every day and were required to undergo a medical examination at Tan Tock Seng at the end of the quarantine period. Persons with chronic diseases who were treated for a condition other than SARS in a hospital where SARS patients were treated were also served home quarantine orders as these patients could have SARS and present with atypical symptoms.<sup>379</sup> Additionally, all patients discharged from a hospital where a SARS patient had been treated were monitored via telephone for 21 days.<sup>380</sup>

During home quarantine persons were required to permit an electronic camera to be placed in their home and to be able to be contacted at all times. The Ministry of Health contracted with CISCO, Singapore's leading commercial security firm, to serve the quarantine orders, install ePic web cameras in homes of those under quarantine, and provide some of the enforcement of home quarantine. CISCO was initially established as a statutory board of the Ministry of Home Affairs to provide guard and escort services for commercial and industrial organizations.<sup>381</sup> Persons under home quarantine were required to answer all calls from Ministry of Health officials, officers of CISCO, or persons acting on behalf of the Director of Medical Services. Persons under home quarantine were called randomly and directed to turn on the web cameras to verify their presence at home. This measure was in part taken in reaction to persons breaking home quarantine despite increased monetary penalties and the threat of jail time, as described below. Random checks were also permitted under home quarantine.

Persons under home quarantine were only allowed to come into contact with family members and others living in their household, healthcare workers under orders of the Director of Medical Services, CISCO officers, persons carrying out a statutory order or function, persons needing access to the house to complete any official work, and any other person with authorization from the Director of Medical Services.<sup>382</sup> The home quarantine order issued by the Ministry of Health provided detailed instructions on what was required and what was prohibited during home quarantine, including information on keeping good hygiene practices at home, numbers to call for help, what to do if SARS symptoms develop, and when to wear a mask. Quarantined persons were given a SARS toolkit and required to check and record their temperature twice a day.<sup>383</sup> During home quarantine, all children under 18 also had to stay home. Persons under home quarantine were given the option of having their children stay somewhere else for the duration of the quarantine so they could continue to attend school. Quarantined persons could also

choose to stay at government facilities for a cost of SGD\$25 per day.\* Staying at government facilities would also allow household children to continue going to school.<sup>384</sup>

A number of penalties were put in place through the amended Infectious Disease Act for breaking a home quarantine order. The Ministry of Health put together a form addressing the breach of home quarantine orders. The form specified that the breach of a home quarantine order is an offense under Section 15(3)b of the Infectious Disease Act; that anyone discovered breaking a home quarantine order will be required to wear an electronic monitoring tag at all times for the remainder of the home quarantine period; that the employer or person in quarantine will not be eligible for the Home Quarantine Allowance (discussed below under “Public Reaction”); and that a second violation of the quarantine order could result in detention and isolation in a hospital or other government-assigned location. Additionally, a person could be arrested without a warrant for breaking an order, and a first offense was punishable by a fine up to SGD\$10,000 and/or imprisonment for six months. Subsequent offenses could be punished by fines up to SGD\$20,000 and/or imprisonment for up to one year.

On April 20, 2003, the Minister of Health closed the Pasir Panjang Wholesale Centre for 15 days after a SARS infected worker failed to stay in place while a special ambulance was called to transport him to the hospital.<sup>385</sup> Approximately 2400 merchants at the Wholesale Centre were put on home quarantine<sup>386</sup> and contact tracing was initiated with approximately 1200 quarantine orders served to persons who might have been exposed to SARS at the Wholesale Centre.<sup>387</sup> Additionally, the Ministry of Health advised those who might have been exposed at the Centre but did not receive quarantine orders to stay at home.<sup>388</sup>

Following this closure, news accounts document that the Health Ministry asked all market associations in Singapore to initiate temperature screenings of hawkers,<sup>389</sup> and as of April 28, 2003, all hawkers and food vendors were required to have their temperatures checked twice daily.<sup>390</sup> National Environmental Agency officers were responsible for conducting these temperature screens and providing hawkers and food vendors with kits that included thermometers, record cards, informational brochures, and “fever-free” stickers.<sup>391</sup>

The general approach of the government of Singapore to SARS was “detect, isolate, and contain.”<sup>392</sup> An underlying theme in government actions in response to SARS was that of social and civic responsibility on the part of residents of Singapore. Under this general approach the government engaged in a wide range of activities, including identifying cases as early as possible, isolating patients, tracing and monitoring contacts, and adopting and enforcing stringent infection control measures for health care workers and others in settings where the risk of transmission was high. It also launched a number of public education campaigns, which will be discussed under “Public Reaction” below.

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\* US\$1= SGE 1.7

Concerning early identification of cases, Singapore adopted a case definition for SARS that was more comprehensive than the WHO case definition.<sup>393</sup> Notification of suspect cases within 24 hours by email/fax by doctors was mandatory. Doctors and hospitals were in turn notified of cases through circulars and the MedAlert system, a computerized messaging and information database. According to the Director of Medical Services of the Ministry of Health, “intra-hospital transmission is the most important amplifier of SARS infection.”<sup>394</sup> On March 22 the government selected Tan Tock Seng as the sole hospital for suspected and probable SARS cases.<sup>395</sup> When a probable SARS case was identified, that person was admitted for isolation and observation. In addition, all acute public hospitals made preparations for creation of additional isolation facilities for SARS patients. When patients were released from a hospital where a SARS case had been treated, they were placed under telephone surveillance for 21 days. Additionally, as noted above, all discharged SARS patients were placed under mandatory home quarantine for 14 days. Fever clinics were also set up at the various polyclinics in Singapore.

All persons having household, social, hospital, and work-related contacts with a SARS case during the 10 days of the incubation period (prior to symptom onset), as well as from the time of symptom onset to hospital admission, were identified and monitored under home quarantine.<sup>396</sup> Contacts of SARS cases were called daily by National Environmental Agency officers. All contacts with possible SARS symptoms were immediately brought to Tan Tock Seng for evaluation.

Other infection control measures included stringent temperature checks of all hospital staff and patients, use of protective gear (gloves, gowns, goggles, N95 or similar respirator) throughout all health care facilities, and isolation of staff working with SARS patients. All health care workers had temperature checks twice a day beginning April 9, 2003.<sup>397</sup> No visitors were allowed at public health care institutions, except that one visitor was permitted in pediatric and obstetric cases. Other patients were allowed contact with family and friends through videoconferencing. Compliance with infection control measures was audited.<sup>398</sup> The government also instituted hospital quarantine when clusters of health care workers or patients with fevers were identified in a particular work area.<sup>399</sup> A dedicated ambulance transported suspected and probable SARS cases to the hospital. This ambulance was also used to transport persons on home quarantine who developed SARS symptoms and persons coming from ports of entry with symptoms.

Temperature checks were also instituted at points of entry (e.g., airport thermal screeners) and community places and events. Persons returning from SARS-affected countries with no symptoms were advised to monitor their health for 10 days, including twice-daily temperature checks. Employers were allowed to impose a mandatory 10-day leave of absence for those returning from a SARS-affected country.<sup>400</sup>

According to the Director of Medical Services, the government actions with the most success during the SARS outbreak include the containment of hospital infections and prevention of community infections.<sup>401</sup> In his view, the most effective measures for containing hospital infections were designating one hospital as the SARS hospital,

conducting temperature screens of all health care workers and patients, isolating staff caring for SARS patients, limiting and in most cases prohibiting hospital visitation, and enforcing use of protective gear in all health care facilities. Because Singapore's SARS cases were first identified in the hospital setting, keeping SARS out of the community was key to preventing its spread. Strategies considered most effective in this area include a strong surveillance system, contact tracing, and enforcement of quarantine with penalties. The surveillance system encompassed measures such as mandatory reporting of all suspected SARS cases by physicians within 24 hours, concentration of SARS cases at one hospital, monitoring fever clusters in hospitals and nursing homes, and temperature screens at community locales and events and all ports of entry.

## 5. Coordination Issues

On March 15, 2003, the Ministry of Health set up a task force to monitor the SARS situation and take prompt, appropriate action. The task force was chaired by the Director of Medical Services and members included various experts from the National Environmental Agency and hospitals. In practice, the response to SARS in Singapore was orchestrated by a number of the ministries. The Ministry of Health conducted telephone surveys with health care providers to assess their level of knowledge with respect to infection control. Health care workers were kept continually apprised of the situation and case definitions via the MedAlert system.<sup>402</sup> The Ministry of Environment raised standards of public health and hygiene.

Action extended well beyond the two lead agencies under the Infection Control Act. The Ministry of National Development and Housing, the Housing and Development Board, and the Town Councils instituted measures to improve cleanliness in housing estates. The Ministry of Education implemented a four-pronged approach to SARS: Contain, Safeguard, Screen, and Isolate.<sup>403</sup> The Ministry of Education instituted prevention and control measures at schools that included the closure of all primary and secondary schools and junior colleges and institutes from March 27 to April 6, 2003. The Ministry of Education further worked with the Ministry of Health in drafting its response measures to the isolated SARS case identified in September 2003.<sup>404</sup> The Ministry of Education and the Ministry of Community Development and Sport instituted preventive procedures—such as temperature screening-- for child care centers and kindergartens. The Ministry of Defense instituted precautionary measures. The Ministry of Manpower amended the Workmen's Compensation Act to include SARS as a disease for which workers would be compensated and imposed a 10-day quarantine on all Work Permit and Employment Pass workers entering Singapore from SARS-affected areas. The Ministry of Home Affairs allowed illegal immigrants to receive medical care at polyclinics and announced they would not be prosecuted.

Also of note, the government of Singapore has committed SGD\$230 million in an economic relief package to help businesses recover from the SARS outbreak.<sup>405</sup> The relief package included money for the tourism and other tourism-related industries, and for the transportation sector. The government also committed some funds for the health care sector through contributions to a "Courage Fund." The Courage Fund is a public-

private partnership set up in April 2003 to provide financial assistance to SARS victims in the health care sector.<sup>406</sup> The Courage Fund collected a total of SGD \$28 million.<sup>407</sup> The Fund provided money to healthcare workers who had treated SARS patients. As of October 27, 2003, SGD \$5.5 million had been given to approximately 2,500 health care workers in Singapore.<sup>408</sup> On July 1, 2003, the Minister of Health announced that Singapore's government had spent SGD\$300 million on SARS-related efforts.<sup>409</sup> This amount does not include the SGD\$230 million relief package.

International coordination and collaboration was also essential to Singapore's success in controlling SARS. From the beginning of the outbreak, laboratories in Singapore worked with WHO to identify and gain knowledge about the SARS virus. Singapore has also collaborated with laboratories in the U.S. Centers for Disease Control and Prevention.

In addition to collaborating with WHO and the CDC, Singapore reached an agreement with Malaysia to cooperate in preventing the spread of SARS in eight particular areas through the formation of the Joint Cross-Border Health Committee. The focus of the agreement was to encourage the exchange of medical information relevant to the prevention of SARS. The areas of focus included: epidemiology; laboratory investigations; public health measures; infection control practices; contact tracing and quarantine measures; aircraft and other vessels; citizens hospitalized with SARS; and status updates on SARS cases.<sup>410</sup> Malaysia and Singapore have thus far held four bilateral meetings on SARS. Both countries have agreed to expand cooperation on preventive measures for other infectious diseases.

## 6. Public Reaction

Public reaction to SARS control efforts in Singapore has been shaped by an extensive public education campaign initiated early on in the SARS outbreak. The Ministry of Health provided general advice to the public regarding symptoms and the need to seek immediate medical attention. Additionally, the Prime Minister delivered a number of public speeches on "Fighting SARS Together" and the civic duty and responsibility of Singaporeans to behave responsibly and abide by government measures. SARS toolkits were distributed by the Peoples' Associations' Constituency SARS Task Force to all residents of Singapore (containing digital thermometer, two surgical masks, and instruction pamphlets in four languages). The Ministry of Health instituted a policy of releasing daily press statements to update the public on the status of the outbreak and established a SARS hotline. The government also created an official SARS website with regular updates.

A unique feature of the public outreach effort in Singapore was the development of a dedicated channel for SARS information by the Ministry of Home Affairs. Media rivals joined together to launch the SARS Channel—a public service project running SARS information 12 hours a day (the other 12 hours consist of repeat programming). All programs were offered in the various languages spoken in Singapore.

The government also supported several campaigns aimed at improving hygiene and sanitation. As information suggesting that SARS could be spread through mouth and nose excretions became available, the government began a campaign against spitting, with monetary fines for spitting in public.<sup>411</sup> The Singapore Tourism Board's COOL Singapore Campaign was launched at least in part to recognize and reward "best practices to ensure rigorous precautionary measures are being taken against SARS in tourist establishments."<sup>412</sup>

The potentially harsh economic effects of quarantine were mitigated by a Home Quarantine Order Allowance Scheme. According to the official Singapore government SARS website, the program was administered by the Community Development Councils and was intended to defray the costs of home quarantine for self-employed persons and small businesses (those with 50 employees or less) that had to close as a result of SARS. The allowance became available on April 30, 2003, but all persons issued a home quarantine order either before or after this date were eligible. Self-employed persons and employers were the only ones allowed to submit an application for the allowance. Employees of small businesses were required to submit their forms to their employers first. Unemployed persons, those in large businesses, and persons arriving in Singapore on new work passes put in home quarantine were not eligible for the allowance.<sup>413</sup>

The allowance consisted of a flat SGD\$70 for self-employed persons, and daily salary up to SGD\$70 for employees of small businesses closed down due to SARS and the absence of employees due to home quarantine. The government advised employers that the home quarantine period should be treated as paid hospital leave for their employees under the Employment Act. The allowance was given to self-employed persons in two installments: one at the beginning of the quarantine period and the second upon completion. Employers were given the allowance for their employees at the end of the quarantine period.<sup>414</sup> The government set aside SGD\$5 million for the Home Quarantine Order Allowance Scheme program, and as of June 17, the government had spent SGD\$1.2 million.<sup>415</sup> The expectation was that many of those under home quarantine would not claim the allowance because they were unemployed, retired, or worked at home.<sup>416</sup>

All individuals under home quarantine were offered assistance with grocery shopping, hotline numbers to call in case of emergencies or questions, and free transportation by a dedicated SARS ambulance should they develop SARS symptoms. The government provided all persons seeking treatment for SARS, including foreigners, with subsidized care at hospitals.<sup>417</sup> The government also provided unspecified financial assistance to workers at the Pasir Panjang Wholesale Market.<sup>418</sup>

According to news reports, a total of 26 people broke quarantine. The government established special facilities for quarantine violators to spend the remainder of their quarantine period. In at least some cases, penalties were imposed. For example, one man was jailed for six months for twice leaving his home during the home quarantine period.<sup>419</sup>

A Gallup Poll conducted on April 2 and 3, 2003, surveyed 512 Singapore residents age 15 and above through face-to-face random sampling. The poll found that the majority of people in Singapore acquired their information about SARS through television and newspaper accounts. Peoples' knowledge about SARS was high. Although the satisfaction with government responses was also high, fear regarding the spread of SARS was widespread. The survey also inquired about behavioral changes during the SARS outbreak, revealing that more than half of the respondents avoided or minimized visits to crowded public places, one-fourth followed stringent personal hygiene measures, and 7% instituted self-imposed home quarantine.<sup>420</sup>

In addition to the Gallup Poll, an AC Nielsen Poll was conducted to compare responses to SARS in Hong Kong and Singapore. The findings of this survey indicate that approximately 45% of Singapore residents found the SARS virus to be of most concern as compared to such things as the economy, unemployment, war in Iraq, and personal health.<sup>421</sup> It also showed that 38% of respondents cancelled or deferred travel plans as a result of the SARS outbreak.<sup>422</sup>

## 7. Current Situation

On May 31, 2003, WHO removed Singapore from its list of SARS-affected areas. The last reported case of SARS was on May 11, 2003, and the last probable SARS patient was discharged from the hospital on June 6, 2003. No more suspected cases were admitted. On July 1, 2003, the Ten Tock Seng Hospital Emergency Department resumed its regular operation. Prior to July 1, the hospital was only treating SARS cases. Additionally, on June 13 the SARS hotline decreased operation to office hours, on July 10 the SARS Channel stopped running, and on July 25 the Ministry of Health discontinued daily SARS press releases.

Other measures discontinued since Singapore was removed from the WHO list include temperature screening in workplaces and buildings, at schools, childcare centers, and other children's centers, food centers and markets, student hostels and tourism establishments, and government buildings. Hospitals discontinued temperature screening on August 1, 2003. Temperature monitoring of hospital staff and patients will continue indefinitely and arriving air, land, and sea travelers will still be screened. Outbound travelers, though, will not be subject to temperature checks.

Post-outbreak assessments have shown the impact of SARS on Singapore's economy to be great. Visitors to the city-state fell by as much as 75%; hotel occupancy fell from an average of 75% to a low of 25%; and the Singapore stock market declined sharply both from the initial outbreak and the isolated case identified in September.<sup>423</sup>

In early September, Singapore was shocked to identify a SARS case almost two months after WHO declared SARS to be under control and four months after Singapore's last case.<sup>424</sup> The patient was a young laboratory technician working in the National Environmental Health Institute laboratories. He was quickly sent to Tan Tock Seng for isolation. Additionally, 25 of the patient's close contacts, including a provider of

traditional Chinese medicine, were put under home quarantine.<sup>425</sup> Despite confirmation from Singapore's Ministry of Health that this was a SARS case, and its treatment of the patient and his contacts as SARS cases and contacts, WHO did not find this case to be in line with the agency's new guidelines.<sup>426</sup> WHO's new guidelines require at least two SARS cases to be identified in the same hospital in order to meet the post-outbreak case definition.<sup>427</sup> The patient was, however, confirmed to be infected with the SARS coronavirus through two separate tests.<sup>428</sup> At WHO's urging, the Singaporean government sent samples to the CDC in Atlanta for analysis, where the presence of the SARS virus was confirmed.<sup>429</sup>

The Ministry of Health put together a review panel headed by a WHO expert to investigate the new case.<sup>430</sup> A Ministry of Health press release stated that the panel found that the most probable source of infection was the affected individual's work at the Environmental Health Institute laboratories.<sup>431</sup> As a precaution, the laboratories were closed for a night and disinfected and all staff that had been in contact with the patient were asked to voluntarily place themselves in home quarantine.<sup>432</sup> The government did not, however, issue home quarantine orders for all the staff that self-quarantined. Panel recommendations included the implementation of a national legislative framework for "ensuring international standards in bio-safety"<sup>433</sup> in laboratories throughout the country. Additionally, experts in biosafety from the CDC and WHO were sent to Singapore at the government's request to examine the laboratories where the patient worked.<sup>434</sup> WHO has issued a statement since the new case was identified specifying that Singapore is a safe travel destination and that travelers from Singapore pose no additional risk.<sup>435</sup>

Intragovernmental as well as international cooperation was again evident during this latest SARS case. Singapore's early communication and seeking of advice and expertise from WHO and the CDC are consistent with the country's record of open communication and cooperation. Additionally, the Ministry of Health worked with the Ministry of Education,<sup>436</sup> the Singapore Tourism Board, as well as other agencies and entities in the nation to educate the public and coordinate necessary actions to prevent a second wave of SARS cases. Despite taking numerous precautionary measures, such as issuing 25 home quarantine orders, and openly announcing the case, the government of Singapore has declared this to be a case of low public health risk and definitely not an outbreak because it was limited to a single case, no contacts have fallen ill, and all necessary protective measures have been taken at the hospitals where the patient was treated.<sup>437</sup>

## E. Taiwan (Republic of China)

### 1. Introduction

The first suspected SARS case was a businessman who traveled to the Guangdong province of China in early February, returning to Taiwan through Hong Kong two weeks later.<sup>438</sup> The man was not hospitalized until March 8, 2003, and his wife was later diagnosed with pneumonia.<sup>439</sup> Taiwan took prompt action, receiving assistance from the U.S. CDC. Although some Taiwanese researchers claim that their research with respect to the SARS virus was slowed by their exclusion from WHO, Taiwan was able to respond to the epidemic through a variety of mechanisms comparable to those recommended by WHO.<sup>440</sup>

Taiwan is a small island located off the southeastern coast of Mainland China. In 1949, the Chinese national government fled to Taiwan when the Communist party took over China. Since that time, China has refused to recognize the Taiwanese government, considering Taiwan to be a “renegade province.”<sup>441</sup> Due to the strained relationship with China, Taiwan has no seat on the United Nations and has been denied membership in WHO since 1972, when the People’s Republic of China was admitted to the U.N. This exclusion from WHO became significant during the SARS epidemic.

As of November 2002, Taiwan's total population was 22.51 million. Taiwan is densely populated and trails only Bangladesh in this category. Kaohsiung City is Taiwan's most crowded urban area, with approximately 9,827 persons per square kilometer; Taipei City had 9,720 persons per square kilometer at the time of the last census. Reflecting two major waves of immigration from Mainland China, one associated with famine in the sixteenth century and the other associated with defeats suffered by the Kuomintang (or Nationalist Party) at the hands of communist forces in the late 1940s, the Han Chinese form the largest ethnic group in Taiwan, making up roughly 98% of the population. Taiwan's population also includes nearly 60 non-Han minorities, including several groups of indigenous peoples. In 1949, after the Kuomintang established a capital in Taiwan, Mandarin became the official language. However, recent “social pluralization” has been accompanied by a growing emphasis on native languages. The Ministry of Education is currently drafting a language equality law aimed at preserving 14 major languages and dialects: Mandarin, Taiwanese, Hakka, and 11 indigenous languages. The draft law encourages both the government and private sectors to provide multilingual services.<sup>442</sup>

### 2. Political and Legal Systems

Taiwan’s official name is the Republic of China (ROC). Article 1 of the *Constitution of the Republic of China* states: “The Republic of China, founded on the Three Principles of the People, shall be a democratic republic of the people, to be governed by the people and for the people.”<sup>443</sup> The Three Principles of the People were first articulated by Kuomintang leader Sun Yat-sen and are usually translated as nationalism, democracy, and people's livelihood.<sup>444</sup>

The government of the ROC is divided into three levels, the central, provincial/municipal, and county/city levels, each with specifically defined powers. The central government is composed of the Office of the President, the National Assembly, and five governing branches referred to as Yuans.<sup>445</sup> The Yuans include the Executive Yuan, the Legislative Yuan, the Judicial Yuan, the Examination Yuan, and the Control Yuan.

The President is the head of the executive branch of government. On March 23, 1996, Taiwan held its first direct presidential election with selection of a winner based on a plurality of the popular vote. The inauguration of President Chen Shui-bian of the Democratic Progressive Party on May 20, 2000, representing an end to the Kuomintang's 50-year hold on the presidency, was an event of considerable national importance.<sup>446</sup> Among other things, the President has the power to appoint the president of the Executive Yuan (known as the Premier) and, with the consent of the Legislative Yuan, the president, vice president, and the grand justices of the Judicial Yuan; the president, vice president, and members of the Examination Yuan; and the president, vice president, auditor-general, and members of the Control Yuan. The Executive Yuan consists of various ministries and departments, including the Department of Health.<sup>447</sup>

Changes in the constitutional framework, culminating with amendments promulgated on April 25, 2000, terminated the sitting National Assembly and established a unicameral legislative system. The National Assembly is now a non-standing body, and most of its functions have been transferred to the Legislative Yuan. The Legislative Yuan consists of representatives who serve for three years and are eligible for reelection. It presently has 225 members. Of these, 168 are elected from the special municipalities, counties, and cities in the ROC (at least one member from each county and city), eight from the plains and mountain aborigines, eight from ROC citizens residing abroad, and 41 from the nationwide constituency.<sup>448</sup>

The main responsibilities of the Legislative Yuan include deliberating and voting on legislation, budgets, emergency declarations, and other issues of national importance. The Legislative Yuan operates through full sessions, committees, and its secretariat. The first session lasts from February to the end of May, and the second from September to the end of December. When necessary, a session may be extended. If the Legislative Yuan disagrees with an important policy of the Executive Yuan, it may, by resolution, request the Executive Yuan to alter it. The Executive Yuan may, with the approval of the President, request reconsideration. If after reconsideration one-half of the attending members of the Legislative Yuan uphold the original resolution, the Premier must either abide by the resolution or resign from office.<sup>449</sup>

The Council of Grand Justices interprets the Constitution and unifies the interpretation of laws and ordinances. Under the Constitution of the ROC, the law cannot restrict Constitutional freedoms except under very limited circumstances such as when public order may be threatened.<sup>450</sup> "Restrictions on constitutional freedoms are valid only if contained in legislation necessary to prevent restrictions against the freedom of others,

to respond to emergencies, to maintain social order, or to enhance social interest. In any case, arrest, trial, and punishment must be implemented strictly in accordance with proper legal procedures. If human rights are violated by the government, the victims are entitled to compensation by the state.”<sup>451</sup>

The ROC court system consists of three levels: district courts, which hear civil and criminal cases at the first level; high courts at the intermediate level that hear appeals; and the Supreme Court at the highest appellate level, which reviews judgments by lower courts for compliance with pertinent laws or regulations.<sup>452</sup> A separate system exists for administrative litigation. Any person who claims that his rights or legal interests are violated by an unlawful administrative action rendered by a government agency may institute administrative proceedings before one of three high administrative courts, with the possibility of appealing questions of law to the Supreme Administrative Court.<sup>453</sup>

The Control Yuan is responsible for monitoring the government and carrying out the audit function. It was formerly a parliamentary body, with its members elected by provincial and municipal councils. Constitutional amendments in May 1992 transformed it into a quasi-judicial organization composed of the president, vice president, and 27 other members. The Examination Yuan is responsible for the civil service system.<sup>454</sup>

The second level of government, the provincial/municipal, also has administrative responsibilities. At present, only two provincial governments are operational -- the Taiwan Provincial Government and the Fuchien Provincial Government. Taiwan is the only province completely under the effective control of the ROC; the Fuchien Provincial Government has delegated most of its powers to county governments. The Taiwan Provincial Government has jurisdiction over the 16 counties in Taiwan and most of the cities with the exception of Taipei and Kaohsiung. These two cities are considered to be special municipalities and are under the direct jurisdiction of the central government. The third level of government is the local level. The local level of government encompasses five cities and 16 counties.<sup>455</sup>

### 3. Public Health Structure and Laws

From 1948 to 1972, WHO assisted Taiwan in developing the foundation of its public health structure. In 1972, the People’s Republic of China was admitted to the United Nations forcing Taiwan out of WHO.<sup>456</sup> To date, Taiwan’s efforts to reverse its exclusion from WHO have not been successful, which has been an issue of heightened concern to Taiwan during the SARS outbreak. However, Taiwan has continued to enhance and expand its public health structure. In fact, Taiwan presently has one of the highest life expectancies in Asia.<sup>457</sup>

Medical care expenditures account for 5.4% of the Gross Domestic Product of Taiwan and the physician to individual ratio is 1/750. There are 700 hospitals; 17,000 clinics as well as 43 acute beds/10,000 persons. To further enhance public health, in 1995 Taiwan established a universal health insurance system providing equal access to care for

the entire population. Under this system, more than 96% of the population is covered by National Health Insurance and 96% of public and private medical care institutions have a contract with the National Health Insurance.<sup>458</sup>

Health care policies for Taiwan are developed by the Department of Health, which is part of the Executive Yuan. There are many subordinate agencies of the Department of Health including the Center for Disease Control, the Bureau of Health Promotion, the National Health Insurance Bureau, and the National Bureau of Controlled Drugs. The Department of Health has five key goals or areas of responsibility: (1) health insurance; (2) health promotion; (3) epidemic prevention; (4) consumer protection; and (5) international cooperation.

One facet of the public health infrastructure of Taiwan is a communicable disease surveillance network comprised of over 450 doctors reporting weekly on a range of infectious diseases.<sup>459</sup> Information from the network is made available to other physicians in a monthly publication, *Epidemiology Bulletin*.<sup>460</sup> Prior to the SARS epidemic, Taiwan had established six disease surveillance centers and quarantine stations to control and prevent the spread of communicable diseases.<sup>461</sup> The Department of Health is responsible for oversight of the nation's quarantine stations and substations.

The Law on the Control of Communicable Diseases and the Regulations Governing Quarantine make up the major body of Taiwanese public health law relevant to the control of epidemics. The law provides a range of measures that may be adopted by all levels of the government and describes measures to be taken by hospitals and medical personnel, the allocation of funds for actions taken pursuant to the law, and a range of penalties that may be imposed for violation of the law.

Article 1 of the law expresses its purpose: to “curtail the occurrence, infection and spread of infectious diseases.” The law lists a number of diseases that must be reported. Four categories of infectious diseases are addressed including “Type 4 Infectious Diseases,” a catch-all which includes “[a]ny other infectious disease or emerging infectious disease which has been reckoned by central governing agency as necessary may be added to the list.”<sup>462</sup>

The law gives the governing authorities of Taiwan at the central and local levels wide latitude to curb the spread of infectious disease. Under Article 7, “Individuals who are infected with the antigen of an infectious disease and those suspected of probable infection who are regarded as infected patients, are bound...to undergo prescribed treatment and preventive measures.”<sup>463</sup> The law further requires that affected areas be disinfected. Additionally, the law grants local governing agencies discretionary authority in the event of an epidemic outbreak to ban or prohibit schools, meetings, banquets, or other types of group activities; limit the access to specific venues and place a limit on the number of persons that can be accommodated; and restrict part or all transportation to a diseased controlled area.<sup>464</sup>

The law also specifically addresses the issue of quarantine as a preventive measure. Article 26 authorizes government agencies at all levels to quarantine and set up interim quarantine facilities. Article 27 addresses quarantine for inbound and outbound travel, providing that “an international harbor and terminal quarantine may be conducted on a paid basis on all inbound and outbound transportation vehicles and the personnel and good on board....”<sup>465</sup> The specifics of quarantine at ports are addressed more thoroughly in the Regulations Governing Quarantine.

The Regulations Governing Quarantine were first promulgated by the Ministry of Health on June 28, 1930, and have been amended many times. The regulations were developed pursuant to Article 27 of the Law on the Control of Communicable Diseases. Article 18 of the regulations allows for the quarantine and isolation of passengers on vessels and aircraft. It provides that “the passengers . . . on board shall be kept in custody; and without permission of the quarantine authorities, shall not be in contact with other persons or commodities.”<sup>466</sup> Passengers who have been transferred ashore to isolation are handled in the same manner.

#### 4. Response to SARS

To confront the threats posed by SARS, Interim Regulations on SARS Control were developed by the Department of Health based on the Law on the Control of Communicable Diseases and Regulations Governing Quarantine. The Interim Regulations were designed to strengthen control during the SARS outbreak.<sup>467</sup>

A variety of quarantine and isolation measures were undertaken in Taiwan to curb the spread of SARS. Initially, Taiwan refused to impose health screening at immigration checkpoints, and quarantine measures were more lax than in other affected areas. Effective April 28, however, a mandatory 10-day quarantine was imposed on anyone arriving from Hong Kong, Mainland China, and other SARS-infected areas as designated by WHO.<sup>468</sup> Taiwan’s measures were more stringent than the WHO recommendations issued on May 15. Those from SARS-affected areas were required to wear masks prior to boarding for departure for Taiwan and were not permitted to board if they did not do so. Passengers arriving in Taiwan from an area unaffected by SARS, but with a change of planes in a SARS-infected area, were not subject to home quarantine if they had a normal temperature reading, but they were subject to enhanced monitoring.

Arriving passengers were required to complete a SARS survey form and wear a surgical mask before deplaning. Providing misinformation on the survey form is considered to be actionable under the law. Temperature screening of all passengers was performed, and passengers were issued a “Notice of Compulsory Quarantine for Special Epidemic Prevention.”<sup>469</sup> Passengers had the choice of undergoing quarantine at an airport transit hotel, at home, or at an employer-designated compulsory quarantine location.<sup>470</sup>

If they selected quarantine at a transit hotel, passengers were provided with transportation on a chartered vehicle.<sup>471</sup> The hotel notified Taiwan’s Center for Disease

Control, and it monitored those under quarantine according to the regulations detailed in the quarantine notice.<sup>472</sup> Individuals were free to leave if they did not exhibit any symptoms after 10 days of quarantine.

Those opting for home quarantine, referred to as Level B Home Quarantine, were asked to avoid public transportation and had to come to the public health office within 24 hours. The office then assumed responsibility for monitoring the individual.<sup>473</sup> If the quarantined individual went outside of the quarantine area (with permission) the individual had to wear a mask at all times and was prohibited from using any public transportation. After 10-days, if no symptoms developed the individual was released from supervision. Those individuals who chose to be quarantined at an employer-designated site were provided with room and board by the employer. The employer was responsible for monitoring the individual. Those employees under mandatory quarantine could not come in contact with employees not subject to quarantine, and all sites designated for quarantine needed to have good ventilation and not be connected to a central air-conditioning system.<sup>474</sup>

Quarantine could also be mandated when a person was in close contact with someone diagnosed with SARS. This is referred to as Level A Home Quarantine.<sup>475</sup> These individuals could not leave their home without prior written approval from a health authority. If such authority was granted, the designated health authority was responsible for arranging for transportation for the individual.<sup>476</sup> Very specific guidelines were issued with respect to the actions that must and must not be taken while under compulsory home quarantine. For example, masks had to be worn to protect others, and if fever or respiratory symptoms occurred, the individual was required to seek medical attention immediately and provide details of all recent contacts.<sup>477</sup> No matter what the level of quarantine, all persons subject to quarantine orders had to take and record their temperature two or three times daily.<sup>478</sup>

In May 2003, the Department of Health published a review of the penalties imposed for violation of the Communicable Disease Control Act in an effort to tighten control over the spread of SARS. According to the Government Information Office, the purpose of enforcing home quarantine was three-fold: (1) managing and supervising persons under home quarantine; (2) providing supportive services to those subject to home quarantine; and (3) communicating with those under quarantine and implementing community education.<sup>479</sup>

On May 6, 2003, the SARS Contingency Committee, Department of Health/Taiwanese CDC, published a list of common violations of SARS-related laws or regulations and their subsequent penalties.<sup>480</sup> The list pertained to infractions by the general public, medical staff, and healthcare facilities. It included: refusing, avoiding or hindering compliance with health screening measures, the execution of spot-checks by health authorities on passenger or cargo transportation, or the enforcement of home or group quarantine, failure to comply with an isolation treatment order or violation of instructions from the health authorities during the quarantine period and/or entering a designated isolation area without authorization; physician failure to report SARS cases within the time period designated by law; healthcare institution failure to inform referring

hospitals of the health condition of the referred patient, deliver proper care to patients with infectious diseases, and prevent infection, and/or turning people away without reason; medical personnel failure to adopt proper infection control while caring for patients, risking the spread of infection; failure to place the body of a deceased SARS patient in a closed coffin and cremate the body within 24 hours; refusal to work upon the request of the governments' use of empty buildings, equipment, vehicles, ships, airplanes, etc. for disease control purposes; suspecting infection with SARS but failing to abide by government orders, risking the spread of disease to others; and violation of the inspection and importation regulations regarding the control of infectious diseases or spreading a virus in a manner that puts the public in danger.

Penalties for these violations include fines ranging amounts from NT \$1,000 to NT \$500,000\* and/or prison terms up to a maximum of three years. For example, providing inaccurate information on a SARS survey form is punishable by fines NT \$60 to NT \$300,000 according to Article 41 of the Law of Communicable Diseases Control and by incarceration for up to two years in accordance with Article 192 of the Criminal Code of the ROC. Additionally, the Cabinet in Taipei City Government will punish medical personnel and institutions who do not cooperate with quarantine orders by imposing fines anywhere from NT \$60,000 to NT \$240,000. Currently, medical personnel are required to report suspect cases of SARS within 24 hours. Other penalties may include fines, jail time, and/or revocation of a medical license.<sup>481</sup>

Other enforcement measures were also instituted. For example, violators of quarantine were assigned a site for compulsory group quarantine (in addition to fines and imprisonment). Home quarantine was enforced through the use of web-based cameras at the height of the outbreak. Additionally, because of the widespread panic of health care workers and the refusal of some to work with SARS patients or in facilities treating SARS patients, health officials considered firing staff nurses who refused to work and revoking licenses of many freelance nurses the hospitals often use as a way to save money. The Health Department fined three physicians NT \$90,000 (US \$2600) and three hospitals NT \$1.5 million (US \$43,000) each for covering up or delaying the reporting of possible SARS cases.

Health care institutions at risk of penalties provided incentives for health care workers to accept risks related to caring for actual or suspected SARS patients. During the height of the epidemic nearly 160 health care workers resigned for fear of contracting SARS. (It is worth noting that at least some resigned in the belief that hospital infection control measures were inadequate.) Because so many doctors and nurses were resigning, hospitals were offering “danger pay” to those working in SARS wards.

## 5. Coordination Issues

At the central government level, the Taiwanese Center for Disease Control took several actions to control the SARS epidemic, including activating its Disease Outbreak

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\* At current exchange rates, NT \$1 is roughly equivalent to US \$0.03. “NT” stands for New Taiwan (dollar).

Emergency Operations Center; conducting surveillance to detect probable cases of SARS; following WHO guidelines and reporting to WHO; investigating and evaluating reported cases of SARS; issuing guidelines and recommendations on clinical measures, laboratory testing, quarantine, isolation, infection control, and exposure management; strengthening airport quarantine; coordinating and providing support to local health authorities for local control centers; and educating members of the public on how to protect themselves. At the central government level, the agency called for intersectoral cooperation among various departments and subdepartments of the Executive Yuan, specifically, the Council of Labor Affairs, the Mainland Affairs Council, the Civil Aeronautics Administration, the Ministry of Transportation, the Ministry of Communications, and the Government Information Office.

Coordination of the various levels of government was no easy task in Taiwan. Because of an adversarial relationship between the President and the mayor of Taipei, coordination of efforts was quite difficult according to some reports. The Department of Health and the local governments required support from the Ministry of Defense, the National Health Insurance Bureau, the Center for Disease Control, and the Taipei city government to establish fever screening stations.

Despite strained relations with WHO due to tensions with the PRC, Taiwan participated in the global WHO SARS conference held in Kuala Lumpur. Before that meeting, the United States sent a team from the CDC to assist Taiwanese government health officials. Additionally, on May 3, 2003, Mainland China provided permission for two investigators from WHO to visit Taiwan. The investigators, however, were prohibited from contacting Taiwanese government officials. An example of regional coordination was the invitation from the Taiwanese SARS Contingency Committee to Vietnamese representatives to share their experiences in dealing with SARS.

## 6. Public Reaction

The government of Taiwan recognized a need to educate members of the public to ensure that they would have an understanding of SARS, thus enabling them to prevent the spread of the epidemic. In addition to conveying messages of good personal hygiene, the government also stressed the need for quarantine as a mechanism for epidemic prevention. To accomplish this widespread education, the government emphasized the need for local governments to bring together health and social welfare personnel to provide lists of lectures and offer promotional materials and enhance education of teachers, students and other school personnel as well as the community.

The priority of public education was especially high given numerous complaints about panic-inducing reports in the news. The Government Information Office called for non-government media outlets to exercise restraint in coverage of the epidemic. Additionally, the Premier ordered the Government Information Office to “monitor exaggerated or false SARS-related reports, clarify any false reports and demand that corrections are made” to ease the public’s concerns.

To quell public fears about the spread of SARS, the Department of Health developed a news program entitled “SARS Front-line.” The program was intended to provide the public with accurate information about SARS, inform the public about government policies relevant to the prevention of SARS, and educate the public about protective measures. The show, hosted by an epidemiologist, aired during the evening news.

Taiwan implemented a number of other measures to protect the rights of those affected by isolation and quarantine and minimize resistance. For example, guest workers who were quarantined were paid salaries and had their jobs secure and medical bills were paid by the Taiwanese government. Additionally, families of workers who died from SARS at work were entitled to up to 45 months of salary, subject to approval by Taiwanese insurers and humanitarian aid. For those under home quarantine the government provided a range of assistance. Subjects were called at home and provided with as much psychological support as possible, and home care was provided to family members affected by home quarantine. Economic assistance, including stipends, was provided to those receiving a notice of home quarantine, complying with the regulations, and found to be uninfected with SARS. Those who completed the quarantine period were paid an amount equivalent to nearly US\$150. In some cases, other assistance was provided. “The additional assistance needs of persons under home quarantine will be evaluated and provided for through the use of public resources or by conveying such requirements to the competent authorities.”<sup>482</sup>

To determine compliance with home quarantine orders, the Department of Health conducted a telephone survey of 100 individuals under quarantine. The survey indicated that 85% of respondents were at home when called and 70% were found to have never left their homes.<sup>483</sup>

## 7. Current Situation

Enforcement of Taiwan’s regulations with respect to SARS took a political toll - - both the Minister of Health and the director of the Center for Disease Control were forced to resign following allegations that their responses to the SARS outbreak were too slow, in particular in infection control measures in hospitals. One theory on the resignation of the Minister of Health is that he did not respond to the city government’s call to declare SARS an infectious disease, resulting in less stringent measures being taken by medical personnel, which led to the spread of the virus within the health care setting.

A report by the U.S. CDC published in *Morbidity and Mortality Weekly Reports* reviewed the quarantine measures instituted in Taiwan to prevent the spread of SARS. The report indicated that only a small percentage (0.2%) of those quarantined were fined for violation of a quarantine order.<sup>484</sup> Very few of those under quarantine were later diagnosed with probable or suspected SARS, and far fewer actually had a confirmed diagnosis of SARS. The report concluded that “more study is needed to determine whether the logistics and costs of quarantine warrants its use.”

Similar analysis by the Department of Health no doubt led to its September announcement of its plans to modify the SARS quarantine policy. The new approach adopted by the Taiwanese Center for Disease Control is “no fever, no quarantine.” This action was taken based upon the fact that during the SARS outbreak, more than 95,000 people were placed under quarantine and only 12 were found to be potential SARS cases, with only two being confirmed cases of SARS. The enormous cost of such an approach led to the modification. Under the new plan, arriving passengers to Taiwan will be hospitalized for observation for three days if they are found to be running a fever.

In addition to modification of quarantine measures, Taiwan also announced SARS prevention measures in preparation for a resurgence. These include infection control measures for health care facilities and oversight of medical supplies, as well as better coordination of government agencies. For example, during the height of the flu season, individuals with fever will be diagnosed in a hospital to ensure that they are not suffering from SARS before they will be permitted to board an airplane.<sup>485</sup>

## F. Socialist Republic of Vietnam

### 1. Introduction

Vietnam, located on the Indochinese Peninsula in southeast Asia, is a country with a rich and tumultuous history. It is a predominantly mountainous country with challenging topography—only 20% of the country is level land—and seven distinct geographical areas.<sup>486</sup> Seventy-five percent of Vietnam's almost 80 million inhabitants live in rural areas. The main urban centers are Hanoi (capital) and Ho Chi Minh City. Vietnamese is the official language, with a significant French language presence and a number of Chinese dialects and tribal languages also spoken.<sup>487</sup>

On February 28, 2003, Vietnam reported its first case of SARS. A Chinese-American businessman coming from southern China was admitted to the Hanoi French Hospital. A WHO infectious disease expert, Dr. Carlo Urbani, was contacted. Dr. Urbani promptly alerted the Vietnamese government of the disease and eventually coined the term "Severe Acute Respiratory Syndrome." The SARS epidemic in Vietnam was primarily hospital-based and all cases were traced to the initial index case. The hospital, a small 60-bed facility, immediately isolated the patient and staff working in the ward. Five of the physicians in the ward died of SARS. The rest remained in self-imposed quarantine to prevent the spread of SARS.

The last SARS patient was released on May 2, 2003, bringing the total of all SARS patients in Vietnam to 68, with five fatalities between January 11, 2003 and June 7, 2003. The last probable SARS case was reported on April 28. Vietnam's clinical management of SARS patients was somewhat different from other countries. Because of the newness of the disease, each country evaluated cases to ascertain various important disease characteristics, such as incubation period, mode of transmission, and type and severity of symptoms. In Vietnam, the incubation period was found to be 4-5 days, as opposed to the 10 days cited by WHO. Additionally, all cases in Vietnam could be traced to the initial index case mentioned above. After the index case, all new cases were nosocomial and limited to hospital staff. Vietnam was the first country to contain the spread of the SARS virus and to be pronounced SARS-free by the World Health Organization.

The experience of Vietnam with SARS is particularly interesting because of Vietnam's limited resources relative to the other affected countries.

### 2. Political and Legal Systems

Vietnam has survived various invasions and conquests culminating in its declaration of independence in 1945 and thus becoming the first independent republic in southeast Asia.<sup>488</sup> In 1954, however, the Geneva Accords divided Vietnam into a Communist north and a U.S.-supported south prompting a long, drawn-out war with U.S. involvement until the 1973 Paris Peace Agreement.<sup>489</sup> In 1975, the country reunified and

was renamed the Socialist Republic of Vietnam. Today, Vietnam is governed by a single party, the Communist Party, but like China it has changed significantly in recent years. In 1986, the Vietnamese government announced a new strategy of *doi moi*—or renovation—committing itself to both internal reforms and expanded external relationships. As a result, Vietnam has adopted market-oriented policies, creating a socialist market-economy under state management. This shift has, in turn, affected its political structure by way of the country’s increasing participation in the international economy.<sup>490</sup>

The country is divided into 53 provincial administrative units, which are in turn further divided into districts and communes. The government is divided into four levels: the central level, the provincial and urban authorities, the urban precincts and rural districts, and the urban wards and rural communes. The primary governing body in Vietnam at the central level is the unicameral National Assembly, the country’s legislature. The National Assembly was established in 1992 when the country’s Constitution was rewritten. The National Assembly is charged with electing the President, the Prime Minister, the Chief Procurator of the Supreme People’s Court, and the Chief Procurator of the Supreme People’s Office of Supervision and Control. Further, the National Assembly has both constitutional and legislative power and is charged with making both domestic and foreign policy, including addressing matters of social and economic welfare and national defense and security. The National Assembly is composed of 498 members elected by popular vote.<sup>491</sup> The National Assembly membership is open to both Communist Party members and nonmembers, although in practice, approximately 90% of the members belong to the Communist Party.<sup>492</sup>

The President serves as the representative of Vietnam internationally and is the commander in chief of the armed forces. The Prime Minister is the head of the executive arm of the National Assembly and carries out the political, social, cultural, economic, national security and foreign duties of the government assisted by five deputy prime ministers and the cabinet. Vietnam currently has 17 ministries and nine state committees.<sup>493</sup>

The main judicial institutions in Vietnam are the Supreme People’s Court and the Supreme People’s Procuracy. The Supreme People’s Court is Vietnam’s highest court and its responsibilities include “organization and implementation of all stages of judicial work, including hearing appeals, reviewing judgments, supervising the implementation of sentences passed by lower-level courts; the organization and conducting of professional training of judges, jurors and other court staff; providing professional guidance for drafting legal documents as requested by the National Assembly; providing professional guidance to local courts; and carrying out a review of judicial practice.”<sup>494</sup> The Supreme People’s Procuracy is responsible for enforcing adherence to the law by all ministries, other entities of the government, social organizations, and all citizens, and has the power to initiate public prosecution. Other judicial bodies include the People’s Courts, military tribunals, and other tribunals set up by the National Assembly for special situations.<sup>495</sup>

Although local government is subordinate to and controlled by the central government, each local administrative unit has a People's Council which serves as its legislative body and a People's Committee which serves as its executive body. People's Committees are charged with maintaining law and order, carrying out budgetary policies, implementing policies from higher administrative levels, and developing socio-economic plans.<sup>496</sup> People's Councils are responsible for implementing basic social services and issuing plans and decisions. Provincial and district level administrative units also have People's Courts and People's Procuraries.

Vietnam's legal system is based on Communist legal theory and the French civil law system. The 1992 Constitution guarantees all citizens fundamental rights including freedom of speech, press, demonstration, assembly, association, belief, religion and non-belief, equal rights between men and women, and rights to education and health care. The 1992 Constitution also emphasizes the importance of the "law-based state" and making the law the "primary regulatory instrument."<sup>497</sup> In addition to the Constitution, Vietnam has a total of 90 laws and ordinances. Laws in Vietnam "tend to be phrased in broad and general terms," meaning ministries and local agencies must develop implementing regulations and guidelines without clear legislative guidance.<sup>498</sup>

An important feature of Vietnam's Constitution is a stress on the responsibilities as well as rights associated with citizenship. Article 51 of the 1992 Constitution states: "[A] citizen's rights are inseparable from his duties. The State guarantees the rights of the citizen; the citizen must fulfill his duties to the State and society. The citizen's rights and duties are determined by the Constitution and the law."<sup>499</sup> In Article 61 a statement that all citizens are "entitled to a regime of health protection"<sup>500</sup> is complemented by a statement that all citizens have the duty to "observe all regulations on disease prevention and public hygiene."<sup>501</sup>

### 3. Public Health Structure and Laws

The government of Vietnam provides health care to its citizens through a network of state-run facilities at the various government levels: central, provincial, district, and commune. The Ministry of Health provides health care management at the central level and is also in charge of delineating policy at all levels. The Provincial and District Health Bureaus provide health care management at their respective levels. The situation varies at the commune level, with some communes receiving health care administration from the district level and others relying solely on the staff at the commune health stations. The commune level receives financial support from the Ministry of Health. All levels of health care are under the control of the central government and the People's Committees at the appropriate level. However, the Ministry of Health has little to no control over budgetary issues at the provincial level as such issues are decided by the Provincial People's Committees.<sup>502</sup>

Vietnam's health infrastructure has grown tremendously in the past decades. In 1945, there were 47 hospitals in the country, by the late 1970s there were about 713 hospitals, and today there are approximately 800 hospitals.<sup>503</sup> Although these hospitals

are predominantly government-owned, the Ministry of Health only controls about 18% of them.<sup>504</sup> Some of the other hospitals are controlled by the Ministry of Defense and the Ministry of the Interior and are intended for use by government officials and the central leadership.<sup>505</sup> In addition, many hospitals at the district level are supported by Overseas Development Aid.<sup>506</sup> A more recent development, particularly in larger cities, is the inclusion of private, for-profit clinics within publicly-owned hospitals.<sup>507</sup> Despite this growth, however, “hospital services are still limited”<sup>508</sup> by Western standards.

Vietnam’s predominantly rural population poses a great challenge to access to health care services. To address this challenge, Vietnam has developed a vast community health care network. District health centers and district hospitals are now available in all districts and most communes have a health center as well.<sup>509</sup> According to the World Bank, approximately 97% of the rural population has access to a public health center within their commune.<sup>510</sup>

Recently, private health care was made legal, although the central government still maintains some control over prices.<sup>511</sup> There are approximately 11,000 medical facilities, and the ratio of physicians to population is one physician/1,000 persons.<sup>512</sup> Because Vietnam is largely a poor country, it depends on international aid to the Ministry of Health for much of its health expenditures.<sup>513</sup> Traditional medicine plays a significant role in Vietnam’s health care services and it is a goal of the central government to “promote and develop” traditional medicine.<sup>514</sup>

The public health legislation in Vietnam, the “Law on People’s Health Protection,” was approved by the National Assembly in 1989.

#### 4. Response to SARS

Although the SARS epidemic did not prompt any amendments to the Law on People’s Health Protection, the Departments of Health Legislation, Preventive Medicine, and HIV/AIDS Control under the Ministry of Health are considering possible changes to the legislation in light of the events surrounding the SARS epidemic.<sup>515</sup>

The Vietnamese government’s response to SARS was prompt and included public acknowledgement of the epidemic from the outset. The use of isolation and quarantine was a key measure to the containment of the spread of SARS. The Law on People’s Health Protection governs public health practice in Vietnam, but the specific procedures for quarantine and isolation are not available and it has not been possible to access the actual legislation.<sup>516</sup> The Ministry of Health enforces quarantine and isolation; the Health Quarantine Service is housed in the Ministry of Health. Ministries and other government agencies are allowed to issue ordinances and regulations. It is possible that the authority for quarantine and isolation comes from a regulation or ordinance issued by the Ministry of Health and/or from the Law on People’s Health Protection. Because details regarding the legislative authority is not known for quarantine and isolation in Vietnam, no detailed information on enforcement is available.

The government of Vietnam took the approach that “SARS is a political challenge”<sup>517</sup> when handling the containment of the epidemic. Even before the first case in Vietnam the government took action based on reports of cases of atypical pneumonia in southern China. Soon after the reports began appearing, the Ministry of Health alerted hospitals and officials in the provinces bordering China about the possibility of SARS entering Vietnam through its borders.<sup>518</sup>

Vietnam’s efforts to contain SARS included identification of persons with SARS, their movements and contacts; isolation of SARS patients in hospitals; protection of medical staff treating these patients; identification and isolation of suspected SARS cases; exit screening of international travelers; and reporting and sharing information with other authorities and/or governments.<sup>519</sup> For example, the Ministry of Health developed preventive guidelines, “Ten Measures for Prevention Against SARS,” that were distributed to communities and to local medical workers.<sup>520</sup> The 10 guidelines were: (1) Minimize close contact with patients. If contact is necessary, use protective gear such as gloves and masks. (2) Isolate source of disease. Sterilize, clean disease area with Chlormin B. Sterilize all used equipment, garments, etc. (3) Understand the symptoms of the disease to identify early, accurately and completely the death of patients and cases of people who are ill but without symptoms. Then organize the isolation and treatment immediately. Control each individual, each family. (4) Do not gather or have meetings, unless necessary, in an area where SARS is suspected. (5) Set up isolation areas in hospitals or clinics that have patients in treatment. Circulate air in schools and hospital rooms. Increase space between working areas. (6) Use antibiotics or a combination of antibiotics to treat respiratory problems. (7) Patients with respiratory symptoms need to be observed and treated immediately. (8) All clinics, preventive clinics, Pasteur Institute, hospitals for infectious disease, and emergency rooms need to be prepared for any situation. (9) Promote daily personal hygiene; hygiene for nose and throat using antibacterial liquid, use a combination of antibiotics to protect the respiratory system. (10) Apply all procedures to prevent an epidemic; report cases according to the Order dated December 6, 2002 from the Health Department.<sup>521</sup>

These guidelines were supplemented by a number of training initiatives. The Ministry of Health and the Vietnam National Administration of Tourism (VNAT) joined together to provide a training course for tourism agencies and others in the tourism industry on ways to prevent SARS.<sup>522</sup> The VNAT also established a SARS Steering Committee to coordinate actions to prevent, detect, and control SARS. The committee worked with the media to inform travelers and was charged with setting both short- and long-term plans for the tourism industry to deal with SARS. The Ministry of Public Health was asked by the Prime Minister to begin training courses at the local level to educate people in border areas and other high-risk areas in the prevention of SARS.<sup>523</sup> In early May, the National SARS Steering Committee held a training workshop for the six northern border provinces to discuss ways to prevent SARS from re-entering the country from China.<sup>524</sup> In May 2003, a two-day workshop for health workers, police, soldiers, and border guards on SARS detection, treatment, and quarantine was held in Quang Ninh province, which borders China.<sup>525</sup> Further, many local governments held training for medical and health workers on the prevention and control of SARS.

Vietnam implemented strict quarantine and isolation measures from the beginning of the SARS outbreak. The Ministry of Health posted on its website the definitions of SARS suspicious cases and SARS cases consistent with information from WHO.<sup>526</sup> The Ministry also made available information sheets for those who had close contacts and social contacts of SARS patients or anyone who had been in a SARS-affected country. These sheets provided information on voluntary isolation at home (10 days and under monitoring by local health workers) and for monitoring only.<sup>527</sup> Family members of SARS patients and others who had close contacts with SARS patients were located and monitored by health workers.<sup>528</sup> The Ministry of Health set up six SARS Mobile Teams to detect, prevent, and treat SARS cases. These teams were composed of physicians, nurses, medical workers, and drivers. The teams were equipped with medicines and the necessary vehicles to transport and isolate SARS cases.<sup>529</sup>

The government selected two hospitals for isolation of SARS cases—the Hanoi French Hospital and the Tropical Medicine Institute of the Bach Mai Hospital. On March 11, the Hanoi French Hospital stopped admitting new patients and prohibited visitors from entering to prevent the spread of SARS.<sup>530</sup> Two other hospitals were prepared to serve as isolation centers should the need arise.<sup>531</sup> The Military Hygiene and Epidemiology Institute assisted the Hanoi French Hospital in sterilizing its grounds to prevent the spread of SARS within the hospital.<sup>532</sup> Vietnam imposed more stringent hospital discharge requirements than those recommended by WHO. The Ministry of Health issued discharge protocols that went beyond WHO guidelines by requiring that patients be without a fever for five days; have clinical improvement; have normal blood examinations; have stable and improved chest x-rays; and have at least seven days in convalescence.<sup>533</sup> Vietnam also followed different screening, diagnosing, treating, and discharging guidelines than other countries. The Tropical Medicine Institute maintained contact with all discharged patients for up to a month after being discharged from the hospital.<sup>534</sup>

All 61 provinces and cities designated at least one quarantine area. SARS Prevention Boards were set up in six northern provinces and at the port city of Haiphong. The boards were headed by the chairmen of the People's Committees. These boards worked closely with the Ministry of Health, border guards, police, immigration, and quarantine agencies. Part of each province's budget was reallocated to purchase necessary medical equipment. Additionally, northern provinces received help from special medical teams created by the Ministry of Health.<sup>535</sup> Although no SARS cases were reported in Ho Chi Minh City, the city also set up a SARS control board, and preventive measures were taken at the city's medical centers.

Because of Vietnam's expansive border with China, restrictions on entry or travel were particularly significant. It is estimated that approximately 5,000 persons travel between China and Vietnam on a daily basis.<sup>536</sup> Seven of the 68 cases of SARS in Vietnam were from the northern provinces; the rest of the SARS cases were from a single city, Hanoi.<sup>537</sup> The government instituted stringent control of border entry points and maintained them even after WHO declared Vietnam SARS free.<sup>538</sup> The Prime Minister

ordered the implementation of emergency epidemic prevention committees and doubled the personnel of the quarantine forces in the northern provinces bordering China.<sup>539</sup> The Ministry of Foreign Affairs set up checkpoints at all ports of entry.<sup>540</sup> Infrared thermal imagers were installed at airports, and temperature screenings were implemented at all borders and airports for those entering the country. Anyone with a temperature above 38C was placed under mandatory quarantine. Persons returning to Vietnam from a SARS-affected area were given the option to register to self-quarantine at home and undergo supervision by local medical clinic workers,<sup>541</sup> or at a medical center. Quarantine stations were also set up at border checkpoints, airports, seaports, and at 54 local hotels.

As an added measure to controlling entry points, the Health Department required that medical preventive centers at border provinces report daily by fax on the number, nationality, and status of arrivals to the Epidemic Prevention Agency.<sup>542</sup> In late March, the Ministry of Health issued an Arrival/Departure medical card used to screen for SARS symptoms or exposures of all arriving and departing travelers by all air, land, and sea entry ports. Vietnamese citizens from SARS affected areas completed health forms and had to provide health certificates from the country of origin and had to undergo a 10-day mandatory quarantine at a local medical clinic. Foreigners from affected areas completed health forms and had to provide health certificates and were required to have regular health checks and provide addresses and telephone numbers during their stay in Vietnam. On March 19, 2003, the Health Department issued a letter to all local health departments dealing with infectious diseases to follow a set of 11 measures issues by the government. Among these, local health departments were asked to work closely with the Customs Department and police in enforcing SARS measures; assign medical personnel to handle passengers from airplanes and buses; notify all passengers of SARS symptoms and distribute Arrival/Departure Medical Forms to all travelers; send information, including case definition, on SARS symptoms to all ports of entry; distribute “Ten Measures for Prevention Against SARS” to all travelers; and report immediately to the Health Department on all issues relating to SARS.<sup>543</sup> In late March 2003, the Airport Authority set up a task force to monitor all flights coming and going from SARS-affected areas.<sup>544</sup>

Persons who wanted to leave Vietnam were given a health examination and issued a health declaration if no symptoms or fever were present. If the person had any symptoms or fever he or she would not be allowed to travel and would be placed on mandatory observation and be treated medically as needed.<sup>545</sup>

Some of the more extreme measures included the government’s quarantine of 2,000 Vietnamese students evacuated from China for 10-14 days upon their return to Vietnam,<sup>546</sup> and the northern province of Quang Ninh’s decision to turn away all Chinese visitors seeking to enter the province in late April. In the latter case, an exception was made for Chinese traders contingent upon a clean health exam conducted by Vietnamese health workers prior to entry.<sup>547</sup>

The national government provided a substantial amount of financial support, equivalent to US \$5.3 million, for medicine, disinfectant, equipment, and other necessary

supplies to combat the SARS outbreak.<sup>548</sup> Additionally, the northern province of Ninh Binh, which borders China, spent a substantial amount of money (VN \$1.3 billion) on equipment, medicine, and protective gear for health workers.<sup>549</sup> The Finance Ministry allocated VN \$30 billion for the prevention of SARS. The majority of the money was spent on medical equipment. Also, the Ministry of Finance provided licensing support for the Vietnam-Russia Medical Centre to develop masks that could prevent the transmission of SARS under WHO guidelines.<sup>550</sup>

Personnel participating in the prevention of the spread of SARS and the treatment of SARS patients received a government allowance of five times the amount normally given to health care workers, as authorized by an order issued by the Treasury Department. Funds for this increase were paid by each medical institution later to be reimbursed by the Health Department upon receiving the complete reports.<sup>551</sup>

## 5. Coordination Issues

On March 19, after an emergency central government meeting to discuss SARS, an Inter-Governmental Steering Committee (IGSC) on SARS headed by the Health Minister and reporting directly to the Deputy Prime Minister was established.<sup>552</sup> The committee was charged with educating the public, monitoring SARS patients, ensuring isolation of SARS patients, and providing for coordination within the government on SARS issues. The committee included members from the Ministries of Foreign Affairs, Civil Aviation, Culture and Information, Public Security, National Defense, Finance, and Transport. The IGSC was subdivided into four subcommittees: surveillance and containment; clinical management; information, education, and communication (IEC); and logistics.<sup>553</sup> The IGSC met on a daily basis from March 19 to mid-April<sup>554</sup> and produced a number of recommendations for the Ministry of Health. Additionally, in the weeks following the inception of the national IGSC task force, local task forces were implemented in 38 out of the 61 provinces and cities of Vietnam.<sup>555</sup> Also on a local level, SARS Prevention Boards established in six northern provinces and one port city worked closely with the Ministry of Health, border guards, police, immigration, and quarantine agencies.

Officials at the provincial level were required to report daily with updates on SARS. All localities were told to immediately isolate suspected SARS cases and send them via a special ambulance to one of the two designated hospitals.<sup>556</sup> Other examples of coordination or cooperation within the government include the coordinated detection and quarantine activities undertaken at border points by the Ministry of Health, Public Security, Finance, Transportation, Agriculture, and Rural Development. These multi-ministerial groups were called Quarantine Forces. The Ministry of Health and the VNAT coordinated activities directed at tourists and travelers and education for those working at entry points, as described in more detail above. Throughout the SARS outbreak the government of Viet Nam presented an image of continued cooperation between the Ministry of Health, Ministry of Foreign Affairs, Ministry of Transportation, Ministry of National Defense, and the General Organization of Customs.<sup>557</sup> Details on

the level of coordination and cooperation and the ease with which this cooperation took place are not available from sources not affiliated with the central government.

The central government of Vietnam worked closely with WHO from the outset of the epidemic. The Hanoi French Hospital informed the Ministry of Health of the first case of atypical pneumonia on March 5. That same day the Hanoi Health Service was sent to investigate. A few days later, on March 9, the first meeting was held with WHO experts.<sup>558</sup> As noted in the introduction to this case study, it was in fact a WHO official, Dr. Carlo Urbani, who named SARS after examining the patient at the Hanoi French Hospital. In early April, more experts from WHO were sent to Vietnam to assist the government in handling the SARS outbreak.<sup>559</sup> The IGSC served to coordinate communication efforts between the government and international experts, including the WHO representatives.<sup>560</sup>

Vietnam also received technical assistance from Singapore, Japan, and the World Bank. Additionally, the Asian Development Bank reallocated US \$6.17 million to help in the fight against SARS.<sup>561</sup> Vietnam also received technical and financial support and assistance from the CDC in the United States, Malaysia, France, and Australia. In addition to providing technical assistance, the Japanese government donated thousands of masks, protective suits, and gloves to Vietnam for use by health workers.<sup>562</sup>

Vietnam worked with Taiwan to protect the safety and health of Vietnamese workers in Taiwan. The Taiwanese government's regulations provide for guest workers who were suspected of having an infectious disease to be quarantined based upon the guidance of health authorities.<sup>563</sup> Under the regulations, workers would be guaranteed their jobs and would continue to be paid their salaries while in quarantine.<sup>564</sup> Additionally, the Taiwanese government assured families of guest workers that if a guest worker died of SARS while working in Taiwan they would receive up to 45 months of salary, contingent upon approval by the Taiwanese government and availability of government and humanitarian aid funds.<sup>565</sup>

## 6. Public Reaction

Vietnamese officials concluded at the end of the SARS outbreak that the epidemic was a political challenge necessitating both political and technical measures.<sup>566</sup> They also considered SARS an ethical challenge that required a great degree of transparency of action to the public and the media.<sup>567</sup> The Prime Minister acknowledged the SARS outbreak on national television and through other mass media outlets on March 14.<sup>568</sup> Along with the announcement of the SARS outbreak, measures for prevention were disseminated via television and other media. Written information was made available in Vietnamese and English from the Ho Chi Minh City Health Department. Daily information was provided to the public through mass media and an intensive information, education and communication campaign.<sup>569</sup>

Residents of Vietnam could access information on SARS by calling a hotline or checking a website set up by the Municipal Centre for Health Education and

Communications.<sup>570</sup> In Ho Chi Minh City, telephone hotlines were set up to provide the community with ongoing information.<sup>571</sup> The hotlines were available during working hours, with health professionals available for information after hours.<sup>572</sup>

In order to minimize the personal burden of SARS and to encourage people to seek medical treatment when they experienced SARS symptoms, the government of Vietnam announced that SARS treatment would be free of charge for citizens and foreigners alike. All patients seeking treatment for respiratory system infections would be exempt from paying medical fees.<sup>573</sup>

## 7. Current Situation

As the second country to experience a SARS case and the first to contain the disease, Vietnam has been cited by many as a success. Health authorities in Vietnam considered the early detection, isolation, and quarantine efforts taken by the government from the outset to be the keys to Vietnam's success in containing SARS.<sup>574</sup> Additionally, the government's transparency, public acknowledgement of the epidemic, and early cooperation with WHO are often cited as reasons for Vietnam's rapid containment of SARS.

Even after Vietnam was removed from WHO's list of SARS-affected countries, the Health Minister reiterated the importance of maintaining preventive measures. As of late April, health checks at entry points were recommended but no longer mandatory; all travelers were still required to complete health forms; all major border points and ports maintained their quarantine facilities in function; and temperature screens were still in place at airports.<sup>575</sup> The quarantine period was reduced from 14 days to 10 days once Vietnam was taken off the SARS affected areas list by WHO.<sup>576</sup>

According to the Vice-Minister of Health of Vietnam, reflecting on his country's experience, the International Health Regulations should be revised promptly by WHO to provide member states with specific guidelines on issues relating to quarantine.<sup>577</sup> Vietnam is also an advocate for an increase in sharing of scientific information, strengthening of the existing disease outbreak alert and response system at the regional and global levels, and the establishment of a regional referral laboratory capable of diagnosing emerging diseases.<sup>578</sup>

After the outbreak was brought under control, several sources, including WHO and the U.S. CDC, touted Vietnam's efforts in both the management of the disease itself and the peripheral logistics associated with a much publicized and scrutinized epidemic of a new communicable disease. The fact that Vietnam is both a communist nation and a poor country, make its success in the management of SARS all the more impressive to the industrialized world.

## V. RELATED LEGAL ISSUES

### A. Discrimination in Health Care Services

Individuals with serious infectious diseases pose health risks to physicians, nurses, and other health care providers. Indeed, in the SARS epidemic health care providers were especially likely to become infected. Is there a legal or ethical duty to treat infected individuals? In the SARS outbreak, the infection originated in China, and with the exception of Canada, most of the countries with serious SARS problems were in Asia. Is it legal or ethical to refuse to treat individuals who are Asian or of Asian descent? Do health care providers have a legal or ethical duty to maintain their practices in a time of medical emergency? The answers to these and similar questions will determine the effectiveness of public health responses to serious outbreaks of infection.

#### 1. Disability Discrimination

Section 504 of the Rehabilitation Act of 1973<sup>579</sup> and Titles II and III of the Americans with Disabilities Act (ADA)<sup>580</sup> prohibit disability discrimination by recipients of federal financial assistance (section 504), government entities (Title II), or public accommodations (Title III). Public hospitals and health care facilities are covered by section 504 and Title II. Title III offers the broadest coverage, because it applies to privately operated facilities used by the public. “Health care provider facilities” are specifically mentioned as one of the categories covered by Title III. Under Title III, however, individuals are not permitted to bring actions for damages. Private remedies for violations are limited to injunctions, attorney fees, and court costs.

In *Bragdon v. Abbott*,<sup>581</sup> the Supreme Court held that a dentist violated Title III by refusing to fill the cavity of an asymptomatic HIV-positive patient in his office because of concern for his own safety and the safety of his other patients. Although health care providers may not discriminate in refusing to treat an individual with disabilities, the plaintiff may have a difficult time satisfying the statutory definition of “an individual with a disability.” To be covered under either the Rehabilitation Act or the ADA the individual must have “(A) a physical or mental impairment that substantially limits one or more of the major life activities of such individual; (B) a record of such an impairment; or (C) being regarded as having such an impairment.”<sup>582</sup> In *School Board of Nassau County v. Arline*,<sup>583</sup> the Supreme Court held that an individual with tuberculosis was covered under the Rehabilitation Act. Subsequent Supreme Court cases, however, have applied narrow coverage standards, and it is not certain that all infectious diseases would be held to meet the standards for coverage. Temporary and minor impairments are not considered disabilities under the ADA.

Another limitation of the *Bragdon* decision is that a health care provider is not required to render services if doing so would create a direct threat to the health of the provider. Indeed, the case was remanded for consideration of whether filling the cavity of an HIV-infected patient in the dentist’s office would create a threat of transmission to the dentist. In the case of SARS, the large number of health care workers who became

infected, many despite infection control measures, would make the risk of transmission apparent. Therefore there would be no violation of the ADA to refuse to treat a SARS-infected patient.

Title III of the ADA also prohibits discrimination against individuals who “associate” with individuals with disabilities. “It shall be discriminatory to exclude or otherwise deny equal goods, services, facilities, privileges, advantages, accommodations, or other opportunities to an individual or entity because of the known disability of an individual with whom the individual or entity is known to have a relationship or association.”<sup>584</sup> This provision prohibits discrimination against individuals because of the known infection of a family member or other associate.<sup>585</sup> It would also prohibit discrimination against health care providers who treat individuals with infectious conditions.

Another law with possible applicability in an epidemic is the Emergency Medical Treatment and Active Labor Act (EMTALA).<sup>586</sup> The law attempts to prevent inappropriate “patient dumping,” and it applies to hospitals receiving Medicare payments. EMTALA prevents the transfer of medically unstable patients and those in active labor, thus creating two duties. The first is a duty to screen the patient upon arrival to the hospital to determine if there is an emergency or active labor. If the patient is in active labor, or is in an emergency, the second duty is triggered; the patient must be stabilized before transfer is permitted. The screening and stabilization are based on standard medical practice. An emergency is defined as a health problem that seriously jeopardizes the health of the patient, seriously impairs a bodily function, or seriously impairs the function of a bodily organ or part.<sup>587</sup> As with the ADA, coverage of the condition turns on severity and thus it is not possible to state any general rules of applicability with respect to a range of infectious diseases affecting various patients.

EMTALA could come into play if a hospital refuses to treat patients with SARS or other infectious diseases. The hospital might claim that it lacked the equipment or facilities for proper infection control, such as negative pressure rooms. A variety of approaches (including government subsidies and licensing requirements) should be explored to ensure that hospitals are ready, willing, and able to care for these patients.

## 2. Race and National Origin

It is possible to imagine that, in the context of SARS, certain health care facilities or providers would refuse to treat patients from China or other Asian countries, even if their medical complaints were unrelated to a respiratory infection. The lawfulness of this conduct would be evaluated under a different set of laws. Title II of the Civil Rights Act of 1964<sup>588</sup> prohibits health care entities from discriminating on the basis of race or national origin. Title VI of the Civil Rights Act of 1964<sup>589</sup> prohibits discrimination on the basis of race, color, or national origin under any program or activity receiving federal financial assistance. For purposes of Title VI, Medicare and Medicaid are considered federal financial assistance.

Titles II and VI of the Civil Rights Act of 1964 were enacted to deal with the problem of racial segregation in public facilities. The issue of institutional discrimination is no longer a concern, and one consequence is that the contours of the law have not been developed by case law.<sup>590</sup> Clearly, the refusal to provide treatment to members of a particular race (e.g., refusal to treat any Asians) will violate the law, but the refusal to treat any SARS patients (which, hypothetically, might initially consist only of Asians) probably would not violate Titles II and VI, but may violate other federal or state health care or civil rights laws.

### 3. Codes of Ethics

In the prior discussion of Title III of the ADA, it was noted that if treating a patient with a chronic infection such as HIV created a “direct threat” to the health care provider, then refusing to provide treatment would not constitute disability discrimination. Such a *legal* defense, however, does not resolve the issue of whether refusing to provide treatment would be *ethical*. In other words, do health care providers have an ethical obligation to provide treatment to a patient when doing so creates a risk to their own health?

One of the basic tenets of medical practice is that a physician is free to decide whom to treat, and this is reflected in the codes of ethics. This ethical position is in accord with the legal principle that the physician-patient relationship is contractual in nature and either party may decline to enter into the relationship. At the same time, there are ethical limits on this freedom of practice. One limitation is emergency situations; another is a broad prohibition on discrimination based on race, national origin, color, sex, or religion. Some codes of ethics, including that of the American Medical Association, also include a ban on sexual orientation discrimination.<sup>591</sup>

The American Medical Association’s first Code of Ethics (1847) directly addressed the issue of physicians’ duty to serve patients during epidemics. “When pestilence prevails it is [physicians’] duty to face the danger ... even at the jeopardy of their own lives.” The duty was a part of the AMA Code of Ethics until 1977, when it was deleted because of the belief that epidemics were over. The AMA’s Declaration of Professional Responsibility, however, still contains a vague statement that physicians should use their knowledge and skills “though doing so may put us at risk.”<sup>592</sup>

Today, aside from statements dealing with the duty to treat HIV-infected patients, of the medical specialty colleges only the American College of Physicians-American Society of Internal Medicine Code of Ethics directly addresses the general duty of physicians to treat patients when doing so would pose a risk to their own health.

Because physicians could possibly be exposed to a number of infectious diseases like HIV and viral hepatitis, it is necessary to reaffirm the physician’s ethical imperative to provide care even when there is a great risk of infection. As patients who are infected can pose a serious risk to physicians, some physicians may not want to treat people with

infectious diseases. However, physicians and health care entities have an obligation to treat all patients, regardless of disease state. To deny care to any class of patients is unethical.<sup>593</sup>

#### 4. Summary

There are only a few cases that consider whether a physician has a legal duty to treat an individual in the absence of a physician-patient relationship. The courts are in agreement that there is no such duty. “A physician is under no legal obligation to practice his profession or render services to whomsoever may request them.”<sup>594</sup>

A variety of civil rights laws contain provisions dealing with discrimination in providing health services. The applicability of these laws to any factual situation remains unclear because of vague and often limited definitions of covered entities, individuals, or health conditions. The codes of ethics of the medical profession generally prohibit discrimination, but they do not say that physicians have an ethical duty to treat individuals whose infections create risks to the physician.

#### B. Privacy

Prompt, effective public health intervention requires timely, accurate, and thorough reporting by health care providers. Although public health laws make the reporting of certain conditions mandatory, an unanticipated but serious threat to reporting cases of infectious disease is the misunderstanding of the provisions of a new health privacy law.

The Health Insurance Portability and Accountability Act (HIPAA),<sup>595</sup> Title II (“Administrative Simplification”), directs the Secretary of Health and Human Services to promulgate regulations to protect the privacy and security of individually-identifiable health information. The final privacy regulation was promulgated on December 28, 2000,<sup>596</sup> took effect April 14, 2001, and had an implementation date of April 14, 2003, for most covered entities.<sup>597</sup>

The HIPAA Privacy Rule establishes the first comprehensive, federal health privacy standards. It mandates sweeping changes in the way that covered entities (certain health care providers, health plans, and health clearinghouses) collect, use, and disclose protected (individually identifiable) health information. The Rule provides various rights to individuals, including the right to receive notice of the privacy practices of covered entities, to view and obtain copies of their own health records, to request restrictions on the use and disclosure of their health records, to request amendments of their health records, to receive an accounting of disclosures of their protected health information, and to have disclosures limited to the minimum necessary to achieve the purpose of the disclosure.

The Rule permits the use and disclosure of protected health information (PHI) without individual consent or authorization for treatment, payment, and health care operations. Although other uses and disclosures, such as fundraising, marketing, and research, require specific authorization, the Rule establishes numerous exceptions in which it seeks to achieve a balance between protecting the privacy of health information and the public need for disclosure. These exceptions include law enforcement, organ donation, and national security.

Public health is one of the most important of these exceptions.<sup>598</sup> Under 45 C.F.R. § 164.512(b), a covered entity is permitted to disclose PHI to public health authorities and their authorized representatives for public health surveillance, investigations, and interventions. The drafters of the Rule intended that traditional public health reporting would not be affected by the Privacy Rule. In fact, the Department of Health and Human Services Office for Civil Rights (OCR) Guidance on the Privacy Rule (December 3, 2002) specifically lists the following permissible disclosures for public health: child abuse or neglect; quality, safety, or effectiveness of a product or activity regulated by the Food and Drug Administration (FDA); persons at risk for contracting or spreading a disease; and workplace medical surveillance. In addition, 45 C.F.R. § 160.203(c) provides that state laws mandating the reporting of certain conditions are not preempted by the Privacy Rule. It should be clear that HIPAA *permits* public health reporting, but it does not *require* it.

Despite the express language of the Privacy Rule and the Guidance issued by OCR, there is much confusion and misunderstanding of the effect of the HIPAA Privacy Rule on public health reporting. After the compliance date of April 14, 2003, there were concerns about a possible decrease in the reporting of essential public health information to local, state, and national public health authorities. These “defensive practices” might be undertaken by certain covered entities to avoid the potentially severe penalties and criminal sanctions for noncompliance with the Privacy Rule.<sup>599</sup> If such actions are widespread and not addressed, they threaten to undermine the nation’s public health surveillance system, including the reporting of infectious diseases.

### C. Employment

#### 1. Occupational Safety and Health

The Occupational Safety and Health Act (OSH Act)<sup>600</sup> is the primary federal law regulating safety and health conditions in the workplace. It applies to virtually all private sector employers in the United States,<sup>601</sup> an estimated 90 million employees at 6 million workplaces. The OSH Act does not apply to federal, state, or local government employees.

In addition to complying with all duly promulgated safety and health standards,<sup>602</sup> employers must comply with the OSH Act’s general duty clause, which provides that each employer “shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to

cause death or serious physical harm to his employees.”<sup>603</sup> Because there is no specific standard dealing with SARS, the general duty clause applies.

The OSH Act is enforced by the Occupational Safety and Health Administration (OSHA) in the U.S. Department of Labor. OSHA has issued guidelines on measures for employers to take in dealing with SARS, including special provisions for health care workers, laboratory personnel, airline flight crew and airport personnel, and those handling the remains of SARS patients.<sup>604</sup> The guidelines were developed in consultation with the CDC.

Section 11(c) of the OSH Act prohibits retaliation against an employee for exercising any right afforded under the OSH Act.<sup>605</sup> This means that it would be unlawful for an employer to discipline or discharge an employee for filing a complaint about occupational safety and health issues related to SARS with OSHA or other public health agencies. Weak remedies limit the effectiveness of this provision, however. Only the Secretary of Labor is authorized to bring actions alleging retaliation; there is no private right of action.<sup>606</sup>

Health care workers, concerned about their own health from treating SARS patients with inadequate infection control measures, might refuse to work until they are satisfied that working is not unduly hazardous. Would their “walkout” be protected under section 11(c) of the OSH Act? Although the statute does not explicitly permit employees to refuse a work assignment because of hazardous conditions, the Secretary of Labor has issued a regulation giving employees this right under limited circumstances.<sup>607</sup> Under the regulation, an employee may not be disciplined for walking off the job if: (1) a reasonable employee believes in good faith; (2) that performing assigned work would involve a real danger of death or serious injury; (3) the employee is unable to obtain correction of the condition by the employer; and (4) there is insufficient time to eliminate the danger through resort to regular statutory enforcement channels. The Supreme Court has upheld the legality of the regulation.<sup>608</sup>

## 2. Nondiscrimination

Employees are always worried about losing their jobs. In the case of SARS, even though the quarantine period is only 10 days, employees who are quarantined might be concerned that they will not have their job after their period of quarantine. Would it be legal for an employer to discharge or replace an employee because of absences during a period of quarantine?

The common law doctrine of employment at will applies to virtually all employees working without a written contract for a definite term.<sup>609</sup> Under the employment at will doctrine an employer is generally free to hire or fire an individual for any reason, so long as the reason has not been made unlawful by statute (e.g., discrimination on the basis of race, color, religion, sex, national origin, age, disability). There are numerous exceptions to the at-will doctrine. Besides the statutory antidiscrimination laws noted above, the public policy exception prohibits discharge in

violation of a clearly articulated public policy (usually a constitutional or statutory provision).<sup>610</sup> Some examples of discharges in violation of public policy include firing an employee for filing a workers' compensation claim, serving on jury duty, refusing to commit perjury, and filing a complaint with a government agency such as the Environmental Protection Agency. It is possible that a court would hold that discharge because an individual was quarantined and unable to work would violate public policy as set forth in the jurisdiction's public health laws. There are no cases on point, however, and not all states have adopted the public policy exception, further clouding the issue.

Another legal theory that could be used by an individual who was terminated due to quarantine is to claim that the discharge was disability discrimination under Title I of the Americans with Disabilities Act (ADA)<sup>611</sup> or an analogous state disability law. The ADA applies to employers with 15 or more employees, but many state disability discrimination laws also apply to smaller employers. The claim of disability discrimination is unlikely to be successful because an individual in quarantine is unlikely to be covered under the ADA. An individual in quarantine does not currently have the requisite physical or mental impairment that constitutes a substantial limitation of a major life activity.<sup>612</sup> An individual has no impairment at all at the time of quarantine and, even if he or she later has one, it is probably temporary. Temporary and minor impairments are not covered under the ADA.<sup>613</sup> The provision of the ADA protecting individuals who are "regarded as" having a substantially limiting impairment also would be unlikely to help because of court decisions requiring that the condition the individual is regarded as having be substantially limiting.<sup>614</sup> An unresolved issue is whether an infected individual who was in isolation because of SARS would be covered. Because most patients have SARS for a limited period of time, resolution of the issue of coverage under the ADA could turn on the individual's degree of residual impairment after recovery from SARS.

### 3. Leave without Pay

Eligibility for leave without pay is related to the issue of termination from employment, but it implicates a different set of employment laws. The federal Family and Medical Leave Act (FMLA)<sup>615</sup> provides that employers of 50 or more employees must permit eligible workers to take up to 12 weeks of unpaid leave in any 12-month period for the birth or adoption of a child, to care for a child, spouse, or parent with a serious health condition, or for the employee's own serious health condition that makes him or her unable to perform the job. Only employees who have been employed by a covered employer for at least 12 months and have at least 1250 hours of service during that period are eligible.<sup>616</sup> "Serious health condition" is defined as an illness, injury, impairment, or physical or mental condition that involves inpatient care or continuing treatment by a health care provider.<sup>617</sup> Although a confirmed case of SARS would definitely satisfy the definition of "serious health condition," it is not clear whether an asymptomatic person in quarantine would be protected by the FMLA. Over half the states also have their own family and medical leave acts, some of which apply only to public employees. A few laws go beyond the federal law,<sup>618</sup> such as by covering smaller employers. In addition, California employees are entitled to up to six weeks of *paid* leave.<sup>619</sup>

#### 4. Workers' Compensation

##### a. Illness

Workers' compensation laws, which differ in each state, would come into play if employees filed a workers' compensation claim as a result of contracting SARS on the job. Health care workers, first responders, and law enforcement personnel who develop SARS probably would be eligible for workers' compensation even without direct evidence of the method by which they contracted SARS. Although workers' compensation is often denied for "ordinary diseases of life," where, as with SARS, a particular class of employees is at an unusually high risk of disease, most courts would consider that enough to satisfy the burden of proving work-relatedness.<sup>620</sup>

Health care workers who were in isolation because they were infected with SARS on the job would be entitled to workers' compensation. Asymptomatic, potentially exposed workers who were quarantined, however, are unlikely to be eligible for workers' compensation because they have not suffered from any occupational injury or illness. Their ability to obtain compensation for lost work time is discussed in subpart c below.

##### b. Fear of illness

Many individuals who learn they are at risk for a life-threatening illness develop a severe psychological reaction. If the potential exposure to SARS occurred in the workplace, the individuals may be entitled to workers' compensation for their emotional distress. Under workers' compensation there is no recovery for pain and suffering or other tort damages. Thus, "recovery" means medical expenses and a portion of lost wages for the period of time they were unable to work because of the emotional distress.

Some of the workplace cases dealing with fear of illness involve exposure to substances, such as asbestos, with a long latency period before the onset of symptoms.<sup>621</sup> This makes the period of uncertainty and thus potential psychological distress extremely long. The courts are divided on whether compensation for emotional distress may be awarded in the absence of any physical symptoms.<sup>622</sup> With SARS, where a definitive diagnosis can be made within four weeks of the onset of illness, it would appear that the only possible recovery would be for employees who suffered a severe and sustained emotional illness that developed at the time of their possible exposure or during their period of quarantine.

##### c. Lost work time

As discussed in previous sections of this report, wage replacement payments to quarantined individuals were widely recognized in other countries as being essential to ensure compliance with quarantine. In the United States, there is currently no generally applicable legal mechanism to provide for the payment of wages or other compensation to workers who were in quarantine.

First, for the minority of employees subject to a written contract of employment (mostly executives and employees subject to a collective bargaining agreement), the contract itself would determine the employees' eligibility for lost wages. These individuals may be able to take vacation days or paid sick leave on the days of their quarantine. It is also possible that future collective bargaining agreements for health care workers and other employees at risk of infection will be drafted to include measures to provide for compensation in the event of quarantine.

Second, health care workers quarantined at their hospital or other place of employment may be entitled to their regular compensation, possibly including overtime pay, if they continue to perform work for the benefit of their employer during their period of quarantine. These eligibility determinations would be based on the federal Fair Labor Standards Act<sup>623</sup> and comparable state laws.

Third, for individuals quarantined at home and who perform no additional services for their employer during their quarantine, there is no legal basis for compensation. For example, these individuals are not entitled to unemployment insurance because, in all fifty states, there is a requirement that the individual must be "able to work."<sup>624</sup>

## 5. Summary

None of the various employment laws discussed in this section clearly prohibits the discharge of employees during their period of quarantine and none requires the payment of wages, although discharge is less likely a concern for employees than the loss of income during quarantine. Even if unpaid leave were mandated by law, at least for lower paid and non-health care workers, income replacement and not job loss is the key problem. Lower paid employees (of which there are many in the health care industry in food service, sanitation, and clerical jobs) are less likely to have sick leave, paid vacations, personal days, and other mechanisms in place to provide them with income during unanticipated periods of not working. These are also the employees most likely to be living from paycheck to paycheck, and for whom a week or more without income would present the greatest hardship. Self-employed individuals raise another set of issues. Consequently, new legislation may be necessary to ensure that quarantined individuals will not violate their confinement in an effort to earn a living. Legislation also may be necessary to protect individuals from the consequences of a quarantine-caused loss of income, such as a moratorium on evictions and repossessions.

In contemplating legislative responses to these problems, one policy issue is whether income support and other protections for employees would apply to voluntary as well as mandatory quarantine. It is time consuming to obtain an order of quarantine, and if only those under an order of quarantine could obtain income support, numerous orders would be needed. Thus, income assistance policies should support the general preference for voluntary quarantine.

## VI. APPLICATIONS OF LESSONS LEARNED

The response to SARS in the six jurisdictions we studied indicated some general themes. The ability of public health systems to respond to SARS and to implement in a timely manner necessary measures for quarantine and isolation depended on the following three elements:

- A. To respond promptly and effectively to SARS, affected countries needed public health laws that established a mechanism for regulating travel into and out of affected areas; case surveillance, reporting, and analysis; and a range of increasingly coercive measures including quarantine and isolation. They also needed the political will to enforce these measures.
- B. To minimize the toll from SARS through quarantine and isolation, affected countries needed the public health infrastructure to coordinate the public health response among all levels of government domestically and internationally, as well as a health care system with adequate levels of providers, facilities, equipment, and medications.
- C. To implement successful programs of quarantine and isolation, affected countries needed ancillary services and logistical support, including law enforcement and other measures to ensure compliance, wage replacement systems, delivery systems for food and medical supplies, and public education and communication measures to inform and gain the support of the public.

These three broad categories provide a framework for discussing measures that would be essential for the United States to take to prepare for a SARS outbreak or a comparable public health emergency.

### A. Legal and Public Health Systems

#### 1. Political/Legal system

##### *Lessons Learned*

The countries we studied differed widely in size, population, and political systems. They differed in government structure, including the allocation of functions among different levels of government and in different departments of government. They also differed in the degree to which they worked well with WHO. For example, Taiwan is not a member of WHO and China did not cooperate fully with WHO in the critical stages of the epidemic, whereas Vietnam worked closely with WHO from the start.<sup>625</sup>

All of the countries studied needed to amend their public health laws (statutes and/or regulations) to authorize quarantine for SARS, but they were able to accomplish this rapidly. Other legislation also was needed, such as Canada's SARS Assistance and Recovery Strategy Act of 2003, which, among other things, prohibited discrimination against employees under quarantine and provided for the compensation of employees in quarantine.

A key factor in effective and “seamless” coordination among government officials was the existence of good working relationships. In Taiwan, coordination between the national government and the city of Taipei was reportedly impeded by the adversarial relationship between the president and the mayor. Good relationships were also essential between public health officials and the political officials who had the ultimate responsibility of issuing directives.

SARS also highlighted problems of WHO and its relationships with member countries. Rapid action at the level of the Health Assembly is hampered by its structure, with only annual meetings and an agenda set many months in advance. The Health Assembly still has not acted on the proposed revisions to the International Health Regulations. Further, WHO regulations are not necessarily binding on member states – which may reject them or issue reservations – and it has little enforcement power. The WHO’s Global Outbreak Alert and Response Network is a valuable program that relies on technology and networking to gather and share information worldwide.

Finally, it is relatively easy for political leaders of countries to decide to invoke their extraordinary powers to protect the public’s health. It is less clear when the special powers should be terminated. For example, thermal imaging techniques have been used to assess whether incoming airline passengers have a fever as a symptom of SARS. Assuming that the devices were valuable from a public health standpoint and that their use was considered ethically and legally acceptable, for how long should they be used? It could be argued that there is a public health value in taking temperature readings of all passengers to detect a range of diseases. There must be vigilance and restraint in the use of extraordinary measures, lest they take on a life of their own. Special public health measures adopted for SARS or another specific disease should not become standard practice without continually balancing the interests of public health and civil liberties. Independent state technical advisory committees should be used for these issues.

Two model acts provide for periodic review of continuing quarantine and isolation. Under the Model Public Health Act,<sup>626</sup> for example, “[t]he health status of isolated and quarantined individuals must be monitored regularly to determine if they continue to require isolation or quarantine.”<sup>627</sup> Similarly, under the Model State Emergency Health Powers Act,<sup>628</sup> public health authorities shall “adhere” to a number of “conditions and principles” when isolating or quarantining individuals, one of which is that “[t]he health status of isolated and quarantined individuals must be monitored regularly to determine if they require isolation and quarantine.”<sup>629</sup>

### *Issues to Consider*

**A.1.1 Clear delineation of authority and responsibility for the various public health functions in an epidemic needs to be undertaken among federal, state, and local officials.**

**A.1.2 Because political boundaries are not barriers to infections, regional coordination should be supported and increased among all agencies with public health functions, including departments of public health, health care providers and hospitals, law enforcement, federal and state emergency preparedness officials, and the legal system.**

**A.1.3 Public health measures adopted in response to an emergency that restrain civil liberties should be reviewed periodically and should not be extended to other conditions unless previously established criteria are satisfied.**

2. Travel restrictions

*Lessons Learned*

Restricting the travel of infected individuals is essential to containing the geographic range of an epidemic. Yet, deciding on the appropriate level of travel restriction involves the difficult balancing of public health interests with the interests of human rights and the economy. To make matters more complicated, the marginal public health utility of increasingly stringent travel restrictions is not always easy to predict.

WHO recommended exit and entrance screening for SARS, and these measures were adopted in all of the countries we studied. Thermal screening also was widely used, including in countries, such as Japan, that had relatively few reported cases of SARS. As this was the first widespread use of this technology, it is important to study its sensitivity and effectiveness as a public health strategy. There were reports that the thermal screening at Tokyo's international airport could not keep up with all of the travelers at peak times. A pilot thermal screening program at the airports in Toronto and Vancouver scanned 2.4 million passengers, with 832 referred for further assessments, and none of the passengers referred had or was determined to have SARS.

A range of other measures was adopted to prevent the spread of SARS by air travel. For example, Taiwan required all passengers traveling from SARS-infected areas to wear masks on airplanes. Hong Kong Airport turned off and sealed water fountains and frequently changed air filters and disinfected public spaces. Some measures appeared to go too far. India and Thailand quarantined foreign visitors from countries with SARS outbreaks, even if they had no symptoms or known exposures.<sup>630</sup>

Although much of the focus was placed on airline travel, other travel restrictions must be in place to control the spread of infectious diseases, including measures aimed at ground and sea transportation. The latter includes the need for infection control on cruise ships and ferries, where close contact could result in the rapid spread of disease. As discussed in Part C below, the quarantine of travelers also requires housing facilities and ancillary services.

The countries we studied also placed restrictions on travel within their countries. Local governments in China introduced exit and entry controls on inter-city travel by air,

rail, bus, ship, and ferry. In China, entire villages in rural areas were quarantined and no travel was allowed in or out of the villages. One village in Hebei Province was quarantined from April 12, 2003 until May 13, 2003. In urban areas, such as Beijing, there were SARS checkpoints between districts where individuals and vehicles passing the checkpoints were subject to examination and disinfection. It is not clear whether such a *cordon sanitaire* would be supported by the public in the U.S. The key factor probably would be the degree of uncontrolled community transmission of the pathogen. Singapore used thermal screening widely at entrances to public and private buildings, which may have encouraged people to seek medical care sooner because they were effectively excluded from public areas. Individuals not in quarantine often had their temperature checked 5-10 times per day.

News of the global SARS epidemic caused the voluntary curtailment of international and domestic travel to affected areas. Travel advisories and travel alerts from WHO and individual countries helped to provide timely and accurate information.

#### *Issues to Consider*

**A.2.1 In the event that an international traveler develops an infectious disease, there is an urgent need to be able to locate crew members and other passengers from the same flight or ship. Public health officials must have immediate access to passenger manifests or be able to require all arriving passengers to complete a public health form containing, for example, the individual's health status, seat number, countries visited, and contact information. The information must be in electronic form.**

**A.2.2 Affected countries felt compelled to adopt thermal imaging and other screening methods before they were able to conduct rigorous research to assess their effectiveness. Various new public health assessment tools should be carefully evaluated before the next epidemic strikes.**

**A.2.3 The authority of the United States government to control foreign and interstate travel is established by the Constitution and federal statute. It is less clear, however, the circumstances under which states may restrict interstate travel to prevent the spread of infection, and this issue should be thoroughly researched and resolved through memoranda of understanding or other means.**

### 3. Surveillance, reporting, and epidemiology

#### *Lessons Learned*

Early identification of case clusters, expert laboratory and pathology analysis, timely tracking of contacts, and prompt reporting of findings to public health officials at all levels are the first lines of defense against an epidemic of infectious disease. The public health significance of the slowness of the initial response in China is perhaps the greatest lesson of the SARS epidemic. The original outbreak of the unknown respiratory

illness in Guangdong Province occurred in November 2002. The first report to public health officials was not made until January 31, 2003, the WHO travel advisory was not issued until March 13, 2003, and it was not until April 2003 that China became an active participant in international surveillance and reporting.

Once Chinese public health officials recognized the magnitude of the problem and the potential for a catastrophic pandemic, China began to collect and store samples from SARS cases and allowed WHO officials to meet with the first SARS patient. China's cooperation with the scientific investigation of SARS was outside of the framework of any treaty obligation, but it represented an essential appreciation of the connectedness of worldwide population health irrespective of political conventions.

Although all of the countries we studied had public health systems in place before the SARS epidemic, there were human resource shortages in one or more of the core public health disciplines in every country. The same would be true if a public health crisis occurred in the U.S. State and local public health departments need to have surveillance systems and sufficient numbers of epidemiologists to detect suspicious patterns of disease and to investigate the circumstances surrounding the illness of index cases. Laboratories need to have adequate staffing and expertise, as well as quality control, to identify the suspected pathogen, and reporting channels need to be in place to trigger large-scale investigations and public health alerts. In light of the September 2003 case of a laboratory worker infected in Singapore, it is important to develop international standards for certifying laboratories and their personnel in infection control measures.

#### *Issues to Consider*

**A.3.1 The U.S. would benefit from undertaking a nationwide public health human resource needs assessment, and measures should be taken to increase training programs, recruitment, and staffing levels to meet these needs. Prior assessments by the Council of State and Territorial Epidemiologists and the Association of Public Health Laboratories need to be updated and expanded.**

**A.3.2 There should be a greater emphasis on public health in medical school curricula and continuing medical education programs to provide the training essential for prompt identification and reporting of suspicious cases. Health professionals also need to have a clear understanding of the laws related to public health reporting so that, for example, misunderstanding the requirements of the Health Insurance Portability and Accountability Act (HIPAA) does not lead to a failure to report cases of infectious disease to public health officials.**

**A.3.3 Signing comprehensive international agreements for cooperation on public health and developing public health infrastructure should be a high priority for U.S. foreign policy. International agreements must be sufficiently flexible to permit a quick response to emerging infections and other public health emergencies.**

#### 4. Quarantine and isolation

### *Lessons Learned*

Although public health laws were on the books in all of the jurisdictions before the outbreak of SARS, the legal authority to order quarantine was limited to certain specific diseases. The SARS epidemic required amending the existing legal authority. For example, in Toronto, the Ontario public health regulation was amended within 24 hours of the discovery of SARS to declare it a reportable, communicable, and virulent disease. In Hong Kong, the Quarantine and Disease Prevention Ordinance was amended to add SARS to the list of notifiable diseases.

Once it adopted quarantine measures, China exceeded the other countries we studied in the extent of the quarantine it imposed. Not only were individuals subject to quarantine and isolation, but entire hospitals, districts of cities, villages, universities, and residential areas were subject to collective quarantine. The use of mass quarantine proved to be effective in China, but it is not clear that such measures would be constitutional or politically acceptable in the U.S.

Taiwan illustrates the delicate balance between public health and political considerations in quarantine. During the SARS epidemic 131,132 people were placed under quarantine, but only 12 were found to be potential cases of SARS, and there were only two confirmed cases of SARS among those quarantined. Officials in Taiwan now believe that its aggressive use of quarantine contributed to public panic and thus proved counterproductive.<sup>631</sup> In September 2003, the Taiwan Department of Health announced its new quarantine policy: “no fever, no quarantine.” This means that, in the future, there will be isolation of symptomatic individuals, but no quarantine of contacts. It remains to be seen what effect, if any, the new policy will have if there is a new epidemic of SARS or another infectious disease.

In virtually all of the jurisdictions we studied, there were incidents of violation of quarantine. In Toronto, the two groups most likely to violate quarantine were teenagers and health care workers. In Hong Kong, many residents of the Amoy Gardens complex violated quarantine and had to be located. In Singapore, the Infectious Diseases Act of 1976 had not been used before SARS. After the SARS outbreak, the law was quickly amended to provide for a fine of up to SGD \$10,000 and imprisonment for up to six months for violating quarantine. A total of 26 individuals were found to have violated the quarantine law, and one individual was sentenced to six months imprisonment. This was an individual whose photograph at a local bar appeared on the front page of a leading newspaper. He had his quarantine order in one hand and a beer in the other. A special facility was established to house quarantine violators. In Toronto, one quarantine violator was known to have gone to work, where he infected a co-worker. The police were investigating the incident and were prepared to bring criminal charges when the alleged violator died.

### *Issues to Consider*

**A.4.1 The decision whether to order a large-scale quarantine requires a complex analysis of scientific, political, and social considerations. Public health officials need to be able to present comprehensive, understandable assessments of the options to government officials in a timely manner. Contingency planning for emergencies through simulations and establishing vertical and horizontal lines of communication are extremely valuable in ensuring a prompt response to a public health emergency.**

**A.4.2 Public health laws need to be flexible enough to permit appropriate responses to new epidemics and new circumstances, and public health officials and professionals need to be familiar with the statutory and regulatory procedures for invoking their (or the governor's) authority for quarantine and isolation as well as the mechanisms to enforce directives.**

**A.4.3 Legal authority and public health strategies need to be in place for dealing with individuals who violate the law, and judges and law enforcement officials should be educated about the relevant enforcement provisions of public health laws. Studies need to be undertaken to determine if incentives or penalties promote compliance with quarantine.**

B. Public Health and Health Care Infrastructure

1. Public health officials and health care providers

*Lessons Learned*

The SARS epidemic highlighted an acute shortage of epidemiologists and other essential public health professionals. In Toronto, it took an average of over nine hours per case to perform contact tracing, and there were 2,282 cases to investigate. To meet this need, virtually all of Toronto's public health employees (over 400 individuals) were diverted from other tasks (e.g., food safety, STDs) to SARS, and key personnel worked around the clock for weeks. It is not clear how much longer this effort could have been sustained. Bringing in staff from other jurisdictions was not a satisfactory alternative because knowledge of local conditions was essential in contact tracing.

The strain of SARS on local public health resources highlights the role that WHO played in several countries. For example, Vietnam worked closely with WHO from the beginning of the epidemic, held meetings with WHO officials, and brought in experts from WHO to help with SARS. It was Dr. Carlo Urbani of WHO who alerted Vietnamese authorities to the severity of the threat posed by SARS. WHO's Global Outbreak Alert and Response Network (GOARN) for communication among public health practitioners was an important source of technical assistance, and experts located throughout the world provided essential knowledge of local conditions and politics.

Epidemics also place tremendous burdens on health care providers, and SARS, by infecting health care providers at a high rate, presented even greater challenges. The first

challenge was to maintain adequate staffing levels during the epidemic. Deaths and illnesses of health care workers and quarantine of others limited the availability of physicians and nurses. For example, in Hong Kong, 22% of the deaths were among health care workers, and in Taiwan over 90% of the infections occurred in hospitals. There were other aggravating factors as well. Even where there were adequate supplies, working with personal protective equipment, including gloves masks, and respirators, was physically and psychologically difficult, which required even more frequent staff rotation.

The SARS epidemic is also likely to have long-term repercussions for health care staffing. For example, some health care workers who went through quarantine have had a residual psychological burden and have found it difficult to treat patients with any type of infection. In Toronto, a substantial number of health care workers have left the profession, and there has been a decline in enrollment in training programs.

Perhaps the most troubling aspect of health care staffing in the SARS epidemic was the widespread reluctance of physicians and nurses to treat infected patients due to concerns for their own health. This phenomenon was experienced in every country we studied. For example, in Taiwan, 160 health care workers quit or refused to work on SARS wards. Three physicians were fined \$2,600 and three hospitals were fined \$43,000 for covering up or delaying the reporting of possible cases of SARS. In China, the government fired at least six physicians for refusing to treat SARS patients and banned them from practicing medicine for life. Besides punishing health care workers who refused to care for SARS patients, the governments in affected countries adopted a range of financial incentives to encourage health care workers. In Vietnam, health care and public health personnel were given an allowance of five times their regular salary. In Toronto, the hospitals doubled the salaries of nurses handling SARS patients. In Taiwan, physicians caring for SARS patients were given “danger pay” of \$300 per day and nurses were given \$150 per day.

### *Issues to Consider*

**B.1.1 The current shortage of epidemiologists, public health nurses, and other personnel in the U.S. will reach a crisis stage in the event of an epidemic. Budget cuts in state and local health departments have further depleted the human resources needed to deal with a public health emergency, and if these positions are not restored an otherwise containable epidemic may spread rapidly.**

**B.1.2 Contingency planning and cross-training are needed to ensure that sufficient numbers of health care workers trained in infectious disease, emergency medicine, pulmonology, toxicology, and other specialties are available in an epidemic or bioterrorism event.**

**B.1.3 Training to diagnose, treat, and report infectious diseases as well as to take precautions for their own protection must become an essential part of the continuing education of front-line health care professionals.**

**B.1.4 Ongoing studies in Toronto of the long-term effects of SARS on health care workers need to be followed closely and a range of psycho-social and educational interventions should be assessed.**

**B.1.5 More fundamental and comprehensive measures may be necessary to deal with the unwillingness of health care providers to treat infected patients. Some options include a greater emphasis on teaching professional responsibility in professional schools and continuing education, and more closely linking licensure with public service obligations. We also need to study whether fragmentation of the health care system and its effects on the provider-patient relationship would have adverse consequences in a public health emergency.**

2. Hospitals and other facilities

*Lessons Learned*

The SARS epidemic demonstrated the lack of surge capacity for isolation and treatment in hospitals and the lack of adequate residential facilities for quarantine. Because SARS was in large measure a hospital-based epidemic it was necessary to close hospitals in every jurisdiction we studied. The loss of hospital beds prevented many elective procedures, and it is difficult to calculate the overall health effects of this lack of access to health care. In addition, there were frequent shortages of essential supplies, including gowns, gloves, masks, protective eyewear, and ventilators as well as inadequate laboratory capacity and infection control measures.

In China, new hospital facilities were built rapidly to respond to SARS, but this approach is unlikely to be effective in the U.S. It probably would be much better to have standby hospital facilities that could be used in the event of any emergency. This surge space could be an unused wing or floor of a hospital or even a separate facility that could be ready for use in short order. As a result of SARS, Hong Kong plans to add 1,000 isolation beds in public hospitals and stockpile three months of protective clothing and equipment for health professionals.

During the SARS epidemic a variety of facilities were used for the quarantine of people who were transients, homeless, or did not want to be quarantined at home. These facilities were selected and converted to use on an ad hoc basis. Quarantine plans should be in place, and periodically updated, that designate certain facilities for use in a public health emergency. Planning needs to be coordinated with local emergency management agencies and the Red Cross. Quarantine areas also need to be identified for other special facilities, including jails, prisons, and military installations.

The prospect of a SARS-like epidemic in the U.S. raises another practical problem, and that is the issue of cost. Unlike the jurisdictions we studied, many of the hospitals in the U.S. are privately owned, both non-profit and for-profit. Closing a hospital for a month or more because of quarantine and isolation would be extremely costly to a hospital both in terms of the costs incurred in treating the patients and staff, and in the lost revenue from other patients. It is quite possible that some hospitals would go bankrupt. Hospitals concerned about these consequences also might be reluctant to treat individuals in an epidemic. A public hospital later designated as the “SARS hospital” may be the only place that was providing health care to indigents.

Measures need to be taken at once to ensure the continued financial viability of institutions taking care of patients in an epidemic. Similarly, there must be a plan for the allocation of financial responsibility among local, state, and federal governments in the event of a public health emergency. There also needs to be a plan to ensure uninterrupted health care in the event of a hospital closure.

#### *Issues to Consider*

**B.2.1 Surge capacity hospital space for public health emergencies needs to be developed for every area of the country.**

**B.2.2 Every public health district needs to develop an emergency quarantine and isolation plan with local facilities that could be used to house people in the event of a large-scale quarantine. The plan should be coordinated with local emergency management agencies and the Red Cross.**

**B.2.3 Legislation should be considered to provide for the funding of health care institutions during public health emergencies. One possibility is to award grants to hospitals in each area to develop and maintain a public health emergency capacity. The Health Resources and Services Administration has begun programs in this area.**

### 3. Medication and equipment

#### *Lessons Learned*

Shortages of protective equipment were common. In Taiwan, the lack of protective equipment, especially masks, led to a “state of panic” among some health care workers.<sup>632</sup> In Vietnam, the Japanese government donated thousands of masks, protective suits, and gloves. In Toronto, health care providers complained that the provincial authorities were too slow in providing equipment, and some doctors sought to purchase their own supplies. Inadequate supplies of oxygen, ventilators, and laboratory equipment undermined patient care.

Public health planning includes stockpiling medical supplies and equipment, which may be expensive. Because many hospitals in the U.S. are having financial

difficulties, government assistance is needed in getting the necessary supplies on hand in advance of an emergency. The Strategic National Stockpile is reportedly expanding its supply of ventilators and other equipment, but logistics also need to be in place for the prompt delivery of the equipment.<sup>633</sup>

Besides hospital-based equipment, many of the countries affected by SARS distributed a vast amount of medical supplies directly to the population. For example, Singapore issued over one million SARS toolkits with digital thermometers and masks. Taiwan gave out 1.5 million thermometers and asked individuals to take their temperature several times a day.

#### *Issues to Consider*

**B.3.1 A public health preparedness inventory should be undertaken for each public health district, noting needs and available supplies.**

**B.3.2 Emergency distribution plans should be developed among federal, state, and local public health and disaster preparedness officials.**

#### 4. Coordination

##### *Lessons Learned*

All of the countries we studied made concerted efforts to coordinate their response to SARS among all of the departments of government, both horizontally and vertically. There was no advance planning for the coordination, however, and measures undertaken “on the fly” led to problems. For example, in Canada, early coordination efforts among city, provincial, and federal officials were weak, thereby delaying an effective, unified response to SARS. In Hong Kong, there was inadequate communication among the Hospital Authority, Department of Health, and university health experts. In Taiwan, there was no single spokesperson during much of the SARS crisis, and the lack of coordination was a major factor leading to the resignation of the Minister of Health.

#### *Issues to Consider*

**B.4.1 Joint response plans involving all appropriate government agencies should be developed for a range of public health emergencies, including natural disasters, infectious diseases, and bioterrorism events.**

**B.4.2 To conserve state and local public health resources and ensure consistency, there should be a single, integrated, public health response plan for all public health threats, including SARS, bioterrorism, and West Nile virus, rather than layering a new plan for responding to the threat onto prior response plans.**

#### C. Law Enforcement and Ancillary Services

## 1. Law enforcement

### *Lessons Learned*

Law enforcement was very important in controlling SARS in every jurisdiction we studied. For example, in Toronto law enforcement personnel were used to enforce the isolation of patients with SARS at hospitals, to serve quarantine orders, to conduct spot checks on people in quarantine, and to track down people who broke quarantine. Specially equipped emergency medical service personnel also were used to transport quarantined individuals to designated hospitals in the event they became symptomatic.

Traditional law enforcement functions also were affected by SARS. In Singapore, the police were directed not to arrest individuals with SARS who were engaged in certain illegal acts, including entering the country illegally and gambling, because they did not want infected individuals to be “driven underground” where they would spread the infection and not be subject to isolation or treatment.

As mentioned earlier, “voluntary compliance” with quarantine was extremely successful in the countries we studied. It is not clear whether a largely voluntary approach would be as easy to implement in the U.S., where notions of individuality, due process, and skepticism of government are more deeply ingrained. Securing large numbers of quarantine orders, however, would severely strain the resources of public health agencies, prosecutors, and the courts. Judicial education about public health laws, advance notice of filings, and clear understanding of federal, state and local responsibility are essential.

### *Issues to Consider*

**C.1.1 Public health law training should be provided to all health care providers and government officials charged with obtaining and enforcing orders for quarantine and isolation of individuals, including police officers, prosecutors, public health officials, and judges. Public health law training also should be incorporated into law school curricula.**

**C.1.2 Because federal and state health officials have concurrent jurisdiction in many quarantine cases, memoranda of understanding should be developed setting forth the responsibilities of various agencies and departments.**

**C.1.3 Appellate courts with jurisdiction to hear appeals of quarantine and isolation cases should review their procedures for emergency appeals so that a trial court’s granting or denying an order of quarantine may be appealed immediately, before an individual is wrongly denied his or her liberty or wrongly permitted to infect other people. In jurisdictions that issue quarantine orders administratively, procedures for emergency judicial review need to be in place.**

## 2. Delivery of food and medicine

### *Lessons Learned*

A large-scale quarantine requires a wide range of services to be provided to individuals confined in their homes. In all of the countries we studied, food and supplies were delivered by public and private social service agencies. Medications for conditions other than SARS also needed to be delivered. A special ambulance system was needed. Special waste disposal precautions had to be put into effect, and mortuary services needed to pay particular attention to infection control. Furthermore, all of these “ancillary” services needed to be provided with special regard for the cultural and religious diversity and varied practices among the people in the affected countries.

In the U.S., the issue of payment for these services must be addressed. How much of the responsibility would be borne by state and local governments and how much would be borne by the federal government? Would individuals in quarantine be required to pay for some of the food and supplies they received and, if so, how much would they be charged and on what basis? Would only “authorized” delivery services be permitted or would private, for-profit home delivery services be allowed to operate, perhaps to provide food and supplies beyond the items offered by social service agencies? Who would handle maintenance and repair problems involving such essential services as heat, plumbing, electricity, or telephone service?

### *Issues to Consider*

**C.2.1 Public health planning for a large-scale quarantine needs to consider the wide range of logistical issues involved in providing food, medicine, and essential services for thousands of people in quarantine. Planning should be coordinated with the Red Cross.**

**C.2.2 Representatives of people from all racial, ethnic, religious, linguistic, and cultural groups as well as people with disabilities and other special needs in each geographic area need to be involved in the quarantine planning process so that a plan appropriate to the needs of each group is developed in advance of an emergency. Policies need to be developed on the appropriate site for quarantine of individuals who have mental illness, mental retardation, substance abuse problems, or other conditions that make home quarantine infeasible.**

**C.2.3 Legislation is needed to further address the responsibility for funding ancillary services in a quarantine.**

## 3. Nondiscrimination and wage replacement

### *Lessons Learned*

Quarantine resulted in the home confinement of thousands of individuals who were well enough to work and who needed to work to support themselves and their families. Because the success of quarantine depended on compliance by the affected individuals, all of the countries we studied took some steps to provide for income replacement and employment security of individuals in quarantine.

SARS-based discrimination in employment was a problem in all of the countries we studied. Many of the individuals subject to discrimination were health care workers. In Hong Kong, a study of 150 recovered SARS patients subject to employment discrimination indicated that 45% had psychiatric problems when they were discharged from their jobs.<sup>634</sup> Many other individuals lost their jobs because of a downturn in the local economy caused by SARS.

In Hong Kong, sick leave was granted to individuals in home confinement. Canada enacted the SARS Assistance and Recovery Strategy Act of 2003, which amended the Employment Standards Act. Under the new law, employers are prohibited from discharging employees under quarantine unless the employer can prove that a business downturn necessitated the elimination of positions. The law also provides compensation for individuals from \$500 to \$6,000 if they are required to be absent from work for at least five days. Physicians whose hospitals are closed because of quarantine are eligible for up to 80% of their regular billing for the period of closure.

In Singapore, the government paid an allowance of SGD \$70 for self-employed persons, and daily salary up to SGD \$70 for employees of small businesses closed due to SARS and having employees on home quarantine. In Taiwan, individuals who completed quarantine were paid an amount equivalent to US\$150. Families of workers who died from SARS at work were eligible for up to 45 months of salary.

### *Issues to Consider*

**C.3.1 In general, under current U.S. law, employees without a contrary contractual provision may be discharged for being in quarantine. Laws need to be enacted to prohibit discrimination and to provide for the job security of individuals in quarantine.**

**C.3.2 With the exception of those contractually entitled to paid sick leave, employees in the U. S. are not eligible for income replacement due to quarantine under any federal or state law. Providing income replacement for employees and self-employed persons is essential to ensure a high rate of compliance with quarantine.**

**C.3.3 To promote adherence to quarantine, individuals in quarantine need to be held harmless for various consequences of lost income, and therefore measures need to be explored that would, for example, provide for insurance and rent payments and protect against repossession for missed car payments.**

#### 4. Public education and communication

##### *Lessons Learned*

Public education and communication played an essential part in the strategy of preventing people from panicking and fleeing, protecting against discrimination directed at certain individuals, promoting sanitary practices, and adhering to quarantine. For example, publicity campaigns in Hong Kong attempted to raise public awareness of the symptoms, mode of transmission, prevention, and treatment of SARS. It also attempted to get people to seek prompt medical attention.

The communication and education programs varied by country. Singapore initiated a 24-hour SARS television channel. Toronto had a SARS hotline staffed primarily by public health nurses that received a peak of over 47,000 calls in a single day. Sometimes, public opinion was molded by unusual events. In Singapore, the quarantine effort received greater public support after it was learned that a member of Parliament and the wife of a cabinet minister were in quarantine. Special outreach programs were needed to reach minority populations. In Toronto, SARS materials were printed in 14 languages.

Not all of the efforts to allay public fears were successful. Singapore closed the public schools because of fear and not because it was necessary to protect public health. In the U.S., where there were relatively few cases of SARS and no fatalities, there were reports of discrimination against Asians. For example, rumors became so prevalent within the Chinese American community in Portland that four businesses ran an ad in the Chinese-language newspaper saying that all of their employees were healthy.<sup>635</sup> In Vineland, New Jersey, a dance troupe from Chinatown in New York City was turned away from its annual performance at two middle schools because of fear of SARS. One school even sprayed the hallways with Lysol after they left.<sup>636</sup>

##### *Issues to Consider*

**C.4.1 Additional research and funding are needed to study and improve programs for public health education and communication.**

**C.4.2 Prior communication involving public officials, public health experts, public health lawyers, business officials, and other civic leaders is essential in implementing a quarantine.**

**C.4.3 Frequent communication by a single, or a very limited number of credible spokesperson(s) throughout an epidemic is essential to improving public understanding of and maintaining public support for quarantine, isolation, and other public health measures.**

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- <sup>79</sup> World Health Assembly, Resolution on Severe Acute Respiratory Syndrome (SARS), WHA56.29, May 28, 2003, at [http://www.who.int/gb/EB\\_WHA/PDF/WHA56/ea56r29.pdf](http://www.who.int/gb/EB_WHA/PDF/WHA56/ea56r29.pdf) (last visited October 14, 2003).
- <sup>80</sup> *Id.*
- <sup>81</sup> World Health Organization, The operational response to SARS, at [http://www.who.int/csr/sars/goarn2003\\_4\\_16/en/print.html](http://www.who.int/csr/sars/goarn2003_4_16/en/print.html) (last visited October 14, 2003).
- <sup>82</sup> Fidler, *Return of the Fourth Horseman*, at 827.
- <sup>83</sup> Gene W. Matthews, Public Health Community Preparedness for SARS, presentation to the CDC, Atlanta, GA, September 23, 2003; see also Part I of this Report.
- <sup>84</sup> SARS: Questions and Answers on Executive Order and Interim Final Rule, at [www.cdc.gov/ncidod/sars/pdf/quarantineqa.pdf](http://www.cdc.gov/ncidod/sars/pdf/quarantineqa.pdf) (last visited October 14, 2003).
- <sup>85</sup> Matthews, Public Health Community Preparedness for SARS.
- <sup>86</sup> Executive Order 13295, Revised List of quarantinable Communicable Diseases, April 4, 2003, at <http://www.cdc.gov/ncidod/sars/executiveorder040403.htm> (last visited October 14, 2003).
- <sup>87</sup> SARS: Fact Sheet, Isolation and Quarantine, August 18, 2003 at <http://www.cdc.gov/ncidod/sars/isolationquarantine.htm> (last visited October 14, 2003).
- <sup>88</sup> ANGUS NICOLE ET AL., LEGAL POWERS THAT WOULD ASSIST IN CONTROLLING SEVERE ACUTE RESPIRATORY SYNDROME (SARS) IN ENGLAND AND WALES: WOULD MAKING SARS NOTIFIABLE ASSIST? (July 2003), at [http://www.hpa.org.uk/infections/topics\\_az/SARS/sarsnotification.pdf](http://www.hpa.org.uk/infections/topics_az/SARS/sarsnotification.pdf) (last visited October 14, 2003).
- <sup>89</sup> EUROPEAN COMMISSION, MEASURES TAKEN BY MEMBER STATES AND ACCESSION COUNTRIES TO CONTROL THE OUTBREAK OF SARS (2003) at [http://europa.eu.int/comm/health/ph\\_threats/com/sars/sars\\_measures\\_en.pdf](http://europa.eu.int/comm/health/ph_threats/com/sars/sars_measures_en.pdf) (last visited October 14, 2003).
- <sup>90</sup> *Id.*
- <sup>91</sup> *Id.*
- <sup>92</sup> Employment, Social Policy, Health, and Consumer Affairs. May 6, 2003, at <http://ue.eu.int/> (last visited October 14, 2003).
- <sup>93</sup> Marjorie E. Kanof, Director, Health Care-Clinical and Military Health Care Issues, U.S. General Accounting Office, Severe Acute Respiratory Syndrome: Established Infectious Disease Measures Helped Contain Spread, But a Large-Scale Resurgence May Pose Challenges, GAO, July 30, 2003 (testimony before the Permanent Subcommittee on Investigations, Committee on Governmental Affairs, U.S. Senate).
- <sup>94</sup> Executive Order 13295, *supra* note 86.
- <sup>95</sup> 42 U.S.C. § 264(b)
- <sup>96</sup> 68 Fed. Reg. 17558 (April 10, 2003).
- <sup>97</sup> 42 U.S.C. § 264(d).
- <sup>98</sup> C.F.R. § 206.36
- <sup>99</sup> *Id.* at § 206.35(a).

- <sup>100</sup> *Id.* at § 206.2 (emphasis added).
- <sup>101</sup> *Id.* at § 206.35(b)(1),(2) (emphasis added).
- <sup>102</sup> *Id.* at § 206.62 (emphasis added).
- <sup>103</sup> *Id.*
- <sup>104</sup> 42 U.S.C. ch. 68 *et seq.* Of course, in an emergency for which the primary responsibility for response rests with the federal government, but which may nonetheless occur within a state, the President need not await a formal request by a state's Governor. *Id.* at § 5191(b).
- <sup>105</sup> *Id.* at § 5192(1)-(7).
- <sup>106</sup> *Id.* at § 5170(b) (contributions to state or local governments as essential assistance in major disasters); § 5174 (financial assistance for temporary housing); and § 5177 (unemployment assistance).
- <sup>107</sup> *Id.* at § 5192(b).
- <sup>108</sup> Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS) (October 10, 2003 Draft)
- <sup>109</sup> Chae Chan Ping v. United States, 130 U. S. 581, 603 (1889).
- <sup>110</sup> Fiallo v. Bell, 430 U.S. 787 (1977).
- <sup>111</sup> Leng May Ma v. Barber, 357 U.S. 185 (1958).
- <sup>112</sup> Jacobson v. Commonwealth of Massachusetts, 197 U.S. 11 (1905).
- <sup>113</sup> United States ex rel. Siegel v. Shinnick, 219 F. Supp. 789, 791 (E.D.N.Y. 1963).
- <sup>114</sup> 42 U.S.C. § 268(b).
- <sup>115</sup> 42 U.S.C. § 243.
- <sup>116</sup> Lawrence v. Texas, 123 S. Ct. 2472 (2003).
- <sup>117</sup> GOSTIN, PUBLIC HEALTH LAW, at 213-216.
- <sup>118</sup> *Id.*
- <sup>119</sup> Lawrence K. Altman, *Citing Concerns About Public Health, Officials Detain Foreign Tourist*, N.Y. TIMES, April 8, 2003, at A9.
- <sup>120</sup> Notice of Adoption of Amendments to Sections 11.01 and 11.55 of the New York City Health Code, Department of Health and Mental Hygiene, Board of Health, at [http://www.phppo.cdc.gov/od/phlp/docs/NYC--11.55%20\(Notice%20of%20Adoption%20-%20Final\).PDF](http://www.phppo.cdc.gov/od/phlp/docs/NYC--11.55%20(Notice%20of%20Adoption%20-%20Final).PDF) (last visited November 10, 2003).
- <sup>121</sup> Va. Code § 32.1-43.
- <sup>122</sup> Utah Communicable Disease Control Act § 26-6b-3 (2003).
- <sup>123</sup> See, e.g. Ind. Code § 16-41-2-1, Ind. Admin. Code §§ 401.1-2.3-52 to 401.1-2.3-112.
- <sup>124</sup> Peter D. Jacobson and Richard E. Hoffman, *Regulating Public Health: Principles and Applications of Administrative Law*, in LAW IN PUBLIC HEALTH PRACTICE, EDITED BY RICHARD A. GOODMAN, ET AL. New York, NY: Oxford University Press, 2003, pp. 23-42.
- <sup>125</sup> 42 U.S.C. §§ 264-272; 42 C.F.R. Part 71.
- <sup>126</sup> United States v. General Motors Corp., 323 U.S. 373 (1945).
- <sup>127</sup> World Health Organization, Summary Table of SARS cases by Country, 1 November 2002-7 August 2003, at [http://www.who.int/csr/sars/country/2003\\_08\\_15/en/](http://www.who.int/csr/sars/country/2003_08_15/en/) (last visited October 14, 2003).
- <sup>128</sup> Health Canada, 29 Canada Communicable Disease Report 13, 113 (July 1, 2003); SHEELA V. BASRUR, TORONTO PUBLIC HEALTH, TORONTO STAFF REPORT: TORONTO PUBLIC HEALTH'S RESPONSE TO THE SEVERE ACUTE RESPIRATORY SYNDROME (SARS) OUTBREAK 2003 ("TORONTO STAFF REPORT") (September 9, 2003).
- <sup>129</sup> Health Canada, Canadian SARS Numbers, September 3, 2003, at [http://www.hc-sc.gc.ca/pphb-dgsp/sars-sras/cn-cc/20030903\\_e.html](http://www.hc-sc.gc.ca/pphb-dgsp/sars-sras/cn-cc/20030903_e.html) (last visited October 14, 2003); BASRUR, TORONTO STAFF REPORT, at 5.
- <sup>130</sup> Government of Ontario, *Premier Eves Lifts Provincial SARS Emergency*. News Release, May 17, 2003, at <http://www.premier.gov.on.ca/english/news/Sars051703.asp> (last visited October 14, 2003).
- <sup>131</sup> *News Indepth: SARS: Implications for Public Health Care*, CANADIAN BROADCASTING CORPORATION NEWS ONLINE, April 29, 2003, (interview with Colleen Flood, Faculty of Law, University of Toronto).
- <sup>132</sup> Statistics Canada, CANSIM, Population, Provinces and Territories, at <http://www.statcan.ca/english/Pgdb/demo02.htm> (last visited October 31, 2003).
- <sup>133</sup> EUGENE A. FORSEY, HOW CANADIANS GOVERN THEMSELVES 30 (5<sup>th</sup> ed.) (2003).
- <sup>134</sup> *Id.*

- <sup>135</sup> See, generally, Department of Justice, Government of Canada, Canada's Court System, at <http://canada.justice.gc.ca/en/dept/pub/trib/page3.html> (last visited October 31, 2003); FORSEY, at 32-33.
- <sup>136</sup> Constitution Acts, 1867, §91(11) (30 & 31 Victoria, c.3 (U.K.)).
- <sup>137</sup> Department of Health Act, R.S.C., ch. 8 (1996) (Can.).
- <sup>138</sup> Quarantine Act, R.S.C., ch. Q-1 (1985) (Can.).
- <sup>139</sup> Department of Health Act, at §4(1).
- <sup>140</sup> *Id.* at §4(2)(b).
- <sup>141</sup> *Id.* at §4(2)(c).
- <sup>142</sup> *Id.* at §4(2)(e).
- <sup>143</sup> *Id.* at §4(2)(i).
- <sup>144</sup> Department of Health Act, R.S.C., ch. 8, §11(1),(2).
- <sup>145</sup> *Id.* at §12.
- <sup>146</sup> Quarantine Act, R.S.C., ch. Q-1.
- <sup>147</sup> *Id.*
- <sup>148</sup> *Id.* at §§8(1)(a)-(d).
- <sup>149</sup> *Id.* at §8(3).
- <sup>150</sup> *Id.*
- <sup>151</sup> *Id.* at §§8(2),(4).
- <sup>152</sup> *Id.* at §§8(2)(a)-(d).
- <sup>153</sup> *Id.* at §13(2).
- <sup>154</sup> *Id.* at §9.
- <sup>155</sup> *Id.* at §13(1).
- <sup>156</sup> *Id.* at §2.
- <sup>157</sup> *Id.* at §11(1).
- <sup>158</sup> *Id.* at §11(2).
- <sup>159</sup> *Id.* at §11(3).
- <sup>160</sup> *Id.* at §12(1)(a).
- <sup>161</sup> *Id.* at §12(1)(b),(2).
- <sup>162</sup> *Id.* at §12(3).
- <sup>163</sup> *Id.* at §12(4).
- <sup>164</sup> *Id.* at §11(4).
- <sup>165</sup> *Id.* at §11(5).
- <sup>166</sup> *Id.* at §19.
- <sup>167</sup> Constitution Acts §92(7).
- <sup>168</sup> Ministry of Health and Long-Term Care Act, R.S.O., ch. M.26 (1990) (Can.).
- <sup>169</sup> Health Protection and Promotion Act, R.S.O., ch. H.7 (1990) (Can.).
- <sup>170</sup> Ministry of Health and Long-Term Care Act, at §6(1)(2).
- <sup>171</sup> *Id.* at §12(h).
- <sup>172</sup> Health Act §2, R.S.B.C., ch. 179 (1996) (Can.).
- <sup>173</sup> *Id.* at §8(1).
- <sup>174</sup> Health Protection and Promotion Act, R.S.O., ch. H.7, §2.
- <sup>175</sup> *Id.* at §5(3).
- <sup>176</sup> *Id.* at §62.
- <sup>177</sup> Health Protection and Promotion Act §22(1), (5.0.1).
- <sup>178</sup> *Id.* at §22(2).
- <sup>179</sup> Health Protection and Promotion Act, at §22(4).
- <sup>180</sup> Virulent diseases are enumerated under the Act (*Id.* at §1(1)); this list now includes SARS following a 2003 amendment (R.O. 95/03, s. 1. (2003)).
- <sup>181</sup> *Id.* at §22(5.1).
- <sup>182</sup> Health Protection and Promotion Act, at §22(5).
- <sup>183</sup> *Id.* at §22(5.0.1),(5.0.2).
- <sup>184</sup> *Id.* at §22(5.0.3).
- <sup>185</sup> *Id.* at §23.
- <sup>186</sup> *Id.* at §22(3),(5.0.4),(7); 44(1).
- <sup>187</sup> *Id.* at §22(5.0.5); 44(1).

- <sup>188</sup> *Id.* at §§44, 45 and 46.
- <sup>189</sup> *Id.* at §24.
- <sup>190</sup> *Id.* at §35(1),(2).
- <sup>191</sup> *Id.* at §35(2),(3).
- <sup>192</sup> *Id.* at §35(4).
- <sup>193</sup> *Id.* at §35(15).
- <sup>194</sup> *Id.* at §35(5).
- <sup>195</sup> *Id.* at §35(6).
- <sup>196</sup> *Id.* at §35(7).
- <sup>197</sup> *Id.*
- <sup>198</sup> *Id.* at §35(11).
- <sup>199</sup> *Id.* at §35(12), (13).
- <sup>200</sup> *Id.* at §35(7.1).
- <sup>201</sup> *Id.* at §35(16),(17).
- <sup>202</sup> *Id.* at §35(18),(19).
- <sup>203</sup> *Id.* at §§100(1),(4); 101(1).
- <sup>204</sup> Health Canada, Canadian SARS Numbers, September 3, 2003, at [http://www.hc-sc.gc.ca/pphb-dgsp/sars-sras/cn-cc/20030903\\_e.html](http://www.hc-sc.gc.ca/pphb-dgsp/sars-sras/cn-cc/20030903_e.html) (last visited September 23, 2003).
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- <sup>206</sup> City of Toronto Act (No. 2) §46(1)-(6), S.O. 1997, ch. 26 (1997) (Can.).
- <sup>207</sup> *Id.*
- <sup>208</sup> Health Protection and Promotion Act §§ 4 *et seq.*
- <sup>209</sup> *Id.*, amended by S.I./2003-126 (June 12, 2003), 137 Canada Gazette (Part II) 14 (July 2, 2003) (amended by the Governor General in Council upon the recommendation of the Minister of Health of Canada).
- <sup>210</sup> Health Canada, Severe Acute Respiratory Syndrome (SARS): Definition of Persons Under Investigation, (May 30, 2003).
- <sup>211</sup> Health Canada, Severe Acute Respiratory Syndrome (SARS): Case Definitions (rev.), July 8, 2003.
- <sup>212</sup> Health Canada, Public Health Management of SARS Cases and Contacts: Interim Guidelines (ver. 6), July 2, 2003.
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- <sup>214</sup> Health Canada, Public Health Management Protocol for Persons Meeting the “Geo-linked Person” Definition, April 4, 2003.
- <sup>215</sup> Health Canada, Recommended Laboratory Investigation of Severe Acute Respiratory Syndrome (rev.), March 19, 2003.
- <sup>216</sup> Health Canada, Biosafety Advisory: Severe Acute Respiratory Syndrome: Interim Guidelines, March 25, 2003.
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- <sup>218</sup> Health Canada, Infection Control Guidance for Respirators (Masks) Worn by Health Care Workers—Frequently Asked Questions: Severe Acute Respiratory Syndrome (SARS) (rev.), June 6, 2003.
- <sup>219</sup> Health Canada, SARS and Air Travel: Interim Guidelines for Prevention and Control (ver. 2), May 8, 2003.
- <sup>220</sup> Ministry of Health Planning, Order in Council 364, 30 Resume of Orders in Council 10, April 1, 2003.
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- <sup>222</sup> Minister of Health and Long Term Care, Timely Reporting of Reportable Diseases Under the Health Protection and Promotion Act, May 27, 2003 (memorandum addressed to all hospital administrators and superintendents of health care institutions).
- <sup>223</sup> Ministry of Health and Long Term Care, Severe Acute Respiratory Syndrome (SARS) Screening Tool for Ontario Healthcare Settings, June 16, 2003.
- <sup>224</sup> Ministry of Health and Long Term Care, SARS Clinical Decision Guide (Ontario), June 16, 2003.
- <sup>225</sup> Ministry of Health and Long Term Care, Directives to Ontario Health Care Providers in Community Settings and Community Health Care Agencies (Directive HCP 03-01), April 23, 2003.

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- <sup>228</sup> See, e.g., [http://www.city.toronto.on.ca/health/boh\\_index.htm](http://www.city.toronto.on.ca/health/boh_index.htm) (last visited September 24, 2003).
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- <sup>231</sup> Office of the Provincial Health Officer, Frequently Asked Questions on Severe Acute Respiratory Syndrome in British Columbia, at [http://www.healthplanning.gov.bc.ca/pho/pdf/sars\\_faq.pdf](http://www.healthplanning.gov.bc.ca/pho/pdf/sars_faq.pdf) (last visited August 18, 2003).
- <sup>232</sup> Vancouver Hospital and Health Sciences Center, Respiratory Equipment and Procedures: Infection Control Guidelines for the Use of Respiratory Equipment or Procedures in Patients with Probable or Suspect SARS (rev.), May 2, 2003.
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- <sup>236</sup> NATIONAL ADVISORY COMMITTEE ON SARS AND PUBLIC HEALTH, HEALTH CANADA, LEARNING FROM SARS: RENEWAL OF PUBLIC HEALTH IN CANADA (“ADVISORY COMMITTEE ON SARS”) 27 (2003).
- <sup>237</sup> ADVISORY COMMITTEE ON SARS, at 35
- <sup>238</sup> ADVISORY COMMITTEE ON SARS, 25.
- <sup>239</sup> BASRUR, TORONTO STAFF REPORT, at 5.
- <sup>240</sup> ADVISORY COMMITTEE ON SARS, at 26-35.
- <sup>241</sup> *Id.* at 26.
- <sup>242</sup> *Id.* at 28; BASRUR, TORONTO STAFF REPORT, at 5.
- <sup>243</sup> ADVISORY COMMITTEE ON SARS, at 26.
- <sup>244</sup> *Id.* at 41.
- <sup>245</sup> *Id.* at 35-40.
- <sup>246</sup> *Id.* at 35 (The advisory committee was comprised of “concerned physicians, infection control practitioners, and administrators from across the country” who came together to assist in the Toronto SARS outbreak. *Id.* at 30).
- <sup>247</sup> *Id.* at 28.
- <sup>248</sup> *Id.* at 11.
- <sup>249</sup> *Id.* at 20.
- <sup>250</sup> *Id.*
- <sup>251</sup> *Id.*
- <sup>252</sup> BASRUR, TORONTO STAFF REPORT, at 7.
- <sup>253</sup> Employment Insurance Regulations, S.O.R./96-332 (1996) (Can.), amended by S.O.R./2003-131 (P.C. 2003-474) (April 4, 2003).
- <sup>254</sup> Office of the Prime Minister of Canada, Government of Canada Actions Related to SARS, at [http://www.pm.gc.ca/default.asp?Language=E&Page=keyinitiatives&Sub=healthcare&Doc=sars\\_e.htm](http://www.pm.gc.ca/default.asp?Language=E&Page=keyinitiatives&Sub=healthcare&Doc=sars_e.htm) (last visited August 18, 2003).
- <sup>255</sup> SARS Assistance and Recovery Strategy Act, S.O. 2003, ch. 1 (2003) (Can.).
- <sup>256</sup> ADVISORY COMMITTEE ON SARS, at 20.
- <sup>257</sup> *Id.* at 214-215.
- <sup>258</sup> BASRUR, TORONTO STAFF REPORT, at 7.
- <sup>259</sup> Yi Guan, The Origin and Evolution of SARS, Presentation at the Institute of Medicine Forum on Microbial Threats, September 30, 2003.
- <sup>260</sup> Personal communication from noted Chinese historian, Sherman C. Cochran.
- <sup>261</sup> Gail E. Henderson, Myths and Reality: The context of emerging pathogens in China, Testimony Prepared for Presentation before a Roundtable of the Congressional-Executive Commission on China, May 12, 2003. Available at: <http://www.cecc.gov/pagpes/roundtables/052103/Henderson.php> (last visited July 15, 2003)
- <sup>262</sup> JONATHAN D. SPENCE, THE SEARCH FOR MODERN CHINA 704-707 (1990).

<sup>263</sup> Another area of reform was tax law, according to Spence. Its relevance to the public health law crisis caused by SARS is probably limited except that the existence of income taxes in 1980s is probably both an index of the growth in wealth and the gaps between the rich and the poor in today's PRC.

<sup>264</sup> Detailed information about NPC work is available at <http://www.npcnews.com.cn/gb/paper10/1/class001000002/index.htm> (Chinese version). (last visited on September 13, 2003).

<sup>265</sup> Huaying Qi,, Introduction to People's Procuratore System in People's Republic of China, (unpublished memorandum dated March 21, 2003 on file with Larry I. Palmer).

<sup>266</sup> The authoritative Chinese version of the Prevention and Treatment Law is available at <http://www.moh.gov.cn/wsflfg/fl/200205140007.htm>. The translation of the Law done by Huaying Qi is on file with Professor Larry I. Palmer.

<sup>267</sup> Article 3: The infectious diseases provided in the Law are grouped in three categories: Type A, B and C: Type A includes pestilence and cholera; Type B includes virosis hepatitis, bacterial and amoebic dysentery, typhoid fever and paratyphoid, AIDS, gonorrhea, syphilis, poliomyelitis, measles, whooping cough, diphtheria, epidemic cerebrospinal meningitis, scarlatina, EHF, canine madness, spirillum, brucellosis, anthrax, epidemic and endemic typhus, epidemic encephalitis B, Kala—azar, Malaria, dengue fever; and Type C includes tuberculosis, schistosomiasis, filariasis, German measles, leprosy, influenza, mumps, rubella, infectious conjunctivitis, other infectious diarrhea than cholera, dysentery, typhoid fever and paratyphoid. The State Council can add, reduce or change the Type A infectious diseases according to the circumstances and should make announcement thereupon. The public health administration department of the State Council can add, reduce or change the B and C-type infectious diseases and make announcement thereof.

<sup>268</sup> See Article 21 of Prevention and Treatment Law.

<sup>269</sup> See Article 22 of Prevention and Treatment Law.

<sup>270</sup> According to Article 39, administrative punishment shall be imposed on relevant medical care and epidemic prevention staffs and government officials who do not perform their duties and cause the spread and epidemic of the infectious disease. They may also face criminal charges, and if the charges are established they may be sentenced to fixed-term imprisonment of up to 7 years.

<sup>271</sup> See Article 23 of Prevention and Treatment Law.

<sup>272</sup> See Article 25 of Prevention and Treatment Law.

<sup>273</sup> See Article 26 of Prevention and Treatment Law.

<sup>274</sup> Regulations on Infectious Disease Management of Sichuan Province, issued on September 21, 1985 by Sichuan Province Government (Decree No. 165) and repealed on Dec 29, 1997. The content of regulations is available at [http://www.law-lib.com/law/law\\_view.asp?id=46891](http://www.law-lib.com/law/law_view.asp?id=46891), and the repeal notice is available at [http://www.law-lib.com/law/law\\_view.asp?id=31507](http://www.law-lib.com/law/law_view.asp?id=31507) (Chinese Version) (last visited September 14, 2003).

<sup>275</sup> Hebei Province: Detailed Rules on Infectious Diseases Prevention and Treatment of Hebei Province, issued on June 19, 1997 by the Hebei Province Government (Decree #192) and effective on the same day, at <http://www.hebwst.gov.cn/article/list.asp?id=287> (Chinese Version) (last visited September 13, 2003). Jiangsu Province: Implementation Measures of "the Prevention and Treatment of Infectious Disease Law of P.R.China" of Jiangsu Province, approved on Sept. 13, 1994 by the standing committee of Jiangsu Province People's Congress, at <http://www.jsbst.gov.cn/dfnewsdisplay.php?newsid=157> (Chinese Version) (last visited September 13, 2003). Heilongjiang Province: Implementation Regulations of "the Prevention and Treatment of Infectious Disease Law of P.R.China" of Heilongjiang Province, issued on September 29, 1994 by Heilongjiang Province Government. Available at [http://www.law-lib.com/law/law\\_view.asp?id=25067](http://www.law-lib.com/law/law_view.asp?id=25067), (Chinese version) (last visited September 14, 2003).

<sup>276</sup> See Article 5 of the notice "Regulations on Epidemic Situation Report", issued on April 27, 1990 by Tianjin Municipal Government. Available at <http://www.tjlegal.gov.cn/lawsweb/laws.nsf/webmain?openframeset>, (Chinese version) (last visited on September 13, 2003).

<sup>277</sup> Issued by Shanghai Municipal Government at [http://www.law-lib.com/law/law\\_view.asp?id=25652](http://www.law-lib.com/law/law_view.asp?id=25652) (Chinese version) (last visited on September 14, 2003).

<sup>278</sup> For detailed information about the SARS epidemic situation, see <http://168.160.224.167/sarsmap/> (Chinese Version) (last visited on September 13, 2003). This website includes detailed charts about the SARS epidemic situation in China.

- <sup>279</sup> See Jeffrey J. Rachlinski, *A Positive Psychological Theory of Judging in Hindsight*, 65 U. CHI. L. REV. 571 (1998).
- <sup>280</sup> See Notice of Listing SARS in the Statutory Infectious Diseases, issued on April 8, 2003 by Ministry of Health, Public Health and Infectious Disease Control Office (Decree 84) at <http://www.moh.gov.cn/was40/detail?record=95&channelid=36079> (Chinese version) (last visited on September 13, 2003). English translation by Huaying Qi is on file with Professor Larry I. Palmer.
- <sup>281</sup> See Notice on Preventing SARS from Epidemic via Transportation Vehicles, issued on April 12, 2003 by the Ministry of Health, Ministry of Finance, Ministry of Railway, Ministry of Transportation and Civil Aviation General Bureau, at <http://www.moh.gov.cn/was40/detail?record=93&channelid=36079>, (Chinese version) (last visited September 13, 2003). English translation by Huaying Qi is on file with Professor Larry I. Palmer.
- <sup>282</sup> See Ordinance for the Handling of Public Health Emergencies, issued on May 9, 2003 by the State Council (Order # 376) at <http://www.moh.gov.cn/zhgl/zt/fgwj/1200305150119.htm> (Chinese version) (last visited September 13, 2003). English translation by Huaying Qi is on file with Professor Larry I. Palmer.
- <sup>283</sup> See Regulation on Prevention and Treatment of Communicable Atypical Pneumonia, issued May 12, 2003 by the Ministry of Health (Decree No. 35), at <http://www.moh.gov.cn/wsflfg/blgz/1200305130080.htm>, (Chinese version) (last visited September 13, 2003). English translation by Huaying Qi is on file with Professor Larry I. Palmer.
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- <sup>285</sup> See, e.g., Article 5 of the Regulations.
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- <sup>287</sup> See Article 17 of the Regulations.
- <sup>288</sup> See Article 29 of the Regulations.
- <sup>289</sup> See Standards of Identifying People Having Close Contact with Communicable Atypical Pneumonia Patients and Handling Principles, issued on May 8, 2003 by the Ministry of Health, at <http://www.moh.gov.cn/zhgl/zt/fgwj/1200305160044.htm> (Chinese version) (last visited September 13, 2003). English translation by Huaying Qi is on file with Professor Larry I. Palmer.
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- <sup>291</sup> See Part I-(I)-5 of the Standards.
- <sup>292</sup> See Guiding Opinion on Enhancing Communicable Atypical Pneumonia (SARS) Prevention and Treatment in the Rural Areas, issued on May 20, 2003 by the Ministry of Health, Ministry of Civil Affairs, Ministry of Agriculture, National Development and Reform Commission, National Population and Family Planning Commission, at <http://www.moh.gov.cn/zhgl/zt/fgwj/1200305280019.htm> (Chinese version) (last visited on September 13, 2003). English translation of part of the notice by Huaying Qi is on file with Professor Larry I. Palmer.
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- <sup>295</sup> See Article 2 and 3 of the Judicial Interpretation.
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