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SARS AND INTERNATIONAL LEGAL PREPAREDNESS

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I. INTRODUCTION

The disease known now as severe acute respiratory syndrome ("SARS") first emerged in November 2002 in China's Guangdong Province and has since been described as the first severe, readily transmissible new disease of the twenty-first century. Its relatively rapid dissemination across the globe left

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biomedical researchers and public health authorities struggling to maintain pace with the disease in the face of scientific uncertainties and difficult policy choices. This article focuses on the earliest stage of the epidemic. We discuss examples of how regions faced with SARS turned to disease control strategies based on public health law, such as “personal control measures” like quarantine and isolation; weaknesses in the ability of nations’ legal systems to frame balanced, coordinated and well-executed public health programs for rapid disease containment; and the responses of diverse populations to restrictive personal control measures.

This article does not advance arguments regarding the efficacy or circumstances under which governments should exercise personal control measures such as quarantine or isolation. A literature on this aspect of SARS disease control strategies is just starting to develop more fully. Instead, we highlight the legal aspects of personal control measures employed against SARS in order to emphasize the importance of understanding public health law’s role in authorizing and constraining disease control strategies, as well as the importance of legal preparedness in nations governed under the rule of law. In the contemporary international environment, one nation’s failure in legal preparedness can affect global public health and, simultaneously, damage perceptions of that nation’s ability to engage in cooperative disease control efforts and commitment to the protection of domestic civil rights. For example, China’s State Secrets Law reportedly prohibited local officials from publicizing an outbreak in advance of the Ministry of Health in Beijing; and considerable delay attended the drafting and passing of China’s SARS control legislation.

We use examples from the very different governmental entities of Singapore, the Hong Kong Special Administrative Region, Canada, and the United States to illustrate important public health law and preparedness challenges for infectious disease control. While we recognize that the experiences of these nations may not perfectly apply in other nations, we believe that they represent a spectrum of political and legal cultures. We restrict our factual discussion to the very earliest stages of the SARS outbreak when the public’s and officials’ uncertainty were greatest and national public health and legal systems most vulnerable. We conclude with recommendations encouraging enhanced legal preparations for public health emergencies.

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II. CHARACTERISTICS OF SARS SHAPING LAW-FOCUSED RESPONSES

SARS' public health characteristics motivated authorities' choices of disease control strategies which, in nations governed under the rule of law, depend on effective legal systems. These included: (1) the novelty of the disease, resulting in the absence of rapid diagnostic tests to confirm infection and the current lack of a vaccine; (2) an unusual pattern of comparatively low viral shedding during the initial phase of the illness, posing further obstacles to the swift development of adequate diagnostic tools; (3) SARS' subclinical or atypical presentation in some patients; (4) the lack of effective treatment; (5) the disease's relative severity (an approximate overall case fatality rate of fourteen to fifteen percent); and (6) its mode of transmission, including the phenomenon of superspreading events. Each of these characteristics provided incentives to use nonmedical control strategies such as mandatory examination and testing, quarantine, and isolation. In the absence of effective therapy or a vaccine, health authorities' ability to control infectious disease necessarily depends upon preventing transmission by appropriately restricting the movement of exposed or infected people. Lack of adequate diagnostics limits public health authorities' ability to control transmission by impeding identification of mildly symptomatic or asymptomatic carriers and promotes reliance on contact history. Some SARS cases with atypical presentations or lacking history of direct contact with known SARS patients went undiagnosed and became "hidden reservoirs of infection on the wards of health-care facilities or in the community." To address this threat, some public health authorities


chose to employ aggressive, legally based surveillance and quarantine measures.\textsuperscript{14} Researchers and clinicians also recommended exercising precautions in all cases of undifferentiated respiratory conditions, including isolation of health care workers and household contacts of cases.\textsuperscript{15}

SARS also appeared vulnerable to control measures such as quarantine and isolation: officials initially believed it to be transmitted through personal contact, possibly by air and also by fomites.\textsuperscript{16} In addition, “superspreading” events, by increasing the perceived risk resulting from failures to contain all cases, likely created greater incentives to implement aggressive control strategies.\textsuperscript{17} Five probable SARS patients in Singapore were each linked to events resulting in the apparent infection of ten or more health care workers, family or social contacts, or unrelated hospital visitors, accounting for 103 of the 205 probable SARS cases.\textsuperscript{18} Finally, effective isolation and quarantine become more difficult as cases accumulate, so public health authorities may more aggressively apply quarantine and isolation for a disease like SARS on the principle that “stringent measures implemented early in the course of the epidemic prevent the need for more stringent measures as the epidemic spreads.”\textsuperscript{19}

III. NATURE OF SARS CONTROL MEASURES UNDERTAKEN

The recommendations of the World Health Organization (“WHO”) for the control of SARS provided a backdrop for national efforts, as illustrated in Table 1. By March 26th, 2003, however, governments had begun independently introducing more stringent personal control measures than those recommended by WHO\textsuperscript{20}—an indication both of the challenge of effectively unifying international action, and of some authorities’ willingness and perceived need to implement mandatory personal control measures. In the process, many governments examined and revised their disease control laws. We briefly consider selected disease control strategies and their legal components with examples from Singapore, the Hong Kong Special Administrative Region, Canada, and the United States.

A. Singapore\textsuperscript{21}

The first, still undiagnosed SARS patients were admitted to Singaporean

\textsuperscript{15} Booth et al., supra note 12, at 2807.
\textsuperscript{16} Gerberding, supra note 6, at 2031.
\textsuperscript{17} Chorh Chuan, supra note 14.
\textsuperscript{18} Leo, supra note 13, at 405-10.
\textsuperscript{19} Marc Lipsitch et al., Transmission Dynamics and Control of Severe Acute Respiratory Syndrome, 300 SCIENCE 558, 558-59 (2003).
\textsuperscript{20} See WHO, Update 10 – Data from China, Countries Introduce Stringent Control Measures (2003), at http://www.who.int/csr/don/2003_03_26/en/ (March 25, 2003) (suggesting maximum measures, such as quarantine to slow the spread of SARS).
hospitals from March 1st through 3rd, 2003;\textsuperscript{21} on March 6th, the Ministry of Health was notified of three cases of atypical pneumonia, following travel to Hong Kong.\textsuperscript{22} Table 1 summarizes major disease control strategies employed in Singapore. As control efforts advanced (March 3rd - April 27th), the average time from onset of SARS symptoms to isolation of probable cases declined in Singapore from 6.8 to 1.3 days.\textsuperscript{23} Officials from the Singapore Ministry of Health maintain that broad and sensitive surveillance, rapid and effective contact tracing, and early use of enforced quarantine during the outbreak were crucial in containing SARS.\textsuperscript{24}

Singapore’s public health response included important legal components. Authorities declared SARS a notifiable disease under the Infectious Disease Act ("IDA")\textsuperscript{25} on March 17th,\textsuperscript{26} allowing mandatory examination, treatment, medical information exchange, health care provider/institutional cooperation, use of facilities, quarantine, and isolation for SARS.\textsuperscript{27} The IDA was officially invoked for SARS on March 24th (quarantining contacts and closing hospitals to visitors two weeks before the WHO recommendation).\textsuperscript{28} By March 25th, approximately 740 people were in home quarantine under the IDA (with fines for noncompliance).\textsuperscript{29} They were legally required, among other things, to restrict visitors and maintain visitor registries; to respond immediately to health department communications; and to keep children under eighteen years of age at home.\textsuperscript{30} Private sector nurses and physicians were temporarily restricted from working in more than one medical facility. Further, in contrast to some other countries, Singapore concentrated all SARS patients into one facility and ultimately achieved containment more rapidly.\textsuperscript{31}

On April 24th, Singapore amended the IDA to: require persons with possibly infectious diseases to report to designated treatment centers; prohibit SARS contacts from going to public places; enforce home quarantine with electronic tagging and forced detention; and allow the quarantine and destruction of SARS-contaminated property.\textsuperscript{32} Section 21A of the Act imposed the affirmative obligation to avoid exposing others (outside immediate family).

\textsuperscript{22} Id.
\textsuperscript{23} Chorh Chuan, \textit{supra} note 14.
\textsuperscript{24} Id.
\textsuperscript{26} Singapore Ministry of Health, \textit{supra} note 21.
\textsuperscript{27} Infectious Disease Act, \textit{supra} note 25.
\textsuperscript{28} Singapore Ministry of Health, \textit{supra} note 21.
\textsuperscript{31} Leo, \textit{supra} note 13, at 410.
\textsuperscript{32} Id.
on any person knowing, or having reason to suspect, that he was a case, carrier or contact of SARS.\footnote{33} To mitigate the effects of its aggressive containment strategy, Singapore provided economic assistance to people and businesses affected by home quarantine orders through a "Home Quarantine Order Allowance Scheme".\footnote{34} While officials from Singapore's Ministry of Health maintained that broad surveillance, rapid and effective contact tracing, and early enforced quarantine were crucial in containing SARS,\footnote{35} their actions were built upon a strong foundation of accessible, high-quality health and social services.

**B. Hong Kong Special Administrative Region**

Hong Kong's SARS index case, a twenty-six year-old ethnic Chinese man, was admitted to the Prince of Wales Hospital on March 4th, 2003 (the Hong Kong Department of Health received notice on March 10th).\footnote{36} WHO was notified of the SARS outbreak on March 12th.\footnote{37} Ultimately, sixty-nine health workers and sixteen medical students developed SARS directly attributable to workplace exposure to the index case; the disease then spread to family members (and other contacts) of the affected workers.\footnote{38} Selected disease control measures employed in Hong Kong are summarized in Table 1. As of May 5th, 2003, 1,080 contacts (from 425 households) of SARS patients had been confined and placed under medical surveillance, with the government providing daily material and financial assistance to 738 of these contacts (283 households).\footnote{39} By June 15th, 2003, the total number of people served home quarantine notices in Hong Kong was 1,262.\footnote{40}

Hong Kong's control measures also initiated the use and review of public health law. Like Singapore, Hong Kong added SARS to its disease control statutes (March 27th, 2003) and notified physicians that SARS was reportable.\footnote{41} On April 15th, in order to establish a legal basis for further disease control measures, Hong Kong authorities amended the Prevention of the Spread of
Infectious Diseases Regulations to allow health officers to prevent travelers from leaving the region; to permit authorized persons to measure travelers' body temperatures; and to examine travelers for SARS. At least one subsequent analysis of public health approaches in Hong Kong suggests that reductions in time from symptom onset to hospitalization, population contact rate, and incidence of nosocomial infection were jointly significant in bringing the epidemic under control. The Hong Kong Special Administrative Region plans a comprehensive review of the Quarantine and Prevention of Disease Ordinance to implement long-term strategies for managing all infectious diseases.

C. Toronto, Canada

Toronto's SARS outbreak was the largest outside of Asia and carried economic effects estimated at one billion Canadian dollars in gross domestic product for 2003. A SARS patient was admitted to a local community hospital shortly after March 5th; this hospital became the epicenter of the Toronto outbreak. The disease was transmitted within the hospital to patients and healthcare workers prior to the implementation of control measures. Transfer of patients between health care institutions resulted in further dissemination of the virus. Selected disease control measures employed by Canadian health officials are summarized in Table 1.

The legal components of Canada's response included the closure of hospitals, the declaration of a public health emergency, the compulsory quarantine of recalcitrant citizens, and the imposition of mandatory self-quarantine. Canada's Quarantine Act and Regulations were amended to list SARS in the schedule of diseases; authorize detention of travelers with suspected SARS for up to twenty days; allow national quarantine officers to compel air carriers to distribute SARS information and questionnaires on flights; and require aircraft to report en route illnesses and deaths at Canadian airports. Health is a joint responsibility of the Canadian Federal and Provincial governments, and federal responses included lending personnel and

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44. Yeoh, supra note 40.
47. Booth et al., supra note 12, at 2802.
equipment, coordinating strategy to boost the health workforce, screening travelers at borders, making employment insurance benefits available for quarantined citizens, and arranging tax relief for affected individuals.50

Canada also provides an example of WHO's difficulty in coordinating health policies across independent, but inter-dependent, regions. Canada officially challenged WHO's April 23rd Toronto travel advisory51 and promised at least ten million Canadian dollars to promote Toronto as a safe destination.52 Even as late as May 2nd, a WHO official noted the failure to receive “good, fast information from Canada,” further stating that “[c]ountries are not very good about reporting new cases, even the United States.”53

D. The United States

The United States' federal government has authority over public health measures at national borders and in matters affecting interstate transmission of disease,54 but assumes direction of states' internal health affairs only under extraordinary circumstances.55 U.S. Federal SARS control measures are summarized in Table 1. By April 2003, the United States' Centers for Disease Control and Prevention (“U.S. CDC”) had deployed more than 40 public health professionals and scientists worldwide and assigned more than 400 staff members to SARS;56 as of June 18th, 2003, the United had 334 suspected and 75 probable cases of SARS.57

SARS provoked at least one significant change in the United States'
national legal structure for disease control. Early in the worldwide outbreak, federal authorities found themselves legally powerless to detain a noncompliant traveler from China 58 and so federal regulations were amended in order to address failures to cooperate with SARS control measures. 59 While the amendment brought SARS within the scope of "national" legislation (section 361(b) of the Public Health Service Act) 60 it could not, however, redress the decentralization of public health authority across the United States. State and local authorities continued to be able to withhold or delay SARS reports to the federal government. 61 Also, at least through the middle of April 2003, U.S. CDC relied on state and local health department resources to develop the necessary methods for actively monitoring exposed persons. 62 But facing a smaller outbreak than those of other countries, policymakers in the United States generally avoided using compulsory personal control measures for disease containment 63 and such powers were used infrequently. Only five aircraft arriving from SARS-affected regions were sequestered, 64 and quarantine and isolation tended to be voluntary or quasi-voluntary, 65 although there were some cases of compulsory confinement. 66

E. Public Response to Control Measures

Overall, SARS quarantine and isolation events illustrate both general compliance with public health measures and the difficulties posed by even a relatively few, noncompliant individuals. Officials in Ontario prosecuted at least

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61. See generally Gerberding, supra note 58 (describing CDC response to SARS and recommending prompt reporting and collaboration with state and local health departments).


65. E.g., Mary H. Cooper, Fighting SARS, CQ Researcher 7 (June 20, 2003).

one recalcitrant individual and threatened unknown numbers of others with forced confinement. Ontario's Commissioner of Public Security perceived noncompliance as the greatest threat to controlling SARS. By April 19th, however, Toronto health officials had pursued legal measures against only fifteen people. Singapore enacted penalties for quarantine violation, utilized its Security Services and electronic, in-home cameras, and arrested at least one man violating a home quarantine order. Violations of quarantine led to calls in Hong Kong for stricter enforcement of orders with implementation of fines and detentions. In comparison, Taiwan apparently suffered serious difficulties in obtaining public cooperation, including citizens' refusal to register with local health authorities before traveling; large scale failures to cooperate with epidemiological contact tracing; mass disobedience of quarantine orders; and hospital concealment of SARS cases. The United States did not implement widespread quarantine. However, polling studies forecast U.S. voluntary quarantine noncompliance rates ranging from eight percent to twenty-five percent. Given the wide range of population responses internationally, the risk and consequences of noncompliance must also be considered when planning U.S. disease containment strategies.

75. See BBC News, Taiwan Hit by Rapid SARS Spread, (May 22, 2003) (reporting two Taiwan hospitals were fined for covering-up SARS cases), available at http://news.bbc.co.uk/1/hi/world/asia-pacific/3048943.stm.
IV. SARS, PREPAREDNESS, AND LAW

Experiences with SARS internationally show that: (1) public health authorities will rely upon personal control measures (such as isolation and quarantine) in outbreaks with certain distinctive characteristics; (2) failure to provide adequate public health legal authority in advance of an emergency simply defers required legislative or regulatory changes to times of legal and political stress; (3) some affected individuals will refuse voluntary personal control measures, underscoring the need for mandatory provisions in some cases; and (4) most governments appear to acknowledge the requirement to provide appropriate treatment of confined persons and preparations for adequate logistical and financial support for public health emergency management. Some legal and structural lessons related to these observations are described below. 77

A. Effective health infrastructure as a foundation of disease control

Nationally effective health care and public health systems are crucial to effective disease control in modern societies. They can only become more important if health authorities turn to personal control measures. Adequate preparation for widespread outbreaks of dangerous, communicable diseases necessarily is built on a foundation of accessible health care and competent, properly funded public health agencies regardless of the approach used. In societies such as the United States, which have chronically neglected public health infrastructures, this entails the swift expenditure of considerable public resources to overcome existing weaknesses in the nation's health system. Traditional U.S. market-based patterns of health care financing and delivery contribute heavily to this problem. Chronic underfunding of public hospitals and the lack of surge capacity to handle health emergencies are extensively documented and threaten U.S. public health preparedness. 78 A recent study of urban U.S. hospitals concluded that while most had conducted basic planning and coordination activities for bioterrorism response (also relevant to a large-scale outbreak of a naturally occurring infectious disease such as SARS), "[m]ost hospitals, however, still lack equipment, medical stockpiles, and quarantine and isolation facilities for even a small scale response." 79 Staffing shortages remain a major concern in public health departments, laboratories and hospitals across the country. 80 While the United States federal government currently spends billions

77. For a discussion of SARS focused on specific ethical issues, see Lawrence Gostin et al., Ethical and Legal Challenges Posed By Severe Acute Respiratory Syndrome: Implications for the Control of Severe Infectious Disease Threats, 290 JAMA 3229, 3229-3237 (2003).


80. U.S. GENERAL ACCOUNTING OFFICE, GAO-03-373, BIOTERRORISM PREPAREDNESS VARIED ACROSS STATE AND LOCAL JURISDICTIONS: REPORT TO CONGRESSIONAL COMMITTEES 17
of dollars in the area of "homeland security," state officials, local officials, and hospital administrators express concern over the sustainability and distribution of essential federal funding for improvements in the public health sector.82

B. Sufficient and predictable authority: the challenge of federal systems

The governments of Singapore and the Hong Kong Special Administrative Region (virtual city-states) could apply SARS control measures uniformly across their populations. In comparison, both in Canada and the United States, public health law and authority generally is decentralized and state or provincial governments largely control public health response, even in emergencies.83 In the United States, for example, U.S. CDC generally defers to state and local health authorities regarding the implementation of quarantine.84 Even in a case of "bioterrorism" (for which it claims lead responsibility), the United States federal government has intended to play a mostly supportive role in dealing with the public health results.85

Duplicating governmental structures found in Singapore or Hong Kong in the United States or Canada is neither feasible nor desirable. But the inherent weaknesses (from an emergency public health preparedness point of view) of modern, western federal systems must be addressed. Local, state or provincial governments in federal systems may be unaccustomed to acting under conditions of public health emergency requiring coordinated approaches. In the Province of Ontario, for example, authorities experienced confusion over which entities were in charge of the SARS outbreak response.86 Canada's National Advisory Committee on SARS and Public Health, in reviewing the condition of public health law relevant to health emergencies across the Canadian provinces and territories, recently recommended that harmonization be explored.87 It also suggested "consideration should be given to a federal health emergencies act to be activated in lockstep with provincial emergency acts in the event of a pan-

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82. See *U.S. General Accounting Office*, supra note 80, at 28 (noting concern among state and local agencies about use of federal funds).


87. *Id.*
Canadian health emergency."

All nations must take the opportunity presented by SARS' sudden emergence to learn lessons in public health law and governance from the experience of neighbors. As recently as April 2003, for example, the United States General Accounting Office reported that "[a]lthough progress was made on local planning, regional planning involving multiple municipalities, counties or jurisdictions in neighboring states or a neighboring county lagged ... some states lacked sufficient coordination with their neighboring states and ... had not participated in joint response planning." Local jurisdictions have expressed concern over a lack of technical guidance in achieving "preparedness." Perhaps more alarmingly, during a recent highly-scripted, multi-jurisdictional, civilian bioterrorism exercise, United States local, state, and federal agencies (1) were unable to agree on the meaning of federally instituted "threat levels," (2) experienced difficulty sharing information between agencies, (3) exhibited uncertainty over chain of command issues, and (4) found governmental procedures unclear. No federal scheme of legislation currently exists paralleling that described by Health Canada, though the United States faces a very similar challenge. United States public health law reform is still being conducted state-by-state, with varying results, two years after the anthrax attacks of October 2001; initiatives such as the Model State Emergency Health Powers Act and the Turning Point Model State Public Health Act are necessarily limited in their ability to provoke change or increase uniformity across independent jurisdictions. As the global spread of SARS illustrates, nations failing to update their public health law infrastructures to facilitate disease control put the entire global community at risk.

C. Adequate legal, logistical, and financial preparations

Governing authorities in Singapore, Hong Kong, and Canada each furnished, to varying degrees, financial and material support to quarantined populations. Interestingly, in Beijing, China, it is reported that only some employers continued to pay salary to quarantined individuals (though all were provided food and medicine). Societies attempting to follow democratic principles and utilizing disease control measures such as quarantine and isolation must recognize the extraordinary responsibility necessarily undertaken by governments employing these measures. As acknowledged by the Canadian government, "[a]pplying the principle of reciprocity, society has a duty to

88. Id. at 177.
89. U.S. GENERAL ACCOUNTING OFFICE, supra note 80, at 5.
90. Id. at 28.
93. Gostin, supra note 83.
95. See, e.g., Ou, supra note 2, at 1038 (describing the care of quarantined individuals in Beijing's Haidon district).
provide support and other alternatives to those whose rights have been infringed under quarantine.\textsuperscript{96} Singapore, the Hong Kong Special Administrative Region, and Canada each recognized this duty. In nations which have only incompletely addressed this problem, quarantine and isolation regulations should legally require confined persons to be provided with: (1) safe, habitable, and medically appropriate housing during confinement, (2) necessary food, clothing, and medical care, (3) means of communication with family, friends, and personal representatives, (4) necessary social services (e.g., childcare and mental health services), (5) appropriate legal review; and (6) protection from adverse social and economic consequences, such as lost income or employment or insurance discrimination during confinement. Major legislative efforts may be required now (not during or after an emergency) in many nations to determine certain and appropriate allocations of financial, material, and programmatic responsibility for public health disease control strategies between multiple governmental authorities.

V. CONCLUSION

All governments around the globe will continue facing the threat of emerging or reemerging infectious diseases,\textsuperscript{97} rendering the consideration of legal and practical issues behind public health preparedness of continuing importance. Experience with SARS indicates that national or regional governments find personal control measures necessary and will resort to them when faced with dangerous, widespread, contagious diseases.\textsuperscript{98} International experience suggests that responsible governments must undertake efforts to enhance public health preparedness in law for the benefit of their own and other nations' citizens. While the balances struck between individual rights and the common good in any given society necessarily depend on the unique political culture and scope of the emergency, when most modern societies rely on compulsory personal control measures for disease containment, they must turn to rational, robust public health law systems. Overcoming public health's structural weaknesses in many modern societies requires that greater effort be devoted to the creation of comprehensive public health infrastructures for emergency response, uniform public health legislative schemes, and national public health emergency practice plans – providing for the imposition of personal control measures only when necessary balanced by appropriate legal safeguards and full logistical support for the care of affected individuals.

\textsuperscript{96} HEALTH CANADA, supra note 67, at 178.


\textsuperscript{98} CENTERS FOR DISEASE CONTROL AND PREVENTION, supra note 84; M.L. Lee et al., Use of Quarantine to Prevent Transmission of Severe Acute Respiratory Syndrome – Taiwan, 2003, 52 MMWR WEEKLY 680, 680-82 (July 25, 2003), available at http://www.cdc.gov/mmwr/PDF/wk/mm5229.pdf.
Table 1. Chronology of Selected Responses to SARS Outbreaks by WHO, Hong Kong, Singapore, Toronto, and the United States, February 2003 to June 2003.

<table>
<thead>
<tr>
<th>Date</th>
<th>WHO</th>
<th>Hong Kong</th>
<th>Singapore</th>
<th>Toronto, Canada</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/03</td>
<td></td>
<td>Intensified surveillance for severe pneumonia following disclosure of the Guangdong outbreak.¹</td>
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<tr>
<td>3/10/03</td>
<td></td>
<td>First cluster of SARS cases reported in a local hospital. (3/10/03)²</td>
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<tr>
<td>3/12/03</td>
<td></td>
<td>Ministry of Health recommends isolation and infection control measures be used in hospitals. (3/6/03)³</td>
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<tr>
<td>3/13/03</td>
<td></td>
<td>Ministry of Health issues a travel advisory. (3/14/03)⁴</td>
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<tr>
<td>3/14/03</td>
<td></td>
<td>Ministry of Health Task Force formed; assists in the hospital admission of a Singaporean resident traveling from New York to Singapore via Germany. (3/15/03)⁵</td>
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<tr>
<td>3/15/03</td>
<td></td>
<td>Activated Emergency Response Center. (3/14/03)⁶</td>
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<tr>
<td>3/14/03</td>
<td></td>
<td>Issued interim guidance to local and state health departments for enhanced SARS surveillance; health alert to hospitals and clinics; travel advisories for Hong Kong, Guangdong and Hanoi. (3/15/03)⁷</td>
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<tr>
<td>3/15-25/03</td>
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<td>CDC quarantine officials meet more than 50 flights arriving from Hong Kong SAR, China and other affected Southeast Asia areas. (3/15-25/03)⁸</td>
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<tr>
<td>Date</td>
<td>WHO</td>
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<tr>
<td>3/16/03-</td>
<td>Hundreds of cases in Hong Kong, several dozen in Singapore and Vietnam; isolation recommended for suspected SARS cases. (3/24/03)</td>
<td>SARS added to the Hong Kong Quarantine and Prevention of Disease ordinance (3/27/03)</td>
<td>SARS is made a notifiable infectious disease under the Infectious Disease Act. (3/17/03)</td>
<td>Advised postponing travel to Asia. (3/25/03)</td>
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<tr>
<td>3/31/03</td>
<td></td>
<td>Quarantined contacts of SARS patients. (3/27/03)</td>
<td>Ministry of Education is told to isolate children and teachers with fever and travel history for a 10 day period. (3/21/03)</td>
<td>Closed Toronto-area hospitals. (3/23-28/03)</td>
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<td></td>
<td>Required that travelers to Hong Kong complete health declaration forms. (3/29/03)</td>
<td>Home quarantine mandated under Infectious Disease Act for contacts of SARS patients. Hospitals closed to visitors. (3/24/03)</td>
<td>Declared a public health emergency in Ontario, resulting in an order for self-quarantine for thousands of residents. (3/26/03)</td>
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<td></td>
<td></td>
<td>Isolated all residents of Amoy Garden apartments Block E. (3/31/03)</td>
<td>All schools, junior colleges, madrasahs, and childcare centers closed until April 6, 2003. (3/27/03)</td>
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<td>Controls imposed on all passengers arriving or departing by air, including questionnaires and assessments. (3/30/03-4/9/03)</td>
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<td>Date</td>
<td>WHO</td>
<td>Hong Kong</td>
<td>Singapore</td>
<td>Toronto, Canada</td>
<td>United States</td>
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<td>4/01/03-</td>
<td>**First advice to postpone travel to</td>
<td>Relocated residents of Amoy Garden apartments Block E to isolation camps</td>
<td>Home Quarantine Orders enforced by Singapore security agency (CISCO). Electronic</td>
<td>Took legal action to force two individuals to comply with quarantine orders; resorted to other legal measures for violations of isolation orders. (4/2/03)</td>
<td>Quarantine of American Airlines flight in San Jose (local action). (4/1/03)</td>
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<td>4/15/03</td>
<td><strong>Hong Kong and Guangdong. (4/2/03)</strong></td>
<td>pending epidemiologic investigation. (4/1/03)</td>
<td>picture cameras installed in homes to monitor compliance with Home Quarantine Orders. (4/10/03)</td>
<td>(4/2/03)</td>
<td>WHO issues travel advisory for Hong Kong. (4/2/03)</td>
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<td>**First recommendation for active, 10 day</td>
<td>WHO issues travel advisory for Hong Kong. (4/2/03)</td>
<td>(4/1/03)</td>
<td>Quarantined 200 workers at a Hewlett-Packard factory following breach of quarantine by a SARS-infected worker. (4/9/03)</td>
<td>Issued interim case definition; issued travel advisories for Hong Kong and Guangdong Province; issued notices to travelers inbound from affected areas; developed interim infection-control guidelines for healthcare settings. (4/4/03)</td>
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<td>surveillance (voluntary quarantine) for</td>
<td>Required all household contacts of SARS patients to remain in mandatory home</td>
<td>Close contacts of SARS patients refused permission to leave Hong Kong during their 10 day confinement period. (4/14/03)</td>
<td>Approximately an additional 500 people are quarantined following contact with suspected SARS cases. (4/14/03)</td>
<td>Quarantine of recalcitrant foreign tourist in New York (local action). (Early)</td>
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<td>probable SARS' cases’ contacts and</td>
<td>confinement - with monitoring, treatment, and compliance verification - up to 10</td>
<td>(4/4/03)</td>
<td>(4/15/03)</td>
<td>(4/1/03)</td>
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<td>passive, 10-day surveillance for</td>
<td>days. (4/10/03)</td>
<td>(4/1/03)</td>
<td>(4/15/03)</td>
<td>(4/1/03)</td>
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<td></td>
<td>suspected SARS' cases’ contacts. (4/11/03)</td>
<td>Close contacts of SARS patients refused permission to leave Hong Kong during their 10 day confinement period. (4/14/03)</td>
<td>(4/1/03)</td>
<td>(4/15/03)</td>
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<td><strong>Voluntary quarantine)</strong> for</td>
<td>(4/11/03)</td>
<td>(4/1/03)</td>
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<tr>
<td>4/16/03-</td>
<td>Travel advisories for Beijing, Shanxi</td>
<td>Compliance warning letters sent to 26 people regarding mandatory home</td>
<td>WHO lifts travel advisory for Toronto. (4/29/03)</td>
<td>Guidance for surveillance of healthcare workers and prevention of secondary transmission to close contacts. (4/18/03)</td>
<td>(4/1/03)</td>
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<tr>
<td>4/30/03</td>
<td>Province (China) and Toronto, Canada.</td>
<td>confinement of SARS contacts. All ultimately complied. (4/16/03)</td>
<td>(4/29/03)</td>
<td>(4/18/03)</td>
<td>(4/1/03)</td>
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<td>(4/23/03)**</td>
<td>All arriving travelers screened for elevated body temperature. (4/26/03)</td>
<td>(4/29/03)</td>
<td>(4/18/03)</td>
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<td><strong>Voluntary quarantine)</strong> for</td>
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<td>5/1/03-</td>
<td>Travel advisories for Tianjin and Inner Mongolia (China) and Taipei</td>
<td>Fifty-year-old man who violated Home Quarantine Order becomes first person</td>
<td>Toronto removed from list of areas with recent local transmission by WHO.</td>
<td>Issued outbreak control plan including travel alerts, advisories and notices.</td>
<td>Provided recommendations for infection control for passengers from affected areas (not quarantine).</td>
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<td>5/15/03</td>
<td>(China) (Taiwan). (5/8/03)</td>
<td>with violating the amended Infectious Disease Act. (5/4/03)</td>
<td>(5/14/03)</td>
<td>(5/2/03)</td>
<td>(5/14/03)</td>
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<td></td>
<td>(5/17/03)</td>
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<td>5/16/03-</td>
<td>Travel advisory for Hebei Province (China). (5/17/03)</td>
<td>WHO lifts travel advisory. (May 23, 2003)</td>
<td>WHO removes Singapore from list of areas with recent local transmission. (5/31/03)</td>
<td>After resurgence of SARS cases, approximately an additional 5,000 persons are quarantined under threat of hospital confinement. (5/29/03)</td>
<td>Reissued Toronto travel alert. (5/28/03)</td>
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<td>(5/31/03)</td>
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<td>6/1/03-</td>
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<td>Man placed in involuntary isolation in a San Francisco hospital following violation of his agreement to remain in voluntary isolation. (local action). (6/6/03)</td>
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<td>6/15/03</td>
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<td>(6/6/03)</td>
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3. Id.
7. Id.
8. Id.
10. Id.
11. Press Release, Center for Disease Control & Prevention, CDC Issues Health Alert Notice for Travelers to USA from Hong Kong, Guangdong Province and Hanoi (March 17, 2003), available at http://www.cdc.gov/od/oc/media/pressrel/030317.htm.
15. SARS EXPERT COMMITTEE, supra note 5, at 215.
16. Id. at 216.
20. Id.
21. Id.
22. Id.
23. Id.
29. SARS EXPERT COMMITTEE, supra note 5, at 220.
32. Press Release, supra note 17.
34. Id.
42. Id.
43. Hong Kong Department of Health, supra note 31.
44. Press Release, supra note 17.
48. Id.
49. Id.
54. SARS EXPERT COMMITTEE, supra note 5, at 237.