CHAPTER 3

THE 2003 SARS OUTBREAK IN CANADA: LEGAL AND ETHICAL LESSONS ABOUT THE USE OF QUARANTINE

Nola M. Ries

It is not surprising that the advent of a frightening, seemingly new public health menace has prompted consideration of coercive measures. Throughout history, plagues have been met with restrictions upon individual liberties. (Parmet, 2003, p. 95)

INTRODUCTION

The 2003 global outbreak of Severe Acute Respiratory Syndrome (SARS) was an abrupt reminder that infectious diseases pose a continuing threat to human health. In 1967, U.S. Surgeon General William H. Stewart declared “it was time to close the book on infectious diseases” (Garrett, 1994, citing W.H. Stewart, “A Mandate for State Action,” presented at the Association of State and Territorial Health Officers, Washington, DC, December 4, 1967). In the latter half of the twentieth century, many shared this bold view that medical science had vanquished infectious disease. As a result, public health struggled to remain relevant in the face of advances in pharmaceuticals, surgery, genetics and other areas that were becoming increasingly dominant in the quest to extend and enhance human life. SARS forced many to rethink the significance of public health and the crisis, though...
relatively short-lived, (for commentary on the disparities between the responses to HIV and SARS, see e.g. Altman (2003)) underscored the need to rebuild public health capacity that had been allowed to slip down the health system priority list.

Outside Asia, Canada was the country hardest hit by SARS. The outbreak took 44 lives, threatened many others and created numerous challenges for public health officials and for the acute health care system. In particular, SARS highlighted serious deficiencies in public health infrastructure and preparedness. As in other countries, officials in Canada were required to weigh and implement various interventions to control the spread of the disease, including quarantine.

In this chapter, I provide a legal and ethical discussion of the use of quarantine to control infectious disease outbreaks, using the Canadian experience with SARS as a case example. Quarantine represents the archetypal conflict that confronts public health: the tension between society’s dual interests in safeguarding individual liberty while protecting and promoting the health of its citizens. I identify legislative authority for imposing quarantine on individuals and discuss limits on its use. Although the law may confer broad authority on public health officials to impose measures like quarantine, I argue those officials ought to be guided by ethical principles in considering when to use coercive powers that abrogate individual liberties. To this end, I discuss ethical frameworks to guide and inform public health decision making. Finally, I comment on quarantine’s impact on individuals, including psychological and economic impacts as well as its effect on the health care system.

SARS IN CANADA: A BRIEF CHRONOLOGY

SARS emerged in China in November 2002. The disease traveled to Canada in late February 2003 when an elderly woman who acquired the disease in Hong Kong returned to her home in Toronto, Ontario, Canada’s most populous metropolitan area with approximately 4.6 million people. She died 10 days after her return. Two days later, her 44-year-old son went to the emergency department of a major Toronto hospital, exhibiting high fever, a severe cough and difficulty in breathing – symptoms that a couple of weeks later would trigger alarm bells as a potential SARS case, but, at the time, health care workers did not know what confronted them. While awaiting admission, the man remained in an open area of a busy emergency department for 18–20 hours. This delay in admitting and isolating him was due, in
part, to hospital overcrowding. Many patients and staff were exposed to the man before he was isolated. This patient died a week later. By then, public health officials realized that the mysterious disease outbreak in Asia had gained a foothold in Canada.¹

SARS began to spread to patients, health care workers and visitors in several hospitals in the Toronto area. Hospitals at the epicenter of the outbreak began closing emergency and intensive care services and refused new admissions. By late March 2003, the Ontario government amended its public health statute, the *Health Protection and Promotion Act*, to classify SARS as a reportable, communicable disease. With the addition of SARS to the statute, public health officials could trace infected individuals and their contacts and use measures, including quarantine, to try to limit the spread of disease.

On March 26, 2003, the Ontario government declared a provincial state of emergency under the *Emergency Management Act (1990)*. The government then ordered all hospitals in the Greater Toronto area to activate “Code Orange” emergency plans that required them to suspend non-essential services, restrict visitors, and create isolation units for SARS patients. Several days later, all hospitals in Ontario were required to implement access restrictions. In short,

> [t]he hospital milieu changed abruptly in late March. A command structure was put in place in the hospital and public health directives from the province enacted authoritatively. Physical access to the hospital was restricted to a single entrance. [Those] whose work was deemed non-essential were told to stay at home. Visitors were not allowed, with some exceptions. Surgical procedures and outpatient appointments were cancelled. The cafeteria was closed ... infection control procedures took precedence over almost all other aspects of hospital function. (Maunder, 2004, p. 1118)

Quarantine was used extensively during the outbreak, with tens of thousands of individuals observing quarantine. For example, anyone who had visited certain hospitals during specific time periods was asked to observe quarantine. One thousand and seven hundred high school students were quarantined after one student at the school became ill. In most cases, individuals complied with quarantine on a voluntary basis, but public health officials sought legally enforceable quarantine orders in a small number of cases. Svoboda et al. (2004) note that over 13,000 Toronto residents voluntarily complied with quarantine, and the city’s public health department had to resort to mandatory orders in only 27 cases. This accounted for just 0.1% of individuals in the metropolitan region requiring quarantine.

In contrast with other countries where quarantine was enforced more oppressively, in Canada, individuals were not threatened with imprisonment
or execution, as was the case in China (Mitka, 2003). In Canada, there were no barricades and tape to seal people inside buildings as occurred in Hong Kong (Mandavalli, 2003). There was no issue of electronic wrist tags as in Singapore and no contracting of security companies to install surveillance cameras.

Many health care workers in the Toronto region were quarantined. "Work quarantine" also was imposed, which required health workers to travel directly between work and home without using public transit and without stopping at any other destination. They also had to separate themselves from family members while at home, wear masks when in contact with others in their household, and not have visitors. Over half of Toronto’s 850 paramedics ended up under 10-day home quarantine during the outbreak (Silverman, Simor, & Loufty, 2004). In total, Canada had 438 cases of SARS; 251 of those were probable and 187 suspected. Ultimately, 44 people died from the disease.

**A BRIEF HISTORY OF QUARANTINE**

Quarantine is one of the oldest public health tools, used by authorities to quell the spread of disease long before microscopic agents were understood as the source of contagion (Sehdev, 2002; Clemow, 1929). Its roots are in the quarantine of shipping vessels, primarily to prevent spread of contagion via infested cargo and persons. One commentator notes that

> quarantine practices have long been notorious for their ill-treatment of and cruelty to travelers. For centuries, travelers faced involuntary isolation based on arbitrary regulations and irrational fears in often unhealthy, degrading conditions, sometimes reinforced by the threat of execution. (Fidler, 2000, p. 289)

Indeed, quarantine has a history of being imposed with a heavy hand by officials motivated by fear and prejudice rather than medical fact. In 1900, after the body of a bubonic plague victim was discovered in San Francisco’s Chinatown, the U.S. President ordered quarantine of all Chinese and Japanese residents of the city based, in part, on "the notion that Asians were particularly susceptible to plague because of their dietary reliance on rice rather than animal protein" (Edelson, 2003, p. 2874).

Further evidence of questionable attitudes toward and uses of quarantine emerged in the earlier years of the HIV pandemic. American public opinion polls in the 1980s revealed that "28 to 54 percent of the respondents favored ‘quarantine’ of people with AIDS in ‘special places to keep them away from the general public’" (Gostin & Zeigler, 1987, p. 11).
The nation of Cuba did, in fact, institute mandatory quarantine for HIV-positive persons between 1986 and 1994, but “no systematic epidemiological studies of HIV infection in Cuba have been published that would clarify the relative effects of quarantine” and other measures (Hansen & Groce, 2003, p. 2875). There is no evidence that quarantine was applied in a discriminatory manner in Canada during the 2003 SARS outbreak. In fact, those who were asked to observe quarantine represented a wide cross-section of the population and individuals disadvantaged by poverty, race or disability were not disproportionately represented. One survey of over a hundred Torontonians who were in quarantine revealed that 72% had a college education or higher and 48% had an annual household income of more than C$75,000 (Hawryluck et al., 2004). Although the sample size was relatively small, these findings were not surprising considering that health care workers comprised a large number of people who observed quarantine. Nonetheless, the lessons of history remain instructive to ensure that past prejudices are not repeated.

**LEGISLATIVE AUTHORITY FOR QUARANTINE IN CANADA**

The Canadian Constitution divides authority over various subjects between the federal government and provincial governments (Constitution Act, 1867). The provinces have primary authority over health care, though the federal government exercises some authority in the health sphere through its spending powers (i.e. the ability to tax citizens and redistribute funds to provincial governments for health-related programs), criminal law power, and “peace, order and good government power,” which authorizes the federal government to act during times of national emergency (Jackman, 2000). The federal government also has explicit constitutional authority to quarantine persons and conveyances (such as airplanes and shipping vessels) entering and leaving the country. While provincial governments have authority to impose quarantine within provincial borders, the federal government’s quarantine powers are concerned with the international movement of people and goods. Both federal and provincial quarantine powers came into play during the 2003 SARS outbreak.

The federal Quarantine Act and regulations authorize the government of Canada to appoint quarantine officers who may detain and assess individuals entering and leaving the country who are suspected of having a contagious disease listed in the regulations (cholera, plague, smallpox and
yellow fever) or any other dangerous disease (Quarantine Act, 1985, Sections 8, 11). A “dangerous disease” is defined as one whose introduction to Canada “would, in the opinion of the quarantine officer concerned, constitute a grave danger to public health in Canada” (Quarantine Act, 1985, Section 2). Persons who are quarantined may appeal their detention to the federal Deputy Minister of Health or the Deputy’s designate (Quarantine Act, 1985, Section 9, 1368). Officers may also hold and inspect conveyances suspected of carrying persons or cargo that may be infected.

In June 2003, the Canadian government amended the Quarantine Act regulations to add SARS to the list of contagious diseases. The incubation period of SARS was described as 20 days, meaning a quarantine officer could detain a person suspected of having SARS up to that period of time. In its public notices about amendments to the Quarantine Act, the federal government acknowledged that the World Health Organization recommended a quarantine period of 10 days and advised that quarantine officers would take that recommendation into account if an order had to be made. At the provincial level in Ontario, individuals were asked to observe a 10-day period of quarantine. Fortunately, during the outbreak, no federal quarantine officer faced a situation requiring the issuance of a quarantine order against an individual (Health Canada Fact Sheet, 2003). At the Vancouver International Airport, federal health officials relied on the Quarantine Act to detain an aircraft for decontamination because one passenger had SARS-like symptoms.

Various criticisms have been directed at the adequacy and effectiveness of the Canadian response at airports. First, in 2002, the year prior to the SARS outbreak, the federal government transferred airport quarantine duties to customs officials with no special training to carry out those responsibilities (National Advisory Committee, 2003, p. 205). When the SARS outbreak occurred, “quarantine officers were quickly overextended and eventually needed additional assistance” to carry out their duties (National Advisory Committee, 2003, p. 205). Additionally, early in the outbreak, before the cause of SARS was known, federal health officials could not provide definitive decontamination protocols for aircraft, cruise ships or other conveyances.

Thermal scanning devices were deployed at the international airports in Toronto and Vancouver to screen for passengers with high temperature. Of approximately 2.4 million air travelers, 832 were identified as requiring further assessment due to high temperature. None had SARS (National Advisory Committee, 2003, p. 206). Some have questioned the utility of large-scale thermal scanning. In a thorough review of the epidemiology,
transmission and control of SARS, Anderson and colleagues (2004) note that “the effectiveness of temperature screening at points of entry and exit as a control measure to limit between-country transmission is uncertain at present” (Anderson et al., 2004, p. 1104).

In the wake of the SARS experience, the National Advisory Commission recommended the federal government ought to ensure that

fully trained and informed quarantine officers should be available at airports [and other ports of entry] to deal with health threats, to provide information to and educate airport staff, customs officials, and airline personnel concerning the recognition of illness and measures to be taken to contain risk.” (National Advisory Committee, 2003, p. 207)

Before the SARS outbreak occurred, the Canadian government was in the process of reviewing its public health legislation, including the Quarantine Act. The emergence of SARS spurred the government to expedite legislative reform of the quarantine law, which was first enacted in 1872. In May 2004, the federal Minister of Health introduced a modernized statute in the Canadian Parliament, titled “An Act to prevent the introduction and spread of communicable diseases” (Bill C-36). This law is aimed at focusing greater emphasis on air travel, the modern mode of global disease spread (Health Canada News Release, 2004). The revised legislation also has a more extensive list of contagious diseases (which includes active pulmonary tuberculosis, anthrax, diphtheria, measles and poliomyelitis) and empowers the federal government to go so far as to close Canadian entry points to arrivals from a jurisdiction with an infectious disease outbreak. The federal government acknowledges that this would be “an extreme measure” (Health Canada News Release, 2004).

In introducing the revised quarantine legislation in the Canadian Parliament, the Minister of State for Public Health remarked that the Quarantine Act was first drafted at

a time when automobiles and jetliners were the stuff of science fiction. Needless to say, times have changed. We live in an age when people move from continent to continent in hours and days rather than weeks or months, often in airplanes and ships whose confined spaces provide a perfect breeding ground for highly communicable diseases to spread. Infectious diseases move like wildfire across the planet today. Diseases do not respect borders, so we know that we will face repeated threats to public health in the future. Among the hard lessons learned from the experience of SARS is the need to strengthen our quarantine legislation to help prevent the introduction and spread of both emerging and re-emerging communicable diseases (Hansard, 2004).

The proposed legislation must be reviewed by a parliamentary committee on health and then be approved by the Canadian House of Commons and Senate before being proclaimed into law.
Each province and territory in Canada has public health legislation that establishes the powers of public health officials to carry out various functions including communicable disease control. This encompasses the authority to issue isolation and quarantine orders. In the province of Ontario, the *Health Protection and Promotion Act* empowers a medical health officer to order a person who is or may be infected with a communicable disease to “isolate himself or herself and remain in isolation from other persons”; otherwise “conduct himself or herself in such a manner as not to expose another person to infection”; undergo a medical examination; and submit to necessary treatment (*Health Protection and Promotion Act*, 1990, Section 22(4)). The medical health officer may issue such an order if she or he has reasonable and probable grounds to believe three conditions exist: (1) “a communicable disease exists or may exist or that there is an immediate risk of an outbreak of a communicable disease”; (2) “the communicable disease presents a risk to the health of persons”; and (3) “the requirements specified in the order are necessary in order to decrease or eliminate the risk to health presented by the communicable disease” (*Health Protection and Promotion Act*, 1990, Section 22(2)).

The *Health Protection and Promotion Act* was amended during the 2003 SARS outbreak to specify that an order may be directed at an individual or a class of persons [Section 22 (5.0.1), amended, 2003, Chapter 1, Section 15(1)]. This amendment was critical to enable public health officials to deal with situations involving hundreds or thousands of people who may have been exposed to an infectious disease, such as 1,700 high school students. The statutory amendment stipulates that notice may be communicated through the media or other public mechanism when the delay involved in notifying persons individually is “likely to cause a delay that could, in the opinion of the medical officer of health, significantly increase the risk to the health of any person” (Section 5.0.3).

Under Ontario’s statute, a medical health officer must inform individuals subject to a quarantine order of their right to a hearing before the Health Services Appeal and Review Board, an administrative tribunal composed of 12 members appointed by the government (*Ministry of Health Appeal and Review Boards Act*, 1998). The individual must request a hearing in writing within 15 days of receiving notice of an order. In turn, the Board is obliged to hold a hearing within 15 days of receiving a hearing request and has authority to uphold, vary or rescind the order (Section 44).

Despite efforts to safeguard the rights of those who are subject to quarantine orders, some legislative gaps and shortcomings are apparent. For instance, though individuals typically have a right to appeal an order, this
protection may be illusory in many cases. A person may be ordered to
observe quarantine for a period of 10 or 15 days from the date of the notice.
Under Ontario’s legislation, the order takes effect immediately, even if the
person subject to the order evinces an intention to appeal the order [Section
44 (3)]. After the Health Services Appeal and Review Board receives the
notice of hearing, the Board has discretion to suspend the quarantine order,
but is not bound to do so. By the time the Board hears the appeal, the
matter may well be moot since the quarantine period will likely have passed.

In addition, Ontario’s legislation and the federal Quarantine Act are silent
with regard to obligations to assure acceptable detention conditions for
persons under quarantine outside their homes. Model emergency health
powers legislation developed by public health legal experts in the United
States provides a template for legislative authority during an event such as
an infectious disease outbreak (Gostin et al., 2002). This legislation explic-
itly addresses responsibilities of public health officials toward individuals
who must comply with mandatory quarantine orders. For example, if an
individual must wait out the quarantine period in a location other than her
or his home, authorities must ensure those premises are safe and hygienic
and provide individuals with necessities such as food, clothing, medication
and means to communicate with the outside world. In addition, the model
U.S. legislation provides for expedited judicial review of quarantine orders
and entitles individuals to legal representation. Such legislative protections
advance principles of fairness, due process and respect for persons.

LEGAL CHALLENGES TO QUARANTINE ORDERS

Quarantine orders may be challenged on various legal grounds, but I focus
briefly here on constitutional challenges under the Canadian Charter of
Rights and Freedoms (1982) (the “Charter”). The Charter, which became
part of Canada’s Constitution in 1982, guarantees a number of fundamental
rights with which the state cannot unjustifiably interfere. Quarantine orders
may infringe on various rights protected under the Charter, including the
freedom of assembly and association (Section 2), mobility rights (Section 6),
rights to liberty and personal security (Section 7), freedom from arbitrary
detention (Section 9), freedom from cruel and unusual treatment (Section 9),
and equality rights (Section 15).

The most likely constitutional basis for challenging a quarantine order is
Section 7 of the Charter, which states “Everyone has the right to life, liberty
and security of the person and the right not to be deprived thereof except in
accordance with principles of fundamental justice.” Section 7 protects against unreasonable, state-imposed restraints on liberty as well as government action that imposes severe psychological stress (New Brunswick v. JG., 1999; Blencoe v. British Columbia, 2000).

Charter rights are not absolute and may be justified under Section 1 of the Charter, which states:

The Canadian Charter of Rights and Freedoms guarantees the rights and freedoms set out in it subject only to such reasonable limits prescribed by law as can be demonstrably justified in a free and democratic society.

Under Section 1, the state may justify a Charter violation by convincing a court of four points: its action was based on a pressing and substantial concern; its goal was rationally connected to the limitation imposed on an individual’s rights; the limitation impairs the individual right in a minimal fashion; and there is proportionality between the benefits of the limitation and its harmful impact (R. v. Oakes, 1986).

The key challenge under Section 1 is to balance the rights of individuals with the competing interests of society as expressed through government action. A former Chief Justice of the Supreme Court of Canada has advised that “[i]t may become necessary to limit rights and freedoms in circumstances where their exercise would be inimical to the realization of collective goals of fundamental importance” (R. v. Oakes, 136). The Supreme Court of Canada has further instructed that in justifying a limitation on a Charter right, the government need not provide “scientific demonstration”; rather, it can defend its actions “by the application of common sense to what is known, even though what is known may be deficient from a scientific point of view” (RJR-MacDonald Inc. v. Canada (Attorney General), 1995, para. 137). Clearly, in implementing control measures during the early stages of a novel disease outbreak, public health authorities will often lack scientific facts and must make judgment calls about restricting individual liberties in the name of protecting the population as a whole.

Despite this general guidance as to how Charter infringements may be justified, there is little Canadian jurisprudence directly addressing potential constitutional violations in the public health context. Consequently, Canada does not have a corpus of legal rulings that instruct how to apply specific Charter rights and the Section 1 justification test in regard to public health interventions. This contrasts with the United States, where courts have given specific instruction as to how to balance competing interests at stake in public health. For example, it has been noted that
The judge must defer to public health authorities on their choice of public health strategies. Public health orders get the most permissive judicial review because they are based on objective criteria, are usually of limited duration, and are necessary to prevent imminent harm. (Richards & Rathbun, 2004, p. 356; Gostin, 2000)

In two cases where courts have balanced claims of individual Charter rights against a broader public health interest, the latter has prevailed. The 1995 Ontario court decision in Canadian AIDS Society v. Ontario involved HIV testing of stored blood that had been donated some 11 years previously. When the blood was collected from the donors between 1984 and 1985, they were not advised that the blood would be tested for HIV as no such testing capacity existed at that time. When testing became available, the Canadian Red Cross Society tested the stored samples to trace any recipients of contaminated blood. Twenty-two HIV-positive donors were identified; nine of whom had previously been identified, leaving 13 remaining donors. The issue that arose in this case was whether the Red Cross should notify the donors and report them to the Province of Ontario in accordance with the Health Protection and Promotion Act. The Canadian AIDS Society objected to donor notification and reporting on the basis that the donors had not consented to testing their blood for HIV, and notification and reporting would violate the donors’ privacy rights.

The Court accepted that Section 7 of the Charter may be interpreted to recognize a blood donor’s privacy interest in regard to personal information revealed through testing their blood samples. However, the Court went on to rule that the public interest in mandatory reporting of HIV cases to public health authorities outweighed the individual donors’ privacy interests. The Court noted that “although due consideration will be given to the privacy rights of individuals, the state objective of promoting public health for the safety of all will be given great weight” (Canadian AIDS Society v. Ontario, 1995, para. 133).

In 2002, a court in Ontario applied similar logic in adjudicating a Charter challenge by a tuberculosis patient who was under detention for treatment (Toronto (City, Medical Officer of Health) v. Deakin). The patient, who had consented to a four-month detention and treatment order by the medical health officer, challenged a four-month extension to the order that health professionals believed was necessary to control his tuberculosis. The patient, who had been physically restrained during several violent outbursts and was routinely restrained during “smoke breaks” to prevent escape (which he had done once to buy beer), argued the restraints and continued detention violated his constitutional liberty rights. In a brief judgment, the Court
accepted his rights were violated, but concluded the infringement was justified under Section 1 of the Charter. The Court stated:

What was done to [the patient] was carried out for the protection of public health and the prevention of the spread of tuberculosis, a disease that [a medical specialist] described as extremely contagious. [The patient] is in the early stages of the disease, it is eminently treatable now, but will become less responsive and more virulent if not treated. *(Toronto (City, Medical Officer of Health) v. Deakin, 2002, para. 26)*

Despite the dearth of Canadian constitutional jurisprudence in the public health context, it appears that courts will recognize the need to balance competing interests and will likely give deference to public health officials who must act during times of uncertainty and possible emergency. Only in situations involving arbitrary or unreasonable exercise of public health powers are courts likely to find a breach of rights protected under the Canadian Charter of Rights and Freedoms.

**ETHICAL PRINCIPLES IN PUBLIC HEALTH ACTION**

Lawrence Gostin, a leading public health law expert, counsels that “[i]n a democratic society, coercive [public health] powers should be carefully justified. We have to balance the public health interests of society against the freedom of the individual” *(Gostin, 2002, p. 415)*. Indeed, while the law may give sweeping powers to public health officials, those officials ought to weigh ethical considerations in deciding what public health interventions are justified in particular situations.

The field of public health ethics, compared to clinical ethics, is relatively nascent. Only in the past several years have theorists attempted to formulate ethical frameworks for the justification of public health interventions *(Kass, 2001; Callahan & Jennings, 2002; Uphsur, 2002)*. In the wake of the SARS outbreak, specific efforts have been made to identify ethical principles relevant to infectious disease outbreaks *(Singer et al., 2003; Gostin et al., 2003)*. *Callahan and Jennings* *(2002)* note that public health is one of few professions backed by the coercive power of the state; the legal authority of public health officials to impose quarantine is one relevant example. They contend that,

*[b]ecause of its public and governmental roles, public health has ethical problems unlike those of most other professions. The relationship between ethics and law is a long and tangled one, but it is safe to say that most public health laws and regulations have behind them an explicitly moral purpose: that of promoting and protecting the lives of citizens.* *(Callahan & Jennings, 2002, p. 173)*
Kass (2001) also situates the need for a public health ethics framework in the coercive nature of many public health interventions:

Indeed, it is in great part because such power is vested in public health by law that a code or framework of ethics designed specifically for public health is so very important. The need for a code of ethics for public health, then, might be viewed as a code of restraint, a code to preserve fairly and appropriately the negative rights of citizens to noninterference. (Kass, 2001, p. 1777)

Clearly, a number of ethical values come into play in the public health response to outbreaks of infectious diseases like SARS. Members of the Joint Centre for Bioethics at the University of Toronto have enumerated the following as ten key values: individual liberty; protection of the public from harm; proportionality; reciprocity; transparency; privacy; protection of communities from undue stigmatization; duty to provide care; equity; and solidarity (Singer et al., 2003). Gostin, Bayer, and Fairchild (2003) detail similar values. They cite the precautionary principle as central to public health ethics, which requires that steps be taken to protect the public against reasonably foreseeable threats, even in a climate of medical and scientific uncertainty. They emphasize principles of “least restrictive alternatives,” justice, and transparency, within which are subsumed concerns with individual liberty, fairness, privacy and due process.

Kass (2001) suggests a six-step framework to guide public health officials in choosing an ethically-sound course of action by evaluating the various options available to them. She argues first that the goals of a public health intervention must be identified. In the context of quarantine, the purpose is to limit the spread of an infectious disease by segregating those who may carry the disease from uninfected individuals. Next, officials ought to evaluate the effectiveness of an intervention in achieving its goals. Quarantine clearly will not be effective in reducing spread of a disease that is not transmissible by ordinary community contact. Kass states that “[t]he question for policy and ethics analysis, then, is what quantity of data is enough to justify a program’s implementation? As a rule of thumb, the greater the burdens posed by a program the stronger the evidence must be to demonstrate that the program will achieve its goals” (Kass, 2001, p. 1778).

Public health officials must also weigh the burdens or harms the intervention may place on individuals. Quarantine restricts individual liberty by limiting freedom of movement, and imposes various psychosocial burdens that I discuss in greater detail below. As the fourth step in the analysis, it is important to consider whether the burdens of an intervention can be minimized while retaining its efficacy. As Kass (2001) points out: “If 2 options
exist to address a public health problem, we are required, ethically, to choose the approach that poses fewer risks to other moral claims, such as liberty, privacy, opportunity and justice. Making this assessment relies on the existence of sound data” (p. 1780). As well as being more ethically defensible, a less restrictive intervention is also more likely to withstand legal challenge.

The penultimate step in Kass’ framework requires assessing how to implement an intervention in a fair manner that does not unjustifiably discriminate against specific groups. As history reveals, quarantine has been imposed unfairly for inexcusable reasons. Finally, public health officials must consider whether the benefits of an intervention outweigh the burdens. Kass (2001) also acknowledges that, “public health ethics must emphasize positive rights as well…. Public health has affirmative obligations to improve the public’s health and, arguably, to reduce certain social inequities” (2001, p. 1777; emphasis in original).

In the specific context of large-scale quarantine, Barbera and colleagues (2001) argue public health authorities should address three key questions. First, does medical evidence indicate that quarantine is likely to be effective in limiting the spread of disease? Second, from a logistical perspective, can officials safely and effectively quarantine large numbers of people? Third, mirroring the last step of Kass’ framework, the adverse consequences of quarantine must be balanced against its potential benefits.

It is arguable that the wide-scale imposition of quarantine during the SARS outbreak in Canada, albeit mostly voluntary, was used excessively and, in some cases, would fail to pass the threshold question of being an effective measure to diminish disease transmission. Beijing and Toronto both quarantined around 30,000 people, but Beijing had 10 times as many SARS cases as Toronto: 2,500 compared to Toronto’s 250. The U.S. Centers for Disease Control and Prevention has suggested “that only a third of the 30,000 Beijing residents quarantined during the SARS outbreak faced significant risk of contracting [the disease because] only residents who came into direct contact with a symptomatic patient were later infected; those who cared for a SARS patient carried the highest risk” (Diamond, 2003, citing Centers for Disease Control and Prevention, 2003). So if Beijing used quarantine too often, then Toronto’s even greater use is perhaps subject to even more criticism.

It also may be contended that quarantine on this scale was unenforceable; indeed, research describes the inability of public health officials to contact individuals in a timely manner to advise them to observe quarantine. In Toronto, the Department of Public Health identified over 23,000 persons
who were contacts of SARS patients and, arguably, ought to have been quarantined (Svoboda et al., 2004). Of these, approximately 9,000 could not be reached at all by public health officials, or only after the 10-day quarantine period had expired.

Finally, evidence indicates that people with SARS are most infectious 5–10 days after developing symptoms (Peiris et al., 2003) and there are no documented cases of an asymptomatic individual transmitting the disease to another (Ksiazek et al., 2003). This knowledge suggests that quarantining people who have no symptoms will be of little utility. As a consequence, resources ought to be directed at segregating and caring for persons with symptoms and at public education strategies to ensure people can recognize symptoms of the disease and know when to seek medical attention.

THE IMPACT OF QUARANTINE

The harsh toll SARS exacted, including the many detrimental impacts of quarantine, came to be termed the “collateral damage” of the outbreak (Bernstein, 2003). In this section, I highlight some of the consequences of quarantine, both for health care workers and others. Hawryluck et al. (2004, p. 1206) emphasize that “[k]nowledge and understanding of the experiences of quarantined persons are critical to maximize infectious disease containment and minimize the negative effects on those quarantined, their families and social networks.”

It has been noted that, “the SARS outbreak is unique in recent history in its rapidity of transmission, its concentration in health settings and the large number of health care workers who have been infected” (Maunder et al., 2003, p. 1245). In fact, health care workers accounted for over 40% of SARS cases in the Toronto area and a key challenge was “to manage and allocate health care staff as the illness forced quarantine of dozens of SARS-exposed workers” (Mackay, 2003, p. 1308). Many health care workers were isolated or quarantined, including those with infection control and microbiology expertise whose skills were desperately needed during the outbreak.

Recent studies have assessed the impact of quarantine (and other measures associated with control of SARS) on health care workers and others (Nickell et al., 2004; Maunder et al., 2003; Maunder, 2004). In general, the unsurprising conclusion is that “the effect of SARS on the health care system in the greater Toronto area was dramatic ... the SARS outbreak had significant psychosocial effects on hospital staff ... The effects on families and lifestyle was also substantial” (Nickell, et al., 2004, p. 793). Further, the
National Advisory Commission (2003, p. 155) cautions that “the impact of SARS on individuals working within the health system should not be underestimated.”

In regard to the specific impact of quarantine, an editorial in a Canadian nursing journal comments that:

The procedure of quarantine, from its beginnings, seems to have been imposed from the outside, as a law or interdict, and resulted in, or at the very least represented, segregation, social and psychological isolation, stigma, reduced status, and the potential powerlessness of those affected. (Wynn & Peter, 2003, p. 207)

One nurse expresses her views as follows: “I am ordered into quarantine and feel as though such a restriction could apply only to some plague-threatened inhabitant of the Middle Ages” (Ellacott, 2003, p. 14).

Health care workers in quarantine reported feeling disconnected and at a disadvantage when they returned to work because they were not up to date on key information, including latest infection control protocols. This reaction demonstrates the need for ongoing communication with workers who are in quarantine so that if they do not become ill, they can return to work feeling ready to do so. Physicians in quarantine who were interviewed at the height of the outbreak “described anxiety about the wellbeing of ill colleagues and their frustration in not being able to elicit details about their condition” (Straus, et al., 2004). While patient confidentiality must be respected, health care facilities ought to be aware that “for those quarantined, knowledge of how their colleagues were faring may have alleviated some of their stress … .” (Straus, et al., 2004). One Toronto hospital experimented with maintaining communication with health care workers during the quarantine.

A number of our staff were put on home isolation after having unprotected exposure to a patient in our Intensive Care Unit … . Suddenly we were faced with a whole new challenge – how to communicate with large numbers of staff at home … . The hospital’s informatics staff quickly established a “lifeline” for staff by providing access to their hospital email from home and created a password-protected SARS Internet site through our website. This enabled staff to stay on top of what was happening at the hospital during their absence and reduced their reliance on media for information. (McBride, 2003, p. 52)

In addition to psychosocial impacts on health care workers, quarantine and other measures used to control the spread of SARS had major consequences on access to health care. The “Code Orange” directive that required hospitals to restrict access to all but the most critically ill patients meant that a vast number of services, including surgeries and other procedures such as radiation therapy for cancer patients, were cancelled (Bernstein, 2003). The
quarantine of health care workers exacerbated this already difficult situation. The National Advisory Commission (2003, pp. 155–160) estimates the cost of addressing the surgical backlog at $32.1 million. In addition, family and friends of patients in hospital were either not allowed to visit, or access for visitors was severely restricted (Bernstein, 2003).

When hospital services began returning to normal, surgeries that had been cancelled had to be rescheduled. One contentious point is that “patients were often allocated to operating rooms not based on urgency of their condition but based on an equitable distribution of finite operating resources within different surgical divisions (e.g. orthopaedics, neurosurgery, plastic surgery, and so on. Many felt this was not fair or appropriate resource allocation” (Bernstein, 2003, p. 39).

Overall, “in the public perception, the SARS outbreak turned the modern world of healthcare on its head in Toronto, in the sense that healthcare workers were seen as victims and vectors of disease rather than healers, and hospitals were seen as contaminated areas rather than places fostering health.” (Maunder, 2004, p. 1122)

While quarantine during SARS had a unique impact on workers and patients within the health care system, it also disrupted the lives of ordinary citizens who faced over a week of segregation because they had the misfortune of possible exposure to SARS. Studies have focused on assessing the effect of quarantine on health care workers, but some research has attempted to explore the experiences of others who observed quarantine. The findings of one Toronto survey are not unexpected:

All respondents described a sense of isolation. The mandated lack of social and, especially, the lack of any physical contact with family members were identified as particularly difficult. Confinement within the home or between work and home, not being able to see friends, not being able to shop for basic necessities of everyday life enhanced their feeling of distance from the outside world. (Hawryluck et al., 2004, p. 1210)

Quarantine also had significant economic consequences. Thousands of employees lost income while they stayed home to observe quarantine or provide care for others who were quarantined. It has been argued that the ethical value of reciprocity demands that the state compensate those whom it asks to stay home from work to comply with quarantine (Singer et al., 2003). Expressed in practical terms,

[a] person potentially missing a mortgage or car payment may face a strong temptation to break quarantine in order not to lose earnings. By promising compensation, the government creates incentives to stay home, and thereby limits the risk that SARS may spread, thus reducing the economic dislocation caused by the disease. (Iacobucci, 2003, p. A24)
Some people had to use vacation time or take unpaid leave in order to observe quarantine. It has been observed that “the initial refusal of governments to recognize the lack of an income cushion for Torontonians obeying quarantine orders clearly contributed to reluctance of some to stay away from work, further spreading SARS” (Canadian Public Health Association, 2003, p. 12). This view is echoed by legal counsel for the City of Toronto who was involved in drafted mandatory quarantine orders when individuals failed to accede to voluntary requests:

People were cooperative, but among other things, the voluntary isolation presented financial hardships for families with one income earner who was suddenly placed under home isolation. The situation became extraordinarily difficult, and public health authorities found that a few circumstances required legal intervention. (Speakman, 2003, p. 63)

The government of Ontario enacted new legislation, the SARS Assistance and Recovery Act 2003, to give job protection to employees who were observing quarantine or had to stay home from work to care for another individual, such as a child, who was quarantined. This law, which came into force on May 5, 2003, had retroactive effect to March 26, 2003, to authorize unpaid leaves of absence for employees in various circumstances, including those observing quarantine or receiving treatment for SARS. A SARS Assistance Plan was also announced to offer some financial compensation to people who lost income during periods of quarantine.

**CONCLUSION: LESSONS LEARNED AND LOOKING TO THE FUTURE**

The 2003 global outbreak of SARS forced public health systems worldwide to evaluate their capacity to respond to a novel disease crisis. As with other countries hit hard by the outbreak, quarantine was heavily used as a public health intervention to attempt to control the disease in Toronto, Canada. Individuals in Canada and other countries were extremely compliant in voluntarily accepting a temporary restriction on their liberty for the broader benefit of their communities. However, public health officials cannot always assume individuals will not resist coercive restrictions. Anderson and colleagues (2004) give the following caution:

... it is difficult to escape the conclusion that the world community was very lucky this time round, given the very low transmissibility of the agent, plus the fact that fairly draconian public health measures could be put in place with great efficiency in Asian regions where the epidemic originated. Given the litigious nature of people in North
America in particular, and to a lesser degree in western Europe, the control of SSEs [super-spreading events] in these regions might have presented greater problems if mass quarantining had been required. (Anderson et al., 2004, p. 1104)

A representative of the American Civil Liberties Union, echoing this concern, points out that “North American litigiousness” is far more characteristic of the United States than Canada: “I think Americans will be more skeptical about quarantine proposals than Canadians are, and probably more anxious to exercise their legal rights” (Tuller, 2003, p. Fl).

Indeed, it is important to keep in mind that the law, particularly constitutionally-entrenched rights and freedoms, places important limits on the use of coercive public health interventions. As well, ethical principles serve to restrain the exercise of public health powers. In deciding whether to interfere with individual liberty during a disease outbreak, law and ethics both demand that officials ask themselves the following question: “Does a coercive intervention truly reduce aggregate health risks, and what, if any, less intrusive interventions might reduce those risks as well or better?” (Gostin, 2000, p. 20)

It is arguable that quarantine was overused during the SARS outbreak and, in many cases, was likely not a truly effective measure in reducing disease spread. Commentators have suggested that “in hindsight, overrecognition of contacts, especially in two hospital-wide quarantine efforts, may have resulted in an overestimate of the number of persons requiring quarantine” (Svoboda et al., 2004, p. 2360). Yet, the phrase “in hindsight” is significant and public health officials clearly must have some degree of latitude when responding to a novel disease outbreak. Interventions that are based on up-to-date evidence and that are not applied in an arbitrary, unfair or discriminatory manner are most likely to pass legal and ethical scrutiny.

Various examples from Toronto’s experience with SARS demonstrate that public health officials were concerned with applying quarantine fairly. For instance, although the outbreak had a major economic impact on businesses in Toronto’s Chinatown, quarantine was not applied in a discriminatory manner against Chinese Canadians. Historical practices of quarantine based on racial prejudices were not repeated. As well, public health officials strove to apply evidence-based quarantine. Despite the retrospective observation that quarantine may have been implemented too broadly, officials resisted “pressure to lengthen the quarantine period to 14 days [because] data did not support a quarantine period longer than 10 days” (Svoboda et al., 2004, p. 2360).

After successfully containing SARS, public health authorities and legislators have focused attention on the need to renew and modernize public
health legislation. Matthews et al. (2002) observe that “[l]aw is an essential tool for public health. Law sets the structure within which public health officials, regulators and private citizens act to protect the population’s health. Law can impede that process … or it can enhance it …” The crucial role of law in public health is highlighted by the national and provincial commissions of inquiry that have analyzed the Canadian SARS outbreak and recommended strategies to equip the public health system for the next outbreak. For example, the National Advisory Commission (2003) comments on a number of legal and ethical issues associated with the outbreak and in a discussion aptly titled “Legal Confusion,” the Ontario SARS Commission (2004) highlights legal ambiguities that hindered an effective outbreak response. These include concerns as to which level of government was ultimately in charge of the outbreak and the lawful authority of public health officials to take steps to control the disease.

A key initiative underway in Canada is the development of a national Public Health Agency to be tasked with responsibilities related to infectious and chronic diseases and emergency planning and response (Public Health Agency Backgrounder, 2004). Canada’s first Chief Public Health Officer was appointed in late September 2004 (Public Health Agency News Release, 2004). Although details about the precise functions and authority of the Agency have not been announced, this body has potential to serve a key role in enhancing national readiness and coordinating future outbreak response. Indeed, it has been noted that “[a]t least one positive development might emerge from Canada’s recent outbreak of SARS: the creation of a national disease control centre similar to the Centers for Disease Control and Prevention (CDC) in the US” (Wharry, 2003). However, as provinces have primary constitutional authority over health, a federal agency will face legal limits on its ability to act unilaterally and will likely strive to collaborate, rather than dictate.

Needed efforts to renew and modernize public health laws are also underway in Canada, with the federal government introducing an updated quarantine statute and continuing its work toward enacting comprehensive health protection legislation to replace existing laws governing food, drugs and hazardous products. Various provincial governments also are reviewing their public health laws. The SARS experience taught officials that legislation authorizing public health interventions like screening, isolation, quarantine and treatment must be sufficiently flexible to allow rapid response to a new infectious agent. For example, many public health statutes have schedules listing various infectious diseases for which coercive interventions are warranted. Such lists must be capable of swift amendment so that officials are not hamstrung in their ability to respond to a disease
outbreak because a novel agent is not yet covered by public health legislation. Similarly, the SARS experience reveals that officials ought to have the legal authority to implement class quarantine orders as it may be unworkable to issue individual orders to thousands of people. The mandated length of quarantine must be based on the best available evidence in order to ensure that individual liberty is not restricted longer than necessary.

Government officials who impose restrictive measures like quarantine should concurrently offer resources to mitigate individual hardships. Workers who cannot report to work because they are in quarantine face, at a minimum, income interruption and, at worst, job loss. Legal mechanisms may be necessary to protect employees’ jobs and compensate them for lost income during periods of quarantine. If the next disease is more virulent than SARS, then public health officials cannot afford the consequences of individuals breaking quarantine to go to work so they can buy groceries for their families.

Outside Canada, numerous other jurisdictions are also engaged in processes of public health renewal. At the international level, the World Health Organization is revising its International Health Regulations, which some have criticized as “nonresponsive to the major challenges of emerging infectious diseases” (Gostin, 2004, p. 2623). In fall 2004, the European Union launched its Centre for Disease Prevention and Control in Stockholm, Sweden (European Public Health Alliance News Release, 2004). Canada’s new Public Health Agency emphasizes the need for international public health collaboration and intends to “play a leadership role with global partners, such as the World Health Organization and the U.S. Centers for Disease Control and Prevention and new European Centre for Disease Prevention and Control as well as other public health agencies” (Public Health Agency Backgrounder, 2004). The fact that our world is a global village is a boon to infectious agents driven to replicate and spread to as many hosts as possible. At the same time, international connectedness is crucial to the worldwide communication and cooperation necessary to mobilize an effective disease outbreak response.

Looking back on SARS, it is worthwhile to keep in mind the following caution: “In the next global epidemic … we may not be so lucky …. Thus one of the major dangers arising from the effective control of SARS is complacency. Sentiments of the type ‘we have been successful once – we will be again’ may be far from the truth” (Anderson et al., 2004, p. 1104). Clearly, public health authorities at local, national and international levels must remain vigilant to respond to the next, novel infectious agent when – not if – it happens again. In responding to these threats through the use of powers such as quarantine, officials must likewise remain vigilant to comply with legal
and ethical principles that require balancing public health protection with individual rights and liberties.

**NOTE**

1. For a comprehensive discussion of the SARS outbreak in Canada, see National Advisory Committee on SARS and Public Health (2003). Information in this summary is drawn largely from this report.

**REFERENCES**

Altman, L. K. (2003). Lessons of AIDS, applied to SARS. *The New York Times*, May 6, p. Fl.
Barbera, J., Macintyre, A., Gostin, L., Inglesby, T., O'Toole, I., DeAtley, C., Tonat, K., & Layton, M. (2001). Large-scale quarantine following biological terrorism in the United States. *Journal of the American Medical Association*, 286(21), 2711–2717.
Bernstein, M. (2003). SARS and ethics. *Hospital Quarterly*, 7(1), 38–40.
Callahan, D., & Jennings, B. (2002). Ethics and public health: Forging a strong relationship. *American Journal of Public Health*, 92(2), 169–176.
Canadian Public Health Association. (2003). Public health in the public interest: A contribution from the Canadian Public Health Association to the National Advisory Committee on SARS and public health. Online: [http://www.cpha.ca/english/sars/brief_e.pdf](http://www.cpha.ca/english/sars/brief_e.pdf)
Centers for Disease Control and Prevention. (2003). Efficiency of quarantine during an epidemic of Severe Acute Respiratory Syndrome – Beijing, China, 2003. *Morbidity and Mortality Weekly Report*, 52(43), 1037–1040.
Clemow, F. G. (1929). The origin of “quarantine”. *British Medical Journal*, 1, 122–123.
Diamond, B. (2003). SARS spreads new outlook on quarantine models. *Nature Medicine*, 9, 1441.
Edelson, P. J. (2003). Quarantine and social inequity. *Journal of the American Medical Association*, 290(21), 2874.
Ellacott, K. (2003). Behind the mask. *Registered Nurses Journal*, 15, 12–16.
European Public Health Alliance News Release. (2004). European centre for disease prevention and control launched. Online: [http://www.epha.org/a/1454](http://www.epha.org/a/1454)
Fidler, D. P. (2000). *International law and public health: Materials on and analysis of global health jurisprudence*. Ardsley, NY: Transnational Publishers Inc.
Garrett, L. (1994). *The coming plague: Newly emerging diseases in a world out of balance*. New York: Farrar, Strauss and Giroux.
Gostin, L., & Zeigler, A. (1987). A review of AIDS-related legislative and regulatory policy in the United States. *Law, Medicine and Health Care*, 15, 5.
Gostin, L. O. (2000). *Public health law: Power, duty, restraint*. Berkeley, CA: University of California Press.
Gostin, L. O. (Ed.) (2002). *Public health law and ethics: A reader*. Berkeley, CA: University of California Press.
Gostin, L. O. (2004). International infectious disease law: Revision of the World Health Organization’s international health regulations. *Journal of the American Medical Association*, 291(21), 2623–2627.
The 2003 SARS Outbreak in Canada

Gostin, L. O., Bayer, R., & Fairchild, A. L. (2003). Ethical and legal challenges posed by Severe Acute Respiratory Syndrome: Implications for the control of severe infectious disease threats. *Journal of the American Medical Association*, 290(24), 3229–3237.

Gostin, L. O., Sapsin, J. W., Teret, S. P., Burns, S., Mair, J. S., Hodge, J. G., & Vernick, J. S. (2002). The Model State Emergency Health Powers Act. *Journal of the American Medical Association*, 288(5), 622–628.

Hansard. (2004). Speech by the Honourable Carolyn Bennett, Minister of State for Public Health. Online: [http://www.parl.gc.ca/37/3fparlbus/chambus/house/debates/0552004-05-14/han0551250-E.htm](http://www.parl.gc.ca/37/3fparlbus/chambus/house/debates/0552004-05-14/han0551250-E.htm)

Hansen, H., & Groce, N. (2003). Human immunodeficiency virus and quarantine in Cuba. *Journal of the American Medical Association*, 290, 2875.

Hawryluck, L., Gold, W. L., Robinson, S., Pogorski, S., Galea, S., & Styra, R. (2004). SARS control and psychological effects of quarantine, Toronto, Canada. *Emerging Infectious Diseases*, 10(7), 1206–1212.

Health Canada Fact Sheet. (2003). Quarantine Act and Regulations – SARS amendment. Online: [http://www.hc-sc.gc.ca/eng/protectionlwarnings/sars/fact_sheet.html](http://www.hc-sc.gc.ca/eng/protectionlwarnings/sars/fact_sheet.html)

Health Canada News Release. (2004). Questions and answers updated. *Quarantine Act*. Online: [http://www.hc-sc.gc.ca/eng/mediareleases/2004/2004_23bk1.htm](http://www.hc-sc.gc.ca/eng/mediareleases/2004/2004_23bk1.htm)

Iacobucci, E. (2003). Do SARS bailouts make sense? *National Post*, May 3, p. A24.

Jackman, M. (2000). Constitutional jurisdiction over health in Canada. *Health Law Journal*, 8, 95–117.

Kass, N. E. (2001). An ethics framework for public health. *American Journal of Public Health*, 91(11), 1776–1782.

Ksiazek, T. G., Erdman, D., Goldsmith, C. S., Zaki, S. R., Peret, T., Emery, S., Tong, S., Urbani, C., Comer, J. A., Lim, W., Rollin, P. E., Dowell, S. F., Ling, A.-E., Humphery, C. D., Shieh, W.-J., Guarnier, J., Paddock, C. D., Rota, P., Fields, B., DeRisi, J., Yang, J.-Y., Cox, N., Hughes, J. M., LeDuc, J. W., Bellini, W. J., Anderson, L. J., and the SARS Working Group. (2003). A novel coronavirus associated with severe acute respiratory syndrome. *New England Journal of Medicine*, 348, 1953–1966.

Mackay, B. (2003). SARS: ‘A domino effect through entire system’. *Canadian Medical Association Journal*, 168, 1308.

Mandavalli, A. (2003). SARS epidemic un.masks age-old quarantine conundrum. *Nature Medicine*, 9(5), 487.

Matthews, G. W., et al. (2002). Legal preparedness for bioterrorism. *Journal of Law, Medicine & Ethics*, 30(3), 52.

Maunder, R. (2004). The experience of the 2003 SARS outbreak as a traumatic stress among frontline healthcare workers in Toronto: Lessons learned. *Philosophical Transactions of the Royal Society of London B*, 359, 1117–1125.

Maunder, R., Hunter, J., Vincent, L., Bennett, J., Peladeau, N., Leszcz, M., Sadavoy, J., Verhaeghe, L. M., Steinberg, R., & Mazzulli, T. (2003). The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *Canadian Medical Association Journal*, 168(10), 1245–1251.

McBride, F. (2003). Communicating during a crisis – the SARS story at Mount Sinai hospital. *Hospital Quarterly*, 6(4), 51–52.

Mitka, M. (2003). SARS thrusts quarantine into the limelight. *Journal of the American Medical Association*, 290(13), 1696–1698.
National Advisory Committee on SARS and Public Health. (2003). *Learning from SARS: Renewal of public health in Canada*. A Report of the National Advisory Committee on SARS and Public Health. Health Canada, Ottawa. Online: http://www.hcsc.gc.ca/english/protection/warningsfsars/learning.html

Nickell, L. A., Crichton, J., Shaw, Tracy, C., Al-Enazy, H., Bolaji, Y., Hanjrah, S., Hussain, A., Makhlouf, S., & Upshur, R. E. G. (2004). Psychosocial effects of SARS on hospital staff: Survey of a large tertiary care institution. *Canadian Medical Association Journal, 170*(5), 793–798.

Ontario SARS Commission. (2004). *Interim report on SARS and public health in Ontario*. Online: http://www.health.gov.on.ca/english/public/pub/ministry_reports/campbell04.pdf

Parmet, W. E. (2003). Quarantine redux: Bioterrorism, AIDS and the curtailment of individual liberty in the name of public health. *Health Matrix, 13*, 85.

Peiris, J. S. M., et al. (2003). Clinical progression and viral load in a community outbreak of coronavirus-associated SARS pneumonia: A prospective study. *Lancet, 361*, 1767–1772.

Public Health Agency Backgrounder. (2004). The public health agency of Canada. Online: http://www.phac-aspc.gc.ca/media/nr-rp/phac_e.html

Public Health Agency News Release. (2004). Government of Canada appoints first chief public health officer to head public health agency of Canada. Online: http://www.phacaspc.gc.ca/media/nr-rp/phac_nr_e.html

Richards, E. P., & Rathbun, K. C. (2004). Making state public health laws work for SARS outbreaks. *Emerging Infectious Diseases*.

Sehdev, P. S. (2002). The origin of quarantine. *Clinical Infectious Diseases, 35*, 1071–1072.

Silverman, A., Simor, A., & Loufty, M. (2004). Toronto emergency medical services and SARS. Letter to the editor. *Emerging Infectious Diseases, 10*(9), 1688–1689.

Singer, P. A., Benatar, S. R., Bernstein, M., Daar, A. S., Dickens, B. M., MacRae, S. K., Upshur, R. E. G., Wright, L., & Zlotnik, S. R. (2003). Ethics and SARS: Lessons from Toronto. *British Medical Journal, 327*, 1342–1344.

Speakman, J. (2003). Quarantine in Severe Acute Respiratory Syndrome (SARS) and other emerging infectious diseases. *Journal of Law, Medicine and Ethics (Special Supplement), 31*(4), 63–64.

Straus, S. E., Wilson, K., Rambaldini, G., Rath, D., Lin, Y., Gold, W. L., & Kapral, M. K. (2004). Severe Acute Respiratory Syndrome and its impact on professionalism: Qualitative study of physicians’ behaviour during an emerging healthcare crisis. *British Medical Journal, 329*, 83.

Svoboda, T., Henry, B., Shulman, L., Kennedy, E., Rea, E., Ng, W., Wallington, T., Yaffe, B., Gournis, E., Vincencio, E., Basrur, S., & Glazier, R. (2004). Public health measures to control the spread of the Severe Acute Respiratory Syndrome during the outbreak in Toronto. *New England Journal of Medicine, 350*(23), 2352–2361.

Tuller, D. (2003). If SARS hits U.S., quarantine could too. *New York Times*. December 9, p. Fl.

Upshur, R. E. (2002). Principles for the justification of public health intervention. *Canadian Journal of Public Health, 93*, 101–103.

Wharry, S. (2003). Will SARS crisis give Canada its own CDC? *Canadian Medical Association Journal, 168*(12), 1581.

Wynn, F., & Peter, E. (2003). Nurses and quarantine: Reflections upon the SARS crisis in Toronto. *Nursing Inquiry, 10*(4), 207–208.
The 2003 SARS Outbreak in Canada

Legislation

*Canadian Charter of Rights and Freedoms*, Part I of the *Constitution Act*, 1982, being Schedule B to the *Canada Act* 1982 (U.K.), 1982, c. 11.

*Constitution Act* 1867 (U.K.), 30 & 31 Vict., c. 3, reprinted in R.S.C. 1985, App. II, No. 5.

*Emergency Management Act*, K.S.O. 1990, c. E.9.

*Health Protection and Promotion Act*, R.S.O. 1990, c. H.7.

*Ministry of Health Appeal and Review Boards Act*, SO. 1998, c. 18.

*Quarantine Act*, R.S.C. 1985, c. Q-l.

*Quarantine Act* Regulations, C.R.C., c. 1368.

Case Law

*Blencoe v. British Columbia (Human Rights Commission)*, [2000] 2 S.C.R. 307.

*Canadian AIDS Society v. Ontario* (1995), 25 O.K. (3d) 388 (Gen. Div.).

*New Brunswick v. JG.*, [1999] 13 S.C.R. 46.

*R. v. Oakes*, [1986] 1 S.C.R. 103.

*RJR - MacDonald Inc. v. Canada (Attorney General)*, [1995] 3 S.C.R. 199.

*Toronto (City, Medical Officer of Health) v. Deakin*, [2002] O.J. No. 2777 (Ct. Just.) (QL).