# Preparing for catastrophic health emergencies[1]

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Before I became Executive Director/General Counsel for IMLA, I served as the County Attorney for Montgomery County, Maryland. During the almost twelve years I held that office, Montgomery County became involved in a number of critical events that help form the structure and direction for its emergency planning and all play a part in preparing for any crisis, including catastrophic health emergencies. The county, over the past several years, responded to a number of challenges that might easily be characterized as "emergencies". While these challenges dominated the news, planning and preparedness under the leadership of then Executive, Douglas Duncan and Chief Administrative Officer, Bruce Romer helped our county agencies attack the problems and challenges purposefully and with resolve. The County's Urban Search and Rescue Team, part of the County's Fire and Rescue Service, responded to the Attack on the Pentagon bringing its expertise in collapse rescue to bear as the world looked on and while the events of September 11, 2001 unfolded. Later in the Fall of 2001, as host to a major postal distribution center, the County responded to the anthrax attacks on our region by providing health resources to federal postal system workers who work or live in Montgomery County, including the purchase and distribution of anti-biotics capable of treating anthrax poisoning. The world again saw Montgomery County in the news a year later, when two criminals began their sniper attacks in Montgomery County and the County led efforts to catch them and bring them to justice.

Like most local governments, Montgomery County daily responds to less sensationalized emergencies, but events that are just as important to the individuals whose lives are threatened, whether by fire, accident, criminal activity or diseases. Obviously, planning for these daily events helps its leaders better serve the residents of Montgomery County. Similarly, planning for other emergencies that expose greater numbers of people to risk helps to address those challenges that we can visualize, but suppose improbable. For example, responding to local building construction collapses helped our Urban Search and Rescue Team when it responded to the bombing of the federal building in Oklahoma City and when it responded to the terrorist attack on the Pentagon. Similarly, daily interaction with patients infected with tuberculosis helps

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analyze and identify how its leaders must respond on a broader scale to epidemics of contagious disease and to the broader pandemic.

With the anthrax attack on the government of the United States in the Fall of 2001, the federal government began committing resources to respond to similar attacks. Those resources and the training involved help local governments put in place the wherewithal necessary to respond to bioterrorism attacks and emerging concerns of pandemic – or catastrophic health emergencies. While all of us must develop plans to address the potential reemergence of SARS and the emergence of the avian flu as potential pandemics[3], the process involved in planning for these potential outbreaks yields insight into planning for any type of catastrophic health emergency.

***The world's experience with SARS: Lessons learned – plans begun.***

In late 2002, a disease now identified as severe acute respiratory syndrome[4] (SARS) emerged as a major public health problem, as it is a disease that was readily transmissible, it often disguised its symptoms, and there was no known medical "cure" or vaccine; more importantly, it initially began killing people at high rates for those who contracted it. The countries where SARS took hold saw significant adverse economic effects as the World Health Organization (WHO) issued travel advisories suggesting that people avoid areas of the world experiencing SARS outbreaks and large numbers of people were placed under order of quarantine. Indeed, in Toronto, Canada, SARS caused the estimated loss of 1.5 billion Canadian dollars in gross domestic product.[5]

SARS spread quickly. In Toronto, one patient entered a local community hospital infecting hospital staff and patients. Transfer of patients to other hospitals further spread the disease before control measures could be implemented. Similarly, rapid spread of the disease occurred in Singapore and the Hong Kong Special Administrative Region. In Hong Kong the disease was linked to one patient admitted on March 4, 2003. Before long, 69 health care workers and 16 medical students contracted the disease as did people they contacted, so that by

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[3] "Pandemic viruses appear (or "emerge") as a result of a process called "antigenic shift," which causes an abrupt or sudden, major change in influenza A viruses. These changes are caused by new combinations of the HA and/or NA proteins on the surface of the virus. This change results in a new influenza A virus subtype. The appearance of a new influenza A virus subtype is the first step toward a pandemic, but the new virus subtype also must spread easily from person to person to cause a pandemic. Once a new pandemic influenza virus emerges and spreads, it normally becomes established among people and moves around or "circulates" for many years as seasonal epidemics of influenza. The U.S. Centers for Disease Control and Prevention and the World Health Organization have large surveillance programs to monitor and "detect" influenza activity around the world, including the emergence of possible pandemic strains of influenza virus."

http://www.cdc.gov/flu/avian/gen-info/pandemics.htm last visited June 4, 2005

[4]" Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus, called SARS-associated coronavirus (SARS-CoV). SARS was first reported in Asia in February 2003. Over the next few months, the illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained." http://www.cdc.gov/ncidod/sars/factsheet.htm

[5] *Public Health Response to Terrorism: A Regional Approach Isolation & Quarantine: A SARS Perspective*, February 16, 2004, p. 2. Available at: http://biodefense.umdnj.edu/documents/PH%20Response%20to%20Terrorism__Quarantine.pdf

May 5, 2003, 1080 people from 425 households had been placed under medical surveillance and quarantine.[6] By June 15, 2003, 1262 people were placed under quarantine. Singapore responded even more aggressively and through effective control measures was able to reduce the time from onset of symptomatic SARS to isolation from 6.8 to 1.3 days. The decisions to quarantine that each affected community made varied as to their scope and duration.

In a paper prepared by Natalie Pawlenko, MSW, the author concludes that as the period of quarantine increases the level of compliance decreases.[7] Based upon evidence that in Beijing and in Toronto each put about 30,000 people under order of quarantine, and that Toronto had only about ten percent the number of infected people, she concludes "a more considered, careful, and evidence-based approach to quarantine and isolation are needed." [8]

In a comprehensive study of the SARS outbreak, the Institute for Bioethics, Health Policy and Law, at the University of Louisville School of Medicine authored a report to the U.S. Centers for Disease Control and Prevention, entitled "Quarantine and Isolation: Lessons learned from SARS".[9] (Hereafter referred to as the "Louisville Report".) Among the report's recommendations and policy considerations, the authors suggest several that involve legal issues.

> A.1.1. Clear delineation of authority and responsibility for the various public health functions in an epidemic needs to be undertaken among federal, state, and local officials.
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> A.1.3 Public health measures adopted in response to an emergency that restrain civil liberties should be reviewed periodically and should not be extended to other conditions unless previously established criteria are established.
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> A.4.1 The decision whether to order a large-scale quarantine requires a complex analysis of scientific, political, and social considerations. Public health officials need to be able to present comprehensive, understandable assessments of the options to other government officials in a timely manner. Contingency planning for emergencies through simulations and establishing vertical and horizontal lines of communication are extremely valuable in ensuring a prompt response to a public health emergency.
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> A.4.3 Legal authority and public health strategies need to be in place for dealing with individuals who violate the law, and judges and law enforcement officials should be educated about the relevant enforcement provisions of public health laws. Studies need

[6] Quarantine applies to those who have been exposed to a contagious disease but who may or may not become ill. Quarantine is distinguished from isolation which applies to those who are known to be ill with a contagious disease. A person may be quarantined "in place" or at a site where others are quarantined. Depending on the disease involved, people in quarantine may be monitored to determine if they have been infected, may be given preventive treatment if it is available and are likely to be the first to receive early and rapid diagnostic testing and symptom monitoring with early treatment should symptoms appear. Those in isolation are usually kept in a facility where they can be treated and protected from infecting others and the period of isolation is coextensive with the period of communicability.

[7] *Pawlenko,* p. 1.

[8] *Ibid*. p.3.

[9] Available at: http://louisville.edu/bioethics/public-health/SARS.pdf/view

to be undertaken to determine if incentives or penalties promote compliance with quarantine.

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

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

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

The People's Republic of China's Center for Diseases Control and Prevention also reported on the SARS epidemic and noted nine strategies that were successful in controlling the epidemic that should be used in the future:

1. Establish multi-sector cooperation and coordination mechanisms at all levels.
2. Establish and improve a SARS surveillance system.
3. Adopt comprehensive control and prevention measures with identification and management of infection resources as the key element, and prevent transmission occurring within the hospitals and outbreaks in communities.
4. Strengthen treatment and care services to reduce the fatality rate.
5. Develop technical guidelines for prevention and control, and conduct training for professionals.
6. Conduct inspection and supervision in the field.
7. Strengthen community-based prevention and health education.
8. Strengthen scientific research on SARS.
9. Strengthen information exchange and cooperation.[10]

The experience with SARS counsels that each local government have in place the necessary legal framework to impose swift and effective control measures on those who may be infected by carriers of potential pandemic disease. The legal framework should be designed to be flexible in addressing diseases about which little is known. For example, should avian flu[11]

[10] Ruotao Wang, *China's Response to SARS*, 77 Temp. L. Rev. 149, 150 (2004).

[11] Recent examples of avian influenza outbreaks and infections in Hong Kong in 1997, 1998, and 2002 and the ongoing widespread outbreaks of avian influenza among poultry in Asia, show the importance of preparing for a pandemic. It has been 38 years since the last pandemic. http://www.cdc.gov/flu/avian/gen-info/pandemics.htm last visited May 19, 2007.

emerge as predicted, no one can yet determine how it will manifest its symptoms to distinguish it from other forms of flu for which treatment regimens and vaccine exist. Similarly, no one can predict its incubation period. Thus a legal framework that allows quarantine or isolation for insufficient periods will prove ineffective. For that reason, the legal framework should be flexible enough to be guided by the medical science and epidemiology of the disease. The following passage about the avian flu (H5N1 virus) from the United States Center for Disease Control "CDC" confirms the potential for concern:

> There is little pre-existing natural immunity to H5N1 infection in the human population. If these H5N1 viruses gain the ability for efficient and sustained transmission among humans, an influenza pandemic could result, with potentially high rates of illness and death. In addition, genetic sequencing of influenza A (H5N1) viruses from human cases in Vietnam and Thailand shows resistance to the antiviral medications amantadine and rimantadine, two of the medications commonly used for treatment of influenza. This would leave two remaining antiviral medications (oseltamivir and zanamivir) that should still be effective against currently circulating strains of H5N1 virus. Efforts to produce vaccine candidates that would be effective against avian influenza A (H5N1) viruses are under way. However, it will likely require many months before such vaccines could be mass produced and made widely available.
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> Research suggests that currently circulating strains of H5N1 viruses are becoming more capable of causing disease (pathogenic) in animals than were earlier H5N1 viruses. One study found that ducks infected with H5N1 virus are now shedding more virus for longer periods without showing symptoms of illness. This finding has implications for the role of ducks in transmitting disease to other birds and possibly to humans as well. Additionally, other findings have documented H5N1 infection among pigs in China and H5N1 infection in felines (experimental infection in housecats in the Netherlands and isolation of H5N1 viruses in tigers and leopards in Thailand).In addition, in early March 2006, Germany reported H5N1 infection in a stone marten (a weasel-like mammal). The avian influenza A (H5N1) virus that emerged in Asia in 2003 continues to evolve and may adapt so that other mammals may be susceptible to infection as well.[12]

Already, there are a number of valuable resources in place to help in establishing the legal framework for dealing with a potential pandemic. The World Health Organization's International Health Regulations[13] offer a guide intended toward limiting the spread of a new highly-contagious disease. The Center for Law & the Public's Health has developed three separate checklists designed to help in planning for public health emergencies. One, the Public Health Emergency Legal Preparedness Checklist,[14] is attached. The State and Local Government

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[12] At http://www.cdc.gov/flu/avian/outbreaks/asia.htm last visited May 19, 2007.

[13] Available at: http://www.who.int/csr/ihr/current/en/index.html "… the entry into force of the International Health Regulations (2005) (also referred to as "IHR(2005)") on 15 June 2007 is a key milestone in public health. The IHR(2005) are the world's first legally binding agreement in the fight against public health emergencies of international concern such as those caused by new and re-emerging diseases with epidemic potential, as well as those associated with acute chemical or radionuclear events."

[14] *Local Government Public Health Emergency Legal Preparedness and Response, December 2004. Available at: http://www.publichealthlaw.net/Resources/ResourcesPDFs/Checklist%202.pdf*

Law Section of the American Bar Association has prepared a checklist that helps address, not only public health emergencies, but other types of emergencies as well.[15]

***The legal framework.***

In the United States, the Center for Law & the Public's Health developed a MODEL STATE EMERGENCY HEALTH POWERS ACT.[16] While this model legislation was designed for application under American law and to facilitate emergency health preparedness under the structure of government that exists in the United States, there are certain core concepts that guide preparation of a legal framework anywhere.[17]

First, the local government, if not already empowered to act, must be given the authority to act in the public interest when certain specified events take place.[18] Next, the local government must have access to information regarding admissions to hospitals and deaths.[19] Once empowered, the following should be considered in determining whether new legislation is necessary:

1. Whether there must be a declared emergency before the government can exercise powers of isolation and quarantine, or require mandatory medical examinations and vaccination, or before it can appropriate private property or destroy private property? For example, some governments would not want to declare an emergency in response to a terrorist attack or in response to civil unrest because doing so validates the act of terrorism. Nevertheless, without a declared emergency, empowering some individuals with unlimited powers can also be problematic.

2. Should a declared emergency limit the effect of other laws and, if so, which ones? For example, when an emergency is declared certain businesses can be closed to help prevent panic, economic chaos or civil unrest.

3. Who should be authorized to declare an emergency, to issue orders of quarantine, isolation, to appropriate private property or destroy private property, or to require

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[15] Available at: www.abanet.org/statelocal/checklist406.pdf

[16] Available at: http://www.publichealthlaw.net/MSEHPA/MSEHPA2.pdf

[17] The Center for Law & the Public's Health prepared a checklist that comprehensively describes the legislative proposal and reasons for including specific provisions in the law. It is available at: http://www.ncsl.org/programs/health/modelact.pdf last visited May 19, 2007. Tennessee has not enacted the Model Act.

[18] In the United States, because state governments formed the federal government through a limited grant of power under the Constitution while retaining plenary power to act within their jurisdictions on matters that they did not empower the federal government to control, the state government, rather than the federal government, must empower the local government to act. Under Home Rule, some local governments have broad authority to act on a broad range of subjects, but most local governments have only limited authority and must point to specific grants of authority before they can enact legislation or regulate a particular subject matter. In the State of Maryland, all local governments have the authority to address public health matters, subject to state review, supervision and preemption. Thus, in Montgomery County, the local government can initiate legislation and regulatory control of health measures to the extent its actions do not conflict with the state's regulatory system.

[19] In Maryland, access to this information is coordinated, monitored and regulated by the state government. Hospital data is analyzed, so that surges of specific symptoms can be quickly identified and studied and appropriate responses can be developed.

mandatory medical examinations or vaccination? For example, limiting the authority to a single individual would prove unworkable, whereas expanding authority too far might result in abuse.

4. What mechanisms are necessary to allow the government to amend its budget or transfer funds from other projects to fund its response to the emergency? For example, most governments operate through the procedure of raising taxes to meet anticipated budgeted programs. Although many include some funding for possible emergencies, response to a catastrophic health emergency might quickly eliminate budgeted funds, and authority to spend money from other sources must be available; alternatively, the government must be authorized to incur debt to respond to the emergency.

5. Whether there are sufficient safeguards in place to prevent the abuse of power and to allow people affected by the exercise of controls to challenge the controls as applied to them? For example, the law must allow for reins to be placed on a rogue bureaucrat and individuals who are affected by control orders need access to the judicial system to have those orders reviewed to protect against arbitrary, capricious and unreasonable orders.

6. Whether compensation should be provided to people whose property is appropriated or destroyed or to people who are isolated or quarantined? For example, in the United States the government cannot take private property for a public use without paying compensation. On the other hand, where the property is a nuisance, such as property that is contaminated and could infect the public, compensation is not required. Those who are placed in isolation or quarantine probably will be losing income and the ability to meet their financial obligations. Finding ways to reduce this burden helps increase levels of compliance with the control orders.

In short, the local government must ensure that it has the appropriate legal authority to act and, once it does, it must exercise that authority to establish a considered legislative regime. In Tennessee, the Commissioner of Health has the authority to declare quarantine and to prescribe rules and regulations to prevent the introduction of epidemic disease into the State and its spread Tennessee Code Annotated (TCA) 68-1-201 and if necessary, emergency rules can be adopted for up to 165 days TCA 4-5-208. Should a pandemic develop, Tennessee will be hard put to respond effectively if mass forced quarantine becomes necessary. Like many states faced with a choice involving the balance between individual liberties and pervasive government regulation, Tennessee chose protecting individual liberties.[20] This choice sits well in the abstract debate that has existed since before this country's founding over how to protect the individual from overarching government regulation and how best to protect the freedom we Americans hold dear. Thus, while the decision to prevent the Commissioner of Health from issuing broad orders of quarantine and limiting the duration of those orders without judicial intervention protect the individual's liberty interests, that decision looms potentially disastrous should hundreds of people in the community become exposed to a pandemic disease.

On the other hand, voluntary quarantine will likely be tried first. As a voluntary measure, the Commissioner may ask large groups of residents to comply. Assuming most voluntarily

[20] *See:* Bhattacharya, *Legal Considertations of Isolation and Quarantine: Power, Prevention, and the Need for Practice –Based Criteria*, presented at IMLA Seminar, April 2007 and available through IMLA.

agree, the number of people who must be forced into quarantine might be sufficiently small to be handled efficiently. In addition, the Governor's authority in an emergency may be sufficiently broad to allow the Governor to authorize different and broader authority to quarantine in an emergency. On its face, however, the authority to quarantine implies that the Commissioner must issue an individual "health directive"[21] before filing a petition in court for a "health measure."[22] The health directive must specifically list the clinical or epidemiological evidence that the person may be a health threat, and direct the person to cooperate with the health authorities' directions to prevent and control communicable disease. The directive must include a copy of Tennessee Rules and Regulations, Chapter 1200-14-4. While the person who receives a health directive may ask that a health measure be issued, the directive stays in effect until the court rules on the matter.

The health measure may be issued by a General Sessions judge following a hearing where the health authorities must prove by clear and convincing evidence that the person is substantially likely to be a health threat to others. The health measure must clearly state what the person is required to do and the health officer bears the responsibility to make the necessary arrangements to carry out the order. While the hearing cannot take place earlier than five days after the petition is served on the individual, the health authorities may seek a "temporary hold" in an emergency situation. The temporary hold may be issued by a General Sessions judge following an ex parte hearing and is intended to last for the period of time before the hearing on the health measure.

Should a pandemic strike Tennessee, the CDC and the Tennessee Commissioner of Health estimate that a 1918 type attack will result in 1.8 million people will be ill out of a total population of about six million. Of those who become ill, 900,000 will be treated as outpatients and over 38,000 will die. Most experts believe that the ingrained independence of Americans will result in fewer cases of voluntary compliance with quarantine than was the Canadian experience with SARS. In Toronto, for example, of the 30,000 people placed under voluntary quarantine, only 27 were taken to court to enforce the quarantine against them. In Hong Kong, however, where a housing complex was placed under voluntary quarantine, the police found that more than half of the residents left in violation of the quarantine.[23] In Taiwan a post SARS survey revealed that 85% of the people under quarantine complied voluntarily.[24] Thus, taking the estimate of 1.8 million people ill, should only one quarter of that number be voluntarily quarantined and 85% of them comply, that means roughly 67,500 people will not abide voluntarily with the quarantine.[25] Processing this many people individually through the health

[21] A health directive is a written statement of evidence that the person may be a health threat and a statement of the actions the health officer is directing the individual to take to cooperate with the public health authorities.

[22] A public health measure is an order signed by a General Sessions judge following a hearing that requires a person to conform to certain conditions designed to protect the public health.

[23] Louisville Report, p. 83.

[24] Louisville Report, p. 105.

[25] On May 30, 2007, the media reported that a man from Georgia had been asked to voluntarily refrain from traveling commercially to avoid exposing people to his just diagnosed TB. As reported, he had been diagnosed with an extremely virulent form of TB - xdr-TB (extremely drug resistant TB). Rather than abide by the restriction voluntarily, the patient traveled back and forth to Europe to avoid foregoing his planned marriage and honeymoon. He became the first person since 1963 to become the subject of a federal order of quarantine when the CDC issued an order of quarantine against him, flew him to Atlanta and held him under guard at a treatment facility. Fortunately, TB is not nearly as contagious as the flu; yet, much time and effort will be spent in attempting to locate

department and through the courts will surely tax the resources of the state and local governments as well as the Tennessee court system.

***Developing a local plan to halt an epidemic.***

After having developed the legal framework, the local government should plan how it will respond to an event. Planning can include responding to checklists such as the one attached and by conducting "table top" exercises that allow those involved in the legal system to recognize and understand their roles in implementing the law. As part of such exercises there are a number of questions that necessarily arise. For example: Assuming that an order of quarantine or isolation has been issued, who enforces those orders and who monitors whether the orders are being followed? How does monitoring occur? If people are prohibited from working, how will they be fed or housed? Are there laws in place to address issues of access to health care, payment for services, sick leave from employment, salary continuation, rent, mortgage, or utility abatements? What systems need to be developed and available, to allow the quarantined access to necessary health services or how will they communicate with friends and family? If an order is to be challenged, how will the person under order of quarantine get a hearing, a lawyer or access to documents or other evidence? Should a person violate quarantine, how rapidly would the public health service know and be able to respond to place the person in custody and where would such a person be confined? Does the government have the authority to commandeer a hospital to house those who are infected, or to commandeer a facility to use for quarantine? How would response to the emergency be paid for? While these are but a few of the questions that need answers, few of these questions have readily apparent answers.

Attempting to answer these questions requires understanding the process of responding to a public health emergency. Once public health officials determine that a potential for widespread infectious disease exists in an area, the identification of the sources of the disease and identification of their contacts become critical and lead to the implementation of various control measures. When dealing with isolated cases of tuberculosis, typhoid, syphilis or AIDs, public health officials are able confidentially to conduct interviews and investigate where the patient contracted the disease and from whom. They can also investigate who the patient's contacts after contracting the disease were and whether they will likely be infected.[26] When an epidemic or pandemic strike, similar resources are unlikely to be readily available, even with planning.[27] Once evidence exists that a disease is spreading rapidly, personal control measures must be implemented quickly.

The authors of the Louisville Report describe the purpose of quarantine:

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approximately 107 people with whom he had contact and that he may have exposed while on the planes. http://news.yahoo.com/s/ap/20070530/ap_on_he_me/tuberculosis_infection_42

[26] The WHO reports that during one of the most recent outbreaks of avian flu in Thailand one million volunteers were enlisted in an effort to track the source of the disease. *Avian influenza: assessing the pandemic threat. p. 54.* Available at http://www.who.int/csr/disease/influenza/WHO_CDS_2005_29/en/ .

[27] Ms. Pawlenko reports that in Canada during the SARS epidemic public health officials conducted approximately 2,000 case investigations, each averaging about 9 hours; also there were more than 200 staff working on the SARS hotline which received over 300,000 calls - 47,567 calls arrived in one day. *Pawlenko, p. 2.*

> At the outset, it should be clear that the purpose of quarantine is not to stop immediately all transmission of infection. Not only is this likely to be nearly impossible, but the severity of the measures needed would be extremely unpopular and therefore the necessary level of compliance would be difficult to achieve. The purpose of quarantine is to reduce the incidence of new cases to below the total rate of deaths plus patients who have recovered. As a result, the total number of infected individuals will peak, decline and then reach zero.[28]

If a disease is isolated to a particular country or region, measures generally involve limits on travelers to and from that country or region. Within that country or region, people who are infected need to be isolated from others; similarly, those they have contacted within the known or suspected incubation period need to be monitored and may need to be quarantined. The issues of mandatory testing, mandatory vaccination, isolation, quarantine and restrictions on travel all involve intervention by the courts.

Bearing in mind that each personal control measure exercises authority over a person to reduce the chances that the person will either contract the disease or will cause its spread, forced interactions with others only increases the potential for spread of the disease and may require that those public health officials and law enforcement officials[29] involved will be required to submit to similar control measures if exposed. For example, consider a person who is admitted to a local hospital and is diagnosed with SARS, but not until the patient has been visited by family and friends and treated by several members of the hospital staff. Under this scenario, the patient might be placed in isolation; the hospital would limit visitors and would reduce contacts of the hospital staff so that those not previously exposed would not be infected. The hospital staff would be ordered to travel only between home and the hospital[30] and their family members might be quarantined at home.[31] The patient's visitors likely would be quarantined in their homes[32] and their health monitored. Public health and police officers required to enforce the quarantine who themselves have been exposed might be required to live in a quarantine environment to prevent infection of family and friends.

People who do not voluntarily comply with orders of quarantine pose additional risks.[33] Not only do they risk exposing others, but once arrested, they cannot simply be confined in the common jail, as doing so risks exposure of the other inmates. Thus, part of planning for a pandemic requires identifying facilities that can be used to confine people who violate orders of

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[28] Louisville Report. p. 25.

[29] "In all countries [where there was a SARS outbreak], police officers were charged with locating and confining individuals who violated quarantine." *Louisville Report,* p.25.

[30] "Work Quarantine: allowed some health care workers to continue to work at the hospital or health care setting where they were exposed as long as they remain well. Rules for Work Quarantine: must wear N95mask at all times while at work and practice diligent hand hygiene; must eat in a separate room if at all possible; follow home quarantine rules when at home, and to commute separately; could not go into other hospitals. Monitored temperature twice daily." *Pawlenko,* p. 1.

[31] The "work quarantine" model was first used in Toronto during the SARS outbreak.

[32] "Home quarantine: people were told to limit exposure to others living with them, wear a mask when near others and were not allowed to leave their home." *Pawlenko,* p.1.

[33] According to the authors of the Louisville Report "The vast majority of people under quarantine in all of the countries [involved in the SARS outbreak] obeyed requests to stay at home without requiring a court order." There were some who did not voluntarily comply. In Singapore, "[a]nyone initially violating quarantine had an electronic tag put on his or her leg." p. 25.

quarantine. These facilities may require special ventilation systems to reduce the spread of the disease. For example, a jail may be able to provide housing for quarantined individuals in an area that uses a separate ventilation system; one that does not emit possibly infected air outside the system. If the jail cannot be used, whether it is too full or does not have the ability to isolate possibly infected prisoners from other prisoners, some other facility must be identified that provides security and an ability to monitor the person for symptoms, while reducing the chances for exposure of others.

Determining how the courts will respond to challenges of orders of quarantine or to enforcement of breaches of these or other similar public health orders must be considered. Bringing people under order of quarantine to court, risks exposing a larger sphere. Accordingly, thought needs to be given to the practicalities of conducting a hearing at a location where the person under quarantine is housed to reduce the chance of spreading the disease to people who may come in contact with the quarantined person at a courthouse or while in transit. Or, establishing a mechanism to allow the proceedings to be conducted through some form of video-telecommunications arrangement might be considered.

During the SARS outbreak of 2003, quarantine was used successfully in Singapore, Toronto, Canada and in Beijing, China. Reports indicate that most people comply because of fear of spreading the disease to others, while the greatest threat to compliance involves economic fears.[34] Jurisdictions imposing quarantine developed mechanisms for providing protections against adverse social and economic consequences, such as loss of income or employment or insurance during confinement.[35] In addition, governments recognized that some people would prefer to be confined at home, while others feared infecting their families and sought to be confined elsewhere.[36] To allow people this choice, the governments acquired facilities for mass confinements, but allowed people to remain at home if they chose. In Singapore, people were called three times a day to ensure they were maintaining quarantine, were monitored on electronic cameras and required to take their temperature in front of the camera and display the results. People who violated the rules of quarantine were ordered to wear electronic monitoring bracelets. In Toronto, a 24-hour hotline was established to answer questions about SARS, handle requests for protective clothing, receive self reports of infection and of contacts and helped reduce the growing panic among the population.[37] Singapore successfully used thermal imaging devices at entrances to most public buildings to help enhance compliance as people with temperatures were more likely to seek medical attention voluntarily when faced with being discovered while entering a public building.[38]

These experiences with SARS confirm the need to prepare in order to be able to respond to similar catastrophic health emergencies. Indeed, on June 25, 2005, the *Washington Post* reported:

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[34] *Pawlenko*, p. 2.
[35] Louisville Report, p. 14; Sapsin, Gostin, Vernick, Burris, and Teret, *SARS and International Legal Preparedness,* 77 Temp. L. Rev. 155, 167-8.
[36] Louisville Report, p. 24.
[37] Louisville Report, pp. 57-8.
[38] Louisville Report, p. 91.

> A team of international experts is in Vietnam studying whether the H5N1 bird flu virus could be evolving into a form that might trigger a human pandemic, the World Health Organization said Friday.
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> The team of virologists and epidemiologists was looking at "the possibility of more widespread H5N1 human transmission, changes in the H5N1 virus and the likelihood of increased human-to-human transmission," WHO said in a statement.
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> "What has happened in Vietnam may have public health implications for the entire world and will be crucial in preparing for a possible pandemic," Hans Troedsson, WHO representative in Vietnam, was quoted as saying in the statement.

Without sounding the alarmist, but while sounding the alarm, local governments in coordination with their superior governments must develop plans to respond to the potential for a pandemic, just as governments have attempted to respond to concerns of terrorist-sponsored catastrophic health emergencies. The economic consequences of worldwide pandemic would cause losses associated with SARS to pale by comparison. Thus, governments will be tested to devise methods to reduce the potential for spread of a potential pandemic disease. Without vaccination, efforts to control the spread of disease through personal control measures, such as quarantine, will likely be the most likely.

Forced quarantine should only be looked to as an unattractive alternative as the ability to marshal sufficient resources to manage a mass forced quarantine are unlikely in most jurisdictions. Also, forced quarantines have the detrimental consequence of causing some people, fearful of government sanction, to retreat into an underground network that can allow the disease to spread quickly should anyone be infected. On the other hand, voluntary quarantine works best when people both understand the need for the quarantine and are protected against calamitous economic loss.

Clearly, many variables play into finding solutions and many are based on the economic, social and governmental structure of a community. For example, recognizing that the fear of economic ruin acts as the primary disincentive to voluntary quarantine, laws that require employers to continue to pay wages, or landlords to continue to allow tenancies despite failure of rent, or lenders to forego collection on loans, including mortgages, during periods of quarantine must be considered. But, simply transferring the risk of economic devastation to employers, landlords and lenders cannot be the answer. Consequently, a legislative solution may include providing for the government to finance wage extensions, or allowing landlords and lenders to make up lost payments over time or through a government funded payback.

In conclusion, the SARS outbreak provided an early warning to the international health community and to global, national and local leaders. The world was warned that disease could spread more quickly and dramatically than almost a century ago during the Spanish Flu pandemic. Fortunately, local governments, such as Singapore, Beijing and Toronto, developed successful methods for interdicting the spread of SARS and so far, the disease has not reappeared. Those methods can be improved upon and, indeed, Beijing and Toronto have each identified steps to make their responses to a similar occurrence even more effective. For the rest of us, preparedness means adapting the techniques applied in cities like Beijing, Singapore, and Toronto to our own social, political and legal structures. Preparedness also means taking the

lessons learned from SARS and using those lessons to put in place the necessary framework and resources to respond to similar events. With a possible avian flu pandemic clearly in view, waiting to act may lead to dire consequences.