

Preparing for a Pandemic

| Strategies for Enhancing
| Business Continuity Plans

Preparing for a Pandemic

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Introduction and Executive Summary

Over the past several years, substantial attention has been focused on the threat of a “bird flu” pandemic. Governments and the media have reacted to concerns voiced by international health experts and the scientific community, who have advised that a mutation in a current strain of avian flu that has killed hundreds of millions of birds may lead, at some point in the future, to sustained and efficient human-to-human transmission of a highly virulent strain of influenza. According to experts, such a pandemic — if and when it occurs — could spread worldwide in a matter of months, causing extraordinary levels of workplace absenteeism, disrupting travel and supply chains, and resulting in millions of deaths.

Fund complexes typically have highly sophisticated business continuity plans already in place. Nonetheless, existing business continuity plans may not address the special challenges associated with planning for a pandemic. Given the extraordinary nature and scope of business disruption that may result from an influenza pandemic, fund groups may find it prudent to consider the adequacy of their current business continuity plans and to take measures they deem appropriate to plan for and address the risks posed by such an event.

ICI Mutual has conducted this study (“Study”) to assist fund complexes in their efforts to assess the particular risks to business operations presented by a pandemic and to develop strategies that may be helpful in managing and reducing these risks. The observations in this Study are derived from ICI Mutual’s interviews with representatives of selected fund complexes, service providers (including custodians and transfer agents) and other third parties, and from ICI Mutual’s examination of publicly available information on pandemic planning. While ICI Mutual’s interviews were necessarily limited to a subset of fund complexes and

fund industry service providers, ICI Mutual believes that the Study reflects the views and activities of a reasonable cross-section of the fund industry.

This Study is divided into two sections:

- The first section provides an overview of the pandemic threat and of responses by the public and private sectors, including the fund industry.
- The second section describes strategies and techniques used by fund groups in their pandemic planning and sets forth a number of questions that fund groups may wish to consider in forming their own plans.

This Study is not intended to and does *not* recommend any particular strategies or set of “best practices” to be used by fund groups in pandemic planning. Given the diversity of the investment management industry, it is not advisable or practical to seek a “one size fits all” standard in this area.

Overview

Over the past decade — in response to increased concerns over hurricanes and other natural disasters, possible “Y2K” computer disruptions, and terrorist incidents — the fund industry, its service providers, and its regulators have devoted substantial attention to business continuity planning. Indeed, given the complex and technical nature of the industry’s operations and heightened regulatory scrutiny, business continuity planning has become an increasingly integral component of fund group operations, with senior management and key business units exploring, reviewing, and preparing for new and emerging threats on an ongoing basis. As a result, fund complexes tend to have in place detailed and often highly sophisticated business continuity plans.

While a pandemic “will not damage power lines, banks, or computer networks, it has the potential ultimately to threaten all critical infrastructure by its impact on an organization’s human resources by removing essential personnel from the workforce for weeks or months.”
– U.S. National Strategy for Pandemic Influenza Implementation Plan

Despite their detail and sophistication, however, existing business continuity plans may not address the special challenges associated with planning for a pandemic. From a business continuity perspective, the occurrence of a serious pandemic will place stresses on business operations that may substantially exceed those associated with natural disasters or terrorist attacks, or even those associated with other infectious disease outbreaks.¹ While posing no direct threat to the integrity of a fund group’s physical facilities or com-

puter operations, a pandemic threatens massive disruption to a fund group’s most critical asset — its personnel.

Other types of disasters, of course, may also pose a grave threat to personnel, yet the threat to personnel posed by a pandemic appears to be unique. If a serious pandemic takes place, it appears almost certain that a significant percentage of a fund group’s workforce will be affected, possibly including entire clusters of key personnel. High levels of workforce absenteeism will presumably not be limited to individual business locations, or even to business locations within particular cities or regions, but may occur at multiple business locations on a national or international level. Moreover, absenteeism may remain at abnormally high levels over a prolonged period as the pandemic spreads, recedes, and reemerges in several waves over many months.

It is certainly possible that from a future vantage point, current concerns over the pandemic threat will prove to have been overstated, as was the case with concerns voiced in the late 1990s over possible Y2K computer disruptions. It may be that the fears being expressed now by pandemic experts will be realized only in the distant future. Indeed, the probability of a pandemic occurring in any given year is generally viewed as low.²

“Regardless of whether a pandemic occurs in the next year or the next 50 years . . . the consensus among public health officials is that we should prepare ourselves for this eventuality now.”
– American Council on Science and Health

Nevertheless, unlike the Y2K threat, the threat of a pandemic persists from year to year, and the probability of a pandemic taking place at *some* future date is substantial. In fact, many experts view the relevant question to be not *if*, but *when*, a pandemic will occur.³

Given the extraordinary nature and scope of business disruption that may result from an influenza pandemic, fund groups may find it prudent to consider the adequacy of their current business continuity plans in light of the risks presented by a pandemic, and to take measures they deem appropriate to plan for and address these risks. Such consideration and planning may also be appropriate for additional reasons. Attention to pandemic planning issues may assist fund groups in their relations with clients and service providers. In this regard, some fund groups have reported that a number of clients — particularly large institutional investors — have begun to make informal and formal inquiries regarding the fund groups’ pandemic plans. If the experience of the fund industry with Y2K is any guide, such inquiries appear likely to continue, and perhaps increase.

Consideration of pandemic planning issues may also assist fund groups in their relations with regulators. As discussed below, regulators have become more active in the area of business continuity planning in recent years. Appropriate attention to pandemic planning may help a fund group demonstrate not only its preparedness for this specific threat, but also its recognition of the importance of a robust approach to business continuity planning in general.⁴

The Pandemic Threat

The prospect of a global “bird flu” pandemic has received significant recent attention at both national and international levels. Governments and the media

have responded to increasing concerns voiced by the scientific and international health communities, who have been focused on the threat of a pandemic for nearly two decades.⁵ Indeed, a number of health experts now view it as only a matter of time until a new strain of highly infectious and highly virulent influenza emerges to which humans have little or no existing immunity. Respected scientific and medical authorities predict that a modern pandemic flu could infect up to 30% of the U.S. population, with a death toll, in a mid-to-worst-case scenario, ranging from 200,000 to 2 million Americans and tens to hundreds of millions worldwide.⁶

By definition, an influenza “pandemic” would require

“Unlike geographically and temporally bounded disasters, a pandemic will spread across the globe over the course of months or over a year, possibly in waves, and will affect communities of all sizes and compositions. In terms of its scope, the impact of a severe pandemic may be more comparable to that of war or a widespread economic crisis than a hurricane, earthquake, or act of terrorism.”

– U.S. Dept. of Homeland Security, “Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources”

(1) the emergence of a new strain of flu virus, (2) with the ability to infect humans and cause serious illness, and (3) with the ability to spread efficiently and sustainably among humans.⁷ While flu pandemics tend to occur every generation or so, some have proved more virulent than others.⁸ The 1918 “Spanish flu” was the most lethal influenza pandemic of the modern era, killing at least 30 to 40 million people worldwide, including an estimated 675,000 Americans.⁹

Some public health experts believe that the world is now closer to another serious influenza pandemic than at any time in the last four decades. More specifically,

many experts are concerned that an existing strain of avian flu may mutate so as to result in an influenza strain capable of efficient transmission among humans.¹⁰ Caused by a virus that occurs in wild birds, this strain of avian flu, known as H5N1, is a fast-moving, highly pathogenic virus that has caused the largest and most severe outbreaks of avian flu on record. Despite the destruction of millions of infected chickens, ducks, and other birds in Asia in an effort to contain the virus, H5N1 has continued to spread (although the virus has not yet appeared in the United States). H5N1 has been of particular concern to experts both because it has crossed the species barrier and infected humans, and because it has been highly virulent.¹¹ While H5N1 is not yet capable of efficient human-to-human transmission, there have been, as of mid-Januray 2007, 267 confirmed cases of human H5N1 infection, with 161 of these cases (or 60%) resulting in death.¹²

How can one measure the relative severity of the threat posed by H5N1 and other emerging flu viruses? The World Health Organization¹³ (“WHO”) has developed a six-phase scale — the “WHO Influenza Pandemic Escalation Phases” (“WHO Pandemic Scale”) — that

is designed to measure escalating public health risk associated with the emergence of new flu viruses that may lead to pandemics. The WHO Pandemic Scale is monitored by many governments and businesses (including fund groups) involved in pandemic planning efforts. WHO believes that the world is currently in the third phase of the six-phase scale: H5N1 is causing disease among humans, but human-to-human transmission has been limited.¹⁴

Public health officials believe that if and when a highly contagious virus emerges, the virus will spread quickly, possibly reaching every continent in less than three months. Absent containment measures, it is predicted that the number of cases of flu could double every three days.¹⁵ Assuming that effective human-to-human transmission of such a virus first takes place in Asia, and in the absence of border or travel restrictions, the virus is likely to arrive in the United States within four to eight weeks of its emergence; even adoption of highly restrictive border measures may delay the virus’s arrival by only a few weeks.¹⁶ Experts predict that a pandemic would result in a substantial percentage of the world’s population requiring medical care, leading to

The WHO Influenza Pandemic Escalation Phases

Interpandemic period

Phase 1: No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may or may not be present in animals.

Phase 2: No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.

Pandemic alert period

Phase 3: Human infection(s) with a new subtype, but no human-to-human spread, or at most, rare instances of spread to a close contact.

Phase 4: Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.

Phase 5: Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).

Pandemic period

Phase 6: Pandemic: increased and sustained transmission in general population.

a shortage of medical staff, facilities, equipment, hospital beds, and supplies.¹⁷

A pandemic flu may also have a very different demographic impact from that of a seasonal flu, which tends to affect the very young and the very old. In 1918, for example, the Spanish flu disproportionately struck adults of workforce age, and a new pandemic flu may have a similar effect.¹⁸ One reason postulated for this difference in impact is the so-called “cytokine storm” phenomenon, an overreaction of the immune system that can result in organ damage and death. As a result of this phenomenon, people with the strongest immune systems may be the most likely to die, as happened with the 1918 flu.¹⁹

While predictions are necessarily speculative and vary widely among experts, WHO has estimated that between 2 million and 7.4 million people worldwide could die in a “mild” pandemic, and many more in a more virulent pandemic.²¹ The U.S. government has indicated that it is preparing for an infection rate in this

country of 30%, with a mortality rate of up to 2% of those infected (or up to 2 million deaths).²² By contrast, seasonal flu typically infects 5% to 20% of the country’s population, has a mortality rate of 0.1% of those infected, and causes about 36,000 deaths.²³

It is generally anticipated that a pandemic would take the form of two or more “waves” of infection, each of which would sweep the country over a period of two to three months.²⁴ Significant percentages of the national and global workforce are expected to be unavailable — the federal government is assuming a 40% absenteeism rate at peak periods²⁵ — whether by reason of their own illness, their need to care for others who are ill, child care responsibilities in the event that schools and/or day care centers are closed, bereavement, fears of being infected, or restrictions imposed by local, state or national authorities on travel or public gatherings.²⁶

For these and other reasons, an influenza pandemic would likely have a highly disruptive effect on both the

Differences Between Seasonal Flu and Pandemic Flu²⁰

SEASONAL FLU

Occurs annually, usually in winter

Humans usually have some immunity

The very young, the elderly, and those with preexisting health conditions are most at risk

Infects approximately 5% to 20% of U.S. population

Most people recover within a week or two

Vaccination is generally effective

Average number of U.S. deaths annually is 36,00

Adequate supply of antivirals is generally available

Health-care systems can meet demands

PANDEMIC FLU

Occurs rarely, three to four times a century, and can take place in any season

Humans have little or no immunity from previous exposure

Healthy people of all ages are at risk; adults between 20 and 40 may be particularly at risk

May infect approximately 30% of U.S. population

Creates more severe illness and higher risk of death

Vaccine likely will not be available, at least during early stages

Experts estimate U.S. deaths could total 200,00 to 2 million

May be inadequate supply of antivirals

Health-care systems may be overwhelmed

public and private sectors of the economy. The World Bank has estimated that a severe avian flu pandemic — based on a mortality rate of 1% of total world population, or about 70 million people — could cost the global economy about \$1.25 trillion, or about 3.1% of world gross domestic product.²⁷ The Congressional Budget Office has estimated that a severe pandemic could cost the U.S. economy more than \$600 billion, or about 5% of the gross domestic product.²⁸

International and U.S. Responses

Public health authorities at the international level have devoted substantial resources to examination of the pandemic threat and to formulation of contingency plans for addressing the effects of an influenza pandemic. WHO has developed a global influenza preparedness plan and led international meetings on avian and pandemic flu.²⁹ WHO's pandemic plan urges every country to develop or update a national influenza preparedness plan and recommends actions to be taken during each of the six phases of the WHO Pandemic Scale. WHO — along with the Food and Agriculture Organization of the United Nations and the World Organization for Animal Health³⁰ — is also coordinating efforts to track the H5N1 virus and has launched a global early warning system for animal diseases transmissible to humans.³¹ Meanwhile, the International Partnership on Avian and Pandemic Influenza, organized in 2005, seeks to raise awareness of the pandemic threat among governments; to promote the development of capacity to identify, contain, and respond to a pandemic flu; and to increase transparency in disease reporting and surveillance.³² The Partnership, which consists of top foreign affairs, health, and agriculture officials from 88 countries, including the United States, as well as representatives from nine international organizations (including WHO, the Food and Agricul-

ture Organization, and the World Organization for Animal Health), requires countries experiencing an outbreak to immediately share information and provide samples to WHO.³³

Public sector authorities at the national, state, and local levels in the U.S. have also been active. The U.S. government issued a National Strategy for Pandemic Influenza in November 2005 and a follow-up 227-page National Strategy for Pandemic Influenza Implementation Plan (“Implementation Plan”) in May 2006, which together detail the federal government's approach to preparing for, detecting, and responding to an influenza pandemic. Noting that WHO “represents the linchpin of international preparedness and response activities,” the Implementation Plan provides for the nation's influenza response system to be triggered upon confirmation by WHO that a new flu virus has become transmissible from human to human.³⁴ The Implementation Plan outlines more than 300 pandemic planning tasks for federal departments and agencies, along with a timetable for completing them. In December 2006, the U.S. government released a status report summarizing the government's progress on those actions.³⁵ According to the status report, 92% of all actions directed to be taken within six months of the release of the Implementation Plan have been completed.

Every state government and a number of local governments have developed pandemic flu plans, and the U.S. Department of Health and Human Services (“HHS”) has held pandemic planning “summits” with public health, emergency management, and response leaders in every state to enhance state and local pandemic flu preparations.³⁶

Fund Industry Responses

U.S. governmental authorities and other experts have cautioned that public sector efforts alone will not adequately prepare the country for an influenza pandemic, or adequately address the effects of a pandemic on the physical health of the populace or the economic health of the country.³⁷ In recognition of the inherent limits of public sector measures, federal and local authorities have urged the private sector to initiate proactive efforts for planning and responding to a future pandemic.³⁸ State and local pandemic strategies typically include plans to rely significantly on public-private partnerships, especially in connection with the provision of health care and health care supplies.³⁹ Likewise, the Implementation Plan emphasizes the importance of public-private partnerships in planning for a pandemic, particularly with respect to protecting critical infrastructure (e.g., health care, drinking water, energy, banking, telecommunications, transportation, emergency services, and shipping).

In this respect, the Implementation Plan extensively discusses the vital role the private sector plays in maintaining and operating the country's infrastructure. Sustaining the operations of critical infrastructure, as well as general economic activity during a pandemic flu, the Implementation Plan states, "will depend largely on individual organizations' development and implementation of (1) plans for business continuity under conditions of staffing shortages; and (2) plans to protect the health of their workforces."⁴⁰ The Implementation Plan offers a number of recommendations for the private sector with regard to pandemic planning. These recommendations cover a number of subjects, including employee cross-training and institution of infection control and social distancing measures to reduce disease transmission.

The private sector, as a whole, appears to be at a relatively early stage in its planning efforts.⁴¹ Nevertheless, some U.S. companies, particularly larger companies, have, in fact, developed extensive pandemic plans.⁴² Many of the plans contain provisions for working from home, flexible work hours, and obtaining permission for certain travel during a pandemic, as well as educational programs concerning preventive hygiene practices.

With regard to the financial services sector, while the Securities and Exchange Commission ("SEC") has not, to date, adopted any regulations explicitly requiring business continuity plans in general (or pandemic plans in particular), the agency has expressed interest in business continuity planning over the past several years. For example, in a 2003 release, the agency indicated that it expected investment advisers' policies and procedures to address business continuity plans.⁴³ More recently, the SEC identified business continuity practices as an examination priority for 2006.⁴⁴ The SEC, the Federal Reserve, and the Office of the Comptroller of the Currency also have issued white papers urging financial institutions to adopt certain business continuity practices.⁴⁵

Self-regulatory organizations and industry trade groups have taken more focused steps. Both the Financial Industry Regulatory Authority ("FINRA") and the New York Stock Exchange, Inc. ("NYSE") have adopted rules requiring business continuity planning by member organizations,⁴⁶ and both have recently more specifically addressed business continuity planning for pandemics. In this regard, in June 2006, the FINRA issued a request for comment on regulatory relief that should be granted in response to a possible pandemic or other major business disruption.⁴⁷ Several companies and industry associations submitted comments before the comment period ended in September 2006.

In May 2006, NYSE Regulation, Inc., the enforcement arm of the NYSE, issued an Information Memo providing “guidance pertaining to business continuity and contingency plans relating to a potential pandemic” (“NYSE Information Memo”). The NYSE Information Memo states that it is intended “to provide guidance to member organizations as to how to assess whether their Business Continuity and Contingency Plans would be suitable for a prolonged, widespread public health emergency.”⁴⁸ Noting that “[t]he threat of a pandemic poses unique challenges and therefore requires special planning,” the NYSE Information Memo highlights five specific considerations for which the securities industry should plan: (1) the risk that their business continuity plans might have to be operative for periods of weeks or months; (2) the risk of government-imposed quarantines; (3) the potential multinational or global scale of a pandemic; (4) the risk of absenteeism of 30% to 40% of the work force; and (5) the potential loss of multiple personnel in the same business unit, including business continuity managers themselves.⁴⁹ The NYSE Information Memo also notes that, in the past, the NYSE has temporarily suspended certain regulatory requirements during business interruptions and that the NYSE “anticipates that, in the event of a pandemic or other public health emergency, a flexible approach to regulatory requirements will be appropriate.”⁵⁰

The Investment Company Institute (“ICI”), through its Business Continuity Planning Subcommittee, a subcommittee of the ICI’s Technology Advisory Committee, has taken a lead role in coordinating the sharing of information among its members on pandemic flu planning and has participated in a number of public-private partnerships relating to the subject. The ICI has been especially active with respect to telecommunications issues and is working with the Financial Services Sector Coordinating Council for Critical Infrastructure

Protection and Homeland Security (“FSSCC”) and the Securities Industry Association in this area.

Indeed, the viability of the telecommunications sector in the event of a pandemic is an issue of widespread concern to the financial services industry as a whole. In this regard, U.S. Treasury Secretary Henry Paulson recently initiated a review of disaster planning for the financial markets by the President’s Working Group on Financial Markets (“President’s Working Group”), which is composed of the Secretary of the Treasury and the Chairpersons of the Board of Directors of the Federal Reserve System, the SEC, and the Commodity Futures Trading Commission.⁵¹ Paulson reportedly was prompted to do so by Wall Street concerns about the resilience of power and telecommunications services in the event of a terrorist attack, natural disaster, or flu pandemic.⁵²

As discussed below, individual fund groups appear to be taking differing approaches to the design and implementation of pandemic plans and to be at different stages in their planning. Some fund groups consulted for this Study are finalizing and testing their plans, while others remain in the preliminary stages of their planning efforts. Indeed, some fund groups — typically smaller fund groups with more limited resources — have determined to delay formal planning efforts, pending further developments.⁵³ Planning by service providers appears to mirror that of fund groups, with some larger service providers having fairly well developed plans and some smaller providers having done little, if any, planning.

Pandemic Planning Strategies and Techniques

Most of the fund groups interviewed for this Study agree that pandemic planning raises unique issues that may not be addressed by current business continuity plans. That being said, in planning for a pandemic — as in planning for any low-probability, high-impact event — fund complexes of varying sizes and levels of available resources may reasonably decide to take very different approaches.

Notwithstanding these differences in approach, there appears to be broad agreement on at least two goals of effective pandemic planning. During a pandemic, a significant percentage of an organization's employees — whether by reason of their own illness, the illness of family members, or otherwise — may be unable or unwilling to report to the workplace for days or weeks at a time. Similarly, a significant percentage of employees of third-party providers may be unavailable to report to their workplaces. Which employees may be unavailable, and for how long, cannot be readily predicted, and it is possible that entire “clusters” of key personnel could be simultaneously affected. Because employee unavailability — depending upon its scope and duration — may present serious threats to the continuity and integrity of an organization's business operations, effective pandemic planning frequently focuses on efforts (1) to reduce, in the first instance, the rate of illness and absenteeism among an organization's own employees, and (2) to ensure, even during periods of high employee unavailability, the continuation of critical business functions.

This section sets forth questions that fund groups may wish to consider in their own pandemic planning, and discusses some of the approaches that fund groups and service providers have taken with respect to pandemic

planning. More specifically, it outlines issues that fund groups may wish to consider in developing pandemic response plans, in addressing employee health and human-resource issues, and in formulating strategies for addressing operational concerns.

Developing a Pandemic Response Plan

The U.S. government has emphasized that pandemic preparedness by the private sector “demands a shift in business continuity planning from one that anticipates a short-term, near-normal condition, to one that prepares for extreme long-term, catastrophic contingencies.”⁵⁴ The U.S. government advises that such planning should be based on specific assumptions about the likely health, societal, and economic impacts of a pandemic and should address the delivery of goods and services essential to the continuity of operations of local communities and of the entire country.⁵⁵

INITIAL STEPS

Has your complex taken initial steps to plan for a pandemic?

Many businesses, including fund groups, have begun the process of planning for a pandemic by forming a pandemic planning team, usually consisting of business continuity managers and their staff, and, in some cases, senior management. These planning teams meet regularly, as often as monthly, to discuss their goals and progress and also regularly meet with, or report to, senior management.

Once individuals or a team have been selected to coordinate pandemic planning, their first task is frequently to gather information about past pandemics

and predictions regarding possible future pandemics. In conducting such research, planning teams may seek information through a variety of means, including Internet research; consultation with public officials, government agencies, and health experts; attendance at presentations, conferences, and webcasts; and discussions with local chapters of contingency planning associations. Some fund groups report having paid particular attention to publications distributed by and information posted on the web sites of WHO, the Centers for Disease Control and Prevention (“CDC”), and HHS. A number of fund groups have reportedly found it helpful, in developing their own plans, to consult the Business Pandemic Influenza Planning Checklist developed by HHS and the CDC, which is also set forth in the U.S. Implementation Plan.⁵⁶

Fund groups have reported that much useful information on pandemic-related issues is readily available, on the Internet and otherwise. Indeed, some fund groups have found it challenging to sort through the vast amount of information available and to determine how to efficiently use the information they have gathered.

KEY ASSUMPTIONS

What key assumptions are being used by your fund complex in planning for a pandemic?

Business continuity planning is inherently a speculative exercise, and this is perhaps particularly true in planning for a pandemic flu.⁵⁷ Surveys of available information yield disparate conclusions about the potential timing, extent, and impact of a pandemic. Accordingly, many planning teams have found it useful, early in the planning process, to identify and formulate working assumptions on certain basic issues, and to use these assumptions in their planning efforts. Some of these basic issues are discussed below:

■ *A Pandemic’s Location and Duration.* As set forth in the U.S. Implementation Plan, the federal government has assumed that a pandemic would occur in two or more waves of infection, each of which would cause localized outbreaks lasting approximately six to eight weeks and sweep the country over a period of two to three months.⁵⁸ The NYSE’s Information Memo advises that a pandemic is “expected to occur in multiple ‘waves,’ each potentially spanning weeks or longer.”⁵⁹ Most fund groups interviewed for the Study have generally adopted the assumptions of the federal government with respect to the course and duration of a pandemic. Most of the fund groups interviewed also have assumed that a pandemic flu will affect different locations at different times such that, to the extent fund groups have multiple facilities, not all of their facilities will be affected simultaneously, and they will be able to temporarily move certain operations to non-affected facilities.

■ *Rate of Employee Absenteeism.* The federal government has assumed that an average of 20% of working adults will become ill during a community outbreak, and recommends that employers assume that up to 40% of their workforce may be absent for periods of approximately two weeks at the height of a pandemic wave (given that some workers will be absent in order to care for others or for other reasons), with lower percentages of employees absent for a few weeks before and after the peak.⁶⁰ Experts have also cautioned that it is unpredictable *which* employees will be affected by a pandemic. Thus, a pandemic may strike anyone “from the CEO to the front-line worker.”⁶¹ A pandemic may also affect “clusters” of workers, i.e., multiple employees in the same business unit, a point emphasized by the NYSE’s Information Memo.⁶²

Fund complexes have adopted varying assumptions about employee absenteeism rates, ranging, among the fund groups interviewed by ICI Mutual, from 30% to 60%. Fund groups also have made different assumptions about the potential for “cluster” absenteeism. As discussed further below, some groups have decided to plan for the possibility that entire business units will be absent for at least some period of time during a pandemic and have incorporated the goal of cross-training employees who perform key functions into their plans. By contrast, some other groups have generally assumed that entire business groups will *not* be absent simultaneously and, accordingly, have not included specific plans to address that possibility.

■ *Government-Imposed Quarantines.* Although the U.S. Implementation Plan does not discuss the likelihood of quarantines during a pandemic, it does note that a pandemic *could* require measures such as isolation of ill persons or quarantine of people who have been exposed to infection but do not yet show symptoms.⁶³ Moreover, the HHS Business Pandemic Influenza Planning Checklist recommends that businesses take into account the possibility of community containment measures and quarantines as part of their planning for employee absences,⁶⁴ as does the NYSE Information Memo.⁶⁵ Many of the fund groups interviewed for the Study recognize that government-imposed quarantines — which would prevent otherwise healthy and available employees from reporting to work — are possible, and some have discussed the possibility of quarantines with government planners, particularly at the local level. Some of the groups interviewed have assumed that notwithstanding the *possibility* of quarantines, widespread quarantines are *unlikely* to be imposed.

■ *Impact on General Infrastructure.* The U.S. Implementation Plan advises that while a pandemic “will not

damage power lines, banks, or computer networks, it has the potential ultimately to threaten all critical infrastructure by its impact on an organization’s human resources by removing essential personnel from the workforce for weeks or months.”⁶⁶ The federal government defines the following thirteen sectors — agriculture and food; public health and health care; drinking water and water treatment systems; energy; banking and finance; national monuments and icons; defense industrial base; information technology; telecommunications; chemical; transportation systems; emergency services; and postal and shipping — and four key resources — dams; government facilities; commercial facilities; and nuclear reactors, material, and waste — as “critical infrastructure” essential to the country’s security and economic and social stability.⁶⁷ Most fund groups interviewed for this Study have assumed that the country’s critical infrastructure will remain largely intact and operable during a pandemic.

■ *Impact on Telecommunications.* Most fund groups interviewed for this Study recognize that there is a legitimate issue as to whether, in the event of a pandemic, increased use of the Internet by telecommuters and/or the general public may cause Internet service to be slow or unavailable.⁶⁸ More specifically, the concern about Internet capacity focuses on the challenge of the so-called “last mile” — the final leg of delivering connectivity from a communications provider to a customer.⁶⁹ Various groups, including the President’s Working Group, the FSSCC, and the ICI, are discussing and analyzing this issue. Some fund groups plan to address the potential problem of limited Internet capacity by staggering the hours workers will use bandwidth by telecommuting. More typically, though, fund groups interviewed for this Study have reasoned that the question of Internet availability is unanswerable at this point and have

decided to assume that there will be sufficient Internet capacity to support a significant degree of telecommuting.

- *Availability of Third-Party Service Providers and Suppliers.* The U.S. Implementation Plan recommends that businesses “identify the suppliers, shippers, resources and other businesses they must interact with on a daily basis” and consider establishing relationships with more than one supplier, noting that “[a] disaster that shuts down a key supplier could be devastating to a business.”⁷⁰

Most fund groups interviewed for the Study have assumed that their primary third-party service providers and other suppliers will continue to provide necessary services during a pandemic. However, as discussed further below, while most fund groups interviewed routinely request and obtain information from service providers about their business continuity plans generally, few fund groups appear to have specifically sought information from service providers about their pandemic plans.

WRITTEN PANDEMIC PLAN REALISTIC TIMELINE FOR COMPLETION

Is your fund complex developing a written pandemic plan or otherwise adapting its written business continuity plan to address issues raised by pandemic flu? Has a realistic timeline for completion of the plan been established?

As with business continuity planning generally, fund complexes typically choose to memorialize their pandemic plans in writing.⁷¹ While some complexes are reportedly drafting their pandemic plans as “appendices” to their current business continuity plans or as separate documents entirely, others are integrating their plans for a pandemic directly into their existing business continuity plans.

As noted earlier, fund groups appear to be at differing stages in the pandemic planning process. A number of groups interviewed for the study reported that they intended to complete a majority of their planning by late 2006. Others, typically smaller complexes and service providers, have decided to postpone planning until the situation develops further or until they become aware of information that causes them to believe immediate action is warranted.

PANDEMIC PLAN TRIGGERS

Have guidelines been established for when your fund complex’s pandemic plan will be triggered?

Unlike most disasters or emergencies for which fund groups prepare (e.g., hurricanes, earthquakes, or terrorist attacks), it may not be clear when a pandemic has begun and, thus, when pandemic plans should be triggered. The federal government has linked the U.S. Implementation Plan to the WHO Pandemic Scale and has developed certain goals, actions, and policy decisions that are to be triggered in each phase. Similarly, a number of fund groups are closely monitoring the WHO Pandemic Scale and have tied elements of their plans to changes in those phases. Thus, for example, the pandemic plans of many of the fund groups interviewed for this Study call for relatively limited activities during Phase 3 (e.g., institution of pandemic and general hygiene education and awareness campaigns, ordering of supplies, and additional planning), with implementation of additional measures scheduled for Phases 4, 5, and 6 (e.g., implementation of policies relating to travel, social distancing, and telecommuting).

PUBLIC-PRIVATE PARTNERSHIPS

Is your fund complex participating in any public-private partnerships relating to pandemic flu planning?

Some fund groups interviewed for this Study reported that they have been active in coordinating with gov-

ernment entities on the city, county, and state levels with regard to emergency planning generally, which is, in many places, being expanded to include pandemic planning.⁷² A number of fund groups are also involved in contingency planning associations, partnerships of local businesses, and/or local emergency management associations. Some fund groups have participated in simulated emergency exercises organized by local authorities. Even those fund groups that have been active in such partnerships, however, believe that the public and private sectors have much more work to do in coordinating their efforts to plan for a pandemic.

EMERGENCY COMMUNICATIONS PLAN

Has the possibility of a pandemic been considered in evaluating your fund group's existing emergency communications plan?

One important factor affecting continuity of business operations during a period of significant absenteeism may be the strength of an organization's ability to communicate with its employees and others. Fund groups typically already have emergency communications systems in place as part of their existing business continuity plans. In this regard, many larger groups have automated — and interactive — communications systems that can send messages, by telephone and/or e-mail, to large numbers of people. Such systems may be capable of facilitating communications between management and employees both off-site and on-site during the course of a pandemic. By contrast, some fund groups, particularly smaller fund groups, have determined that less sophisticated communications protocols should be satisfactory to meet their particular needs, in light of their size, geographical distribution, and/or other factors. Such fund groups may choose to rely, for example, on a manual process of contacting employees by phone or e-mail or by posting messages on intranet sites or on automated voicemail systems.

TESTING

Has your fund complex begun testing its pandemic plan?

Some of the fund complexes and service providers interviewed for the Study have begun testing all or parts of their pandemic plans, or anticipate testing them in the relatively near future.⁷³ For example, a number of fund groups and providers regularly test their emergency communication systems, both as part of their pandemic planning and their general business continuity planning. Similarly, some entities have reported that they plan to test their information technology capabilities by arranging for large numbers of employees to work from home at a specified time. Other entities plan to incorporate pandemic scenarios into their regular disaster planning exercises — for example, by simulating the unavailability of a large and random percentage of employees for specified periods of time.

A recent measles outbreak in Boston afforded a number of businesses, including certain fund groups, with an opportunity to consider the effectiveness of their pandemic planning. The outbreak also illustrates the potential for infectious diseases to travel around the world in a short period of time. In April and May of 2006, authorities confirmed eleven cases of measles, believed to have originated with a new employee from out of the country who went to work at a financial services company in a large, downtown office building. The outbreak spread to other employees at the financial services company, most of whom were on the same floor, and ultimately caused the state of Massachusetts to order hundreds of employees at three workplaces to stay home until they could prove they were not susceptible or until they passed the incubation period for the disease.⁷⁴

As with business continuity planning generally, the pandemic threat involves a number of variables that may evolve over time. Accordingly, as with other forms

of business continuity planning, fund groups may wish not only to test their pandemic plans, but to review and update them at regular intervals.

Addressing Risks to Employees

As discussed above, one common focus of effective pandemic planning is on reducing, in the first instance, the rate of illness and absenteeism among an organization's own employees. Fund groups interviewed for this Study have taken a number of approaches to the threats posed by a pandemic to their employees' physical and psychological health.⁷⁵ In considering how to address such risks to employee health, fund groups may wish to consider the following questions, among others.

LIMIT THE SPREAD OF INFECTION

Is your fund complex considering what policies may be appropriate to implement in order to limit the spread of infection among employees in the workplace?

Flu viruses are particularly infectious because they have a long incubation period (approximately forty-eight hours), during which individuals may be infected — and be infectious — without being aware of it and without demonstrating any symptoms. Because most Americans work in settings where social contacts occur, infection control in the workplace is expected to be a significant issue in the event of a flu pandemic.⁷⁶

While recognizing that there are no fail-safe methods to ensure their employees' health during a pandemic flu, many fund complexes have considered whether there are reasonable measures that can be taken to help limit the spread of infection. For example, some fund groups plan to try to limit infection by imposing “quarantines” from work, with pay, for specified

periods of time after an employee is either exposed to or infected by the flu virus. Some groups also plan to divide employees into groups to work different shifts in order to limit exposure. In a similar vein, some groups, concerned over the possibility that entire clusters of key employees — and even entire business units — could become infected by reason of their proximity to one other, are reviewing the feasibility of physically separating employees at an appropriate phase of a pandemic.

Most fund groups interviewed also have included policies in their plans discouraging or prohibiting face-to-face contact in the workplace, depending on the current pandemic phase. For example, during Phase 4 of the WHO Pandemic Scale (in which human-to-human transmission has begun in small clusters), some groups plan to encourage, but not necessarily require, employees to conduct telephone conference calls instead of face-to-face meetings and to decrease the number of client visitors. During Phase 5 (in which larger clusters of humans are being infected by human-to-human transmission), some groups plan to prohibit in-person meetings, require that meetings be held by conference calls, and disallow all client visits.

Fund complexes appear to be taking different views on whether to stockpile hygienic and flu protection supplies for employees. Some fund groups have already purchased or decided to purchase supplies (e.g., hand sanitizers, towelettes for cleaning office equipment, and masks) for distribution and use as events may warrant. Other groups have decided not to centralize the stockpiling of such supplies, and, instead, have planned to allow individual departments to order certain supplies as they may deem appropriate.

Some fund groups are also considering such measures as mandating the use of masks, restricting access to office space, inspecting and cleaning the heating and

cooling filtration systems to ensure proper ventilation, and disallowing preparation of food onsite. Some fund groups report longer-term plans to incorporate hygiene and infection considerations when remodeling office space or leasing new office space (for example, by implementing or seeking features such as hands-free restroom facilities).

Some fund groups report that they have considered contracting with health professionals to screen employees and/or provide health care onsite in the event of a pandemic. However, few, if any, appear to have concrete plans to do so. In considering onsite health care, some fund groups have concluded that in the absence of a pre-existing relationship, they are unlikely to be able to secure the services of health-care professionals during a pandemic, when the demand for health-care providers will likely far exceed supply.

Finally, some fund groups are seeking to address the issue of “presenteeism” — the economic costs (e.g., lost productivity) associated with workers who are sick, but who persist in reporting to the workplace.⁷⁷ Studies attempting to quantify the costs of presenteeism have done so in the absence of a pandemic, and the costs seem likely to rise during a pandemic, as sick workers may infect their colleagues.⁷⁸ Some fund groups are evaluating whether their current policies and employee benefit structures encourage presenteeism and whether any changes should be made. Thus, for example, employers who provide combined sick leave and annual leave may inadvertently encourage ill employees to report to work in order to maximize their number of vacation days. A number of groups are also considering the appropriateness of forced sick days, or at least how they might encourage employees who are sick, or have reason to believe they may be infected, to remain at home.⁷⁹

TRAVEL RESTRICTIONS

Is your fund complex considering when/whether to impose travel restrictions on employees?

Pandemic plans of some fund complexes include restrictions on employee business travel. As the threat level escalates (e.g., as measured by the WHO Pandemic Scale), some groups plan to issue a blanket prohibition on travel to areas where human-to-human transmission of a flu virus has occurred; others plan to limit travel to areas approved in advance by human resources management. Imposing prohibitions on personal travel has proved more problematic, and none of the fund groups interviewed for the Study reported plans to place restrictions on non-business travel, generally due to their reluctance to interfere with personal rights. However, some groups do plan to provide information to employees about the risks of travel during various stages of a pandemic and/or to request that employees provide notice of their personal travel plans.

EMPLOYEE ACCESS TO PANDEMIC FLU AND RESPONSE PLAN

Is your fund group providing employees with access to information about pandemic flu and your group's response plan?

There appears to be a consensus among public health experts and public sector authorities that employee education is a key element of pandemic planning.⁸⁰ Employee education serves at least two important purposes: reducing fear and anxiety among employees, and limiting the spread of infection.⁸¹

Many fund groups have viewed concerns over avian flu as providing them with an opportunity, often in conjunction with their annual flu vaccination programs, to educate employees about good hygiene and health-care practices that can contribute to overall employee health, even in the absence of a pandemic. In this

regard, some fund groups have planned health education campaigns, which may include distribution of written materials and/or seminars about such practices as the benefits of annual flu vaccines and common techniques for reducing the spread of infections.

With respect to educating employees on pandemic flu more specifically, most fund groups interviewed for the Study appear to have opted, to date, for a low-key approach. Citing concerns over “media hype” and fears over creating undue alarm among employees, some fund groups are not planning to provide pandemic-related information to employees until such time as a pandemic appears imminent, or until the threat of a pandemic receives such a sustained amount of media attention as to warrant prompt educational efforts by the fund groups. Other groups report that they intend to provide a limited amount of information about pandemic flu and their response plans on their web sites.

LIBERAL LEAVE FLEXIBLE WORKPLACES AND SCHEDULES

Has your complex considered implementing policies and procedures for liberal leave, flexible workplaces, and/or flexible schedules during a pandemic?

Because a pandemic poses risks to personnel, the threat naturally raises human-resource issues for consideration by fund groups. Employee absenteeism appears to be the most significant of these issues. A number of fund groups interviewed for the Study have evaluated their employee leave policies and have decided that these policies will be liberalized in the event of a pandemic, both to allow employees to attend to their own health and that of their families, and as a means to limit the spread of infection in the workplace. Thus, many fund groups plan to offer appropriate amounts of leave time, in addition to standard allotted leave time, to

employees who are exposed to or infected by the flu virus, or who may be required to care for family members. Other fund groups believe that their existing leave policies will be appropriate in the event of a pandemic.

Similarly, many fund groups plan to permit more flexible employee work schedules, perhaps permitting employees to work varying shifts and to telecommute when possible, during a pandemic. Like liberal leave policies, flexible work schedules and flexible work places may help to limit the spread of infection, as well as permit employees to care for themselves and their families.

Although it is beyond the scope of this Study, it is important for all businesses, including fund groups, to be aware that employment-related legal issues may arise in the course of pandemic planning. For example, issues may arise under occupational safety and health, workers’ compensation, labor, and/or health laws.⁸² Fund groups may wish to consult with legal counsel about these issues.

PLANNING FOR ABSENTEEISM

Regardless of the preventive measures taken by employers to protect employee health, a pandemic, by its very nature, will almost certainly result in very high rates of employee absenteeism. Recognizing that a pandemic is likely to require substantial changes, at least temporarily, to their ordinary business operations, many fund groups have focused substantial attention on ensuring that they will be able to continue critical business operations during the pendency of such an event.

CRITICAL OPERATIONS

Has your fund complex analyzed how to ensure that critical operations continue in the event of large-scale, extended employee absenteeism?

In planning for a pandemic, as in planning for other types of business disruptions, fund groups frequently seek to identify the operations most critical to their ability to continue business, and to develop appropriate mechanisms to continue such critical operations during a disruptive event. Because the disruptive effect of a pandemic will, in large part, be driven by the rate and duration of employee (and third-party provider) unavailability, fund groups may wish to consider how they may compensate for the absence, over indefinite time periods, of uncertain numbers of employees involved in critical operations. In this regard, smaller entities may be affected to a greater extent than larger entities since larger firms may have multiple employees who are able to perform a particular function, whereas smaller firms may have only one person who can perform that function.

Regardless of size, fund groups may find it useful, as an analytical matter, to consider the separate issues raised by (1) employees of the fund group who are able to work, but who are unavailable to be at the workplace; (2) employees of the fund group who are unavailable to work at any location; and (3) employees of third-party providers who are unavailable to provide customary services to the fund group.

■ *Employees Able to Work, but Unavailable at the Workplace.*

In planning for absenteeism among employees who are able to work, but who are not available to work onsite, most fund groups interviewed for the Study expect to rely, to varying degrees, on the ability of large numbers of these employees to telecommute. Some fund groups report that they plan to have the capability to permit between half and two-thirds of their employees to telecommute at any given time.

Notwithstanding this emphasis on telecommuting, fund groups appear to agree that there may be some inherent limitations on the types of work that can be

accomplished remotely. In developing plans for telecommuting, fund groups have therefore sought to evaluate the feasibility of telecommuting by employees of various business units, given their responsibilities, regulatory and technological requirements, and workflow. In this regard, the feasibility and challenges associated with telecommuting may differ dramatically among employees. For example, absent regulatory relief, certain work (such as trading) presumably may not be permissible from remote locations.

The prospect of mass telecommuting also raises a host of operational issues. Foremost among these is whether the fund group has the technological capability to permit significant numbers of employees to telecommute. Several fund groups interviewed for the Study report that they plan to implement computer systems that allow users to access their employers' networks from any location, so as to provide employees with access to those applications and files to which the employees would have access if they were working onsite. Some groups, having determined that it would be impractical for employees who have dial-up Internet connections to work remotely, have surveyed how many of their employees have broadband connections in their homes, and have considered what additional steps might be appropriate or feasible to facilitate remote access.⁸³

As discussed above, experts have warned that, in the event of a pandemic, the Internet infrastructure may not be able to support the increase in traffic that would be generated by telecommuters.⁸⁴ Generally, fund groups are aware of this concern and recognize it as a potentially significant challenge. That being said, most fund groups interviewed for this Study regard this as a global dilemma to which there may be little, if any, alternative, other than to recognize that they should not plan to rely solely on telecommuting.

Some fund groups have also considered the prospect that a pandemic or similar crisis could increase security risks, including risks of electronic security breaches. These fund groups report that they are, as a result, considering how they may upgrade security measures in the event a pandemic occurs.

- *Employees Unable to Work at Any Location.* As discussed above, experts estimate that a substantial percentage of the workforce may be infected during a pandemic, and have emphasized the unpredictability of determining which employees may be infected during any particular period. Telecommuting will not address the issue of how to compensate for key employees who are unavailable to work by reason of their own serious illness. Telecommuting will also not address the issue of how to compensate for key employees who are otherwise unavailable to come to the workplace, and for whom telecommuting is not a feasible solution (by reason of technological limitations, security concerns, regulatory issues, or otherwise). Accordingly, a number of fund groups are focusing planning efforts on the cross-training of multiple employees to handle the same critical function, with a goal of ensuring that at least one of these individuals is reasonably likely to be available in the event of a pandemic.

Separate and apart from cross-training of employees, a number of fund groups also have found it useful to review — and, as necessary, to create or supplement — written documentation of important procedures and job functions. Such groups have reasoned that the existence of such a written record should assist them if, despite cross-training and other planning efforts, a pandemic results in the unavailability of *all* employees who may otherwise be qualified to immediately handle a specified critical function.

- *Unavailability of Employees of Service Providers.* Based on interviews conducted for the Study, it appears that, to date, there has not been extensive coordination between fund complexes and their service providers with regard to the specific area of pandemic flu planning. While some fund groups have made broad inquiries of their service providers in this area, and while most groups are aware of their major providers' general business continuity plans, it appears that relatively few groups have sought to research the state of their service providers' pandemic plans in detail. Similarly, most service providers themselves generally have reported that they have not affirmatively provided information about their pandemic plans to fund groups and have received few inquiries from fund complexes regarding the status of their plans (although some service providers have advised that the number of inquiries has recently increased).

The pandemic planning efforts of the larger service providers interviewed for the Study tend to mirror those of fund groups generally. Thus, these service providers have sought to prepare not only for high absenteeism rates, but also for the possibility that key groups of employees may be absent at the same time. In this regard, some service providers report plans to physically separate key groups of employees, as may be appropriate, and to make use of their backup data facilities in different locations, under the assumption that employees in both their headquarters and backup locations would likely not fall ill at the same time. While believing that they already have strong information technology programs, some service providers have made plans to further upgrade their technology, with a view toward increasing their telecommuting capacity. Finally, a number of service providers recognize that the pandemic threat involves many variables that are evolving, and indicate that they plan to review and update their pandemic plans at regular intervals.

Conclusion

The weight of scientific and governmental authority supports the view that the threat of an influenza pandemic is real. Existing business continuity plans of fund groups, despite their detail and sophistication, may not address the special challenges associated with planning for a pandemic. For fund groups, attention and consideration to pandemic planning may be appropriate not only as a matter of prudence, but to assist in addressing potential concerns that may be raised by clients and regulators.

There appears to be broad agreement that effective pandemic planning seeks (1) to reduce, in the first instance, the rate of illness and absenteeism that a pandemic may generate among a fund group's own employees, and (2) to ensure, notwithstanding periods of high employee unavailability, that critical business functions can be maintained. Fund complexes of varying sizes and levels of available resources may reasonably decide to take very different approaches in their efforts to achieve these ends.

Appendix — Additional Resources

Center for Infectious Disease Research & Policy
www.cidrap.umn.edu/cidrap/content/influenza/panflu/index.html

Flu Wiki, an online collaborative flu encyclopedia
www.fluwikie.com

Food and Agriculture Organization of the United Nations
www.fao.org

Mayo Clinic
www.mayoclinic.com/health/bird-flu/DS00566

U.S. Department of Health & Human Services Centers for Disease Control
www.cdc.gov

U.S. Department of Health & Human Services Pandemic Influenza Plan
www.hhs.gov/pandemicflu/plan/pdf/HHSPandemicInfluenzaPlan.pdf

U.S. Government Avian and Pandemic Flu Information
www.pandemicflu.gov

U.S. National Strategy for Pandemic Influenza Implementation Plan
http://www.whitehouse.gov/homeland/nspi_implementation.pdf

World Bank
www.worldbank.org

World Health Organization
www.who.int

World Organization for Animal Health
www.oie.int

Endnotes

¹ See U.S. Dep't of Health & Human Servs., *HHS Pandemic Influenza Plan*, B-3 (2005), available at <http://www.hhs.gov/pandemicflu/plan/pdf/HHSPandemicInfluenzaPlan.pdf> (hereinafter *HHS Plan*) (“It is the sheer scope of influenza pandemics, with their potential to rapidly spread and overwhelm societies and cause illnesses and deaths among all age groups, which distinguishes pandemic influenza from other emerging infectious disease threats and makes pandemic influenza one of the most feared emerging infectious disease threats.”).

² The Congressional Budget Office has estimated that there is approximately a 3-4% probability of a pandemic occurring in any given year. Cong. Budget Office, *A Potential Influenza Pandemic: Possible Macroeconomic Effects and Policy Issues* 5 (rev. ed. 2006); Roger Highfield, *A Flu Pandemic Is Long Overdue*, *Telegraph*, Feb. 21, 2006 (a severe influenza pandemic “is what scientists call a low-probability, high-impact risk.”)

³ Anthony S. Fauci, *Pandemic Influenza Threat and Preparedness*, 12 *Emerging Infectious Diseases* 73, 76 (2006), available at <http://www.cdc.gov/ncidod/eid/vol12no01/05-0983.htm> (“We cannot be certain when the next influenza pandemic will emerge, or even whether it will be caused by H5N1 or an unrelated virus. However, we can be certain that an influenza pandemic eventually will occur.”); Jan Jun, *Radio Free Europe, U.K.: Bird-Flu Experts Gather, Say Pandemic “Not Matter Of If, But When”* (Dec. 6, 2005), <http://www.rferl.org/featuresarticle/2005/12/fda1957d-7e2b-49f9-ab0f-33749b29d393.html>; World Bank, *Avian Flu Pandemic – Not a Question of If, But When and How Severe?* (Oct. 19, 2005), <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXTEAPREGT/OPHEANUT/0,,contentMDK:20690106~menuPK:503063~pagePK:34004173~piPK:34003707~theSitePK:503048,00.html>.

⁴ Even in the absence of a future *influenza* pandemic, there remain legitimate concerns about the development of business continuity responses to a rapid spread of infectious disease more generally. Such concerns are not without basis, as evidenced by the impact on local financial institutions of a measles outbreak that occurred in the spring of 2006 in Boston. See Stephen Smith, *Measles Outbreak Shows a Global Threat*, *Boston Globe*, June 10, 2006, available at http://www.boston.com/news/local/articles/2006/06/10/measles_outbreak_shows_a_global_threat.

⁵ At least in the U.S., some of this increased attention may have been fueled by the aftermath of Hurricane Katrina, which highlighted the importance of preparedness for disasters. Marc Lipsitch & Barry R. Bloom, *Avian Flu: Preparing for a Pandemic*, *Harv. Pub. Health Rev.*, Winter 2006, available at http://www.hsph.harvard.edu/review/rvw_winter06/rvwwinter06_dean.html (“The infectious disease community has been concerned about the possibility of pandemic influenza for almost two decades, and the U.S. government began to draft a Pandemic Emergency Plan in 1991. But it was not until the aftermath of Hurricane Katrina that our country’s lack of preparedness for handling major disasters became evident to all.”); Donald G. McNeil, Jr., *Bird Flu Deaths in Indonesia Raise Concerns*, *N.Y. Times*, May 18, 2006, available at <http://www.nytimes.com/2006/05/18/world/asia/18birdflu.html>; *Presenteeism, Bird Flu Won’t Mix, Firms Say*, *L.A. Times*, May 8, 2006, available at <http://www.latimes.com/business/la-fi-birdflu8may08,1,2408763.story>; Gardiner Harris, *States Welcome Flu Plan But Say They Need Federal Money*, *N.Y. Times*, May 4, 2006, at A20; David Brown, *Business Plan for a Pandemic? Most Firms Haven’t Prepared for Possibility of a Global Outbreak*, *Wash. Post*, May 2, 2006, available at <http://www.washingtonpost.com/wp-dyn/content/article/2006/05/01/AR2006050101608.html>; Del Jones, *Few U.S. Companies Are Prepared for Bird Flu Outbreak*, *USA Today*, Apr. 30, 2006, available at http://www.usatoday.com/money/companies/management/2006-04-30-avian-flu-usat_x.htm; World Health Org., *Pandemic Influenza Draft Protocol for Rapid Response and Containment* (2006), available at http://www.who.int/csr/disease/avian_influenza/guidelines/RapidResponse_27%2001.pdf.

⁶ *HHIS Plan*, *supra* note 1, at 18; Homeland Sec. Council, *National Strategy for Pandemic Influenza Implementation Plan*, 15, 25 (2006); Michael T. Osterholm, *Preparing for the Next Pandemic*, 352 *New Eng. J. of Med.* 1839, 1842 (2005), available at <http://content.nejm.org/cgi/content/full/352/18/1839> (“If we translate the rate of death associated with the 1918 influenza virus to that in the current population, there could be 1.7 million deaths in the United States and 180 million to 360 million deaths globally.”); David Brown, *World Death Toll of a Flu Pandemic Would Be 62 Million*, *Wash. Post*, Dec. 22, 2006, at A3 (discussing study published in the *Lancet* medical journal, which predicted deaths from a modern Spanish flu in the range of 51 million to 81 million, with a median of 62 million). In contrast, seasonal influenza is responsible for about 36,000 deaths and 226,000 hospitalizations every year in the United States. *HHIS Plan*, *supra* note 1, at B-3.

⁷ Marc Siegel, *Bird Flu: Everything You Need to Know About the Next Pandemic* 15 (2006); World Health Org., *Handbook for Journalists: Influenza Pandemic 2* (2005), available at http://www.who.int/csr/don/Handbook_influenza_pandemic_dec05.pdf#search=%22who%20predict%20infection%20rate%20pandemic%20flu%22; Aubrey Stimola, American Council on Science & Health, *Avian Influenza, or “Bird Flu”: What You Need to Know* 3 (2006).

⁸ The last three major flu pandemics were the 1918 “Spanish” flu, the 1957 “Asian” flu, and the 1968 “Hong Kong” flu. *See* note 9, *infra*.

⁹ As noted in the text, it is estimated that at least 30-40 million people died worldwide during the 1918 pandemic. Approximately 2 million people are estimated to have died worldwide during the 1957 pandemic, and about 1 million people during the 1968 pandemic. *See generally* World Health Org., *Ten Things You Need to Know About Pandemic Influenza*, Oct. 14, 2005, available at <http://www.who.int/csr/disease/influenza/pandemic10things/en/index.html>; Ctrs. for Disease Control & Prevention, General Information, <http://www.pandemicflu.gov/general> (last visited Nov. 16, 2006); Jeffery K. Taubenberger & David M. Morens, *1918 Influenza: the Mother of All Pandemics*, 12 *Emerging Infectious Diseases* 15 (2006), available at <http://www.cdc.gov/ncidod/EID/vol12no01/05-0979.htm>; Brown, *supra* note 6.

¹⁰ World Health Org., Current WHO Phase of Pandemic Alert (Nov. 2005), http://www.who.int/csr/disease/avian_influenza/phase/en/index.html; Writing Committee of the World Health Organization Consultation on Human Influenza A/H5, *Avian Influenza A (H5N1) Infection in Humans*, 353 *New Eng. J. of Med.* 13 (2005) (“An unprecedented epizootic avian influenza A (H5N1) virus that is highly pathogenic has crossed the species barrier in Asia to cause many human fatalities and poses an increasing pandemic threat.”).

¹¹ World Health Org., Avian Flu Frequently Asked Questions (Dec. 5, 2005), http://www.who.int/csr/disease/avian_influenza/avian_faqs/en/index.html (“Unlike normal seasonal influenza, where infection causes only mild respiratory symptoms in most people, the disease caused by H5N1 follows an unusually aggressive clinical course, with rapid deterioration and high fatality. Primary viral pneumonia and multi-organ failure are common.”). Moreover, the virus continues to mutate. Scientists recently discovered a new strain of H5N1 that appears to be resistant to vaccines developed to protect poultry from earlier types of the H5N1 virus. Randolph E. Schmid, *Scientists Uncover New Bird Flu Strain*, Associated Press, Oct. 30, 2006, available at <http://abcnews.go.com/Technology/wireStory?id=2616679&CMP=OTC-RSSFeeds0312>.

¹² World Health Org., Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO (Jan. 15, 2007), http://www.who.int/csr/disease/avian_influenza/country/cases_table_2006_01_15/en/index.html. Most of those infected have been previously healthy children and young adults.

¹³ The World Health Organization is the health agency of the United Nations. World Health Org., About WHO, <http://who.int/about/en> (last visited Nov. 16, 2006).

¹⁴ Dep't of Communicable Diseases, World Health Org., *Global Influenza Preparedness Plan 2* (2005), available at http://www.who.int/csr/resources/publications/influenza/GIP_2005_5Eweb.pdf.

¹⁵ Homeland Sec. Council, *supra* note 6, at 100. The flu virus is transmitted from person to person primarily by virus-laden droplets generated when an infected person coughs, sneezes, or speaks. The droplets may enter the respiratory tracts of people within a radius of about three feet. The typical incubation period for flu is two days, and people infected with the flu may be contagious for 24 hours before exhibiting symptoms. *Id.* at 76.

¹⁶ *Id.* at 75; Brown, *supra* note 5; World Health Org. Writing Group, *Nonpharmaceutical Interventions for Pandemic Influenza, National and Community Measures*, 12 *Emerging Infectious Diseases* 88 (2006), available at <http://www.cdc.gov/ncidod/eid/vol12no01/05-1371.htm>; *Preparing for a Pandemic*, *Scientific American*, Oct. 24, 2005, available at http://www.sciam.com/print_version.cfm?articleID=000DCB5A-9CC7-134E-9CC783414B7F0000; World Health Org., *Ten Things You Need to Know About Pandemic Influenza* (Oct. 14, 2005), available at <http://www.who.int/csr/disease/influenza/pandemic10things/en/index.html>.

¹⁷ U.S. Dep't of Health & Human Servs., *What Is an Influenza Pandemic?* <http://www.pandemicflu.gov/general/whatis.html> (last visited Nov. 16, 2006). Currently, there is no vaccine for H5N1, though researchers are working to develop one. Ctrs. for Disease Control & Prevention, *Key Facts About Avian Influenza (Bird Flu) and Avian Influenza A (H5N1) Virus* (June 30, 2006), available at <http://www.cdc.gov/flu/avian/gen-info/facts.htm>.

¹⁸ Death rates for the 1918 pandemic were disproportionately high among young adults 20-40 years old, representing nearly half of flu-related deaths. *See* Taubenberger & Morens, *supra* note 9. Similarly, the human deaths from the H5N1 virus have predominantly been among children and young adults, in contrast to seasonal flu, which primarily affect the very young, very old, and those already ill. *See* Bernadine Healy, *The Young People's Plague*, *U.S. News & World Rep.*, May 1, 2006, available at <http://www.usnews.com/usnews/health/articles/060501/1healy.htm>; Ctrs. for Disease Control & Prevention, *supra* note 17; Donald G. McNeil, Jr., *Avian Flu Tends to Kill Youths, as in 1918 Wave, Study Finds*, *N.Y. Times*, July 2, 2006, available at <http://query.nytimes.com/gst/fullpage.html?sec=health&res=9A00E3D91530F931A35754C0A9609C8B63&en=To%2fNews%2fHealth%2fDiseases%2c%20Conditions%2c%20and%20Health%20Topics%2fAvian%20Influenza> (noting that a WHO report found that "[t]he median age of victims with confirmed cases [of avian flu] was 20 years . . . The highest death rate – 73 percent – was among patients ages 10 to 19, while the overall fatality rate was 56 percent.”).

¹⁹ Patricia Vowinkel, *Spinning a Cytokine Storm*, *Risk & Ins.*, Apr. 15, 2006, available at <http://www.riskandinsurance.com/060415choice.asp>.

²⁰ U.S. Dept. of Health & Human Servs., *How Does Seasonal Flu Differ from Pandemic Flu?*, http://www.pandemicflu.gov/season_or_pandemic.html (last visited Dec. 15, 2006); Ctrs. for Disease Control & Prevention, *Key Facts About Influenza and the Influenza Vaccine*, available at <http://www.cdc.gov/flu/keyfacts.htm> (last visited Dec. 15, 2006); World Health Org., *Ten Things You Need to Know About Pandemic Influenza*, Oct. 14, 2005, available at <http://www.who.int/csr/disease/influenza/pandemic10things/en/index.html>.

²¹ World Health Org., *supra* note 11.

²² Homeland Sec. Council, *supra* note 6, at 15 (“Three human influenza pandemics occurred in the 20th century, each resulting in illness in approximately 30 percent of the world population and death in 0.2 percent to 2 percent of those infected. Using this historical information and current models of disease transmission, it is projected that a modern pandemic could lead to the deaths of 200,000 to 2 million U.S. citizens.”).

²³ Ctrs. for Disease Control & Prevention, *supra* note 17; Gina Kolata, *The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused It* 7 (1999).

²⁴ Homeland Sec. Council, *supra* note 6, at 25.

²⁵ *Id.* at 165.

²⁶ Ceci Connolly, *U.S. Plan For Flu Pandemic Revealed*, Wash. Post, Apr. 16, 2006, at A1 (“The federal government – as well as private businesses – should expect as much as 40 percent of its workforce to be out during a pandemic,” said Bruce Gellin, director of the National Vaccine Program Office at HHS. Some will be sick or dead; others could be depressed, or caring for a loved one or staying at home to prevent spread of the virus.”).

²⁷ World Bank, *Avian Flu: The Economic Costs* (June 29, 2006), <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20979352~pagePK:64257043~piPK:437376~theSitePK:4607,00.html>. For example, a pandemic flu is expected to have a profound effect on the travel and tourism industries. The Sudden Acute Respiratory Syndrome (SARS) epidemic in 2003 reportedly caused the number of airline flights in the Asia-Pacific area to decrease by 45% and the number of flights between Hong Kong and the United States to decrease 69% from the year before. Michael T. Osterholm, *Preparing for the Next Pandemic*, Foreign Affairs, July/Aug. 2005. Although Canada had only about 40 SARS deaths, Toronto lost nine conventions and 12,000 jobs, and its economy lost \$1 billion. Brown, *supra* note 5.

²⁸ U.S. Dep’t of Homeland Sec., *Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources* 25 (2006). A 1999 study by the CDC estimated that, absent large-scale immunization efforts, a pandemic could have an economic impact in the United States of up to \$250 billion. Martin Meltzer, *The Economic Impact of Pandemic Influenza in the United States: Priorities for Intervention*, 5 *Emerging Infectious Diseases*, 659, 664 (1999); *see also* Shani Bhattacharya, *Flu Pandemic Could Cost Billions*, *New Scientist*, May 4, 2006, *available at* <http://www.newscientist.com/channel/health/dn9111.html>.

²⁹ Hannah Brown, *Nations Set Out a Global Plan for Influenza Action*, 366 *Lancet* 1684 (2005).

³⁰ The Food and Agriculture Organization of the United Nations leads international efforts to defeat hunger. Food & Agric. Org. of the United Nations, *About Us*, http://www.fao.org/UNFAO/about/index_en.html (last visited Oct. 3, 2006). The World Organization for Animal Health is an intergovernmental organization that works to control animal diseases by disseminating information about animal diseases, including diseases transmissible to humans, reported by member countries, collecting and analyzing scientific information about animal disease control, and encouraging international cooperation in animal disease control. World Org. for Animal Health, *What Is the OIE?*, http://www.oie.int/eng/OIE/en_oie.htm (last visited Oct. 3, 2006).

³¹ The system is designed to gather and track information using a shared web-based electronic platform and to permit the organizations to jointly analyze whether to issue early warning messages about emerging animal diseases that could infect humans. *See* World Health Org., *Launch of Global Early Warning System for Animal Diseases Transmissible to Humans* (July 24, 2006), <http://www.who.int/mediacentre/news/new/2006/nw02/en/index.html>.

³² U.S. Mission to the Eur. Union, *Top Officials Meeting on Bird Flu Strategy in Vienna* (June 5, 2006), <http://useu.usmission.gov/Article.asp?ID=0CEB3831-B0B3-4875-81FE-09B094860773>; U.S. Dep’t of State, *U.S. Launches International Partnership on Avian and Pandemic Influenza* (Sept. 22, 2005), <http://www.state.gov/r/pa/prs/ps/2005/53865.htm>.

³³ U.S. Dep’t of Homeland Sec., *supra* note 28, at 15.

³⁴ Homeland Sec. Council, *supra* note 6, at 20 (“[WHO] represents the linchpin of international preparedness and response activities. It is bolstered by other multilateral and bilateral organizations, but during a pandemic we will rely on it to be a highly visible and credible coordinator of the international response.”); *id.* at 36 (“We will rely upon the WHO to confirm sustained human-to-human transmission of a novel influenza virus, but it is possible that confirmation will come directly from an affected nation or through our own scientists in the affected region.”).

³⁵ Homeland Sec. Council, *National Strategy for Pandemic Influenza Implementation Plan Summary of Progress* (Dec. 2006), available at <http://www.pandemicflu.gov/plan/federal/strategyimplementationplan.html>.

³⁶ See U.S. Dep’t of Health & Human Servs., *Pandemic Planning Update III* (Nov. 13, 2006), available at <http://www.pandemicflu.gov/plan/pdf/panflureport3.pdf>.

³⁷ As the *National Strategy Implementation Plan* notes, due to the very nature of a pandemic – namely, the widespread geographic areas that may be affected – all levels of government and all non-government sectors must be involved as well. Homeland Sec. Council, *supra* note 6, at 2 (“The distributed nature of a pandemic, as well as the sheer burden of disease across the Nation over a period of months or longer, means that the Federal Government’s support . . . will be limited . . . Local communities will have to address the medical and non-medical effects of the pandemic with available resources.”). Indeed, HHS Secretary Michael Leavitt has emphasized that planning must take place on a local level and that it simply will not be logistically possible for the federal government to “come to the rescue” of those who are unprepared. Aimee Curl, *Bracing for Bird Flu*, *FederalTimes*, Apr. 10, 2006, www.federaltimes.com/index.php?S=1673613.

³⁸ U.S. Dep’t of Homeland Security et al., *Pandemic Flu Business Letter* (Dec. 6, 2005), <http://www.pandemicflu.gov/plan/panbusletter.html>. A number of public-private partnerships have been formed, particularly in the area of avian flu vaccine development and production, and governments are encouraging the formation of additional such partnerships. See European Vaccine Manufacturers, A ‘Public-Private Partnership’ on European Pandemic Influenza Vaccines, http://ec.europa.eu/comm/health/ph_threats/com/Influenza/influenza_key07_en.pdf; *NIAID and MedImmune Join Forces to Develop Potential Pandemic Influenza Vaccines*, *Medical News Today* (Sept. 30, 2005), <http://www.medicalnewstoday.com/medicalnews.php?newsid=31368>; U.S. Agency for Int’l Dev., *Call for Public-Private Alliance Proposals Relating to Avian Influenza*, http://www.usaid.gov/our_work/global_partnerships/gda/ai_announcement.pdf.

³⁹ See, e.g., R.I. Dep’t of Health, *Pandemic Flu Emergency Response Plan 13* (2005) (“The cooperation and coordination between the Department of Health and Rhode Island’s health care providers to develop health care service regions is one illustration of a public-private partnership used to mobilize resources for an efficient and fair response to a pandemic flu event.”); Ind. State Dep’t of Health, *Pandemic Influenza Plan 10* (2005), available at <http://www.in.gov/isdh/pdfs/PandemicInfluenzaPlan.pdf#search=%22state%20pandemic%20planning%20public%20private%20partnership%22>; Press Release, State of N.D. Office of the Governor, Hoeven, Dwelle Outline State Pandemic Flu Plan (Nov. 10, 2005), available at <http://governor.nd.gov/media/news-releases/2005/11/051110a.html> (“As North Dakota’s plan details, effective planning for and response to an influenza pandemic depends upon strong partnerships with public and private health-care entities. . .”).

⁴⁰ Homeland Sec. Council, *supra* note 6, at 168 (“Recognizing that more than 85 percent of the critical infrastructure is owned and operated by the private sector, the development of public-private partnerships is paramount to securing our Nation’s assets.”).

⁴¹ One survey released in early 2006 reported that two-thirds of U.S. companies had yet to begin preparing and concluded that “[b]usiness is not prepared for even a moderate avian flu epidemic.” Brown, *supra* note 5. By contrast, many companies in Southeast Asia, where avian flu has been present for years and which experienced an outbreak of SARS in 2003, are reportedly further along in pandemic planning. Some of these companies’ plans include provisions for employees to work at home to prevent the spread of infection, for relaying warnings to workers by text messages to mobile phones, and for dividing workers among multiple sites. Some plans include the outright closing of offices. See Elisabeth Rosenthal & Keith Bradsher, *Is Business Ready for a Flu Pandemic?* N.Y. Times, Mar. 16, 2006, available at <http://www.nytimes.com/2006/03/16/business/16bird.html?ex=1155873600&en=efc4d737ffe59e4&ei=5070> (“A recent survey of 80 corporate officials at an avian flu seminar held by the American Chamber of Commerce in Hong Kong found that nearly every company had someone in charge of avian flu policy, and 60 percent had clearly stated plans that could be put in place immediately.”).

⁴² See Melanie Warner, *Business Prepares for Possibility of Avian Flu in the United States*, N.Y. Times, Mar. 21, 2006, available at <http://www.nytimes.com/2006/03/21/business/21poultry.html?ei=5090&en=b463a0fc70eadc43&ex=1300597200&partner=rssuserland&emc=rss&pagewanted=all>; *Companies Preparing for a Bird Flu Outbreak*, MSNBC News Services, Nov. 17, 2005, available at <http://msnbc.msn.com/id/10082533/>; Marilyn Chase, *Companies Prepare to Ward Off Bird Flu*, Wall St. J., Nov. 17, 2005 at B1.

⁴³ That release adopted Rule 38a-1 under the Investment Company Act of 1940 and Rule 206(4)-7 under the Investment Advisers Act of 1940, which require funds and advisers to implement policies and procedures designed to prevent funds from violating federal securities laws. See Compliance Programs of Investment Companies and Investment Advisers, Inv. Advisers Act Release No. 2,204, 68 Fed. Reg. 247 (Dec. 24, 2003) (“We believe that an adviser’s fiduciary obligation to its clients includes the obligation to take steps to protect the clients’ interests from being placed at risk as a result of the adviser’s inability to provide advisory services after, for example, a natural disaster or, in the case of some smaller firms, the death of the owner or key personnel. The clients of an adviser that is engaged in the active management of their assets would ordinarily be placed at risk if the adviser ceased operations.”).

⁴⁴ See Mary Ann Gadziala, SEC Speech: The Examination Program (Feb. 7, 2006), available at <http://www.sec.gov/news/speech/spch020706mag.htm>; Mary Ann Gadziala, Speech by SEC Staff: A Regulatory View – Broker-Dealer Internal Audit/Compliance Priorities (Oct. 17, 2006), available at <http://sec.gov/news/speech/2006/spch101706mag.htm>.

⁴⁵ In April 2003, the SEC, the Federal Reserve, and the Office of the Comptroller of the Currency issued the *Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System*. While the recommendations in that paper are guidelines, rather than regulations, financial service firms have been working closely with the agencies to meet their expectations. A follow-up paper, issued in 2006, specifically noted that investment companies do not fall within the scope of financial service firms covered by the *Sound Practices Paper*, but also noted that the *Sound Practices Paper* “encourages all financial firms to review and consider implementation of the sound practices.” Bd. of Governors of the Fed. Reserve Syst. et al., *Joint Report on Efforts of the Private Sector to Implement the Interagency Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System* 8 (2006). With respect to planning for pandemic flu, the *Joint Report* stated:

Today, business continuity plans of financial firms are expected to focus on the impact of a disruption, rather than the cause of the disruption (all hazards approach). This helps ensure that high impact but low probability risks are incorporated into the planning process. At present, financial services firms are reviewing their business continuity arrangements to address the risks posed by a newly-identified threat—pandemic flu. For almost 100 years, the nation has not had reason to plan for a protracted absentee rate of 30 to 50 percent of a firm’s personnel for four to six weeks in waves over a 12 to 18 month period; yet today firms are working to find ways to contain the spread of such influenza, protect employees, and maintain continuity of critical business operations.

Id. at 8-9.

⁴⁶ In April 2004, the SEC approved NASD Rules 3510 and 3520 and NYSE Rule 446, which require those organizations' respective members to create and maintain business continuity plans designed to enable them to meet obligations to their customers in the event of a significant business disruption.

⁴⁷ NASD, Notice to Members No. 06-31 (June 2006). The NASD also recently included planning for a possible pandemic as a topic at a "Face-to-Face with NASD Conference." *See* Agenda for Face-to-Face NASD Conference on October 25, 2006, *available at* http://www.nasd.com/web/idcplg?IdcService=SS_GET_PAGE&siteId=5&siteRelativeUrl=%2FEducationPrograms%2FConferencesEvents%2FNASDW_014509&cssUrlPrefix=/&PrinterFriendly=1.

⁴⁸ NYSE, Information Memo (May 5, 2006), at 1 (hereinafter NYSE Information Memo).

⁴⁹ *Id.* at 3-4.

⁵⁰ *Id.* at 5. Specifically, the NYSE Information Memo states that areas of potential regulatory relief could include extensions of time for standard filing requirements; flexibility with respect to office space arrangements; delays in real-time supervision where technology monitoring is feasible; additional time for reconciliations; extensions of time relating to licensing requirements; and flexibility with respect to compliance with certain provisions of clearing agreements. *Id.* at 5-6.

⁵¹ U.S. *Reviews Disaster Plan for Financial Markets*, Int'l Bus. Times, Sept. 9, 2006, *available at* <http://www.ibtimes.com/articles/20060909/paulson-treasury-markets-disaster-planning.htm>; Exec. Order No. 12,631, 3 C.F.R. 559 (1988 Comp.).

⁵² Int'l Bus. Times, *supra* note 51.

⁵³ *See generally* Lisa Lacy, *Bird Flu Not Ruffling Fund Industry Feathers*, Ignites, July 12, 2006 ("Observers say the fund industry has worked to develop disaster plans but likely has bigger concerns on its radar. Additionally, high technology costs have caused firms to pay extra attention to the bottom line and not allocate resources toward issues they don't see as vital.").

⁵⁴ U.S. Dep't of Homeland Sec., *supra* note 28, at 20.

⁵⁵ *Id.*

⁵⁶ The Business Pandemic Influenza Planning Checklist developed by HHS and the CDC is available at <http://www.pandemicflu.gov/plan/businesschecklist.html>.

⁵⁷ Indeed, uncertainty is a challenge faced by all those who are planning for a possible pandemic. *See, e.g.*, Cong. Budget Office, *supra* note 2, at 18 ("Uncertainty is an ever-present concern, prompting such questions as Will the H5N1 strain be the pandemic strain? Will the vaccines currently being stockpiled prove effective? Likewise, will antiviral drugs prove useful? And can the public health system cope with the surge in demand that an outbreak would bring? Not surprisingly, most of the policies now in effect and those being contemplated can be analyzed only by making heroic assumptions about how such uncertainty is resolved.").

⁵⁸ Homeland Sec. Council, *supra* note 6, at 25.

⁵⁹ NYSE Information Memo, *supra* note 48, at 1.

⁶⁰ Homeland Sec. Council, *supra* note 6, at 165.

⁶¹ U.S. Dep't of Homeland Sec., *supra* note 28, at 21.

⁶² See, e.g., NYSE Information Memo, *supra* note 48, at 4.

⁶³ Homeland Sec. Council, *supra* note 6, at 12. By Executive Order in 2005, influenza caused by a virus that is causing or could cause a pandemic was added to the list of diseases for which the federal government can order a quarantine; state and local laws may also provide for quarantines in the event of a pandemic flu. *Id.* at 220, 226. Recent analysis of public health measures taken during the 1918 pandemic suggests that closing schools, banning large gatherings, staggering work hours, and quarantining households of the ill may have significantly reduced mortality and not merely delayed or dampened the pandemic, as previous research had concluded. David Brown, *1918 Flu Epidemic Teaching Valuable Lessons*, Wash. Post, Dec. 13, 2006, available at <http://www.washingtonpost.com/wp-dyn/content/article/2006/12/12/AR2006121201628.html>.

⁶⁴ Homeland Sec. Council, *supra* note 6, at 183.

⁶⁵ NYSE Information Memo, *supra* note 48, at 3 (“The United States government has indicated that it may resort to quarantines in the event of a domestic outbreak, and foreign governments’ reactions may be similar or more drastic. Firms should evaluate the viability of their [business continuity plans] in light of potential restrictions on travel, as well as on gatherings of large numbers of people in one location.”).

⁶⁶ Homeland Sec. Council, *supra* note 6, at 1.

⁶⁷ *Id.* at 168.

⁶⁸ As the executive director of the Cyber Security Industry Alliance testified in May 2006 before the House Government Reform Committee, “[l]ittle empirical evaluation is available on the ability of the Internet infrastructure to support the traffic created when large numbers of employees suddenly attempt to log on during the onset of a crisis. The private sector owns and operates the vast majority of the critical information infrastructure, but in an emergency the government must play a leading role in coordinating its continued operation during a national emergency.” *Federal Workforce Not Ready to Telework During Influenza Pandemic, CSLA Testifies*, Cyber Sec. Indus. Alliance, May 11, 2006, https://www.csialliance.org/news/pr/view?item_key=88b5b3474f9700bb36e45a890651ede361526629.

⁶⁹ *Last-Mile Technology*, Smart Computing Encyclopedia, <http://www.smartcomputing.com/editorial/dictionary/detail.asp?guid=&searchtype=&DicID=17983&RefType=Encyclopedia>.

⁷⁰ Homeland Sec. Council, *supra* note 6, at 169.

⁷¹ As noted earlier, the SEC has approved NASD and NYSE rules that require members to create and maintain business continuity plans generally, though those rules do not specifically address pandemic flu planning.

⁷² For example, the Partnership for Emergency Planning (<http://www.pepkc.org>) is a Kansas City public-private partnership concerning emergency planning issues.

⁷³ In December 2006, the federal government issued a report providing a template for “tabletop” exercises for pandemic planning to be used by state and local health agencies and their healthcare and governmental partners. Tabletop exercises essentially are discussions led by facilitators, who present evolving scenarios and then allow participants to discuss how they would respond to the scenarios at different points in time. *See Tabletop Exercises for Pandemic Influenza Preparedness in Local Public Health Agencies* (Dec. 2006), available at <http://pandemicflu.gov/plan/states/tr319.html>.

⁷⁴ Smith, *supra* note 4.

⁷⁵ *See* Homeland Sec. Council, *supra* note 6, at 111 (“During a pandemic, psychosocial issues may significantly contribute to, or hinder, the effectiveness of the response. Public anxiety and subjective perception of risk during the initial phases will impact the degree of medical surge; overall compliance with quarantine, snow days, and other control procedures; and participation of the workforce, including health care workers, in response efforts.”).

⁷⁶ *See id.* at 173 (“The majority of Americans work in settings where social contacts occur. . . . Where feasible, voluntary or discretionary contacts may be reduced through contact interventions [telecommuting, use of social distancing techniques]; where not, and in settings where social contacts are inherent in the nature of the position, risk reduction should be attempted through the implementation of transmission interventions [e.g., use of masks, attention to cough etiquette and hand hygiene].”).

⁷⁷ *See, e.g.,* Lisa Belkin, *The Pandemic of Not Calling in Sick*, N.Y. Times, Jan. 15, 2006, available at <http://www.nytimes.com/2006/01/15/jobs/15wcol.html?ex=1294981200&en=b60bd1e27b478902&ei=5088&partner=rssnyt&emc=rss> (“According to a recent survey by CompPsych, a Chicago company that provides employee assistance programs, 77 percent of workers say they come to work sick. We do it so often that experts have given it a name – presenteeism, as in the opposite of absenteeism, describing time and productivity lost when employees are physically at work but not feeling well enough to be productive.”).

⁷⁸ A 1994 Harvard Business Review article estimated presenteeism may cost U.S. companies more than \$150 billion annually. *See* Paul Hemp, *Presenteeism: At Work—But Out of It*, Harv. Bus. Rev., Oct. 1, 2004.

⁷⁹ The federal government’s Office of Personnel Management has drafted guidance for agencies with respect to a number of issues relating to pandemic flu. With regard to the issue of presenteeism, the guidance states:

As with any illness, any medical diagnoses by a supervisor is very problematic and should be avoided. However, when a supervisor observes an employee exhibiting signs of illness, he or she may express general concern regarding the employee’s health and remind the employee of his or her leave options for seeking medical attention, such as requesting sick or annual leave. . . . Although leave is generally voluntary, an agency may direct an employee to leave.

In the case of a pandemic, agency personnel actions aimed at preventing the spread of a disease may occur because of the guidance or directive of public health officials regarding the general danger to public health. Supervisors should consult their human resources staff prior to effecting either enforced leave or indefinite suspension.

U.S. Office of Personnel Mgmt., *Human Capital Management Policy for a Pandemic Influenza C-1* (2006), <http://www.opm.gov/pandemic/agency/questions.asp>.

⁸⁰ See, e.g., Ctrs. for Disease Control & Prevention, Business Pandemic Influenza Planning Checklist, *available at* <http://www.cdc.gov/flu/pandemic/pdf/businessChecklist.pdf> (“Develop and disseminate programs and materials covering pandemic fundamentals (e.g., signs and symptoms of influenza, modes of transmission), personal and family protection and response strategies (e.g., hand hygiene, coughing/sneezing etiquette, contingency plans); [a]nticipate employee fear and anxiety, rumors and misinformation and plan communications accordingly; [e]nsure that communications are culturally and linguistically appropriate; [d]isseminate information to employees about your pandemic preparedness and response plan . . .”).

⁸¹ See, e.g., Dallas County Health & Human Servs. Influenza Pandemic Response Frequently Asked Questions for Businesses, *available at* <http://www.dallascounty.org/department/hhservices/services/publichealthalert/documents/preparingthebusinesscommunity/PandemicInfluenzaFAQforbusinesses.pdf> (“Employee education IS critical for several reasons. Most likely there will be fear and anxiety. Good education could reduce absenteeism due to anxiety. . . Also encouraging employees to wash their hands often with either soap and water or alcohol-based hand sanitizer will help to reduce the spread of the virus.”).

⁸² See, e.g., Scott M. Gawlicki, *Companies Must Prepare for the Possibility of an Avian Flu Pandemic*, Inside Counsel, Feb. 20, 2006, *available at* http://www.insidecounsel.com/issues/insidecounsel/15_175/labor/304-1.html; Jeffrey Staples et al., *Preparing for a Pandemic*, Harv. Bus. Rev., May 2006, at 11.

⁸³ Certain complexes also have surveyed their supply of hardware in order to determine their capacity for telecommuting.

⁸⁴ See *supra* note 69.

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