PANDEMIC PREPAREDNESS

An Examination of Corporate Pandemic Preparedness in the US
among 21 Leading Corporations

FINAL REPORT

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By:

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and

Center for Biosecurity

Executive Summary

In November 2006, 21 major companies agreed to participate in a roundtable discussion on corporate preparedness for avian influenza. The following is a summary of the key topics discussed at that meeting.

We are in the midst of an unprecedented global outbreak of highly pathogenic avian influenza. The H5N1 virus responsible is the most lethal in history and has infected more than 250 people with a case fatality rate of over 50%; significantly higher than both the 1918 influenza that killed an estimated 50 million people and the more recent SARS epidemic. To date, most human H5N1 cases have required direct contact with infected birds. However, if H5N1 adapts to enable efficient person to person transmission and maintains its high case fatality rate, a devastating human pandemic would result. The potential impact makes contingency planning an imperative for large corporations.

Pandemics are not like other disasters; they are global, long-lasting and are inevitably associated with significant uncertainties and confusion. Contingency planning for pandemics is relatively difficult because of the lack of certainty around the probability, timing and severity of an occurrence. One of the few "knowns" is that historically, influenza pandemics happen fast. The World Health Organization estimates that should a pandemic strain of flu emerge, it would be found on all continents within three months. Ongoing outbreaks of flu can be expected to be continuous around the world for 1-2 years; businesses will likely be directly affected for more than a year. A pandemic has the potential to affect every part of an organization with multiple locations being affected simultaneously. Traditional emergency response and business continuity plans require significant modification to adequately address this potential threat.

Over the past several decades, many companies have outsourced or relocated supply chains and back office services around the world. They are now more exposed to a global influenza pandemic than before. Society, in general, is also more vulnerable than in the past. Today, we travel more extensively and rapidly than before, have larger, denser urban populations and have a large aging population with more chronic diseases. Hospital systems (in the US) also have less surge capacity than previously and are thus ill-prepared for an influenza pandemic; the possibility exists that they could fail. In addition to the weakness in the US healthcare system, other infrastructures on which businesses depend will likely be affected; mass transit, airlines, utilities and telecommunications are all at risk.

The availability of an effective vaccine could radically change the outcome. Today's influenza vaccine manufacturing technology is slow and production capacity limited. Additionally, it is uncertain how effective the current stockpiles of H5N1 vaccine would be on a pandemic virus strain. Increased research into cell-based vaccine technologies and increasing production capacity, as well as an accelerated FDA approval process are key factors in increasing the availability and efficacy of a 'new' vaccine. Vaccines must be quickly produced in large volumes in order to provide the best protection against pandemic influenza. Current production capabilities are estimated to require a year to

manufacture enough vaccine for the US population after the pandemic strain is identified. A substantial increase in federal funding would be required to change this.

Considerable effort and investment in preparedness for a threat of this nature has already been undertaken by the companies represented at the roundtable. All have pandemic plans either in-place or underway. All have crisis management plans and emergency communications capabilities in-place that could be used in the event of a pandemic. They reported being better prepared for pandemic influenza than they were 18 months ago. However, few if any, consider themselves completely prepared and all intend to continue to improve the preparedness of their enterprises going forward. Extensive testing of these plans and capabilities is the next step for many. Lessons learned from simulations provide the basis for continual improvement. Benchmarking is also important in identifying best practices and accelerating learning to achieve this objective.

It is widely assumed that during a pandemic many employees will work from home. However, as a solution this differs from company to company; many have large portions of their workforce that cannot perform their duties remotely. Working from home is highly dependent on whether the communications infrastructures will hold up and countries differ widely in this respect. Companies that intend to incorporate working remotely as part of their response have had to invest in additional laptops, internal surge capacity and remote access. Extending privileges to employees to work from home also involves new challenges in information security, regulatory compliance and liability management; for many, working remotely is likely only a partial solution at best.

Taking care of employees is considered a "must", and effective communications with them will be vital during a pandemic. Protecting workplaces requires investment in medical, janitorial and critical office supplies. It is also essential for companies to be a "trusted source" of information for employees. Communicating accurately and often is important to achieve this. Companies must have access to good information and be able to provide corporate responses quickly. Pre-packaged communication templates, policy modifications, travel tracking and up-to-date personal contact data can help enable this. Effective liaisons with state and local health departments, hospitals, etc. and business working groups will also be critical; establishing these capabilities must be done before an outbreak occurs as this will be hard to accomplish during a pandemic event.

Pandemic preparedness planning has focused corporations on the inadequacy of many of their traditional disaster solutions and underlines the importance of longer-term, strategic thinking to risk mitigation. Corporate resiliency has recently come to the forefront in contingency thinking. The concept of resiliency embraces flexibility. The overarching goal is to prepare for a disaster of any nature anywhere in the world. Diversifying the supply chain and business processing geographically is central to achieving this.

In our view, the corporations present at this roundtable have responded admirably in a short time frame. As always, there is more to do. Those companies that continue to develop their pandemic preparedness capabilities, integrate their plans and incorporate appropriate best practices will further improve their overall state of preparedness and serve their stakeholders best.

Introduction

In June 2006, *The Bellwether Group, Inc.* received a grant from the *Alfred P. Sloan Foundation* to organize a roundtable discussion on Pandemic Preparedness among a select group of large corporations. *Bellwether* partnered with the *Center for Biosecurity of UPMC* (*University of Pittsburgh Medical Center*) to help develop and deliver the program. The event took place in New York City on Wednesday, November 29, 2006. The primary objectives of the meeting were to:

1. Discuss the pandemic influenza threat and corporate response thereto
2. Determine the state of preparedness within the participating group
3. Identify best practices in corporate preparedness for pandemic flu
4. Provide the participating companies an opportunity to learn from each other.
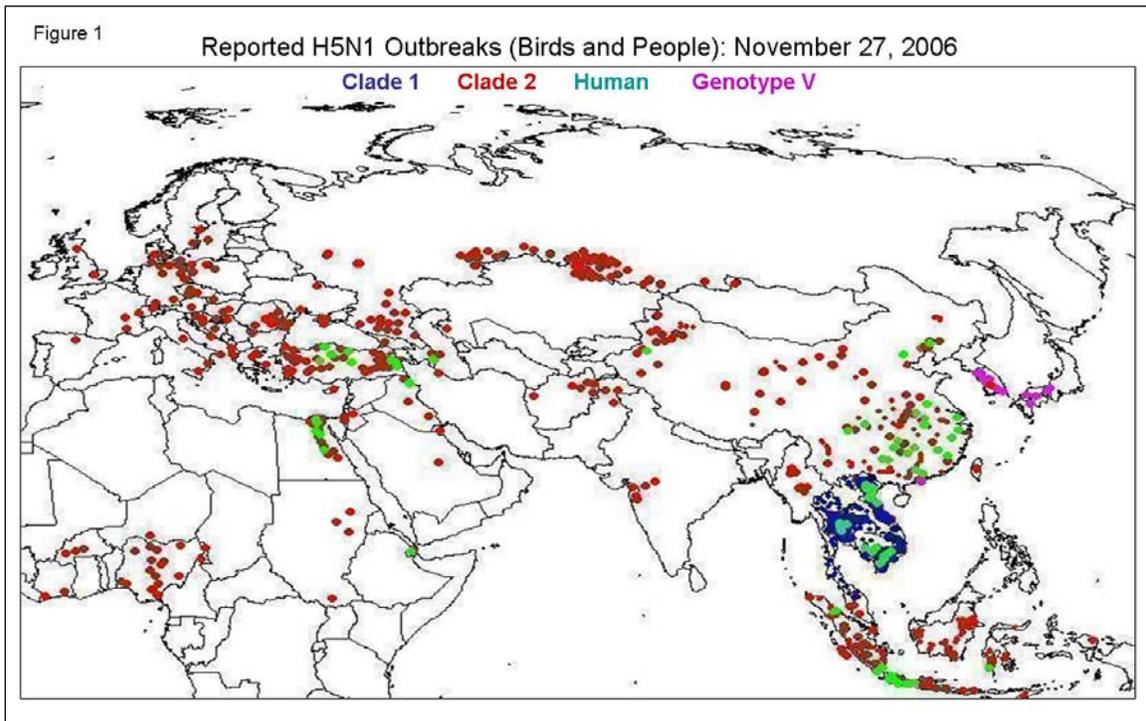
21 companies agreed to participate including: *Aetna, American Airlines, Amtrak, Boeing, Cisco, CitiGroup, Continental Airlines, Dell, Deutsche Bank, Fidelity, First Marblehead, Forest Laboratories, IBM, Johnson & Johnson, KeySpan Energy, Lehman Brothers, Mellon Financial, MITRE Corporation, National Grid, Pfizer and Verizon*. These companies were selected as a representative cross-section of industries critical to the US economy and infrastructure, as well as for their interest in preparing their enterprises for a potential pandemic event. Collectively they represent over $670 billion in revenues and more than $1.5 trillion in net worth, and employ over 1.7 million people. Industries these companies are engaged in include financial services, aerospace, defense, technology, hardware, software, healthcare, gas and electric utilities, telecommunications and transportation. Although most are global in nature, a significant portion of their businesses are conducted in the US. The majority of the companies represented are publicly-held; however, several are private, and thus both perspectives were represented.

Prior to the roundtable meeting, *Bellwether* undertook a survey among the participants to assess the state of preparedness of the group represented. Research sources used to identify the key issues in pandemic influenza preparedness and determine the survey data collection requirements included: *Centers for Disease Control and Prevention (CDC), The Financial Services Roundtable, Department of Homeland Security (DHS), Congressional Budget Office, The Library of Congress, Federal Emergency Management Agency (FEMA), Deloitte Center for Health Solutions, Aon, Control Risks Group, Disaster Recovery Institute International (DRII), Business Continuity Institute (BCI), American Society for Industrial Security (ASIS), Conference Board* and *Science*.

The findings described below are based on information provided by the *Center for Biosecurity of UPMC, NYC Department of Health and Mental Hygiene* and from the companies directly through their participation in the survey completed prior to the meeting and their contributions to discussions at the event. References to "companies" and "corporations" generally refer to those participating in this event and reflect their input. We thank them for taking the time to participate and contributing to this pool of knowledge.

Threat of Pandemic Influenza

We are in the midst of the first known global outbreak of highly pathogenic avian influenza (see *Figure 1* below). The H5N1 virus responsible is the most lethal in recent history and has infected more than 250 people with more than a 50% mortality rate[1]. If it changes in such a way as to be able to spread efficiently from person to person and maintains its lethality in humans, the 'new' virus <u>will</u> cause a severe human pandemic. Of the 30 documented pandemics, 3 occurred in the last century. To date, H5N1 has occurred in birds and people throughout Asia, Europe, the Middle East and Africa. Compared to the 1918 "Spanish" flu and 2003 SARS epidemic, H5N1 has a significantly higher case fatality rate (CFR) in people; 59% as opposed to 2.5% and 10% respectively[2].

Figure 1
Reported H5N1 Outbreaks (Birds and People): November 27, 2006
Clade 1   Clade 2   Human   Genotype V

Source: Center for Biosecurity of UPMC (from WHO, FAO and news reports)

The World Health Organization (WHO) has identified 6 levels of Pandemic Alert and states that we are currently at Level 3, "No/Very Limited Human-to-Human Transmission" *(*see *Figure 2,* on the following page*)*. A "pandemic" is declared at Level 6, "Efficient and Sustained Transmission". However, its progress may not be gradual or linear; instead, we may jump directly to Level 6.

The good news on H5N1 is that several countries have had some success in controlling outbreaks. Vietnam, Thailand, India and others in Europe and the Middle East have made progress through good surveillance combined with the vaccination of poultry and

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[1] World Health Organization
[2] Ibid

culling of infected stock. However, these interventions are expensive, and the bad news is that containment among poultry is less likely in poorer countries where H5N1 has appeared. Outbreaks in Indonesia, China and certain African countries have been less successfully controlled. Moreover, H5N1 infection in wild migratory birds is now widespread; making global eradication of H5N1 impossible.

Contingency planning for a pandemic scenario is relatively difficult because very little can be predicted. One of the few "knowns" is that historically, pandemics happen fast. Influenza has a short incubation period, usually about 2 days[3] and it spreads quickly, often before symptoms appear. As a result, it unlikely that quarantine, travel restrictions or other geographic controls will succeed. Additionally, pandemics move globally in complex ways involving multiple locations, often near and far at the same time. Within a single community, an outbreak may occur as a 'wave' lasting 2-3 months[4] and can recur in communities several times until most people are immune through recovery or vaccination. Consequently, from a global perspective, outbreaks can be expected to be continuous for 1-2 years. Thus, businesses will likely be directly affected for more than a year. The global severity of the last 3 influenza pandemics varied considerably, from an estimated 50 million deaths in 1918, 2 million in 1957 to 1 million in the 1968 event. In the US, these same pandemics resulted in an estimated number of deaths of 675,000, 70,000 and 34,000 respectively[5]. H5N1 has demonstrated a much higher CFR to date and is therefore considered potentially more lethal. The severity of an avian influenza pandemic could be minor or catastrophic. Again, the lack of certainty around the probability, timing and severity of an occurrence makes it an event for which it is extremely challenging to prepare.

Figure 2

WHO Pandemic Alert Phases
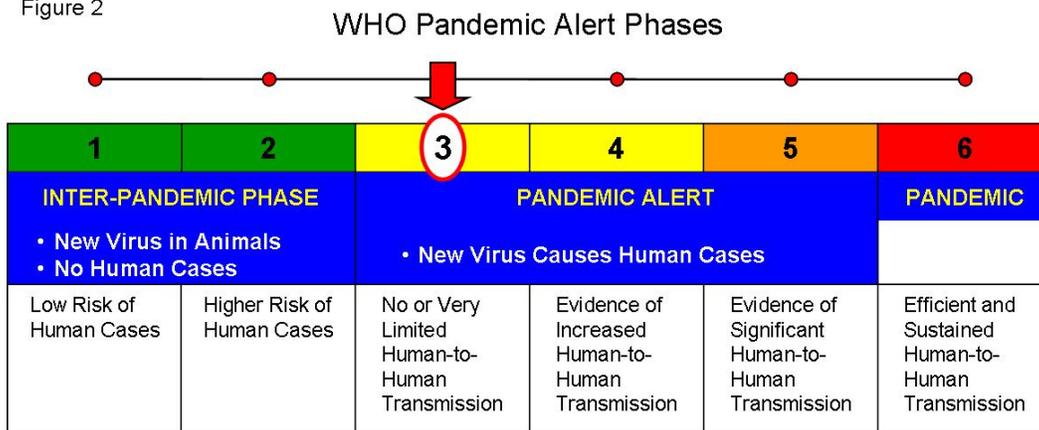
Source: Based on WHO Global Influenza Preparedness Plan

In many ways, society is also much more vulnerable than was the case in 1918. We travel more extensively and rapidly, have larger, denser urban populations, are more reliant on global supply chains and remote service providers, have aging populations with

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[3] US Department of Health & Human Services
[4] Ibid
[5] Ibid

more chronic diseases and have relatively less hospital surge capacity. HHS planning assumptions for a potential pandemic include two scenarios: one moderate and one severe, based on extrapolations from experiences in 1957/68 and 1918 respectively. They assume that the clinical disease attack ratio will be 30% in both scenarios and recommend planning for the more severe case[6]. Businesses will also be impacted by other effects on the infrastructure such as school closings, mass transit and law enforcement.

The question as to what can be learned from SARS is frequently asked. SARS affected most global corporations even though it was a relatively small epidemic with approximately 8,000 cases in total and 774 deaths[7]. However, it had spread to 29 countries before WHO issued its global alert on March 12, 2003[8]. Disease containment was successful in 2003, because SARS has a long incubation period and displayed limited community transmission as people were contagious only late in their disease and only when very sick. However, hospitals amplified the disease: 50% of cases were infected in hospitals, and 21% of victims were healthcare workers[9]. By contrast, influenza is contagious early, has a very short incubation period and is capable of extensive transmission within communities. Travel restrictions, quarantines and fever-screening did not work during the SARS epidemic because people incubating the disease could not be easily identified. Although these techniques may aid in reducing exposure within specific facilities, they should not be relied upon to contain pandemic influenza on a broader scale.

Similarly, the anthrax attacks in 2001 also provided lessons that may apply in the event of pandemic influenza. At the outset of the attacks following 9/11, situational awareness was poor. Much of the initial information from government and news agencies proved incorrect. Governments and municipalities were slow to provide guidance and much of what was given was distrusted. As a result, hospitals in affected areas were overwhelmed by "rule-out anthrax" patients and those seeking *Cipro™* for precautionary purposes. Based on these experiences, businesses should anticipate a degree of chaos, confusion and unreliable information in the event of an influenza pandemic, particularly early on, when uncertainties are greatest.

In summary, improving corporate preparedness for a potential influenza pandemic will help response to a wider spectrum of healthcare emergencies that corporations may face in the future including potential acts of bioterrorism.

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[6] US Department of Health & Human Services (HHS)
[7] Ibid
[8] Center for Biosecurity, UPMC
[9] Ibid

Hospital Preparedness

The hospital systems in the US are ill-prepared for an avian influenza pandemic. A moderate pandemic, such as occurred in 1968, would require that about half of the current ICU (intensive care unit) beds, on average, throughout the country and about 20% of the ventilator and non-ICU bed capacities be dedicated to flu patients[10]. Hospital requirements for a more severe pandemic could significantly exceed the total numbers of existing hospital beds and ventilators. Most hospitals are not easily able to increase their capacities in this respect as they are marginally profitable (30% lose money), have limited cash reserves and suffer shortages of critical staff. Close to half of all emergency departments operate at, or over, capacity and many have reduced their surge capacity from former levels. Hospitals will need to maintain all other essential medical services while at the same time caring for an influx of pandemic flu patients. There is a real possibility that portions of the healthcare system could collapse in the event of a severe pandemic[11]. Under these conditions, difficult decisions about rationing medical care for both influenza and non influenza patients would have to be made.

The New York City Department of Health and Mental Hygiene (NYC DOHMH) has put much thought into planning for pandemic influenza and represents some of the most advanced thinking in the hospital system arena. Serving over 8 million people, New York City's hospital system is the largest in the US. It includes 65 acute care hospitals, 22,000 licensed hospital beds, 163,000 full-time staff with 27,000 physicians and 68,000 licensed nurses[12]. They believe that in a pandemic, healthcare resources will be strained, vaccine will not be available for 6 to 9 months, and antivirals will be in short supply; as a result, prioritization and rationing will be required. New York City Health Department's goals, in the event of a pandemic, are to:

1. Limit severe illness and deaths from influenza
2. Maintain essential medical services
3. Work with healthcare partners to support influenza evaluation and care
4. Communicate rapidly, accurately and frequently with the public and medical community.

NYC DOHMH examined the effect of a potential influenza pandemic under two scenarios similarly to HHS. The peak impact under the 1957/1968 scenario would exceed ICU capacity within the New York City healthcare system by week 5 of an 8-week pandemic wave[13]. Similarly, under 1918 conditions, both ICU bed and ventilatory capacities would be exceeded several times over. Hospitals will be challenged to immediately expand bed capacity, equipment and staff, keep the "worried well" away (from the hospitals), ration care and provide security at their facilities. New York City will need to stockpile ventilators, train additional technicians, and work with hospitals to appropriately modify care standards. Officials are currently drawing up plans and

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[10] NYC DOHMH
[11] AHA 2004
[12] 2000 US Census, NYC DOHMH Hospital Survey, Greater NY Hospital Assoc., NYS Dept of Education
[13] CDC Flu Surge 2.0, NYC Vital Statistics 2003, NYC DOHMH 2005 Critical Care Survey

seeking funding to improve New York City's preparedness for such a pandemic event. *Figure 3,* compares pandemic scenarios for NYC hospitals.

Figure 3 — Peak Impact of Pandemic Flu Patients on NYC Hospitals	1957/68 Scenario		1918 Scenario	
Variable	# Related to Flu Patients	% of Existing Capacity Required	# Related to Flu Patients	% of Existing Capacity Required
Daily Hospital Admissions	1,129	23%	8,016	31%
Hospital Beds (n=26,177)	5,512	21%	39,155	160%
Intensive Care Unit Beds (n=1,713)	2,662	155%	18,907	1,104%
Mechanical Ventilators (with 40% of 2,688 vents available, n=1,075)	1,331 Gap: 256	50%	9,454 Gap: 8,379	352%

Note: Impact estimated at week 5 of 8-week pandemic; 35% attack rate; 10-day vent use; 25% of flu patients require ICU care; 50% of ICU patients require ventilation

Source: CDC FluSurge 2.0; NYC Vital Statistics 2003; NYC DOHMH 2005 Critical Care Capacity Survey

Communication within the healthcare community is also a key issue. NYC DOHMH points out that corporations can help to avoid some of the likely chaos by developing referral plans with local hospitals and primary care centers, reinforcing healthcare messages to employees, sharing staff retention plans with hospitals and ensuring their medical staff are connected with local Health Alert Networks (HANs).

Vaccine and Antivirals

The availability of effective vaccine can change the outcome of pandemic influenza significantly. There is limited production capacity today and the current, egg-based technology is slow to produce vaccine. Once a pandemic strain is identified, it would take close to a year to produce enough vaccine for the US population. At the same time, the majority of the world's population would still not have access to vaccine. The US Government currently has 3 million courses of vaccine against the current strain of H5N1 virus on-hand and plans to increase this to 8 million by the end of 2007. Its current plans do not call for full US population coverage until 2011[14]. However, it is unclear how effective the current H5N1 vaccine that is being produced and stockpiled by the government will be during a pandemic. Early availability of effective vaccine could make a significant difference; however, its efficacy will be uncertain until a pandemic strain emerges. Therefore, increasing research into cell-based vaccine production technology, as well as, accelerating the FDA approval process, is a key factor to increasing the availability of an effective vaccine for an avian influenza pandemic.

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[14] US Department of Health & Human Services

Antivirals (such as *Tamiflu™* and *Relenza™*) must be started within hours of the onset of symptoms to be most effective. Therefore, stockpiles of antivirals must be "forward-deployed" to be quickly available. There will be little chance of getting adequate supplies after a pandemic is declared. Companies intending to administer antivirals must consider how they will be dispensed and administered and how they will determine who will qualify to receive them.

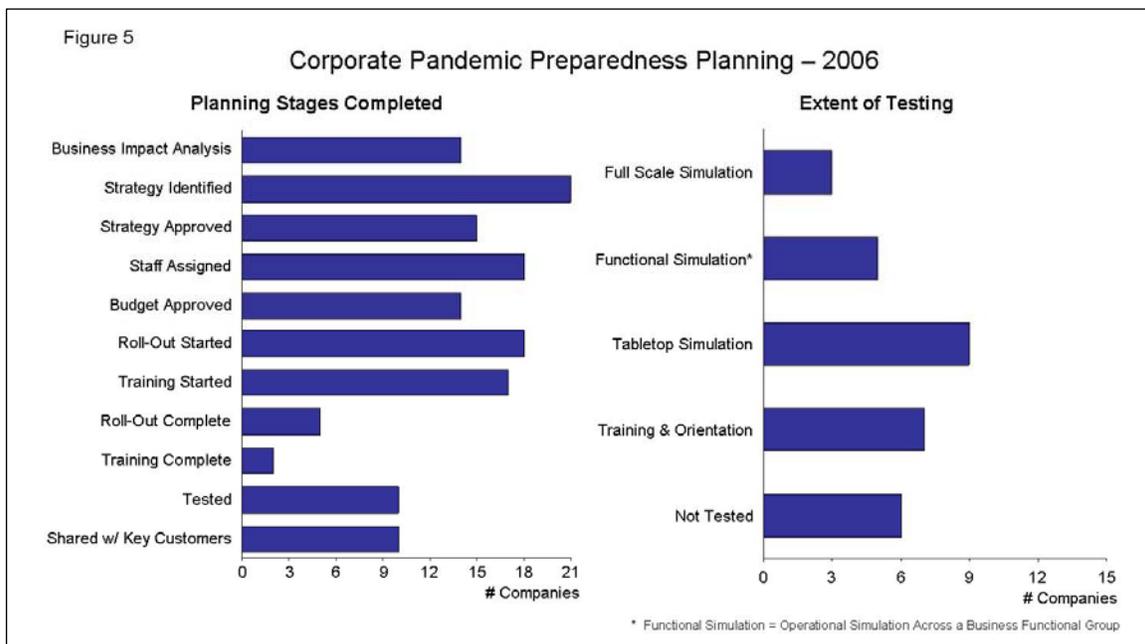## State of Corporate Pandemic Preparedness

Corporate leadership was characterized as engaged and supportive of pandemic preparedness planning by representatives at the roundtable. Our survey results showed that amongst the companies participating in the event, a high priority had generally been placed on preparing these corporations for such a pandemic, and that in almost all cases, the Chief Executive Officer (CEO) had been briefed on the threat and how their enterprise will respond. Over 60% of participants classified pandemic preparedness as an extremely or very important corporate priority. Most had conducted leadership briefings at the senior level and about half at the Board level. Pandemic preparedness plans amongst the group had already received corporate approval in most cases, and about half had assigned a Pandemic Flu Monitoring Officer. Among these companies, the corporate officer responsible for preparedness planning was 3 reporting steps from the CEO on average, with a range of 2 to 5 steps, often corresponding to the size of the company. Over 50% had evaluated the impact on their businesses specifically for a pandemic influenza outbreak, and nearly all had identified critical business processes, positions and employees within their companies to help prioritize their response planning.

Planning for a possible pandemic is relatively new for most corporations. Of those represented at the roundtable, planning efforts are little more than a year old. See *Figure 4* below.

Figure 4

Companies

When Pandemic Flu Planning Started at Participating Companies
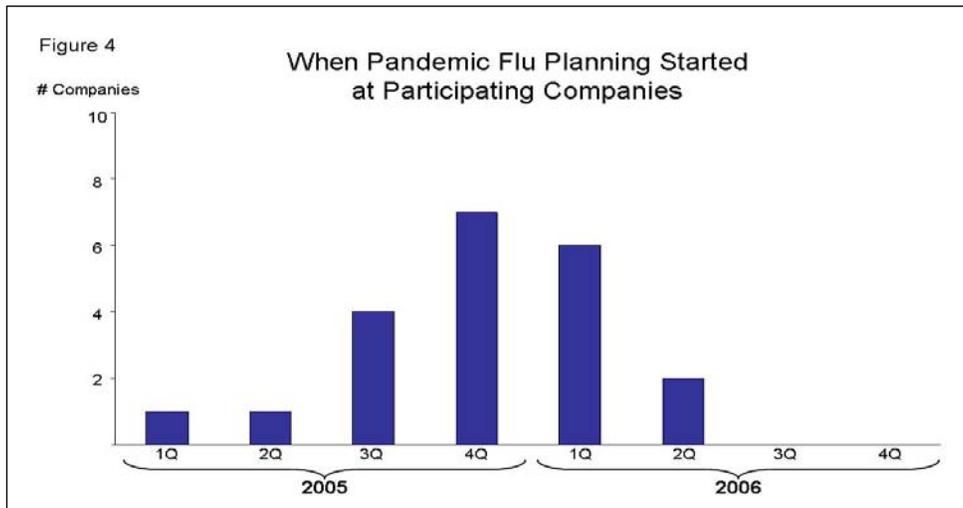
Source: Bellwether Participant Survey

A considerable effort and investment has been undertaken by the companies at the roundtable. All companies have pandemic plans either in-place or underway. Planning has typically been undertaken across the whole enterprise although some companies have not (yet) extended it to all business units and to all corporate functions. Most stated that their planning was relatively advanced with many of their stages completed. However, substantially fewer had thoroughly tested their plans, and more than 25% stated that they had not tested them at all. (*Figure* 5 shows the stages completed and extent of testing amongst participant companies.) While the lack of full testing is not surprising given the relative infancy of pandemic planning at corporations, it is an important part of the preparedness process and clearly a very important next step. Of those that had tested their plans, many claimed there were many important lessons learned that had enabled them to improve their preparedness overall. Additionally, the inclusion of senior executives in simulations significantly strengthened their testing programs.

Figure 5

Corporate Pandemic Preparedness Planning – 2006

Source: Bellwether Participant Survey

Pandemic preparedness is generally seen as part of the business continuity function at these major companies. The corporate program office for pandemic planning is usually the Business Continuity Office. Plans are typically "owned" by the business units, i.e., the business units develop them, but are coordinated centrally. A pandemic threat is different in nature from most of the threats against which more traditional business continuity plans protect. Pandemics occur globally over a longer period of time and threaten a much larger portion of the workforce. Business continuity planning and traditional disaster recovery planning more typically mitigate against isolated incidents that are not expected to recur. They do not, therefore, optimally mitigate many of the risks associated with a pandemic event. A centralized command center is considered a necessary feature of pandemic influenza preparedness to monitor and provide direction to different geographic locations that may be affected differently during an epidemic. As

we have noted in a prior study[15] including a different group of companies, there does not appear to be any common organizational model for where the business continuity function resides within corporations; this was also true of the companies represented here.

Monitoring the status of bird flu is important to most companies. Most regularly receive alert information, although the sources utilized differ. Many have sought assistance from outside advisors including planning consultants, pandemic advisory services, medical advisors and domestic and foreign health departments. As with many other issues that companies do not consider to be core competencies, these corporations have sought and embraced external help in fashioning a customized response appropriate to their enterprise.

All companies at the roundtable had invested in crisis management planning and had communication capabilities that would be used in the event of a pandemic. Many had invested in automated systems, and most have extensive call trees identified and in-place. These typically included their leadership teams, local and centralized crisis teams and critical staff. About half had prepared communications that could be used as templates to speed up communications to employees in specific emergency situations. Companies intend to use multiple methods of communication during a potential pandemic event of which web sites, e-mail and 800 numbers were the most commonly cited. Given that all companies anticipated that some portion of their workforce would elect to work from home, many have invested in additional telecommuting capacity including video telecom, virtual private networks, high-speed access, *SecurID™* and switch capabilities. Not surprisingly given the diversity of industries represented, the estimated ability of their workforces to work from home varied widely from 10% to 85%, with the group average around 40%. However, all were concerned that this would be highly dependent on telephone and data transmission infrastructures beyond their control and saw this as a potential weakness in this response strategy.
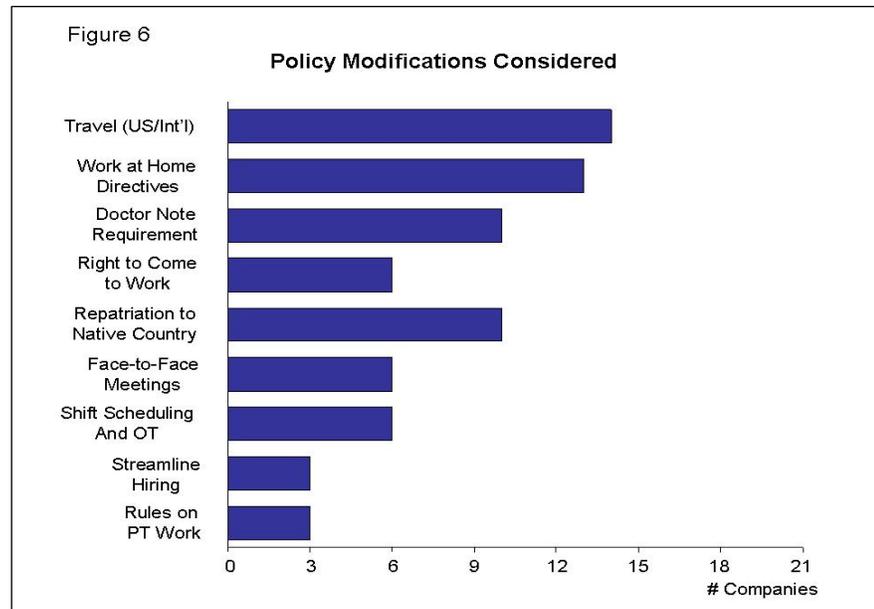
Participating companies understand that significant policy modifications will be required in the event of a pandemic, particularly in the area of personnel policy. About half have developed policy modifications that could be used in the event of a pandemic including those that address travel, meeting protocols, facility access, return to work, repatriation and personal time off, among many others (see *Figure 6* on the following page*)*. This is obviously a sensitive area and many claimed that, while policy changes would be required and alternatives had been considered, in the event of a pandemic their policies would be revised and communicated in response to a specific situation at that time.

Most companies encourage seasonal flu shots for both health and productivity reasons. About 50% offer them free to employees on request; about 25% encourage them but still require a fee. Few companies, however, formally track whether personnel have had a flu shot and most do not have systems capable of tracking their employees' exposure or vulnerability to influenza in a pandemic scenario. A small minority did claim to have this capability in-place currently. About 75% of the participants represented have their own

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[15] Disaster and Terrorism Preparedness in US Corporations – Final Report 2005 *(The Bellwether Group)*

medical staff at their headquarters and/or other major facilities; however, few companies have their own medical staff in their smaller facilities. About half have developed and documented processes for decontaminating work areas; for example, if an employee becomes sick and the office or work station must be used by another, or for workstations that are staffed on a rotational basis such as is common for customer service and sales. Again, about half have specific plans to expand janitorial services in the event of a pandemic.

Figure 6

Policy Modifications Considered

Policy	# Companies
Travel (US/Int'l)	14
Work at Home Directives	13
Doctor Note Requirement	10
Right to Come to Work	6
Repatriation to Native Country	10
Face-to-Face Meetings	6
Shift Scheduling And OT	6
Streamline Hiring	3
Rules on PT Work	3

Source: Bellwether Participant Survey

All companies have medical supplies on-hand that could be useful in the event of a pandemic. Masks, gloves and decontamination supplies were the most commonly stocked items among the group. Other supplies included antiseptic for dispensing stations, surgical masks and protective suits. In addition, about half the companies had stockpiled some antiviral drugs, though it was not clear how extensive these inventories were throughout each enterprise.

Over the past several decades, many companies have relocated or outsourced their supply chains and back office services to lower cost countries. These companies are now more exposed to a global influenza pandemic than before and must do more than others to mitigate the risk for their enterprises. Many have drawn up corporate relocation plans in the event of a global influenza pandemic and some of these are very comprehensive. For others, relocation plans are less critical by virtue of the nature of their business and their geographic configuration. Many of those companies with comprehensive relocation needs had identified critical business processes as well as the critical employees to carry them out and have discussed their preparations with relevant employees including family needs. Some have prepared transportation plans, engaged third parties and put the necessary travel documents, such as passports and visas, in-place. Many have identified new work locations, equipped them, provided for accommodations and contracted for potential evacuation.

Supply chain and process resiliency are now major issues for many large companies and the possible pandemic threat that we now face has emphasized the importance of this.

Emergency Response Planning and Leadership Command

The impact of a potential pandemic on large, global corporations will be very different from the disasters that these companies have faced in the past. Pandemics are global in nature with the potential to affect every part of the organization, as well as multiple locations simultaneously. An influenza pandemic, should one occur, will infect a significant portion of the workforce and will also collaterally affect most employees in one way or another. Infrastructures on which employees and corporations are dependent, will be compromised or fail in unpredictable ways. Pandemics last for significantly longer periods of time than other types of disasters corporations have experienced and a 'paradigm shift' with respect to response planning is required to adequately mitigate against them.

Traditional emergency response plans at many corporations are focused around isolated incidents of relatively short duration and largely, local impact. These traditional plans require significant modification to address pandemic scenarios. All companies represented at the roundtable recognize this, and most began to modify their response capabilities more than a year ago. One participant likened pandemics more to the weather in that one can see them coming. However, they are very different in two other ways that will put response teams to the test. Pandemics are broad-based, making the information challenge much larger, and involve healthcare communities around the world which will require establishing new interfaces with corporations that have not been needed in the past.

All participants agreed on the need for reliable and timely information to inform their response capabilities. Good crisis response requires appropriate and accurate information. Accurate information will be most valuable during critical times, just when it is likely hardest to come by. Most envisaged calling local government and municipal departments for information and guidance, with few able to get through or get a useful response if they do. Access to information is a substantial issue and corporations have addressed this in several ways. All had invested in developing their personal contact networks for this purpose; some have joined industry networks (for example, the financial services community has set up sponsored emergency conference call bridges and websites); others embrace groups such as BENS (Business Executives for National Security); and several are actively including public sector representatives in their testing exercises. Some corporations have specifically hired people who have left government positions in emergency management in order to capitalize on their first-hand knowledge of government operations, personal relationships and contacts.

To activate their response plans, most corporations have, at one time or another, grappled with the issue of 'triggers', or specific indicators that could determine the necessary level of response. However, most agree that there are currently no good, pre-defined triggers and that they will have to determine what information constitutes a 'trigger' in the context of the overall situation and their specific exposure to it. It was pointed out that some of the information from government sources was conflicting and that much was 'packaged' and not useful to corporate planners.

Tabletop testing exercises had helped identify and determine trigger points for one company. Some advocated testing regularly, using worst case scenarios and building 'bench strength' so there is a larger pool of individuals capable of managing a crisis. Others emphasized the importance of continuously challenging the basics; for example, not everyone will be able to telecommute, or significant portions of the infrastructure may fail. All agreed that it is important to involve senior leaders as much as possible in all aspects of pandemic planning.

Crisis management in these corporations had typically been structured as a centralized command/local control model. All agreed that both aspects are important and that the pandemic threat, in particular, has emphasized the need for a corporation to have a coordinated central command capability from which to receive input and provide direction. Strategic business units should develop their own plans and select their own crisis management teams; they should "own" their plans. Good execution on the ground during an emergency will require this. Corporate planning functions should provide guidance, share best practices and ensure compliance with corporate planning policies. By requiring commonality in structure, program offices can ensure the central command/local control model can be optimally coordinated and will work well. Some of the larger companies pointed out that their needs are more complex and that they have had to develop regional command capabilities to accommodate the activity necessary during a crisis of this nature.

Private sector efforts to obtain and share accurate information with employees are complicated by the fact that there is no formalized process for corporations to work with governments, particularly public health agencies, during an emergency. Therefore, most businesses rely on informal networks and contacts. Many corporate representatives expressed the need for "one voice" and some wanted to see "unified command" capabilities at the public level. Many feared that this is unlikely to happen and that corporations will be "on their own" and have developed their capabilities accordingly. Development by Federal and local governments of an integrated communications infrastructure would be beneficial for businesses across the board and avoid the likely scramble for information anticipated in a pandemic scenario. "Stove-piping" with respect to critical infrastructures was observed as a significant challenge, and for coordinated communications to be successful, timely and properly scaled efforts would be required.

All companies agreed that the pandemic threat is potentially highly impactful to their businesses and their employees, but largely unpredictable by nature. Their preparedness planning, therefore, has to be substantial, extensive and flexible in response.
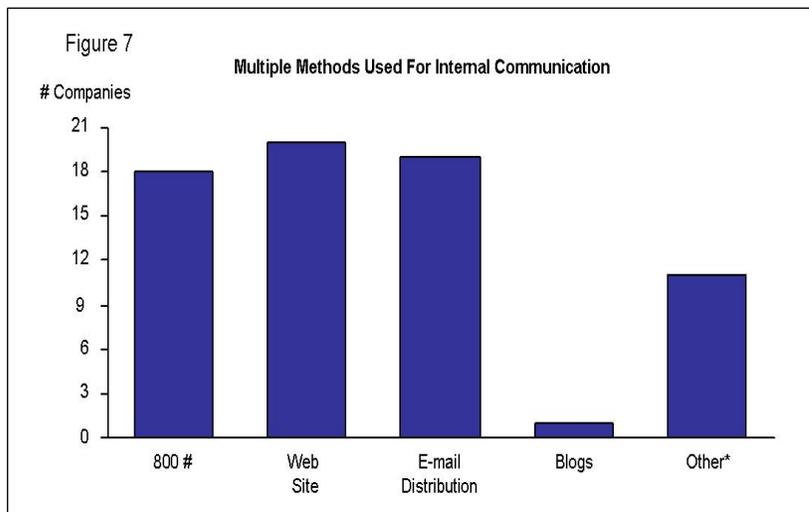

Employee Communications

Effective communications with employees are a must; they will become vital during a pandemic event. Most participants felt it was important for communications to be concise and direct; too much information is not helpful or good practice. Short messages

delivered often are, more likely, better than long messages delivered less frequently. Several felt that feedback from employees was important to gauge the effectiveness of their messaging. The overall goal in getting the messaging right is for the corporation to become a "trusted source". Becoming a "trusted source" requires honest and balanced communication. "Here is what we know…" and "Here is what we don't know…" often works well in the messaging construct. Employees need to know that their company has a plan and that they will be taken care of. Their awareness must be maintained without 'fear-mongering' as this only diminishes credibility. Leaders must lead, and many of the companies represented at the roundtable claimed they have set this as a corporate goal for their corporations. Pandemic preparedness is a timely opportunity for them to do so. After all, most claim that their most important corporate asset is their people, and so looking after them during a pandemic (both at work and beyond) is appropriately, a very high priority.

Most have commenced an internal awareness program. They claim it should provide a high level view of the company's preparedness planning without getting too detailed. Some were considering their messaging very carefully as they are concerned that certain aspects of the plan would cause distress and be counter-productive. One company pointed out that while it is clearly inappropriate to provide all the details, they will answer all questions asked. Many companies are tying pandemic preparedness into wider, more general 'family preparedness' programs as there are many overlapping requirements and this both helps their employees potentially and aids in getting their attention. Many companies have 'piggy-backed' pandemic awareness objectives on regular influenza season awareness programs. The basics of infectious disease control, good workplace practices and personal hygiene can be communicated in this manner under less alarming and more predictable circumstances. Several participants pointed out that directives originating in the US are often viewed more skeptically by international counterparts within the same companies, and therefore, tailoring the messaging for different cultures was important.

Most corporations use multiple media channels for their internal messaging (See *Figure 7*). Corporate intranets are favored with specific web-sites, health bulletins, newsletters, signs and leaflets also widely utilized. Other opportunities to introduce awareness also arise in the ordinary course of business such as training courses, 'town hall' meetings, etc. and many have, or plan to, use these to increase awareness and widen employee preparedness. For communications with employees to work effectively in an emergency, it is

Figure 7

Companies

Multiple Methods Used For Internal Communication

Source: Bellwether Participant Study

important to have up-to-date employee contact information for home and mobile phones, personal e-mail, etc. Good tracking programs enabling companies to know instantly where their employees are in the event of an outbreak should be mandatory for corporate travel and possibly also voluntary for private travel. For example, in one situation, this allowed a company to rescue employees and their families that were on vacation in Lebanon in the fall of 2006 when violence broke out.

While much of the communications planning has been around employees, representatives emphasized the need for corporate communications planning appropriate for executives, investor relations and the media to be addressed (FAQs, talking points, etc.).

Working Remotely

It is widely assumed that under a pandemic scenario many employees will work from home, for many reasons including: that they are sick, caring for a household member who is sick, because the school or daycare system is closed, or because their employers encourage or direct them to stay home. Others may elect to do so for fear of coming in contact with an infected person, and yet others may be precluded from commuting due to failures in mass transit. For some companies working from home is a more viable situation than for others. In many industries, the majority of employees cannot perform their jobs from home (for example, the airlines, mass transit, utilities, telecommunications, etc.). Society will need such companies to continue to provide services to minimize disruption. So the "work remotely" assumption differs considerably from company to company. The effectiveness of a "work remotely" approach is also an important assumption for everyone, as it is highly dependent on the resiliency of the infrastructures that may be impaired, as noted earlier.

Allowing employees to work from home also presents new challenges in information security, regulatory compliance and liability management. Many companies are working to increase the proportion of employees who can perform their function remotely. However, most critical business processes cannot currently be performed remotely while working from home and a major shift in current thinking, for those for whom this may be viable, would be required to change this. Many issues need to be addressed regarding privacy and regulatory compliance as well as security regarding theft and unauthorized access to proprietary company information.

Many employees do not currently have remote connectivity. In order to do so, they must have laptops or have their home computers enabled for remote access. Of those that have laptops with remote connectivity, many do not take them home on a regular basis; corporations have identified this issue and are working to encourage employees to take their laptops home. Many that could work from home have to be enabled to do so and have been provided a laptop with remote access capability. In addition, some employees do not have high speed connections. Given the plethora of different carriers and service providers, corporations face a complex problem in enabling many workers this capability. However, one thing is clear, those corporations planning on having employees work

remotely as part of their preparedness solution, must develop these capabilities now, before a pandemic emerges, as the challenge to enable users after the start of the pandemic may be insurmountable.

As several representatives stated, there is uncertainly as to whether, or to what extent, different external infrastructures will hold up if employees work remotely. Not all countries are the same; many have been identified as significant issues, for example, India where companies are highly dependent on outsourced back office operations. Internet congestion will likely be a fact of life under a pandemic scenario further hampering productivity. From an internal perspective, companies will not have adequate corporate bandwidth without additional investment. Some here have already made investments in switch, PBX and server capacities to accommodate this; others have not.

Working at home also raises many other issues for corporations. Information security is a substantial challenge and involves corporate compliance and privacy policies. Regulatory authorities will have to consider whether to relax current rules during a pandemic to enable certain functions to be performed remotely, for example, market makers within the financial services industry. Employer liability is also potentially expanded since the home will substitute as the workplace (for example, for workers compensation in the event of a domestic accident). Working from home raises many new issues that companies are grappling with and which may not be finally resolved until the situation arises. It is, however, a core expectation amongst the group that many employees will have to work from home during portions of a pandemic occurrence.

Taking Care of Facilities and Employees

Companies recognize the fact that it is essential to protect employees and that this has implications for policies applying to the workplace in a pandemic scenario. Large companies have a mix of large and small facilities and some have a significant number of small facilities such as telecommunication and utility enterprises. It will not be possible for many companies to rely heavily upon employees to work from home. *Figure 8* shows how companies have modified some policies to accommodate work-from-home scenarios. Critical infrastructure companies face unique challenges. Most companies intend to restrict travel, particularly

Figure 8

**Personnel Policies Modified
To Accommodate Working from Home**
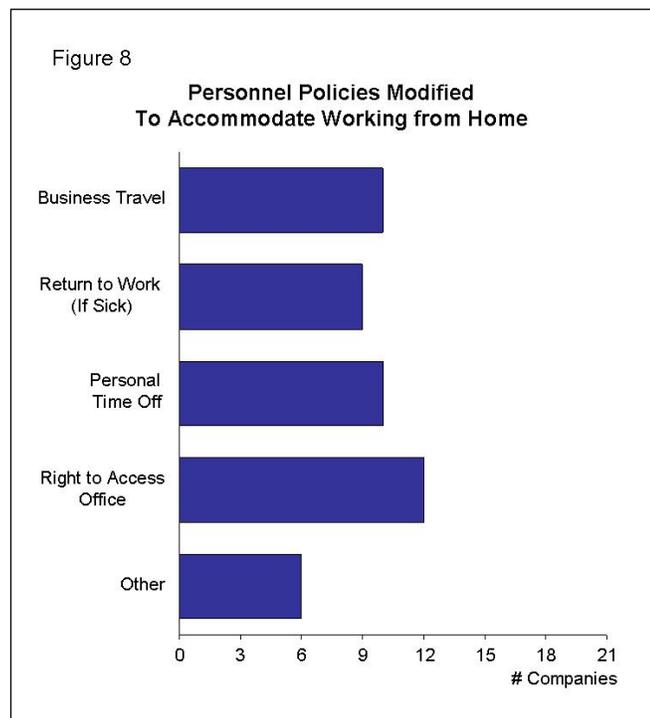
Source: Bellwether Participant Survey

international, and modify meeting policies to reduce exposure. Investment in medical, janitorial and critical office supplies are required, because re-supply during a pandemic will likely be difficult. Despite the issues surrounding the effectiveness of screening, most recognize the need for screening for influenza to help determine who should come to work and who should stay at home. Some intend to use medical trailers to screen employees prior to entering the workplace. However, many are not yet certain of what they will do, nor how they will do it, though they have identified the options.

Screening has been shown not to be particularly effective (for example, during SARS) since infected persons may be contagious prior to being symptomatic and a fever can be masked by medication. However, several companies anticipate conducting fever screening. More companies anticipate using self-screening to reduce worksite exposure by providing employees self-scoring symptom checklists in order to determine whether it is appropriate to come to work. They are also an important component of the employee awareness program. They may be the only appropriate screening methodology for small facilities and can be applied widely across companies in combination with modified corporate policies. Most felt that self-screening techniques would be encouraged and employed at their companies. Healthcare representatives also pointed out that an effective rapid diagnostic test would improve the situation significantly, particularly if it could be self-administered like a home pregnancy test.

Pay policies are also an issue at many companies; they are particularly complicated where union rules and contracts apply, and commissioned sales representatives also require separate consideration. Many companies expressed the need to reassure employees on this topic during a pandemic. This was considered important for many reasons including reinforcing and encouraging the stay at home option where companies deem it desirable. All recognized that under serious and prolonged pandemic conditions, corporate solvency may become an issue that could modify their initial position on pay policy and that periodic review would be necessary.

Corporate Resiliency

The pursuit of cost efficiency and quality over the past several decades has driven companies to consolidate many functional operations into single 'centers of excellence' often located in low-cost countries around the world. Manufacturing in China and customer servicing in India are common examples. For business continuity planning, many companies have contracted local sites as alternatives and some have identified ones in different countries and have prepared relocation plans for them. For many corporations, having several 'critical eggs in a single basket' is a significant issue.

The H5N1 pandemic influenza threat now challenges the wisdom of such thinking. As a representative of one corporation succinctly put it "we had to throw a lot of assumptions out of the window". Single centers of excellence for critical supplies and business processes do not mitigate against the ramifications of a global pandemic. Local off-site alternatives and "fly-outs" (flying employees to another location or facility) do little for a

locally impacted population. As an influenza pandemic is only one of the threats global corporations face, a new approach is needed; the concept of corporate resiliency is now at the forefront in contingency thinking.

Corporate resiliency embraces the concept of flexibility; it is strategic and long-term in nature. It flies in the face of optimizing efficiency in the short-term but endorses the concept of minimizing disruption in the longer term. Appropriate investment now, to minimize the effect of disaster later, should provide a positive cost-benefit solution overall. Corporate resiliency requires the development of multiple supply chain and processing capabilities for core products and business processes. A company's geographic footprint is an important element of diversifying its risk. Prioritization of products and processes should drive investments in facilities that can provide multiple-functionality and geographic diversification. Extending remote working and virtual communicative capabilities are part of the resiliency solution.

Corporate resiliency will require multi-event planning and good situational awareness short-term, and a global approach combined with sound strategic planning long-term.

Best Practices

All companies participating in the roundtable had developed or incorporated best practices within their pandemic preparedness planning. Every company had employed specific practices or processes that would enable them to respond better in certain areas in a pandemic scenario. Many of these were developed in response to anticipated circumstances that may not be appropriate for all.

Numerous best practices were reported in many categories by participants both within their enterprises and also at other entities with which they had familiarity. These categories included situational awareness, communications, crisis management, emergency response, travel, employee protection, working remotely, facility care, healthcare liaison, drilling, training, preparedness planning and resiliency. Several were identified within each category. For example, to improve situational awareness some companies have appointed a pandemic monitoring officer, are participating in industry bridges, networking across industries for benchmarking purposes and have hired people with public emergency expertise. More examples are included in *Appendix A*. No company participating in the study employed all the best practices identified, but many employed several of them.

Each company determined what was appropriate from their own point of view by assessing whether the anticipated benefits warrant the investment and on-going expense associated with the practice. Companies participating in the roundtable discussion had an opportunity to discuss best practices performed by their peers. The event provided a forum to do this and participants found the roundtable forum valuable in enabling on-going dialog. The merits of each best practice require careful evaluation by companies to determine whether they are appropriate for their particular circumstances.

Conclusion

The threat of an avian influenza pandemic is real; not so much because it is considered high probability in the short-term, but because of its potential impact on society and economies around the world, and therefore to companies, could be devastating. Unlike most other disasters, pandemics are global, long-lasting and cause significant irreducible confusion. Contingency planning for them is particularly difficult because so little can be predicted. Planning is also complex as it deals with all facets of business and a substantial portion of the workforce will be affected one way or another. Supply chains, service providers and public infrastructures will be affected, and some will likely fail or be compromised. Healthcare systems will also likely be overwhelmed. Consequently, the planning challenge for corporations is considerable.

Despite this, all corporations represented at the roundtable are better prepared for pandemic influenza than they were 18 months ago. Should a pandemic occur the impact on many corporations, however, would likely be global, simultaneous, multi-locational and prolonged. Few, if any, consider themselves ready for this and continue to work on improving their preparedness. Pandemics happen fast, and companies emphasized the need to be proactive in planning. As one representative put it, "It's easier to ask forgiveness (for acting proactively) than permission." Barring the threat turning real in the interim, these corporations will be even better prepared in another 18 months. Many have begun to integrate the threat of pandemic influenza into a broader resiliency strategy that will better deal with multiple threats, irrespective of their nature. One of the major benefits of the H5N1 threat has been to accelerate investment in this all-hazards approach which will eventually better prepare all corporations which invest in it to deal with both local and global public health threats, including acts of terrorism.

The early availability of an effective vaccine would change the outcome substantially and corporations may well consider helping lobby for the changes in government priorities and funding that could enable this. It was pointed out that the private sector has a profound role to play in national preparedness for an influenza pandemic, and that more will likely be asked of them in such an event than they probably recognize today.

In our view, the corporations present at this roundtable have responded admirably in preparing themselves for a potential pandemic and are continuing to improve in this respect. Public entities could benefit from the practices at these major corporations.

<u>**Appendix A**</u>

Examples of Best Practices Cited by Participating Companies

Situational Awareness

- Pandemic Monitoring Officer
- Industry Bridges
- Cross Industry Liaison Networks
- Public Emergency Expertise

Communications

- 24/7 Monitoring/Support
- Prioritized Communications Protocol
- Automated Call-Out
- Automatic Contact Data Updating

Crisis Management

- On-Duty Teams
- Dedicated Crisis Mgmt Teams
- Activation Protocol
- Off-Site Alternatives

Emergency Response

- Centralized Command Control
- Local Crisis Command Capabilities
- Pre-Prepared Policy Alternatives
- Pre-Packaged Messaging

Travel

- Travel Tracking
- Non-Business Travel Tracking Option
- Pre-Packaged Advisories/Directives
- Pre-Prepared Travel Policies

Employee Protection

- Antivirals Inventory
- Self-Screening Scorecard
- Meetings and Interaction Protocol
- Flu Tracking Capability

Working Remotely

- Extended Laptop Capability
- Remote Access Enablement
- Laptop Take-Home Policy
- Surge Capacity In-Place

Taking Care of Facilities

- Cleansing Stations/Supplies
- Workstation Cleansing Capability
- Emergency Janitorial Contracts
- Critical Office Supplies Inventory

Liaison with Healthcare Community

- Pre-Established Relationships
- In-House Medical Officers
- Alert Network Memberships
- Integrated Response Plans

Drilling & Training

- Full Scale Exercises
- Surprise Drills
- Public Health Agency Participation
- Pandemic Awareness Program

Pandemic Preparedness Planning

- Corporate Program Office
- Business Unit/Function Ownership
- Supplier/Service Provider Compliance
- Continuous Improvement Program

Corporate Resiliency

- Identified Strategy/Roadmap
- Geographic Diversification
- Multifunctional Facilities
- Extended Virtual Capabilities