COMMUNICATING PANDEMIC INFLUENZA RISK TO INDIVIDUALS, FAMILIES, AND COMMUNITIES

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Abstract

All nations understand the need to communicate essential information to help people plan, prepare, and ultimately cope with pandemic influenza and its impacts. Further, they understand the need to align – to the extent possible – their communication plans with others and to coordinate communication in an open, timely, and transparent manner.

Using open-source information and direct work experience, this paper explores best practices in communicating risk associated with low probability/high impact potential threats such as pandemic influenza. It summarizes the current communication strategies employed on a global scale to address risks associated with pandemic influenza to the public and private sector and will identify any shortfalls and gaps by comparing these approaches to best practices. Finally, the paper recommends measures for improving individual, family, and community preparedness through risk communication.

Introduction

What is Pandemic Influenza?

According to the U.S. Centers for Disease Control and Prevention (CDC), a pandemic is a global disease outbreak. An influenza pandemic occurs when a new influenza A virus emerges for which there is little or no immunity in the human population, begins to cause serious illness and then spreads easily person-to-person worldwide. Once international spread begins, pandemics are considered unstoppable, as they are caused by a virus that spreads very rapidly by coughing or sneezing. The severity of disease and the number of deaths caused by a pandemic virus vary greatly, and cannot be known prior to the emergence of the virus.

The CDC says a pandemic can occur when three conditions are met: (1) a new influenza virus subtype emerges; (2) it infects humans, causing serious illness; and (3) it spreads easily and sustainably among humans.

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The risk of a pandemic is serious. Pandemic influenza occurred three times in the last century, with tens of millions dying from the 1918 influenza pandemic (or "Spanish Flu"). Health experts from the World Health Organization (WHO) and CDC suggest there is a potential for another influenza outbreak and a resultant pandemic, especially from H5N1 (or "bird flu"). With the H5N1 virus spreading in poultry from Asia to Europe and Africa and confirmed human cases in twelve countries, the risk continues to escalate. Each additional human case gives the H5N1 virus an opportunity to improve its transmissibility in humans and develop into a pandemic strain. While neither the timing nor the severity of the next pandemic can be predicted, the probability that a pandemic will occur has increased.

What is Risk Communication?

Risk is an intricate part of our lives. The air we breathe, the water we drink, the food we eat, the cars we drive, are all full of hidden threats and pose some risk to our health and safety. How we choose to deal with all these risks depends upon our perception of them, including how those risks are communicated to us. Baruch Fischoff, an expert in risk communication, found that people's perception of risk is influenced by many factors (see Figure 1).

"We may be at almost the last stage before the pandemic virus may emerge. Whether the avian influenza pandemic will occur, that is not the question any more, [it is] when the pandemic will occur." – Dr. Jai Narain, director of WHO communicable diseases department

Figure 1 – Factors Influencing Risk Perception (adapted from Fischoff et al. 1981)

- Risks perceived to be voluntary are more accepted than risks perceived to be imposed.
- Risks perceived to be under an individual's control are more accepted than risks perceived to be controlled by others.
- Risks perceived to be have clear benefits are more accepted than risks perceived to have little or no benefit.
- Risks perceived to be fairly distributed are more accepted than risks perceived to be unfairly distributed.
- Risks perceived to be natural are more accepted than risks perceived to be manmade.
- Risks perceived to be statistical are more accepted than risks perceived to be catastrophic.
- Risks perceived to be generated by a trusted source are more accepted than risks perceived to be generated by an untrusted source.
- Risks perceived to be familiar are more accepted than risks perceived to be exotic.
- Risks perceived to affect adults are more accepted than risks perceived to affect children.

In the United States, the National Research Council defines risk communication as "an interactive process of exchange of information and opinion among individuals, groups, and institutions" (Stern and Fineberg 1996). Risk communication, according to this definition, is a dialogue-focused process which involves discussion between the communicator and the audience on the nature of risk and about methods for managing risks. Through this interaction, the audience is better positioned to decide whether they perceive the risk and/or willing to accept it because of their belief that potential benefits far outweigh the risk.

The term "risk communication" is widely used to refer to the communications established by experts putting forth their technical recommendations. For example, the public tends to trust officials who establish standards for issues in public safety. However, if the level of trust is compromised, the public's perception of risk changes dramatically. Therefore, it is important that risk communication accounts for both risk and public perception of such risk. Dr. Peter Sandman defines risk in this manner – as "risk = hazard x outrage."

In public health, officials use risk communication to educate citizens and to engage them in the decision-making process. For example, citizens are asked to provide input on the location and operation of new facilities, such as manufacturing plants and waste disposal sites. Disease outbreaks, especially exotic ones such HIV/AIDS, Severe Acute Respiratory Syndrome (SARS), and bird flu, cause strong public reaction and heightened perception of risk, making risk communication critically important. For example, the 2004 outbreak of SARS virus in China caused worldwide alarm mainly because of the uncertainty associated

with the emergence of this new coronavirus. Yet, comparatively speaking, SARS only caused 55 deaths, while seasonal influenza (or "the flu") causes 500,000-1,000,000 deaths each year. However, the public does not generally perceive the risk of the flu as in important issue.

> "…This is perhaps the only time since 1968, which was the last pandemic, that we are getting signs, symptoms and warnings from nature….More and more birds are dying and different parts of the world – this is the kind of signals and early warnings that we are referring to." – *Dr. Margaret Chan, WHO director for Pandemic Flu Preparedness*

Every crisis, no matter how bewildering, comes with a warning – that warning is risk. In recent years, there were increasing numbers of bird flu cases in many different countries and a threat of a future pandemic with a novel influenza virus is considered a real risk. An influenza pandemic will cause very serious consequences on all of us – as individuals, family members, neighbors, friends, and co-workers. The likely rapid transmission of the disease across this highly interconnected society makes it imperative for governments around the world to effectively and successfully communicate pandemic influenza risk to the public. Communicating risks associated with an uncertain disease outbreak is an especially difficult and complex task. Based on lessons learned, it is clear that the consequences of facing a severe pandemic unprepared will far exceed all levels of tolerance.

Thesis

Protect Your Community – Protect Your Family – Protect Yourself

According to experts, the next influenza pandemic will touch the lives of every individual, every family, and every community around the globe. Although we cannot predict the severity of the next influenza pandemic, how well we prepare today will directly influence the potential consequences. With history as our guide, our preparedness must reach across the planet and into every community and every home. Assuming simultaneous outbreaks occurring over large geographic areas, hospitals will be overwhelmed, antiviral medications, if efficacious, will be in short supply, and critical infrastructure – such as transportation, energy, and public safety – will be in disarray. The world will not really achieve global preparedness until all 193 country and the thousands of related local plans are developed, tested, and integrated. Communities around the world must, therefore, rely upon local resources and establish mechanisms to communicate and manage the risks of pandemic influenza now. Well-planned and well-executed pandemic influenza risk communication at the community level is the crucial first step for ensuring that available resources are efficiently routed and delivered where needed. The main question then is: Are our communities prepared to handle an influenza pandemic? They must – because our lives depend upon it.

> *"Pandemics are global in nature, but their impact is local. When the next pandemic strikes, as it surely will, it is likely to touch the lives of every individual, family, and community. Our task is to make sure that when this happens, we will be a Nation prepared."* – Michael O. Leavitt, Secretary of the U.S. Department of Health and Human Services

Effective risk communication guides the public in understanding preparedness and response activities, adhering to and implementing recommended public health measures, and responding effectively to pandemic outbreaks. Community pandemic influenza preparedness strategies should, therefore, provide basic tools and resources to enable every individual within a community to understand the risks associated with pandemic influenza and be prepared to deal with a major influenza outbreak by:

1. **Informing** them about the risks associated with pandemic influenza to increase public awareness.
2. **Educating** them about what has been done and can be done to decrease the spread of illness through personal and local preparedness and ensuring they receive consistent

and current information on the status of the pandemic, the government efforts, and the responsibility of individuals and families.

3. Encouraging them **to take action** before an influenza pandemic outbreak and providing specific guidance for decision making to protect individual and family health.

Improving individual, family and community preparedness based on an approach of – ***inform, educate, and act*** – to reduce risk by saving lives and minimizing damage by preparing individuals and families to plan for and respond appropriately for an influenza pandemic.

Sources of Information

Current Pandemic Influenza Risk Communications Strategies

Since an influenza pandemic would affect every aspect of society, every person must take actions now to prepare. Risk communication strategies serve as an integral component of pandemic influenza plans across all segments of every society – with a clear purpose of turning ideas into actions. At the present, there is no neither generic nor universal risk communication strategy for the global audience. Governments across the world are developing, improving, and testing their own plans for an influenza pandemic and, in most cases, these plans place heavy emphasis preparing for the threat of pandemic influenza. However, in most cases, these planning efforts do not include comprehensive and detailed information on what to communicate, how to do communicate it, to whom and by whom actions must be planned for all pandemic phases and for all audiences.

WHO Global Influenza Preparedness Plan – According to the WHO, there are two main reasons to actively promote pandemic influenza preparedness on the global level:

1. To mitigate the direct medical and economic effects of a pandemic, by ensuring that adequate measures will be taken and implemented before the pandemic occurs.
2. To provide benefits now, as improvements in infrastructure can create immediate and lasting improvements, and can also mitigate the effect of other epidemics or infectious disease threats (WHO, 2007).

Accordingly, WHO developed a global influenza preparedness plan, which outlines the roles and responsibilities of WHO and national authorities and recommends measures on national and international levels that should be implemented before and during an influenza pandemic (WHO, 2005). Recommended actions aim to improve global preparedness, reduce opportunities for a pandemic virus to spread across the globe, and accelerate vaccine development. In addition, WHO provides tools and training to assist in the development of national pandemic preparedness plans (WHO, 2007). The WHO phases provide succinct guidance about the global risk for a pandemic and provide benchmarks against which to measure global response capabilities. Measures on the international level include border controls for persons entering or exiting country (provide information to travellers about outbreaks and recommend travel deferral to affected areas and administering entry/exit screening and medical surveillance). Measures at the national level fall into the following categories:

- Public health information (communications).
- Information for public on risk and risk avoidance (tailored to target population).
- Measures to reduce risk that cases transmit infection (confinement, face masks).
- Measures to reduce risk that contacts transmit infections (tracing and follow up of contacts, voluntary quarantine).
- Disinfection measures (hand washing, air disinfection) (WHO, 2005).

European Union – Most European Union (EU) countries have had pandemic plans for years. On March 26, 2004, the European Commission of the European Communities published a report titled, "Community Influenza Pandemic Preparedness and Response Planning," which outlines the roles of the Commission and the Member States in pandemic preparedness planning and defines key actions for all pandemic phases in the areas of coordination, surveillance, prevention, mitigation and response, communication, civil protection and research. In November 2005, the European Commission published another important communication on pandemic influenza preparedness and response planning in the European Community, as a revision of a previous EU pandemic influenza preparedness and response plan, urging Member States to not only have plans in place but continuously update strategies for pandemic influenza planning and coordination.

The European Centre for Disease Prevention and Control (ECDC) was established in May 2005 to help strengthen EU's defenses against infectious diseases, such as influenza, SARS and HIV/AIDS. In January 2007, ECDC issued the report titled, "Pandemic Influenza Preparedness in EU," which summarizes the results of the first preparedness review of 27 countries (25 EU Member States, plus Iceland and Norway) (ECDC, 2007). This first report is based on many sources including country assessment visits, the simulation exercise "Common Ground," workshops summaries and questionnaires assessing the level of preparedness. Although the report states that substantial progress has been on the preparedness front, at the same time, it emphasizes the need for continuous improvement in a number of different areas, such as health service response, antivirals for public health purposes, communications, and interoperability between countries. At EU level some of the recommended measures to enhance the communication of risks to the public include – developing/updating pre-agreed pandemic messages within countries and between countries where possible, develop/updating educational materials (e.g., leaflets, posters, media advertisements) that can be used in a pandemic. Member states are urged to consider how to reach minorities and address language barriers. A second status report will be published following completion of the assessment of all EU countries later in 2007 (ECDC, 2007).

United States – The U.S. Homeland Security Council published the "National Strategy for Pandemic Influenza," which outlines roles to be played by all levels of government, private industry, international partners, and individual citizens during all pandemic phases (NSPI, 2005). The National Strategy highlights the need for communities to ensure that all necessary and reasonable measures are being taken to limit the spread of an outbreak within their borders by establishing comprehensive and credible preparedness and response plans that are exercised on a regular basis. It also emphasizes the need for clear, effective, and coordinated risk communications to ensure that people, domestically and internationally, understand the actions required to prepare for and respond to a pandemic. This includes "identifying credible spokespersons at all levels of government to effectively coordinate and communicate helpful, informative messages in a timely manner, providing guidance to individuals on infection control behaviors they should adopt pre-pandemic, and the specific actions they will need to take during a severe influenza season or pandemic, such as self-isolation and protection of others if they themselves contract influenza."

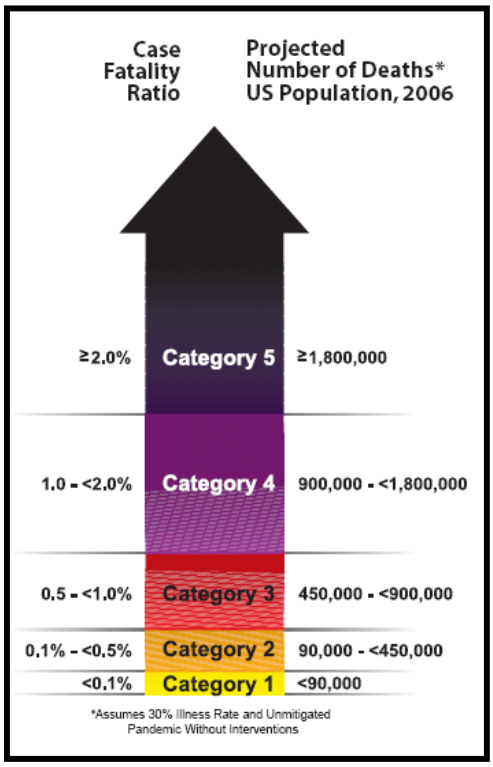
The National Strategy also calls for "integrating non-health entities in the planning for a pandemic, including law enforcement, utilities, city services and political leadership", identifying key spokespersons for the community, ensuring that they are educated in risk communication and have coordinated crisis communications plans is another important local response. Heavy emphasis was also placed on educating the population, which should: (1) begin before a pandemic; (2) be provided by all levels of government and the private sector; and (3) focus on preventing the transmission of any infection, such as the annual influenza or the common cold. Responsibilities of the individual and families include taking precautions to prevent the spread of infection to others if an individual or a family member has symptoms of influenza, being prepared to follow public health guidance that may include limitation of attendance at public gatherings for days or weeks, and keeping supplies of materials at home.

Augmenting the National Strategy, in February 2007, CDC released a draft document titled, "Interim Pre-Pandemic Planning Guidance – Community Strategy for Pandemic Influenza Mitigation in the United States," to help prepare communities in the United States deal effectively with an influenza pandemic. The strategy is based on employing the "non-pharmaceutical interventions" to combat an influenza virus, such as social distancing during the first six- to eight-weeks following the outbreak.

> *"In addition, developing and delivering effective risk communications in advance of and during a pandemic to guide the public in following official recommendations and to minimize fear and panic will be crucial to maintaining public trust."* – CDC's Community Strategy for Pandemic Influenza Mitigation

In an effort to inform and educate the public about the actual and perceived risks associated with pandemic influenza, CDC's strategy established the Pandemic Severity Index (PSI) – as shown in Figure 2 – which comprises five indices for grading pandemic severity. A similar index is used for hurricanes – the Saffir-Simpson Hurricane Scale (NASA, 2007). For pandemic, CDC uses case fatality ratio as a key risk parameter – defined as the fraction of sick individuals that die during the outbreak. According to CDC, the PSI is designed to enable better prediction of the impact of a pandemic and to provide local decision-makers with recommendations that are matched to the severity of future influenza pandemics. In the 1918 pandemic at least 50 million people worldwide died, and the case fatality ratio in the United States was 2.2 percent. Subsequent pandemics in 1957 and 1968 had lower ratios of less than 0.5 percent. If the 1918 influenza pandemic were to occur today, CDC estimates that 1.8 million individuals would die in the United States, which is equivalent to a PSI of Category 5 (CDC, 2007).

Figure 2 – Pandemic Severity Index (CDC)



Case Studies in Risk Communications

Two case studies were selected from areas of public health emergency – SARS and the 2004 Indian Ocean Tsunami – to evaluate lessons learned related to risk communication strategies. As the lessons learned from this case study suggest, it is safe to assume that all the warnings and information in the world will not do much if the public is not sufficiently informed, educated and ready to act.

SARS – The first new severe disease of the 21st Century, SARS emerged in February 2003 and immediately received worldwide media coverage. SARS was a wake up call for public officials across the globe as it revealed how much the world has changed in terms of the impact that epidemics of this sort can have in a highly mobile and closely interconnected world. Caused by a highly contagious new coronavirus, unknown at the time, it was initially diagnosed as an atypical pneumonia. The first outbreak occurred in China, but it was not long before the disease spread quickly across Asia and North America with reported cases in a total of 32 countries. The SARS virus travelled quickly via international air travel routes and by August 2003, causing 916 deaths and infecting more than 8,400 individuals around the world (1,725 of which were healthcare workers) (WHO, 2003). The SARS experience was remarkable in at least three ways:

1. It showed that decisive national and international action, taking full advantage of state of the art information technology and communication tools, was the most effective approach to stop the virus from further spread thus saving thousands of lives.
2. It highlighted the role of public health sector as leader in the coordination efforts across all segments of society to ensure implementation of prevention measures to combat the virus.
3. Public anxiety translated into a desire to take personal action, and information shaped this action in a positive way.

In Hong Kong and Singapore, containment measures were a priority at the government level and used to restore the confidence of tourists and trade partners as economies in those areas were hard hit (Finley, 2005). As information was considered the best way to ensure public participation, efforts were made to issue official reports on the outbreak in frank, open, and continuous manner. This was a critical success factor in getting people to mitigate risks as communities were receptive to messages about their role in outbreak containment and therefore were willing to fully comply with recommended measures (i.e., personal hygiene, frequent temperature checks, hand washing, the urging of hospitals to separate patients with SARS symptoms, restrictions on visiting sick patients in hospitals, etc.) (Lau et al. 2004).

Other measures, such as quarantine, truly depended on community camaraderie which was reflected in a collective need and a shared responsibility to do everything possible to enable communities to return to normal conditions. Wearing protective masks was perceived as both personal protection and public courtesy (i.e., "respiratory etiquette") in both Hong Kong and Singapore (Lau et al. 2004). In just a few months, SARS virus reached Canada, killing 44 and infecting more 350 individuals in Ontario alone (SARS Commission Report, 2006). Thousands of people were placed into quarantine and the health system in the Greater Toronto Area was severely impacted. In the SARS Commission's final report the importance of implementing infection control measures was especially highlighted, however, a number of other key issues that relate to poor community preparedness were reported: (1) poor communication with families; (2) lack of clear and consistent visitation rules; (3) inability to have a traditional funeral, and (4) stigma of being associated with SARS (SARS Commission Report, 2006).

2004 Indian Ocean Tsunami – On December 26, 2004, an earthquake measuring about 9.0 magnitude struck near the west coast of Sumatra, Indonesia, triggering several tsunamis across the Indian Ocean. Despite the distances involved, with the tsunamis taking from between fifteen minutes to seven hours to reach coastlines from Asia to South Africa, they caused catastrophic damage in multiple countries – killing 275,000 people, leaving tens of thousands homeless, and severely damaging the environment. The severity and the scope of the devastation resulted in worldwide humanitarian response, with more than $7 billion U.S. dollars in aid.

In the United Nations' report on the 2004 Indian Ocean Tsunami response efforts offered the following the lessons learned and best practices that relate to the community preparedness and perception of risk associated with tsunami (UN Report, 2005):

- **The extraordinary scale of the disaster** caused difficulties during the initial response in the affected communities as they were not prepared for a catastrophe of such scope.
- **Risk awareness among the population was very low** which helps explain the high death toll. In some areas of Indonesia and Thailand however, certain communities relied on the knowledge of their ancestors passed from generation to generation which enabled them to get to the higher grounds as soon as they feel the first tremors. This illustrates the effectiveness of risk awareness in saving lives.

- **The affected communities themselves were at the front lines in the early relief efforts.** However, efforts were not coordinated on the state level and their involvement in needs assessments, planning and implementation of emergency assistance programs was not addressed.

It is critical that individuals in those areas are educated before tsunami strikes because lessons learned showed ultimately it is up to each individual to take appropriate actions to protect oneself (i.e., moving inland and to higher ground). Figure 3 offers an example of how informing and educating the public leads to action that saves lives and reduces risk.

There are several educational programs in place to educate the public about the risks associated with tsunamis so that they can take appropriate actions in timely manner. The purpose of one such program, the "TsunamiReady Program," is to educate and remind the public about tsunami safety precautions. The program emphasizes risk awareness by educating key decision makers, emergency managers and the public about the nature (physical processes) and threat (frequency of occurrence, impact) of tsunamis, as well risk mitigation steps that could be taken before a tsunami strikes to reduce the risk associated with a loss of life and property.

Figure 3 – The Value of Inform, Educate and Act

A 10-year-old British schoolgirl who was vacationing with her family on the Thai island of Phuket saved the lives of hundreds of people in Phuket by warning them a tsunami was about to strike.

She was taught by her geography teacher that there was about 10 minutes from the moment the ocean draws out until the tsunami strikes.

This single piece of information was enough to initiate and prompt the evacuation of Phuket's Maikhao beach and a neighboring hotel before tsunami hit, saving hundreds of people from death and injury.

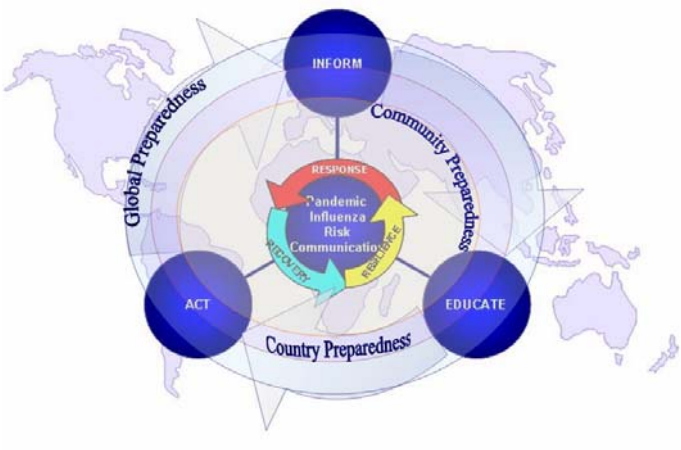
Findings and Discussion

Pandemic influenza is a unique public health emergency that will have wide ranging effects on individuals, families, and communities around the world. Community preparedness can be enhanced by improving public understanding of the risks associated with the dangers of pandemic influenza and the benefits of implementation of community-wide control practices. Public health campaigns based on the ***inform-educate-act*** approach should explain how individual action (e.g., good personal hygiene, staying home when showing symptoms) and community efforts (e.g., implementation of snow days and wearing masks) can help reduce the risk of spreading the virus and consequently save lives.

Data presented in the case studies suggest if pandemic were imminent today, the two primary goals of containment efforts before and during an outbreak would be to delay the spread of disease early after it enters the country or a region and to limit the number of individuals that become infected in community outbreaks throughout the pandemic period. Figure 4 illustrates how inform, educate, and act is applicable to improving risk communications for pandemic influenza.

Inform – Successful decision making starts with the following three words: Inform. Inform. Inform. Individuals within communities must understand that factors relating to society, the environment, and increasing global interconnectedness increase the risk of disease emergence and spread. In addition, the key messages targeting local communities should be translated and modified as required to address the cultural and linguistic needs of that community. While respiratory etiquette has been recommended as the best control measure to combat influenza in the SARS case study, it is difficult to convey that information to the unprepared communities considering the information overload, distractions associated with stressful situation, and the impact of unforeseen problems. Risk awareness and community-based disaster preparedness courses should be introduced in school curricula and in the formal training provided in the workplace settings, healthcare facilities, police and fire personnel and other relevant civil servants.

Figure 4 – Improving Pandemic Influenza Risk Communications



Educate – Knowledge is power. Communities can and should prepare for an influenza pandemic now. Therefore it is of utmost importance to acquire vital information about the magnitude of what can happen during a pandemic outbreak and what has been already done to reduce the impacts on the community (e.g., what the government is doing to prepare for pandemic influenza). Educational campaigns should contain the criteria, justification, role, and methodology that will be utilized during the implementation of the recommended containment measures and description of social, medical, and psychological ways in which individuals and families will be supported before and during a pandemic outbreak. Quarantine – temporary restriction of personal movement to/from an affected area that may be imposed by the governing authority – should be explained to public as a collective action implemented for the common good to promote a sense of solidarity within a community.

Act – Improving preparedness, especially of individuals, families, and communities, will help to lessen the risk of pandemic influenza. To accomplish this, the main question is then what actions an individual can take to help lessen the impact of an influenza pandemic on them and their families. These should be commonsense actions one can take now to prepare for a potential pandemic. For example, the U.S. government established a website (www.pandemicflu.gov) that contains a planning checklist for individuals and families, among others, to help reduce transmission of the pandemic virus if/ when it emerges.

The continuing efforts to identify and contain SARS disease is a constant reminder that communities must be ready today for the unexpected threat of tomorrow. Although it will be difficult to be fully prepared to face every potential health threat, communities can do a lot today to better protect themselves against future threats. Certainly, the experience with SARS and the 2004 Indian Ocean Tsunami reinforces the need for improved global collaboration and mega-community (from local to global) preparedness. It all starts with an informed, well educated individual within a community whose actions can make a difference and save lives.

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Ms. Meliha Dzirlo-Ayvaz has ten years of professional experience, including three years of consulting experience in continuity of operations planning and emergency management to include organizational pandemic planning. Ms. Ayvaz holds a B.S and M.S in Biological Sciences from the George Washington University, and she is an adjunct professor of biology at Northern Virginia Community College in Alexandria, Virginia. Prior to joining Booz Allen, Ms. Ayvaz conducted biomedical research at the Center for Cancer Research at the Children's National Medical Center in Washington, D.C.