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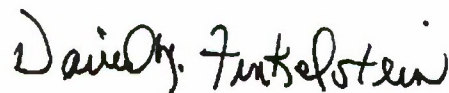
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Approved for distribution:

April 2007

A handwritten signature in black ink that reads "David M. Finkelstein". The signature is written in a cursive, flowing style.

Dr. David M. Finkelstein
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Introduction

On February 3, 2006, The CNA Corporation's *Project Asia* held a one-day conference entitled *Asia and the Science and Politics of Pandemics*. This conference brought together a broad group of policy-makers, health care professionals, and academics to discuss the political and scientific issues of prevention and planning for a possible pandemic in Asia. The goal of the conference was to focus on Asia as a potential epicenter of emerging diseases, discuss the response capacities of various Asian health systems, and explore health crises as political issues for regional governments in Asia.

Keynote addresses were delivered by:

- Ambassador Nancy Powell, Senior Coordinator for Avian and Pandemic Influenza, Department of State
- Dr. William Steiger, Director, Office of Global Health Affairs and Special Assistant to the Secretary for International Affairs, Department of Health and Human Services
- We were also honored to have as speakers serving diplomats from the embassies of Japan, Turkey, Indonesia, and Thailand in Washington, D.C.

Speakers discussed the demographic and scientific conditions that have contributed to the emergence of avian flu in Asia; the political challenges associated with health crises in Asia; the capacity of Asian health systems to respond to potential pandemics such as avian flu; and international and regional cooperative efforts to prevent and control avian flu. (See appendices A and B for the conference agenda and a list of speaker bios.) Several of the conference participants brought to bear extensive field experience, with some having returned from research trips as recently as the week before the conference.

This report serves as a record of the conference: a discussion of key themes and brief summation of points made at each of the four panels; appendices that contain a copy of the conference agenda and biographies of the conference panelists and moderators.

Key themes

The following highlights key themes that emerged during the day-long discussion.

Certain geographic and cultural features extant in Asia make it an epicenter for emerging diseases

Asia is only one of several potential global hotspots where new infectious diseases are likely to emerge. However, conferees were in agreement that there are certain features in parts of Asia that make it a prime candidate for the emergence and re-assortment of certain viruses.

- Asia has a large and dense rural human population that lives in close contact with farm animals, and backyard farming is practiced extensively.
- Asia has a huge domestic poultry population and is on a major migration route for wild fowl. Hence, the ease of transmission of avian viruses from wild birds to domestic ducks and chickens.
- Asia also has a sizable pig population. Pigs can act as mixing vessels for strains of human and avian flu, allowing it to mutate into a form that is easily transmitted among humans.

The H5N1 virus is a serious concern for global public health officials

Not surprisingly, much of the conference discussion focused on avian influenza. Avian influenza is a form of the Influenza A virus that infects birds. These viruses mutate often and can be found in other species, including domestic farm animals and humans. Some forms of the Influenza A virus are common in humans and the source yearly winter influenza outbreaks.

H5N1 is the strain of avian influenza that is receiving a great deal of attention worldwide. There is no H5N1 influenza pandemic today because H5N1 in its current form does not have the ability to spread from person to person in a sustained manner. However, conference panelists cautioned, H5N1 is a serious concern for global public health officials for the following reasons:

- H5N1 is a new virus to which no one is immune
- H5N1 has a high mortality rate
- H5N1 is resistant to the more common anti-flu drugs
- There is no FDA-approved vaccine for H5N1
- H5N1 has the potential to mutate into a form that is easily transmitted to humans from animals

The real concern is not about H5N1 in its current state, but rather about potential mutations of this virus

While clearly a cause for concern, conference attendees pointed out the major pandemic influenza threat lies not within the genetic code of H5N1, but in a potential H5N1 assortment that gives the virus the ability to spread from person to person in a sustained manner. At the same time, vaccine research can only occur for viruses that exist, not for viruses that we fear have the potential to emerge. Therefore, efforts to develop a vaccine for a potential H5N1 mutation cannot begin in earnest until *after* H5N1 has already mutated and an influenza pandemic has begun. Planning for this contingency is a true challenge.

There are systemic, political, and resource hurdles in some Asian nations that have the potential to make individual, community, and governmental responses to health crises more difficult

Public health specialists at the conference underscored that, as a general proposition, an effective response to large-scale national health crises requires at least five key capacities:

- **Elite responsiveness:** Political will to raise awareness, initiate preparedness plans, engage international community
- **Institutional capacity and governance:** Skills of technocratic personnel veterinarian/health professionals for surveillance, training, vaccine development, epidemic planning
- **Institutional coordination and communication:** Cooperation between key agencies and different levels of government.
- **Political embeddedness/public trust:** Political accountability and transparency, capacity and willingness to engage in public education campaign and cooperate with civil society actors.
- **Resources:** Funding on health generally, support for surveillance, prevention, compensation, public education and vaccine development

Regional and country specialists at the conference painted a mixed picture of Asia as regards the ability to satisfy the five capacities: from nations such as Thailand and Turkey that have demonstrated they can rise to the occasion, to China which is stressed in many of the five capacities listed above.

Much of the discussion along these lines focused on the types of governments in place (democratic versus authoritarian) and the capacity of each to deal with large scale health crises. Others focused on the characteristics of an “Asian style of bureaucracy” that might affect response effectiveness.

Some went so far as to argue that as a general proposition, authoritarian regimes are not capable of responding quickly to health crises because they lack feedback mechanisms and good early-warning systems. In authoritarian regimes, bureaucratic feedback is the only channel through which public issues move into the government agenda. Bureaucratic actors tend to distort the information that they pass on in order to please their superiors. Some

panelists argued that this problem is alleviated in democracies, where there is greater transparency and oversight by non-governmental groups.

There are some clearly identifiable actions that a nation might undertake to avert or manage outbreaks of influenza such as H5N1

Conference participants identified five major components as essential for averting or managing an influenza pandemic in an affected country:

- Establish control of avian influenza at its source
- Maintain surveillance of human and livestock populations
- Enable rapid containment of outbreaks
- Plan for all contingencies
- Establish effective communications

Currently, there are wide variations in capability among countries in East and Southeast Asia to avert or address avian influenza outbreaks. Most assessed that since the SARS outbreak in 2003 China had made impressive progress, but that structural problems were still in place that leave it ultimately incapable of adequately addressing a major outbreak; this was seen to be especially worrying in the case of a potential mutated H5N1 virus that was easily transmissible between humans.

Vietnam and Thailand on the other hand were singled out as models of what preparedness for infectious disease outbreaks could, and should look like.

There are also clearly identifiable tasks that the international community can undertake to support nations in their efforts to prepare for and respond to avian influenza outbreaks

Just as there was consensus as to the main tasks and priorities for countries affected by avian influenza, there was also a fair amount of agreement on what other nations could do to facilitate preparation and response for avian influenza outbreaks.

- Help countries improve surveillance capacities.
- Allocate adequate funding to reimburse farmers for any economic losses they suffer in culling efforts to ensure compliance.
- Provide funding and technical assistance to improve laboratory and clinical diagnosis capabilities. This will allow for better notification and rapid confirmation of new human and animal cases.
- Encourage collaboration and support existing surveillance efforts by the World Health Organization (WHO), Food and Agriculture Organization (FAO), and the Organization for Animal Health (OIE)

- Provide funding and technical assistance to train local rapid-response teams in target countries, improve the ability of foreign health workers to control infection and manage cases, and develop national pandemic plans in target countries
- Increase the involvement of NGOs and the private sector in prevention and control planning
- Support efforts to develop effective risk communications in local languages on prevention and containment of avian and pandemic influenza

Panel Descriptions

Opening Address: Overview of International Efforts to Prevent and Control Avian Influenza

Ambassador Nancy Powell, Senior Coordinator for Avian and Pandemic Influenza at the U.S. Department of State set the stage for the conference by offering an overview of U.S. diplomatic efforts to coordinate avian flu prevention and preparedness with other governments.

Ambassador Powell stated that in order to prepare for the next pandemic, the United States needs to partner with governments at all levels as well as strengthen its ties with UN technical agencies, non-governmental organizations (NGOs), and the private sector. She pointed out that the U.S. government is engaged in a wide variety of activities, both at home and abroad, aimed at improving prevention measures, developing the capacity to detect and rapidly respond to outbreaks, and planning for containment.

As an example of multilateral cooperation, she highlighted the International Partnership on Avian Pandemic Influenza (IPAPI). This organization encourages discussion and transparency and helps to develop interagency coordination mechanisms throughout the world. The IPAPI and the U.S. government have provided experts to help create preparation plans in various countries around the world as well as funding for various initiatives such as stockpiling vaccines for birds. Other examples provided by the ambassador included the U.S. government's close cooperation with UN technical agencies such as the World Health Organization (WHO), which is the lead agency on avian flu, and the United Nations Children's Fund (UNICEF), which has developed educational software that can be quickly distributed in the event of a crisis.

IN ORDER TO PREPARE FOR THE NEXT PANDEMIC, THE UNITED STATES NEEDS TO PARTNER WITH GOVERNMENTS AT ALL LEVELS AS WELL AS STRENGTHEN ITS TIES WITH UN TECHNICAL AGENCIES, NON-GOVERNMENTAL ORGANIZATIONS AND THE PRIVATE SECTOR.

In addition to these multilateral efforts, Ambassador Powell said that the U.S. government is engaged in a number of bilateral projects with other countries. The U.S. Department of Health and Human Services (HHS), US Department of Agriculture (USDA), and the U.S. Agency for International Development (USAID) all have extensive experience working with other governments to combat an avian flu outbreak. The focus in Asia has been on national planning, especially monitoring and testing. Activities have included helping countries improve their diagnostic and research labs, and stockpiling bird vaccines and flu treatments.

According to Ambassador Powell, one area in which the U.S. government needs to be more effective is global assessments. She stated that while the U.S. government is currently working to improve its global assessments capabilities, governments around the globe still lacks effective standardized assessment criteria and mechanisms for sharing data between

countries. As an example, the ambassador noted that political issues prevent countries in the Caucasus from sharing information and coordinating efforts with their neighbors. These types of problems need to be resolved through more cooperation with international organizations and better bilateral ties.

The ambassador concluded by noting that public-private outreach is crucial. U.S. embassies need to be able to keep U.S. citizens abroad informed, and American businesses are being told to stockpile medicine and prepare evacuation plans in the event of a pandemic. In addition, the United States is working to disseminate basic information to the general populace in target countries so that they can protect themselves.

Panel One: Pandemics and Asia

The first panel was intended to serve as an introduction to the topic of pandemics and emerging diseases. Speakers were asked to fulfill two tasks. First, they were asked to provide some basic scientific information on pandemics and influenza, focusing on avian flu as an example. Second, they were asked to closely analyze pandemics in Asia. They were asked to identify geographic and cultural factors that had the potential to make Asia an epicenter for emerging diseases.

Science and the History of Pandemics

The first panel speaker, Dr. Daniel Lucey, Co-Director, of the MS Program in Biohazardous Threats and Emerging Infectious Diseases at Georgetown University Medical Center and Director of the Center for Biologic Counterterrorism and Emerging Diseases at Washington Hospital Center, began this session by providing an overview of the history and science of flu pandemics.

Lucey defined the term “pandemic” as either a serious human disease that involves most of the world or an epidemic that is on a global scale. Dr. Lucey noted that pandemics have occurred throughout human history and that emergent diseases have repeatedly proven their ability to spread quickly around the world. This is especially true with modern international travel, which can enable a disease to spread globally in a matter of weeks rather than months or years.

To illustrate the potential threat Dr. Lucey briefly examined the last three flu pandemics: the 1918 Spanish flu pandemic, the 1957-58 Asian flu pandemic, and the 1968-69 Hong Kong flu pandemic. The 1918 pandemic, by far the worst of the three, killed an estimated 50-100 million people worldwide, including some 675,000 in the United States. Translating the 1918 death rate to correspond to the world’s current population would mean about 180-360 million deaths worldwide. The 1957-58 Asian flu pandemic was more moderate, resulting in 2 million deaths worldwide, including some 70,000 in the United States. The 1968-69 pandemic killed 1 million people around the world, including 34,000 in the United States. According to Dr. Lucey, it is not possible to know in advance how severe the next influenza pandemic will be.

Next, Dr. Lucey discussed avian influenza. Lucey explained that avian influenza is a form of the Influenza A virus that infects birds. These viruses mutate often and can be found in other species, including domestic farm animals and humans.

One form of avian influenza that has received a great deal of attention in recent years, Lucey said, is known as H5N1.¹ Unlike other influenza viruses, such as H3N2 and H1N1, that are common sources of yearly influenza outbreaks, H5N1 is new to humans. As a result, no one has any immunity to this virus and virtually everyone is vulnerable to infection.

Dr. Lucey noted that migratory birds have now spread avian flu throughout much of Asia and parts of the Middle East, Eastern Europe, and Africa. So far the disease has only spread to a small number of people, all of whom were in very close contact with infected poultry.

There is no H5N1 influenza pandemic today, Lucey explained, because H5N1, in its current form does not have the ability to spread from person to person in a sustained manner.

Nevertheless, he stated, H5N1 is of serious concern for the following reasons:

- H5N1 it is a new virus to which no one is immune
- H5N1 has a high mortality rate.
- H5N1 is resistant to the more common anti-flu drugs
- There is no FDA-approved vaccine for H5N1
- H5N1 has the potential to mutate into a form that is easily transmitted in humans

**EFFORTS TO
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Lucey ended his presentation with a sobering explanation of the difficulties in preparing vaccines for a potential H5N1 pandemic. The major pandemic influenza threat lies not in the genetic code of H5N1, but in a potential H5N1 mutation that gives the virus the ability to spread from person to person in a sustained manner. Vaccine research, on the other hand, can only occur for viruses that exist, not for viruses that we fear have the potential to emerge. Therefore, efforts to develop a vaccine can not even begin until after H5N1 has already mutated and an influenza pandemic has begun. Planning for this contingency is our current challenge.

**H5N1 IS NEW TO
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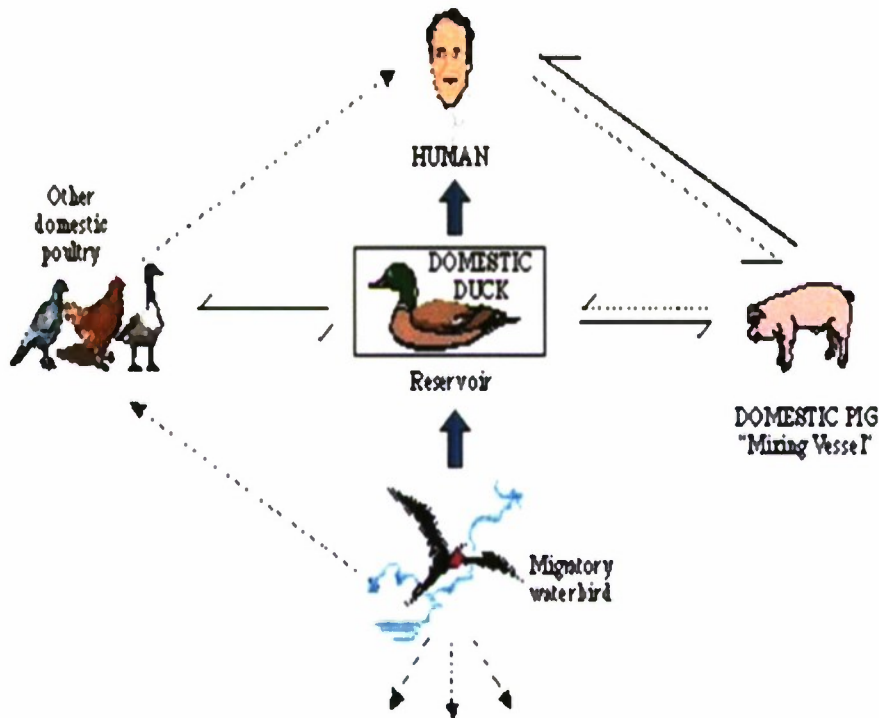
¹ Strains of avian flu are identified by two surface proteins designated by the letters H (hemagglutinin) and N (neuraminidase). There are 16 H subtypes, related to infectivity and 9 N subtypes, related to severity.

Asia: An Epicenter of Emerging Diseases?

The second presentation by Dr. Susan Zimicki, the Director of the Initiative for Infectious Disease at the Academy for Educational Development, took a closer look at Asia as a possible epicenter for future pandemics. Dr. Zimicki noted several factors present that have the potential to mark Asia as an epicenter for emerging disease.

- Asia has a huge poultry industry that includes significant numbers of domestic ducks, which facilitates the transmission from wild birds to domestic ducks and on to chickens.
- Asian agriculture also has a sizable pig population. Several conferees noted, pigs act as mixing vessels for strains of human and avian flu.
- Asia has a large and dense rural human population that lives in close contact with domestic poultry and pigs due to the widespread existence of backyard farming.

Figure 1: Transmission paths of Avian Influenza



Source: Presented in briefing by Dr. Daniel Lucey

Both Dr. Zimicki and Dr. Lucey described the process through which viruses can transfer from one species to another and eventually pass to humans. Figure 1 illustrates migratory waterbirds serving as a reservoir for the avian flu virus. These birds can transmit the virus to domestic ducks, other domestic poultry, and domestic pigs. These animals in turn can pass the virus on to humans (either in its current form or after a mutation).

Dr. Zimicki argued that effective detection and containment programs are critical because one cannot accurately predict when and where the next pandemic will begin. She highlighted four things that can be done to improve detection and containment measures.

- First, improve surveillance, by improving communication between administrative levels in Asia governments.
- Second, improve the capacity of diagnostic and research labs. This will require international cooperation.
- Third, take appropriate preventive and containment measures, which will require reporting on outbreaks from credible sources.
- Fourth, improve the capacity to mobilize the necessary resources to deal with a potential pandemic. This will also require international cooperation.

**THE EMERGENCE OF
HUMAN PANDEMIC FLU
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Dr. Zimicki stressed that no country has all these capabilities and that sharing of resources and information is vital. She noted that the emergence of human pandemic flu is a question not just of biology and demography but also a question of transparency and international will.

Panel 2: Political Challenges of Emerging Health Crises

Building on the discussion from the previous session, the goal of the second panel was to consider political barriers in Asia that had the potential to make individual, community, or government responses to health crises more difficult. To do this, panelists were asked to examine previous responses to health crises in various countries in Asia. They were asked to discuss successes and failures as well as identify lessons learned.

The Political Challenges of Health Crises in China

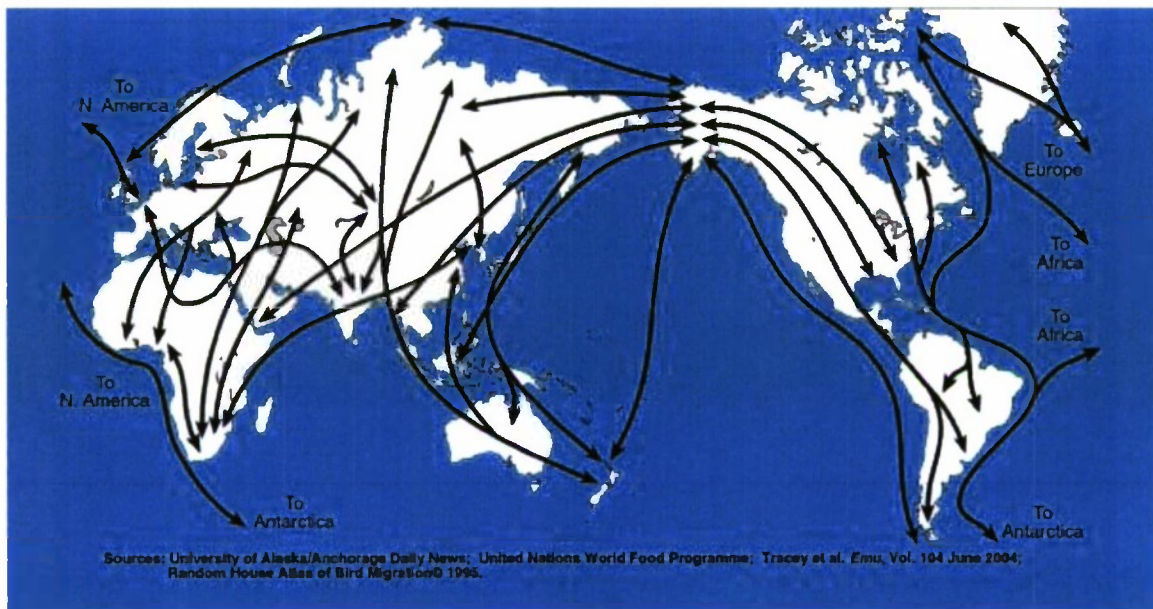
Professor Yanzhong Huang, Assistant Professor and Director of Global Health Studies at Seton Hall University, analyzed the influence of China's political system on the government's ability to manage health crises. Dr. Huang argued that political factors play a large role in defining the limits and constraints in China's preparations for the next disease outbreak. Huang's presentation concluded that while the Chinese political and policy context has improved somewhat following recent SARS and HIV crises, China will continue to face problems in disease surveillance, risk communication, and policy enforcement in preparing for a potential flu pandemic.

Dr. Huang began his presentation stating that, historically, China has been the origin of several epidemics, such as SARS and the 1968 Hong Kong flu. He argued that there were many reasons to suspect that China might be at the epicenter of the next pandemic outbreak.

Before discussing political factors, Dr. Huang highlighted some facts about China that would make it vulnerable to emerging diseases, particularly avian influenza:

- China hosts three sections of global routes for migratory birds, and those birds have close contact with domestic poultry.
- China is home to the world's second largest domestic poultry industry, with 3.7 billion waterfowl.
- Most poultry farms in China are family owned, with poor sanitary conditions and little bio-security.
- China has a large floating population of migrant workers that pose difficulties for disease control.

Figure 2: Migratory Bird Flyways



Note: The flight patterns of migratory birds were a topic mentioned by several of the panelists. Scientists have hypothesized that H5N1 travels via migratory birds. This image, displayed by Counselor Mehmet Cagil from the Embassy of the Republic of Turkey at the conference, shows the migration patterns of birds intersecting around the globe.

Dr. Huang then turned to the roles that political factors and governance play in exacerbating China's existing vulnerabilities to emerging disease. In particular, he argued that in post-Mao China there is "a significant disjuncture between the magnitude and severity of epidemics and the speed and effectiveness of government response."

He argued that authoritarian regimes, such as China's, are not very effective in responding quickly to health problems, because they lack feedback mechanisms and good early-warning systems. In authoritarian regimes, bureaucratic feedback is the only channel through which public issues move into the government agenda, and bureaucratic actors tend to distort the information that they pass on in order to please their superiors. Huang pointed out that this

problem is alleviated in democracies, where there is oversight by outside (non-governmental) groups.

In the case of China, Huang stated, the national government is not willing to enfranchise the general public with oversight powers to monitor lower-level officials. Effective risk communication and policy enforcement are thus sacrificed and China is unable to have greater transparency between national and local government. Huang cited the SARS outbreak a few years ago as an example of a situation in which initial problems were hidden from the central government. As a result, central authorities were unable to obtain timely and meaningful data, making it difficult to formulate an appropriate policy response.

Huang also argued that authoritarian regimes tend to promote the dictator's goals, often at the expense of the social good. He cited the case of post-Mao China, when elites emphasized economic growth and paid little attention to healthcare, giving it a very low priority. Huang went on to state that the result is that local officials in China have little incentive to tackle public health problems and "that only epidemics draw attention."

IN POST-MAO CHINA THERE IS A SIGNIFICANT DISJUNCTURE BETWEEN THE MAGNITUDE AND SEVERITY OF EPIDEMICS AND THE SPEED AND EFFECTIVENESS OF GOVERNMENT RESPONSE.

Huang also stated that the SARS outbreak has been an important lesson for Chinese leaders and that the government now has a better understanding of the political, economic, and social consequences of a pandemic. He noted that in the post-SARS environment in China, there is more emphasis on social justice and harmony in state planning. The government is becoming more transparent and no longer regards the existence of some viruses as state secrets. There is now some encouragement of NGOs and the private sector in health matters.

Dr. Huang stated that a "Bird Flu Control and Prevention Headquarters" has been set up at the vice premier level to coordinate government agencies and that China has already set up 150 state centers and 400+ monitoring centers. He noted that the Chinese government deserves credit for having successfully stamped out 33 outbreaks of avian flu among bird populations through mass culling, surveillance, compensation programs for farmers, and vaccination of domestic poultry.

While Huang said that these and other measures are important and laudable, he also noted that there are critical gaps in China in the areas of surveillance, risk communication, and policy enforcement.

- Many localities lack the capacity to differentiate avian flu samples from those of other diseases.
- China has not always been fully cooperative when interacting with the WHO
- Regulations and other organizational barriers inhibit effective collaboration on acquisition and testing of samples.
- The current policy of compensating farmers only after culling is ordered creates a strong incentive for farmers to hide or underreport poultry deaths, thus subverting the surveillance network.

Huang also felt that effective risk communication is a problem for China. He argued that successful risk communication has two key dimensions. First, the national government must receive timely and accurate reports from local officials. Second, the government needs to publicize the presence of a health threat in a manner that reduces public panic and fear. Huang felt that without fundamental reforms to the political power structure, China would not be able to adequately address either of these concerns. Local officials still have too much incentive to hide information or fabricate reports, and they continue to restrict information and provide the public with “benevolent lies.”

Huang stated that while authoritarian regimes have strong autonomy in setting national policy, they are not necessarily able to penetrate localities to enforce implementation. In the past, the Chinese government had some success in using mass mobilization techniques to get local officials to carry out policies. However, in the absence of genuinely engaged civil society groups as a source of discipline and information, increased pressure from central authorities produces a results-oriented implementation structure that makes unscientific, heavy-handed measures appealing to local officials. In the case of SARS, quarantine and isolation worked, but, according to Huang there is a danger that local officials have learned the wrong lesson and that they will view these methods as a panacea for all medical emergencies. Isolation and mass quarantines will not work with a flu pandemic.

In sum, according to Huang, political factors play a large role in defining the limits and constraints in China’s preparations for the next disease outbreak. While the Chinese have learned some lessons from SARS and HIV, and this has improved the political and policy context, China will continue to face problems in disease surveillance, risk communication, and policy enforcement in preparing for a potential flu pandemic. Fixing these problems requires not just strong health capabilities but, more importantly, some fundamental changes in China’s political system.

Political Challenges of Health Care Crises in Southeast Asia

Next, Professor Bridget Welsh, Assistant Professor of Southeast Asia Studies at Johns Hopkins School of Advanced International Studies presented her views on political factors that could serve to limit governmental ability to effectively respond to health crises in Southeast Asia. She began her presentation with an important caveat: Southeast Asia is a diverse region of 500 million people divided into 11 countries that vary considerably in terms of regime type, living standards, institutional capacity, and health issues. Therefore discussing the region as a whole would necessarily involve some generalizations.

Professor Welsh noted that Southeast Asia is very diverse in terms of healthcare and healthcare capacity. For example, the WHO ranks Singapore as having the sixth-best healthcare system in the world, while nearby Burma is ranked last (190th out of 190). The Association of Southeast Asian Nations (ASEAN) has alleviated the situation somewhat by working toward regional integration on healthcare issues, and Welsh argued that there has been considerable learning from SARS and recent avian flu outbreaks. Nevertheless, there is still much work to be done, and, while the region is vulnerable biologically much of its vulnerability to a possible pandemic is based on remaining political obstacles.

Welsh identified five categories of political challenges facing countries in the region that could impair their ability to prepare for and effectively respond to health crises.

- **Elite responsiveness:** Political will to raise awareness, initiate preparedness plans, engage international community
- **Institutional capacity and governance:** Skills of technocratic personnel veterinarian/health professionals for surveillance, training, vaccine development, epidemic planning
- **Institutional coordination and communication:** Cooperation between key agencies and different levels of government.
- **Political embeddedness/public trust:** Political accountability and transparency related to avian flu, capacity and willingness to engage in public education campaign and cooperate with civil society actors. Scope of the illegal economy compared to legal economy.
- **Resources:** Funding on health generally, support for surveillance, prevention, compensation, public education and vaccine development.

Dr. Welsh examined all 11 countries in the region² and measured their ability to meet these challenges in terms of both preparedness and responsiveness.

With regard to preparedness, Welsh noted that there are some sharp differences between countries in the region. Generally the area of preparedness that is strongest across the region is in institutional capacity (trained personnel, surveillance, and ability to plan), and most Southeast Asian countries have the ability to formulate plans and engage in policy options. In terms of preparedness the weakest areas tended to be resources for planning and preparation, as well as institutional coordination and communication.

In terms of responsiveness, Southeast Asian countries showed less capacity to respond to an outbreak than to prepare for one, and Welsh interpreted this to mean that countries in the region should focus their efforts on preparedness.

While data indicates that elites in the countries studied would be very responsive in the event of an epidemic, governing institutions at other levels would be less responsive. The data indicated that the weakest links in responsiveness are in institutional coordination and lack of resources. Many countries also did not do well in terms of political embeddedness and public trust due to their inability to work effectively with NGOs and other forms of civil society.

In conclusion, Welsh argued that vulnerability in the region is high from a political perspective. Singapore, Vietnam, and Thailand deserve credit for effective responses to date.

DUE TO THE "BAD NEIGHBOR" DILEMMA, IN WHICH COUNTRIES WITH WELL-DEVELOPED HEALTHCARE SYSTEMS ARE AT RISK FROM NEIGHBORING COUNTRIES WITH POOR AND INEFFECTIVE HEALTHCARE, A WHOLE REGION BECOMES VULNERABLE IF ONE COUNTRY HAS A HEALTH CRISIS.

² The 11 countries are: Brunei, Cambodia, Laos, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam.

Indonesia especially needs to be supported, as it is facing its strongest challenges right now. Welsh also argued that response cannot be country specific but rather must be regional: due to the “bad neighbor” dilemma, in which countries with well-developed healthcare systems are at risk from neighboring countries with poor and ineffective healthcare, a whole region becomes vulnerable if one country has a health crisis. In terms of improving preparedness the emphasis needs to be on resources, institutional coordination, and public awareness. Response planning should focus on resources and coherent implementation of planning.

Keynote Address: U.S. Cooperation with Asia Against Avian Flu and Other Emerging Diseases

Next, Dr. William Steiger, Director of the Office of Global Health Affairs and Special Assistant to the Secretary for International Affairs at the Department of Health and Human Services provided an overview of how the U.S. government perceives, and might possibly respond to, an emerging pandemic.

A central focus of his talk were the results from Department of Health and Human Services Secretary Leavitt’s fact-finding mission to Southeast Asia in October 2005. One take-away from this trip was that not all cases of transmission of H5NI to humans are known and reported. Therefore, Dr. Steiger emphasized, international cooperation is absolutely essential and surveillance is critical for effective early intervention.

According to Dr. Steiger, the most important priority is to obtain a steady and reliable flow of samples so that the evolution of the virus can be tracked. He noted that containing an avian flu epidemic would be very difficult but that it is worth the effort because it would buy sufficient time to produce an effective vaccine for humans and to raise collective defenses.

Dr. Steiger also noted that long-term preparedness requires a sustained domestic and international commitment. Accordingly, in Fiscal Year 2006 the U.S. government directed 280 million dollars toward international activities to deal with avian flu issues. This money was used to:

- Help countries improve surveillance, as well as laboratory and clinical diagnosis, for better notification and rapid confirmation of new human and animal cases
- Support existing surveillance efforts by the World Health Organization (WHO), Food and Agriculture Organization (FAO), and the Organization for Animal Health (OIE)
- Train local rapid-response teams in target countries
- Improve the ability of foreign health workers to control infection and manage cases
- Increase the involvement of the private sector in prevention and control planning
- Help develop national pandemic plans in target countries
- Support efforts to develop effective risk communications in local languages on prevention and containment of avian and pandemic influenza.

Dr. Steiger concluded his presentation by noting some recent developments in international cooperation, such as the voluntary adoption of International Health Regulations to deal with

influenza and a large donors' conference in Beijing that raised 1.9 billion dollars for international influenza prevention and control.

Panel 3: The State of Response Capacity in Asia

The third panel took a deeper look at the response capacity of health systems in Asia and their ability to respond to emerging crises. Following the format of the previous session, one panelist discussed response capacity in China, the largest country in East Asia, and a second panelist discussed response capacity in several Southeast Asian countries.

China's Health System and Avian Flu Preparedness

During the first session, Professor Hong Wang, Assistant Professor in the Division of Global Health at the Yale School of Public Health, discussed China's health system response capacity. Dr. Wang's presentation outlined considerable weakness at the grass roots level.

First, he summarized the policies and initiatives that China has implemented to date concerning avian flu. Second, he examined China's healthcare system at the grass roots level to identify vulnerabilities in the system. Wang began by noting that since H5N1 emerged, China has experienced 33 outbreaks among its bird population and that these outbreaks have been spread across 14 provinces. As a result of these outbreaks, the Chinese government has responded with a number of initiatives:

- It has created the national Headquarters for Highly Pathogenic Avian Influenza Control to coordinate between various government ministries. Previously, cooperation between government agencies had been very difficult and a mechanism above the ministerial level was needed for to enable some coordination.
- It has carried out an extensive immunization program for poultry, and, Wang stated, about 85 percent of China's domestic poultry has now been immunized.
- It has also sought to improve its surveillance system to include 192 flu-monitoring stations, 304 stations for monitoring epidemics in animals, 146 border surveillance stations, and over 60 influenza labs. Facilities exist at the national, provincial, city, and county levels.
- It has developed pandemic preparedness plans at the national, provincial, and municipal levels.

Other Chinese responses have included the creation of rapid-response teams, better training and technology, research on a possible human vaccine, the creation of new biotech companies, health education and multi-media activities, and greater collaboration (better transparency and timelier reporting) with international organizations.

Wang went on to argue that while on paper this all looks promising, closer examination reveals considerable vulnerabilities at the grass roots level. China has a three tier rural health system comprised of a village health post, a township health center, and a county hospital. This system practices both curative and preventive medicine, but the emphasis has traditionally been on prevention, a notion deeply embedded in traditional Chinese medicine and Maoist policies.

According to Professor Wang, the first major problem with rural healthcare in China system is that the entire system is desperate for funding. These financial concerns work to limit the upward flow of information in China's surveillance system. Wang found that the lower levels of the healthcare system rarely refer patients to the county-level hospitals, because doing so would mean the loss of revenue from that patient. As a result, cases can go undetected and unreported.

The second major problem is that even if quality care exists, there are few rural residents who can afford it. While the national government financed rural healthcare during the Maoist era, this is no longer the case. In theory, county hospitals are now supposed to be funded by the county government. In actuality however, only 20-30 percent of hospital revenues come from the county, and the rest comes from out-of-pocket payments. Local government health facilities must be self-financing, and township and village health entities must also rely on themselves. This creates huge inequalities in the quality of preventive care as poor areas have little money.

**FINANCIAL
CONCERNS WORK
TO LIMIT THE
UPWARD FLOW OF
INFORMATION IN
CHINA'S
SURVEILLANCE
SYSTEM.**

In addition, during the 1980s people in rural areas were covered by community health insurance, but this system collapsed in the 1990s. As a result, only about 5 percent of the population is now covered by health insurance. Consequently, many cannot afford to see a doctor.

Health Systems and Avian Flu Preparedness in Southeast Asia

Next, Professor Judith Ladinsky, National Chair of the US Committee for Scientific Cooperation with Vietnam and Director of the Office of International Health at the University of Wisconsin Medical School, examined the experiences of seven Southeast Asian countries: Singapore, Thailand, Vietnam, Malaysia, Indonesia, Cambodia, and Laos. She discussed the problems she found with regard to avian flu preparedness and response planning.

In examining the experiences of individual countries, Ladinsky noted several differences between the various countries in terms of how avian flu has affected them, how they have responded, and what capacity and available resources they have. She noted that Singapore, for example, has been fortunate in not having any avian flu in poultry or humans. It has exemplary preparedness and disease management facilities, it already has enough antivirals to treat a tenth of its population, and it should have enough antivirals to treat a quarter of its population by the end of 2006.

In contrast to Singapore, Thailand and Vietnam have been hard hit by outbreaks of avian flu. Both countries currently have the problem under control and are preparing for future outbreaks. Thailand has been able to build on its experiences with HIV/AIDS and has a comprehensive preparedness plan that includes surveillance of human and animal populations, stockpiling of antiviral drugs, research on flu treatments, coordination of communication between government agencies, and a strong public education program. Vietnam has a centralized and effective health bureaucracy and is developing a national

preparedness plan but it has been hampered by lack of funds. For instance, Ladinsky noted, Vietnam is not able to compensate farmers for culled poultry. The country has turned to international donors for help in acquiring bird vaccines and conducting research on a possible human vaccine.

Professor Ladinsky stated that Malaysia has had only one outbreak of avian flu among poultry and has had no human cases. Nevertheless, there is cause for concern as Malaysia is adjacent to several areas that have experienced considerable problems with avian flu. Unlike Thailand and Vietnam, the Malaysian government has stockpiled vaccines for poultry and people, acquired protective gear, trained medical personnel, and upgraded laboratories. Ladinsky noted that some health experts were concerned that the plan focuses too much on treatment of the disease and does not do enough in terms of prevention.

Indonesia also has done little in terms of preventive measures. It has been slow to develop a program for culling and has neglected education and health outreach in rural areas. Ladinsky identified Indonesia as a country at high risk of a major outbreak and one that might suffer heavily in a worldwide pandemic.

Ladinsky pointed to the rudimentary healthcare systems of Cambodia and Laos and identified them as the countries most in need of international assistance. Cambodia does not have any ability to diagnose or treat avian flu; all four of its known human cases had to be sent out of the country for treatment. In the case of Laos, we lack the basic information necessary to properly assess what is going on in the country. Ladinsky thought it was questionable whether effective planning and control measures could be implemented in either country under current conditions, and said that it is crucial for the international community to reach out and help them create a basic preventive system.

Ladinsky then turned to a discussion of five major components that she identified as essential for averting or addressing an influenza pandemic in Southeast Asia:

- Control of avian influenza at its source
- Surveillance of human and livestock populations
- Rapid containment of outbreaks
- Preparedness planning
- Effective communications

In terms of controlling avian flu at its source, there should be greater surveillance of poultry populations, vaccination of birds, and compensation for farmers whose flocks are culled. Ladinsky pointed out that cooperation from farmers is essential if these types of measures are to succeed. One of the main problems in Southeast Asia has been that little attention has been paid to how culling jeopardizes farmers' livelihoods. If farmers are not properly supported or

ONE OF THE MAIN PROBLEMS IN SOUTHEAST ASIA HAS BEEN THAT LITTLE ATTENTION HAS BEEN PAID TO HOW CULLING JEOPARDIZES FARMERS' LIVELIHOODS. IF FARMERS ARE NOT PROPERLY SUPPORTED OR COMPENSATED, THEY ARE UNLIKELY TO REPORT OUTBREAKS OR COMPLY WITH GOVERNMENT SURVEILLANCE MEASURES.

compensated, they are unlikely to report outbreaks or comply with government surveillance measures. Thailand has the most comprehensive compensation plan but it now pays only 75 percent of the value of birds lost. Vietnam's compensation is erratic, and Indonesia has said that it lacks the resources to repay farmers. Cambodia and Laos lack both funds and government infrastructure to carry out a compensation plan, and probably cannot institute such a program. Ladinsky argued that the international community has been slow to respond to farmers' needs and should do more to address this issue.

**A LACK OF ADEQUATE
LABORATORY FACILITIES
AND TRAINED
PERSONNEL CAN DELAY
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OUTBREAKS.**

In terms of surveillance of human and livestock populations, Ladinsky focused on the need for adequate veterinary services, especially in rural areas, to detect outbreaks in livestock populations. While some countries, such as Thailand, have adequate infrastructure in this regard, others have only rudimentary veterinary services and have trouble reaching all communities that might be affected. For early detection among humans, the biggest challenge is having enough diagnostic labs.

According to Ladinsky, Thailand has 12 diagnostic centers and Vietnam has facilities in Hanoi and Ho Chi Minh City. Cambodia, however, has had to send cases out of the country to be properly diagnosed and the same is probably true for Laos. Malaysia's first cases of avian flu were confirmed in a Hong Kong laboratory. Ladinsky emphasized that a lack of adequate laboratory facilities and trained personnel can delay detection and response to outbreaks. This is a cause of great concern for all countries in Southeast Asia, she noted, and needs to be addressed.

Concerning the rapid containment of outbreaks, Ladinsky noted Turkey's experience with avian flu as proof that the rapid treatment of human cases saves lives. In contrast, all of Cambodia's human cases have proved fatal due to delays in diagnosis. The problem is that it takes time to train adequate veterinary and laboratory personnel and it takes money to pay staff and equip laboratories. Many Southeast Asian countries, however, lack the necessary resources and are hoping international donors will equip woefully under-equipped laboratories.

**THAILAND AND
VIETNAM ARE
MODELS OF WHAT
PREPAREDNESS
COULD BE FOR
OTHER SOUTHEAST
ASIAN COUNTRIES.**

In terms of preparedness planning Ladinsky noted that every country in the world has been encouraged by the WHO to prepare a plan on how to respond to a possible pandemic. Both Vietnam and Thailand have very comprehensive plans that include education of the public, better surveillance and testing, research on possible human vaccines and extensive vaccination of birds. Their plans also include response measures in the event of an outbreak and also worst-case scenarios (full-scale pandemic). Ladinsky argued that Thailand and Vietnam are models of what preparedness could be for other Southeast Asian countries. Malaysia, she noted, has a plan but it puts most of its emphasis on responding to an epidemic rather than toward preventing viral spread. Indonesia has a national commission for avian flu

control involving all relevant ministries and social agencies. Its focus is to control the spread of the disease and increase public awareness.

The fifth and final component essential to averting an avian flu pandemic, according to Ladinsky, is effective communication channels with which to inform and educate the public and government officials. Factual and transparent reporting of outbreaks is vital to ensuring a rapid and effective response. Ladinsky noted that all countries in Southeast Asia possess the necessary radio and TV communications infrastructure and equipment to reach their citizens.

**FACTUAL AND
TRANSPARENT
REPORTING OF
OUTBREAKS IS VITAL TO
ENSURING A RAPID AND
EFFECTIVE RESPONSE.**

The real question is whether Southeast Asian governments would be open and honest enough to use these media resources as an effective means of preventing the spread of the disease. She noted that Vietnam offers a case in point. Only the Ministries of Health and Agriculture are allowed to publicly report information about avian flu and public information can come only from official news sources. Ladinsky noted that since Vietnam's government is very good at mobilizing the population to achieve goals, she would therefore expect it to effectively respond to an epidemic. The question is how quickly and openly it would inform the general public.

**ALL COUNTRIES IN
SOUTHEAST ASIA
HAVE REASONS
FOR BEING
RELUCTANT TO
ADMIT THE
PRESENCE OF
H5N1 IN THEIR
COUNTRIES.**

In conclusion, Ladinsky stated that all countries in Southeast Asia have reasons for being reluctant to admit the presence of H5N1 in their countries. Some are afraid of adverse impacts on tourism or animal exports. Others are not convinced of its seriousness and/or are more concerned with other health problems, such as malaria or dengue fever. Vietnam and Thailand should be held up as role models for others, to demonstrate that proper preparation and precautions can be effective. This will require considerable outlay from international donors, but, Ladinsky emphasized, it should be remembered that much of this aid money will be for establishing essential facilities that could be needed for response to any kind of global or regional threat.

Panel 4: The View From Asia

During the final panel of the day, we opened the floor up to embassy officials from countries currently dealing with or preparing for the challenges posed by avian influenza and other potential health crises.

Representatives from Japan, Indonesia, Singapore, Thailand, and Turkey discussed the plans and programs they had in place to cooperate with the international community in the tracking and containment of emerging diseases. They were also asked to identify what they saw to be

their biggest challenges and areas where, from their perspective, international assistance could have the greatest impact.

A view from Japan

Counselor Takeshi Akahori from the Economic Section at the Embassy of Japan began the panel by discussing the view from Japan.

Akahori noted that while avian flu has yet to appear in Japan, the Japanese government regards avian flu as a very real potential threat to human security. He noted that avian flu already threatens Japan's friends and neighbors in Asia and affects Japan in terms of trade and tourism. He also noted that a human pandemic might result in as many as 170,000 deaths in Japan. He stressed that, given these statistics, Japan must reach out and help others in preparation and prevention measures.

Counselor Akahori emphasized three goals for international cooperation on avian flu:

- **Take ownership.** Countries must take action on their own needs—and they know those needs better than outside donors. Countries should draw up their own plans and ask donors' assistance in those areas where they are weak. It is important for countries to be transparent about their needs when asking for assistance.
- **Increase public awareness.** People in both rural and urban areas need to be aware of the dangers and know what measures they need to take to protect themselves.
- **Promote international solidarity.** The disease can spread quickly, and therefore countries must collaborate in their efforts. International organizations are key players, even if some countries choose to lead the way.

Akihori then elaborated the current activities Japan is engaged in to help other Asian countries. He stated that Japan is working closely with international organizations such as the WHO, the FAO and the World Bank to help other Asian countries develop surveillance capacity, veterinary services, and preparedness planning. He also stated that Japan has hosted an important international planning conference. The Japanese government is also assisting in the stockpiling of antivirals, and Japanese research institutes are engaged in joint research with scientists in China, Vietnam, and Thailand to develop a human vaccine.

A view from Turkey

Next, Counselor Mehmet Cagil from the Agricultural Section of the Embassy of the Republic of Turkey described Turkey's experiences with avian flu.

Turkey was the first country outside of East Asia to suffer human cases of avian flu, and it experienced outbreaks of avian flu across much of the country.

The government made avian flu a national priority and moved quickly to improve protection and surveillance zones around outbreaks. The Turkish government was completely transparent in reporting all the cases and worked very closely with international organizations. Within the Turkish government there was close coordination and cooperation between the defense, interior, education, health, and agricultural ministries. The national government worked very closely with provincial and local governments.

In addition, government officials coordinated their efforts with the private sector, including chambers of commerce, unions representing egg and meat producers, and NGOs. The high degree of cooperation at all levels of government and society enabled Turkey to move quickly to quarantine and monitor problem areas.

TRANSPARENCY IS JUST AS IMPORTANT AS HAVING STRONG POLITICAL, INSTITUTIONAL, AND TECHNICAL CAPACITIES.

There was a very effective media and outreach campaign. Cagil emphasized that mass media were very specific and exact in communicating to people what they needed to know to protect themselves. The WHO has stated that the Turkish response was excellent and that Turkey is a model for other countries.

Cagil concluded by stressing that transparency is just as important as having strong political, institutional, and technical capacities. He argued that one of the biggest constraints on Turkish preparedness is the vulnerability of some of its neighbors to avian flu outbreaks, and he said that much more needs to be done in those countries. He concluded by stating that the global community needs to take a more holistic approach to avian flu and that much greater international vigilance and cooperation is required.

A view from Thailand

Minister-Counselor Songsak Saicheiva provided an update on the situation in Thailand. He reported that his government now has avian influenza under control.

Saicheiva argued that Thailand has improved its monitoring capacity and can now monitor every village for signs of avian flu. The country has also stepped up planning and stockpiling of antivirals. He agreed with the Japanese representative on the importance of ownership, and noted that Thailand wants to rely on its own capacity to develop vaccines. He concluded his remarks by noting the importance of transparency in information sharing and disclosure, and by stressing the importance of international cooperation at both the global and regional levels.

A view from Indonesia

Counselor Metrawinda Tunus provided an overview of the current situation in Indonesia and summarized the Indonesian government's response to the avian flu threat. He concluded by pointing out that Indonesia will need international assistance in building its capacity to prepare for a possible pandemic. In particular, it will require assistance in such areas as

- Compensation for culling
- Quarantine and control measures
- Better surveillance capabilities
- Diagnostic labs
- Public education

Appendix A: Conference Agenda

Asia and the Science and Politics of Pandemics

February 3, 2006

Ronald Reagan Building and International Trade Center, 8th floor rotunda

8:00-8:45 **Registration**

8:45-9:00 **Welcome Remarks**

Dr. David Finkelstein – Director, Project Asia, The CNA Corporation

9:00-9:30 **Opening Address**

Overview of International Efforts to Prevent and Control Avian

Influenza

Ambassador Nancy Powell – Senior Coordinator for Avian and Pandemic Influenza, U.S. Department of State

9:30-10:45 **Panel I: Pandemics and Asia**

Chair: Dr. Rosemary Speers – *CNAC*

9:30-10:00 *Science and History of Pandemics*

Dr. Daniel Lucey – Co-Director, MS Program in Biohazardous Threats and Emerging Infectious Diseases, Georgetown University Medical Center; Director, Center for Biologic Counterterrorism and Emerging Diseases, Washington Hospital Center

10:00-10:30 *Asia: An Epicenter of Emerging Diseases?*

Dr. Susan Zimicki – Director, Initiative for Infectious Disease, Academy for Educational Development

10:30-10:45 *Q&A*

10:45-11:00 **Break**

11:00-12:15 **Panel II: Asia and the Political Challenges of Emerging Health Crises**

Chair: *Maryanne Kivlehan-Wise* – Deputy Director, Project Asia, The CNA Corporation

11:00-11:30 *The Political Challenges of Health Crises in China*

Professor Yanzhong Huang – Assistant Professor and Director, Global Health Studies, John C. Whitehead School of Diplomacy and International Relations, Seton Hall University

11:30-12:00 *The Political Challenges of Health Crises in Southeast Asia*

Professor Bridget Welsh – Assistant Professor of Southeast Asia Studies, Johns Hopkins School of Advanced International Studies

12:00-12:15 *Q&A*

12:15-1:45 **Lunch with Address**

US Cooperation With Asia Against Avian Flu and Other Emerging Diseases

Dr. William Steiger – Director, Office of Global Health Affairs and Special Assistant to the Secretary for International Affairs, Department of Health and Human Services

1:45-3:00 **Panel III: The State of Response Capacity in Asia**

Chair: Matthew Payne – Senior Advisor on Public Health, Institute for Public Research, The CNA Corporation

1:45-2:15 *China's Health System and Avian Flu Preparedness*

Professor Hong Wang – Assistant Professor, Division of Global Health, Yale School of Public Health

2:15-2:45 *Health Systems and Avian Flu Preparedness in Southeast Asia*

Professor Judith Ladinsky – National Chair, US Committee for Scientific Cooperation with Vietnam; Director, Office of International Health, University of Wisconsin Medical School

2:45-3:00 *Q&A*

3:00-3:15 **Break**

3:15-4:45 **Panel IV: The View From Asia**

Chair: Malia Du Mont – Asian Security Analyst, Project Asia, The CNA Corporation

3:15-4:30 *International Cooperation Against Avian Flu*

Counselor Takeshi Akahori – Economic Section, Embassy of Japan

Counselor Mehmet Cagil – Agricultural Section, Embassy of the Republic of Turkey

Counselor Metrawinda Tunus – Agricultural Section, Embassy of Indonesia

**Minister-Counselor Songsak Saicheua – Royal Thai
Embassy**

4:30-4:45 Q&A

4:45 Closing Remarks

Appendix B: Speaker Bios

Takeshi Akahori is Counselor in the Economic Section at the Embassy of Japan. After becoming a career diplomat in 1989, he served in the Embassy of Japan in France between 1990 and 1994. Between 1994 and 2004, he held a variety of positions in the Japanese Ministry of Foreign Affairs, including Deputy Director for UN Policy, Deputy Director for Management, Principal Deputy Director for Legal Affairs, and Principal Deputy Director for Political Relations with North America. Mr. Akahori has a Bachelor of Law degree from the University of Tokyo and a Diplôme International d'Administration from the Ecole Nationale d'Administration in Paris.

Mehmet Cagil is Agricultural Counselor at the Embassy of the Republic of Turkey. Prior to being posted to the Embassy, he served as Deputy Undersecretary, and then Acting Undersecretary at the Turkish Ministry of Agriculture and Rural Affairs. Previous positions also include Department Head for Foreign Relations, and Deputy Director General for Energy Affairs at the Ministry of Energy and Natural Resources. He has also previously worked as a freelance consultant for water resources development in Central Asia, and also spent fifteen years as international projects coordinator at the State Water Works of Turkey. Counselor Cagil graduated from Aegean University, Faculty of Agriculture at Izmir, and earned his Master's degree in Agricultural Economics from Colorado State University.

Malia Du Mont is an Asian Security Analyst for The CNA Corporation's *Project Asia*. She specializes in China-Central Asian affairs and is co-founder of the Internet-based China-Eurasia Forum. She holds a BA in Chinese from Bard College and an MPP in International Security and Political Economy from Harvard's JFK School of Government. She also studied Chinese foreign policy at the Hopkins-Nanjing Center for Chinese and American Studies. While on the staff of Harvard's JFK School of Government, she directed the Executive Program for Senior Chinese Military Officers, the Hong Kong Leadership Enhancement & Development Executive Program, and the Executive Program for China's National School of Administration. In China, she worked at a television station in Jiangsu, at the American Embassy in Beijing, at the American Chamber of Commerce in Guangzhou, and taught English at Zhongshan University.

David M. Finkelstein is the Director of The CNA Corporation's *Project Asia*. He received his PhD in Chinese history from Princeton University and studied Mandarin at Nankai University in Tianjin, China. A long-time student of Chinese and Asian affairs, he is widely published. His 1993 historical monograph, *From Abandonment to Salvation: Washington's Taiwan Dilemma, 1949-50* (GMU Press), was hailed in *Presidential Studies Quarterly* as "blazing a new trail" and "will take an important place in the literature of U.S.-China relations in the mid-20th Century." He is co-editor of *China's Leadership in the 21st Century: The Rise of the Fourth Generation* (M.E. Sharpe, 2002), *Chinese Warfighting: The PLA Experience Since 1949* (M.E. Sharpe, 2003), *China's Revolution in Doctrinal Affairs: Recent Trends in the Operational Art of the Chinese People's Liberation Army* (CNA: 2005), and *Civil-Military Relations In Today's China: Swimming In A New Sea* (M.E. Sharpe, June 2006). A retired U.S. Army officer, Finkelstein is a graduate of the United States Military Academy at West Point, the U.S. Army Command & General Staff College, and the Army War College. He has held command and staff positions at the platoon, company, battalion, and Major Army Command levels. He also held significant China-related positions at the

Pentagon as an advisor to the Secretary of Defense and Chairman, JCS in addition to serving on the faculty at West Point, where he taught Chinese history.

Yanzhong Huang, PhD, is Assistant Professor at the John C. Whitehead School of Diplomacy and International Relations, Seton Hall University, where he teaches graduate-level courses on bioterrorism and the impact of infectious disease. He also serves as the Director of the school's Center for Global Health Studies, and in that capacity he provided leadership for the school's development of a global health specialization, the first academic concentration among U.S. professional schools of international affairs that explicitly addresses the international security and foreign policy aspects of health issues. His current research interests include global health governance, health politics in China, and empirical analysis of global HIV/AIDS reduction. In 2004-2005, he joined a small group of foreign policy experts to advise the Canadian prime minister on his proposed L20 meeting of key world leaders. During summer 2005, he was a visiting fellow at the Center for Strategic and International Studies (CSIS), in Washington DC. He was recently a consultant of the Department of Foreign Affairs Canada (FAC) on pandemic flu and a participant of the China Task Force of the Eurasia Group addressing the public health risks from China. Dr. Huang received a PhD degree in political science from the University of Chicago.

Maryanne Kivlehan-Wise is the Deputy Director of The CNA Corporation's *Project Asia*. Her research interests include: Chinese politics and foreign policy, China's media reforms, South China Sea and ASEAN issues, Chinese maritime law, and China's new generation of leaders. She is the co-editor of *China's Leadership in the 21st Century: The Rise of the Fourth Generation*, and the author of chapters in several edited volumes addressing Chinese security issues. She completed her undergraduate work at the State University of New York at Buffalo, holds an MA in Security Policy Studies from the Elliott School of International Affairs at The George Washington University, and is a graduate of the Hopkins-Nanjing Center for Chinese and American Studies, as well as Capital Normal University in Beijing, where she studied Mandarin. Before joining The CNA Corporation, she worked for an international nonprofit organization directing projects on Chinese and Mongolian affairs. She also spent time in Bosnia working with the Organization for Security and Cooperation in Europe (OSCE) in support of the 1997 municipal elections.

Judith Ladinsky is Associate Professor in the Department of Population Health Sciences and is Director of the Office of International Health at the University of Wisconsin Medical School. Professor Ladinsky also chairs the US Committee for Scientific Cooperation with Vietnam. Her research interests include international health, specifically cross-national health care delivery systems, and infectious disease, specifically diseases of developing countries in Southeast Asia. She teaches courses that examine primary care and rural health care delivery in Vietnam, Laos, Cambodia and Thailand, the organization of health services, and international health. She has conducted extensive research on a variety of health care topics in Vietnam, most recently on malaria, diabetes, Japanese encephalitis, SARS, and avian influenza. She received her PhD in Reproductive Physiology from the University of Wisconsin.

Daniel Lucey, MD, MPH, is an infectious disease and public health physician who has traveled widely in China and Southeast Asia to exchange information on biodefense, avian influenza, and SARS. He maintains updates on these infectious disease-public health topics on the website www.BePast.org that is operated by the Washington Hospital Center in DC,

where he is the Director of the Center for Biologic Counterterrorism and Emerging Diseases. Since the current onset of human infections with H5N1 avian influenza virus in January 2004, he has posted 30 "Washington Newsletters" on this website regarding avian and pandemic influenza. Dr. Lucey is also the Co-Director of the Master of Science (MS) Program in Biohazardous Threat Agents and Emerging Infectious Diseases at Georgetown University School of Medicine in Washington DC. He also serves on the DC Hospital Association Infectious Disease/Infection Control Committee and was Co-Chair from 2001-2004. In early 2004 he served as the interim Chief Medical Officer of the Washington DC Department of Health, where he oversaw purchase of a stockpile of 2.5 million surgical masks and 0.5 million N-95 respirators for "dual-use" against both bioterrorism (e.g. plague, pneumonia, or smallpox) and natural epidemics (e.g. influenza, SARS). Previously he worked as the Chief of the Infectious Disease Service at the 900-bed Washington Hospital Center from 1998-2002, and as an Attending Physician at the National Institutes of Health. His training includes college and medical school at Dartmouth, internal medicine at the University of California, San Francisco, and Infectious Disease Fellowship and Master's of Public Health (MPH) at Harvard. He has published over 80 papers and 12 book chapters.

Matthew Payne is Senior Advisor on Public Health within The CNA Corporation's Institute for Public Research. He joined The CNA Corporation in November 2005 after eight years of service to the U.S. Department of Health and Human Services. Most recently, Mr. Payne served as the Deputy Director for Operations within the HHS Office of Public Health Emergency Preparedness, Office of Emergency Operations and Security Programs. During his tenure, Mr. Payne participated in numerous emergency responses, managed the development of national policies and plans (including HHS' input to the National Response Plan and National Incident Management System), and coordinated the Department's participation in several major exercises, including the Top Officials series. Mr. Payne continues to work on public health and medical emergency preparedness issues at CNAC. His current efforts focus on the inherent roles and responsibilities of governmental and non-governmental organizations in preparing for and responding to catastrophic disasters. He has a Master's of Public Administration (MPA) from Syracuse University.

Nancy J. Powell is currently serving as the Senior Coordinator for Avian and Pandemic Influenza at the U.S. Department of State. Prior to this she was the Acting Assistant Secretary of State for the Bureau of International Narcotics and Law Enforcement Affairs. Ms. Powell is a career member of the Senior Foreign Service, and she served as the Principal Deputy Assistant Secretary and the Acting Assistant Secretary of State for Legislative Affairs from November 2004 to March 2005. She served as Ambassador most recently to the Islamic Republic of Pakistan and has also served as Ambassador to the Republic of Ghana and to Uganda. Ms. Powell was Principal Deputy and Acting Assistant Secretary of State for African Affairs from 1999 to 2001 and has held numerous other positions within the State Department and abroad. Her postings include Dhaka, New Delhi, Calcutta, Lomé, Islamabad, Kathmandu and Ottawa. She speaks French, German, Urdu, and Nepali with varying degrees of proficiency. Ms. Powell received a degree in History/Teaching (honors) from the University of Northern Iowa. She joined the Foreign Service in 1977 after working for six years as a teacher at Dayton High School in Dayton, Iowa.

Songsak Saicheua is Minister-Counselor at the Royal Thai Embassy in Washington DC. He was a lecturer at Bangkok Technical College from 1981 to 1985 and started his career at the Ministry of Foreign Affairs (MFA) in 1985. Within the MFA he has worked in the Policy

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Rosemary Speers is a Research Analyst and Project Director in The CNA Corporation's Operations Evaluation Group, where she has conducted operations research on both animal and public health emergency preparedness. Her experience includes on-scene analysis during response operations for events such as the anthrax incidents of October 2001 and the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS). Dr. Speers has led several reconstruction and analysis efforts for the U.S. Department of Agriculture, including work on the exotic Newcastle disease outbreak of 2002-03 and the BSE ("mad cow disease") case investigation of 2005. Also in 2005, she worked with U.S. Joint Forces Command to examine the coordination of response efforts among United Nations agencies and other international organizations following the tsunami in Southeast Asia. Dr. Speers continues to serve as lead analyst for the Tripartite exercise series involving federal agriculture agencies in the U.S., Canada, and Mexico. She has also served as a consultant to the National Security Studies Program hosted by the Maxwell School of Syracuse University. Dr. Speers received a PhD in Biomedical Engineering and a Master's degree in Mechanical Engineering from The University of Michigan. She also earned a Master's degree in Biomedical Engineering from Northwestern University.

William Steiger, PhD, is Director of the Office of Global Health Affairs and Special Assistant to the Secretary for International Affairs at the U.S. Department of Health and Human Services. He advises the Secretary and Deputy Secretary on global health, international family and social affairs issues, and policy development in the U.S. government interagency process and at multilateral organizations. He also represents the Secretary at various multilateral organizations or for major U.S. government global initiatives. These have included serving as the U.S. Member of the Executive Board of the World Health Organization; President of the Executive Committee to the Pan American Health Organization; and Alternative U.S. Member on the Board of Directors of the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria. He is the Secretary's liaison to the Office of the U.S. Global AIDS Coordinator in the implementation of the President's Emergency Plan for AIDS Relief, and to the Steering Committee that manages the President's International Malaria Initiative. Dr. Steiger previously served as Education Policy Advisor for Tommy G. Thompson, then Governor of Wisconsin. He has lived and worked in Africa, Asia, and Latin America. He earned a PhD in Latin American History at UCLA and a BA in History from Yale. He is fluent in Spanish and Portuguese.

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Metrawinda Tunus has been the Agricultural Counselor for the Embassy of Indonesia in Washington DC since October 2003. As the Agricultural Counselor, Ms. Tunus represents the Indonesian Ministry of Agriculture and her mandates also cover the fishery and forestry sectors. Ms. Tunus graduated from Bogor Agricultural University in Indonesia and received her Master's in Resource Economics from Colorado University. Before becoming the Agricultural Counselor, she served as the Head of Multilateral Cooperation Division, International Cooperation Bureau, Ministry of Agriculture. As the head of Multilateral Cooperation, she was a member of Indonesian Delegation to several international meetings related to the Agriculture. She also attended several trainings on agricultural policy overseas. Before joining the International Cooperation Bureau, she was the Head of Analysis and Evaluation Division at Bureau of Planning, Ministry of Agriculture.

Hong Wang, MD, PhD, is Assistant Professor at the Division of Global Health, Yale University School of Public Health. Before taking his position at Yale, he served as an Associate Professor of Health Economics at Beijing Medical University and as the Deputy Director of the National Health Economic Institute, Ministry of Health, China. He was a member of the Chinese Ministry of Health Advisory Committee of Health Policy and Administration during 1995 and 1998. Professor Wang's primary research interests are in health care financing, health care systems and public health system analysis, as well as the determinants of population health in developing countries. He is currently working on health care financing in poor rural areas of China, the effects of socio-economic changes on population health, the system effects on HIV/AIDS control, and the economic analysis of tobacco consumption. He is also working on a cost-benefit analysis of nursing intervention for improving the quality of life of ovarian cancer patients in US.

Bridget Welsh is Assistant Professor in the Southeast Asia Studies Program at Johns Hopkins University-SAIS in Washington DC, where she teaches courses on Southeast Asian history, violence and political conflict, Malaysian/Singaporean/Brunei politics, development and regional international relations and democratization. She is also the Chair of the Malaysia, Singapore, Brunei Studies Group; a member of the Southeast Asia policy survey team at Georgetown University; and a consultant to Freedom House. In Fall 2004 she was a Southeast Asian Studies Fellow sponsored by the Henry Luce Foundation at Australian National University. Her primary research interest focuses on 20th century Southeast Asian politics. In 2004 she edited a volume entitled *Reflections: The Mahathir Years*. She has also written about attitudes toward democracy in Malaysia in the 1990s, the effects of globalization on contemporary political conflicts, human rights, US-Southeast Asia relations, and Malaysian politics. She is currently completing an analysis of Malaysian voting behavior and the electoral system during the last ten years and a project examining the local dynamics in elections. She is also working on ongoing projects examining vigilante and gangster violence in Indonesia, and political developments in Burma. She received her doctorate from the Department of Political Science at Columbia University, her MA from Columbia University, language training (FALCON) from Cornell University, and BA from Colgate University.

Susan Zimicki is the newly appointed Director of the Initiative for Infectious Diseases in the Global Health, Population, and Nutrition Center at the Academy for Educational Development. Dr. Zimicki recently completed her assignment as Director of AED's CHANGE Project, which focused on identifying, developing and evaluating tools and strategies for achieving behavior change relevant to child health, maternal health, infectious diseases, and HIV/AIDS. She provides management oversight, technical direction, guidance and research/evaluation support to DC- and field-based staff working on behavior change projects. Dr. Zimicki has more than twenty years of experience in applied research on public health interventions in Africa and Asia, including stints as a visiting researcher at ORSTOM in Senegal and at the Medical Research Council field station in The Gambia, where she designed and fielded a national survey on the socio-behavioral aspects of insecticide treatment of mosquito nets in The Gambia. She is currently a member of the Roll Back Malaria Communications Working Group.