

**Presentation to
The Congressional-Executive Commission on China
Avian Influenza and China**

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In December 2003, the global community learned of reports from Korea of its first ever cases of Avian Influenza (A) H5N1. Shortly after this, H5N1 appeared among poultry in a number of countries in East Asia, including Thailand, Vietnam, and China. Since then, H5N1 has spread to Central Asia, Europe, and the Middle East. As we know, in recent weeks Nigeria reported the deaths in its northern provinces over 40,000 birds from H5N1, bringing the disease to Africa. In addition to these avian cases, human cases are appearing sporadically across the globe. As of February 20, 2006, the World Health Organization (WHO) confirmed 170 human cases, of which 92 have been fatal. In all but a very few cases, all confirmed human cases could be linked to contact with sick poultry or animals.

While 92 human deaths may not be considered significant in the context of other diseases such as tuberculosis and HIV/AIDS, the high rates of mortality, the lack of predictability about who could contract the disease, and fears of genetic changes within the virus that could create an environment for efficient human-to-human transmission, cause great concern about human cases of H5N1. Globally, the emergence of a new strain of influenza with pandemic potential has public health officials extremely concerned. Thus multi-lateral organizations such as the WHO, the World Organization for Animal Health (OIE), and the Food and Agriculture Organization of the United Nations (FAO), as well as larger donor governments such as the United States, Japan, and the European Union, have begun to apply political pressure and provide financial and technical assistance to help countries around the world affected by the animal disease epidemic in hopes of stemming a possible human pandemic.

Influenza (A)H5N1 is one of many strains of influenza or flu, of which only some affect humans, or birds, or both and some that affect other species such as pigs and cats. Not all strains are highly infectious or cause high rates of morbidity and / or mortality. The fact that influenzas change and mutate is why specialists carefully watch flu strain patterns every year to predict which strains will be responsible for the regular, seasonal human flu which causes about 36,000 deaths in the U.S. a year.

Beyond seasonal flu, H5N1 specifically, is of concern for a couple of reasons. First, flu pandemics tend to come in cycles of thirty to fifty years. The "Spanish" flu pandemic of 1918 is thought to have caused between 20 and 100 million deaths worldwide, and more than 500,000 deaths in the United States. While subsequent pandemics have been less deadly (the last true flu pandemic occurred in 1968 and caused 1 million deaths across the globe), the specter of the 1918 pandemic lingers on. Second, the H5N1 strain in circulation among animals seems to cause extremely high rates of mortality when it infects humans. Third, while vaccines specific for H5N1 are in development, they are still being tested and if proven to be effective, will take time to manufacture and distribute. In the interim, other drugs, such as amantadine and oseltamivir (Tamiflu®), are in limited supply and are of limited use.

While it is clear that direct exposure to diseased birds seems to be a necessary link in humans contracting disease, other information about how, when and why H5N1 causes disease in its victims is still a mystery. The ability of flu viruses to mutate quickly causes public health officials to be on the lookout for sustained human-to-human transmission. This makes health ministers lose sleep at night and their agriculture counterparts toss and turn worrying about the drop in trade that the die-offs in poultry are causing.

H5N1 has appeared before. It first appeared in Hong Kong live bird markets in 1997. Appearing to only affect chickens at first, public health officials became worried when six people died from H5N1 as well.

Alarmed by what appeared to be a possible harbinger of a pandemic, the Hong Kong Health Authority led by Dr. Margaret Chan (now with the WHO) made the courageous decision to order the destruction of every single chicken, duck and egg in Hong Kong. Over 1 million birds were culled and human cases of H5N1 seemed to abate at eighteen cases and six deaths. Biosecurity measures in live markets were put in place that ensured better separation between humans and poultry; and policies were instituted that ensured tissue and blood samples from every shipment of poultry from China (mostly Guangdong and Shandong Provinces, where most poultry in Hong Kong originates) were taken and tested for H5N1. The goal was an effective animal surveillance system that would catch a possible outbreak before human cases could occur.

H5N1 did reappear in February 2003 when two human cases were detected in Hong Kong from travelers returning from Southern China, suggesting that H5N1 was still circulating at least among domestic poultry during the prior year. While the Ministry of Agriculture of China never officially confirmed new avian cases linked to these human cases, these cases were quickly overshadowed by what became the Severe Acute Respiratory Syndrome (SARS) outbreak that dominated public health and global media attention in the Spring and Summer of 2003. When Korea reported its first ever case of H5N1 in December 2003, the current outbreak officially began.

A couple of words on Hong Kong. Hong Kong is, of course, a unique situation. In 1997, Hong Kong became a Special Administrative Region of the People's Republic of China. However, with the "two systems, one government policy," it is still, to a large extent, an economic entity separate from the mainland with different infrastructures, business practices, and economic development. Then as now, China cannot afford to lose the technological, economic, and academic advantages that Hong Kong brings to it, and thus allows it to continue to function--at least economically--at some level on its own. Further, Hong Kong is always at "Code Orange" for avian influenza and as such maintains animal husbandry and biosecurity practices far different than most of rural mainland China. As such, until as recently as last month, Hong Kong managed to keep itself relatively H5N1 free, even in the face of continued outbreaks around. And, while no human cases from Hong Kong have been reported, it has an urban population still smarting from the memories of SARS, the economic wherewithal to pursue these high-level biosecurity measures, the geographic limits, and the community will to maintain this "orange alert" status for H5N1.

As many of you know, recently Hong Kong reported H5N1 cases in native magpies, which has caused great concern for local health authorities, who fear H5N1 may have been brought to Hong Kong from the mainland, and, worse yet, that H5N1 may now be endemic within the territory. Indeed, scientists support their suspicions of importation of the disease from China, as recent studies from Hong Kong and funded by the National Institutes of Health of the U.S. Department of Health and Human Services have demonstrated that the H5N1 virus endemic throughout China is the likely source of outbreaks among poultry in surrounding countries and territories.

Now then to China. As you know, about 60% of its population lives in rural areas. There are (or were) 15 billion domestic fowl in China last year. That is to say, one fifth of the world's poultry -- mostly chickens -- but also significant numbers of ducks, turkey and geese-- raised for domestic consumption come from China. China has both large scale production facilities and family "backyard" farms. Indeed, most rural families have 10-25 chickens and ducks, which are kept for food and income.

So what is a country scared by their SARS experience and faced with an economic and possible public health disaster like H5N1 to do? As my colleague from USDA will discuss, outbreaks among birds must be contained, monitoring and reporting of suspect animal and human cases must continue in a transparent manner. However, given that most strategies for containment among birds include the culling and eradication flocks where exposure to H5N1 is suspected, posing a huge loss for farmers, the disincentives for reporting animal cases are high. Compensation for lost flocks is a complicated issue that an economist can address far better than I can. Further, for countries that export poultry (and China is one of them--mostly to Japan and

Hong Kong) reporting cases to the international community can be viewed as a trade risk, and economic considerations sometimes take precedence over public health concerns.

Having said that, lessons learned from HIV and SARS both appear to have encouraged China to recognize the need to investigate openly and report at least suspect *human* cases of H5N1. Up until the summer of 2002, China continued to deny that HIV/AIDS had epidemic potential within its borders, preferring to place blame on outside influences. As my colleague from CSIS knows too well, United Nations organizations, donor countries such as Japan and the United States, as well as non-governmental organizations like CSIS applied both public and private pressure on the government of China, trying to convince them that the economic and health impacts of **not** acknowledging and dealing with a burgeoning HIV/AIDS problem were far greater than continuing to deny it.

As result, Chinese officials began to open up internationally (and more importantly, domestically) about HIV/AIDS in China. Within a year, China successfully competed for a \$32 million two-year HIV grant from the Global Fund to Fight HIV/AIDS, Tuberculosis, and Malaria. At the same time, the United States and other donors made financial commitments to China's Ministry of Health for both research and technical assistance in confronting HIV. China had learned that openness about public health issues of global concern would not necessarily bring shame, but might actually bring financial resources.

However, the lessons from HIV/AIDS did not seem to apply until late in the game with SARS. Reports of a strange new respiratory illness with high levels of mortality began to appear in late February 2003. When, what became the SARS outbreak finally ended later that summer, over 8000 cases would be reported, with 775 deaths, in 30 countries on 6 continents. As noted earlier, public health practitioners were originally concerned that the SARS outbreak was the next flu pandemic and indeed, two early suspect SARS cases proved to be H5N1. Early on, Chinese officials were concerned about the impact an outbreak of disease of unknown origin would have on travel on the Chinese New Year-- the largest travel day of the year worldwide. The government chose to delay entry to international experts, and continued to question if SARS had epidemic potential domestically. It was only when rumors about the disease began to have an impact on tourism, as well as rising international outcry at cover-ups, that China opened its borders to scrutiny, but as usual, in a carefully monitored and controlled fashion.

And, by the end of the SARS outbreak, according to the World Bank, the impact on the Gross Domestic Products of countries in the region was between 0.4 and 0.5%, between \$20 and 25 billion. In the process, a number of high-level Chinese officials, including the Minister of Health and the Mayor of Beijing, lost their jobs.

And yet, embarrassingly for China, it wasn't over yet. In March 2004, an accident at the National Institute of Virology of China in Beijing, China's premier virology laboratory infected two researchers with SARS and the Institute closed. By the end of the investigation, nine new cases of SARS were discovered, and one person died, all linked to the laboratory accident. While the global health community quickly commended the Chinese government for taking swift action in reporting the cases and for quickly closing the facility, the government lost its only internationally accredited laboratory with high enough bio-safety and bio-security to deal with infectious agents such as SARS and H5N1.

This double whammy of HIV/AIDS and SARS clearly affected the internal culture of the Ministry of Health. The WHO has positively commented on how quickly the Ministry of Health reports any outbreak of human disease. When the first suspect human case of H5N1 finally appeared (as many outside observers were predicting) in late October 2005, the Ministry of Health engaged the international health community in inviting outsiders in to work side by side with Chinese experts in investigating the cases.

I will note that China's idea of transparency and openness is still one with a degree of control involved. All decisions and reports on human cases are made by the central government not by local officials, which can add time to official announcements; further anecdotal reports suggest that some restrictions have been placed on the press. Government announcements come with clearly defined solutions already in play, suggesting that the government has the situation under control. Nevertheless, the Ministry of Health's willingness to open itself to international scrutiny is a huge step, and China, has been publicly praised internationally and promised further assistance in dealing with human cases as a result.

Unfortunately, the lessons learned from SARS by the Ministry of Health do not seem to have translated as well to the Ministry of Agriculture. For example, international observers have long suspected that H5N1 has been circulating among backyard poultry in China (the 1997 outbreak in Hong Kong supports this idea). Nevertheless, the Ministry of Agriculture reported no outbreaks of H5N1 to the OIE until April 2004, when other countries in the region reported cases. Further, when wild birds began dying in Qinghai in April 2005, the Ministry of Agriculture delayed allowing international scientists and observers into the actual areas where the deaths had occurred, citing so-called security concerns, although the deaths were largely in nature preserves.

Finally, late last summer, as wild and domestic birds continued to die across China, international observers were invited to see the veterinary laboratory in Harbin, which had tested tissue samples from dead birds. The Ministry of Agriculture continued to refuse to share samples from their avian cases with international bodies such as the FAO and OIE. Equally challenging, the Ministry of Agriculture refused to share samples with the Ministry of Health, claiming flatly that this was not a human health issue; merely an agricultural and trade issue. While the Ministry of Agriculture has recently been more forthcoming with reports of outbreaks, the timing of this willingness to share seems to coincide with both reports of human cases, large-scale Ministerial poultry vaccination campaigns targeted at the backyard farmer, and Wen Jiabao's January 2006 public commitment at the Beijing Donor's Conference to cooperate with the international community in containing the spread of disease in the region.

There is no question that we see an increased level of commitment and cooperation by the Chinese Government in addressing the avian influenza threat. Both in-country coordination between Ministries, and communication with outside organizations have improved. More importantly the Ministry of Health has shared samples from human cases through the WHO network. However, it is important to point out that human cases of H5N1 in China are often recognized prior to recognition of disease in poultry in the same locales, indicating the shortcomings of the animal disease surveillance and reporting system. In some of the human cases reported over the past few months, the victims came from regions in which no previous bird infections had been reported – even though the transmission occurred from contact with infected poultry. In general, areas needing strengthening include 1) surveillance - both human and animal; 2) general public and farmer awareness about the disease and the need to report; and 3) multisectoral cooperation.

China has also recently begun a policy of being both a donor and recipient of international assistance, reaching out politically and financially to partners in the region. Due to its economic progress, it has become ineligible for certain kinds of very-low or no-interest loans from the World Bank and its regional organizations. Even with the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria, China made a point of donating \$10 million to the Fund before becoming a recipient of its grants. More recently, China showed great leadership in hosting the Beijing Pledging Conference for Avian Influenza last month, and made a point of being a donor with a pledge of \$10 million.

Now, I would like to say a couple of things about the U.S. response to avian influenza, and then our relationship with China in particular.

As you know, the United States takes avian and pandemic influenza extremely seriously, and is mobilizing resources both at home and abroad to cope with a potential pandemic. The U.S. Government, for example, has formed the International Partnership to Fight Avian and Pandemic Influenza, affectionately known as IPAPI. Over 80 countries participated in the IPAPI's first meeting in October 2005, and activities under IPAPI to coordinate donor efforts, maintain transparency of data, and develop global strategies to prepare for and contain a possible pandemic continue to develop. At the Beijing Pledging Conference last month, \$1.9 Billion was raised for international flu efforts. The United States was the largest single country to make a pledge, with its pledge of \$334 Million in grant funding from FY '05 and '06. (The World Bank made the largest overall pledge -- \$500 Million in reprogrammed funds). These funds are for international efforts to prepare for and contain an avian and, possibly a human influenza pandemic.

While no specific amount is targeted at China as of yet (those decisions are being made as I speak), funds will be coordinated with other donor activities, and will be aimed at countries and regions where animal disease has recently appeared, or shows no signs of abating, or where there are human cases. In addition to these international activities, the U.S. Government has established a platform with China, the Program on Emerging and Reemerging Infectious Diseases, that will promote cooperation between the two countries on a number of infectious diseases, but first on avian influenza. This platform builds on long-standing health and science cooperation between the United States and China that dates back to 1977. In 2004, HHS alone funded more than \$34 million worth of bio-medical research and basic public health activities with China and we foresee that figure increasing, not decreasing. HHS also has a staff of seven on the ground in Beijing, led by our Health Attaché, Dr. Craig Shapiro. Because of an agreement that HHS Secretary Leavitt signed in October of last year, we hope to be able to increase that staff by as many as three bringing us to a total of 10, all aimed at emerging infections such as H5N1. It is our belief that by working with China as a partner to confront issues of public health important such as avian influenza, we will be able to create an environment that not only promotes scientific and bio-medical transparency and sharing of data, but also will improve China's public health surveillance and disease reporting networks, so that epidemics may be prevented and contained, not left to fester quietly. China, the fourth largest country with 1/5 of the world's population and 7% of the world's arable land, must be a partner in any global effort to prepare for an influenza pandemic.

Lastly, before I end, I would like to point you all to a number of valuable websites for further information.

1. www.pandemicflu.gov is the U.S. government's primary site for all things flu. It includes the U.S. Government's national domestic plan for pandemic influenza and has links to HHS, to USDA, and other U.S. Government partners in the pandemic influenza efforts.
2. http://www.who.int/csr/disease/avian_influenza/en/ is the website for all things influenza for WHO.
3. www.oie.int is the website for the OIE.
4. www.fao.org is the FAO website. FAO has some great maps that show the distribution of H5N1 globally, and is also an excellent resource for information about food safety and economic issues and H5N1.

I have also brought copies of Wen Jiabao's speech from the Beijing conference and am happy to share copies. Lastly, if you haven't already done so, I would encourage you to thumb through a copy of John M Barry's, The Great Influenza: The Epic Story of the Deadliest Plague in History, Penguin Books, 2004. As you may have heard, this is the flu "bible" at HHS, and Secretary Leavitt, after he traveled to Southeast Asia in October, 2005 (5 countries, 10 days, we were tired but he wasn't) gave copies of Barry's books to heads of state with key sections marked with post-it notes.

Thank you very much for your attention. I'm glad to answer any questions at this time.