Avoiding Pandemic Influenza : Improvements and Concerns in China's Public Health System

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Avian influenza has been surged in the mainland of China. The outbreaks and the occurrence of human cases are testing China's capacity to cope with a potential pandemic. China's government has taken precautions to strengthen its public health system and improved its transparency and accountability after SARS crisis. However, rural areas, extremely vulnerable spots in the country's public health system during a long period, remain a concern. There are obstacles to prevent and control the disease, such as a high opportunity of human exposure to infected poultry, a limited access to disease information, and lack of human and material resources for medical facilities. Thus, relevantly high risks of acquiring the infection lie in China's rural areas. To re-establish the primary level of public health system, to reduce poverty in rural areas, and to avoid the potential threat of the pandemic, the government shoulders a heavy responsibility.

Keywords : Avian influenza, Public health system, Rural areas, China

1. Background

Avian influenza outbreaks are sweeping many countries and areas around the world. In China, since the first human case was reported

in Hon Kong in 1997 (Sims *et al.*, 2003), the viruses, especially H5N1, has occasionally attacked human and led to fatalities. Since October 2005, avian influenza outbreaks have recurred, sweeping through 33 areas of 14 provinces of China (Chinese Center for Disease Control and Prevention, 2006). A reported close to 150,000 poultries has died and more than 21 million were slaughtered in an attempt to stop the spread of the disease¹⁾. More frightening than these bird outbreaks, however, was the announcement on November 16 from China's Ministry of Health that the country's first

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Table 1 Short history of impact of avian influenza (H5N1) reported in China and the government's policy to avoid outbreak of the disease*

Date (Yr)	No. of cases	No. of deaths	Location and events
1997	18	6	Hong Kong
2003	2	1	Hong Kong**
2004			Outbreaks of H5N1 recurred in 49 areas of 16 provinces.

Date (Yr/Mo/Day)	Cumulative no. of cases since 2005	Cumulative no. of deaths since 2005	Location and events
2005/6/			More than 6,000 wild birds died within a week at Qinghai Lake in northwestern China.
2005/11/15			Vaccination of more than 5 billion poultries was implemented.
2005/11/16	2	1	Hunan and Anhui Provinces
2005/11/18			The State Council issued "Significant Animal Epidemic Emergency Regulation" .
2005/11/23	3	2	Anhui Province
2005/11/23			The Ministry of Health issued "Diagnosis and Treatment Guideline of Human Case" .
2005/12/06	4	3	Guangxi Zhuang Autonomous Region
2005/12/08	5		Liaoning Province
2005/12/21			Phase-I human trial of avian influenza vaccine was started.
2005/12/29	6	4	Fujian Province
2006/01/09	7		Hunan Province
2006/01/18	8	5	Sichuan Province
2006/01/23	9	6	Sichuan Province
2006/02/08			15,000 fowls died in Shanxi Province.
2006/02/08	10		Fujian Province
2006/02/10	11	7	Hunan Province

*Data is mainly according to announcements of China Ministry of Health.

**Yuen and Wong (2005)

human cases of the H5N1 avian influenza virus had been confirmed. An additional victim was confirmed on the 23rd and then the number of victims is increasing as shown in Table 1. Fears

are growing that the outbreaks among birds and humans could trigger more human cases of avian influenza.

According to the situation assessment by WHO (2005), all the prerequisites for the start of a pandemic influenza have been met save one : the establishment of efficient human-to-human transmission. On the other hand, the possibility

¹⁾ Yin C, the Vice Minister of Agriculture, at the press release conference on November 21, 2005. Available at <http://www.xinhuanet.com/>. (Accessed November 23, 2005)

that the virus will mutate into a new form communicable among humans increases as the geographical range of the infection expands and the number of people both near the disease and who have contracted the disease increases ; thus the potential for a pandemic is growing.

In this paper, we review how China confronts the influenza pandemic threat that is probably approaching closer and closer, and what the problems are for rebuilding and strengthening public health system especially with a focus on the condition of rural areas in China.

2. Threat of Influenza Pandemic : A Challenge to China's Public Health System

In China, there are 14.2 billion poultry, accounting for 20% of the worldwide total. Moreover, 3 out of 8 major bird migration routes pass through China. Both of these factors suggest that China is one of the most likely areas for an avian influenza pandemic to start. Moreover, many surrounding countries have experienced damage from avian influenza. And the size of the bird population carrying the virus, both migratory birds and poultry, is severely vast. The transmissibility has improved in this peak migratory season. The probability of avian influenza prevention is not good²⁾.

A greater and greater risk from unpredictable public health emergencies highlights an urgent need for the establishment and strengthening of a robust and sustainable alert and response system. During the past two years,

China's government has taken a lot of precautions after suffering much damage from the SARS crisis in 2003, which triggered a political debacle in China, threw the spotlight on the inadequacies of China's public health system and then created renewed awareness of good governance, especially transparency and accountability. China's government finally was aware of its accountability in public health : for the need of both the country and global society. Thanks to the SARS scare, China's awareness and investment in health care has increased. Each level of the government, from national to local, has issued regulations on public health emergency response procedures and improved their performance in their alert and response systems in terms of the human and material resources and techniques. This fulfills the promise made by Wen J, the Prime Minister, in the government's work report for the National People's Congress in 2004, "to establish within three years a fully functioning system for disease prevention and control, and for emergency medical aid that covers both urban and rural areas" (Wen, 2004). Moreover, China is encouraging cooperation with other countries and international organizations, such as WHO, in terms of responding to existing and emerging epidemic diseases and reforming public health systems.

After the lesson from SARS, government capacity to deal with epidemic diseases has increased³⁾. In September 2005, based on WHO's Global Influenza Preparedness Plan and National Regulations on Public Health Emer-

²⁾ "The Ministry of Agriculture Warns that Transmissibility has Improved," *Xinhua News*. November 21, 2005. Available at <http://www.xinhuanet.com/>. (Accessed November 23, 2005)

³⁾ "The Minister of Health Says the Avian Influenza Outbreaks are Under Control," *Xinhua News*. November 21, 2005.

agency Response, China's Ministry of Health issued a National Influenza Pandemic Plan⁴⁾ and established a universal monitoring network in the country. The government openly published news of the outbreaks and human cases, showing that the government's tendency towards secrecy has improved dramatically. In handling the current outbreaks, each level of government responded swiftly and adopted the proper measures (such as slaughtering fowl in epidemic areas and vaccinating fowl in the adjacent areas) to stop the spread of the disease. In November 2005, the Influenza Guideline⁵⁾ was published, in order to directing the works of the detection and treatment of the human case.

Public health experts agree that we must reduce the opportunities for human infection, which will help us limit the risk of a mutation in the virus. Therefore, humans must avoid exposure to birds, especially sick birds. Reports state that China's victims were exposed or had eater to sick birds. Gao Q, the Minister of Health, indicates that, at the present time, the outbreaks are under control but that health departments at each level need to intensify collaboration with agriculture as well as other related departments to monitor the disease : if an outbreak in animals occurs, human must not come in contact with the sick animals ; if a human is suspected of contracting the disease, the patient should be given treatment for influenza immediately, and the patient and all of those whom the patient has come in contact with, should be put through a thorough epide-

Figure 1 Poultry is bred in rural backyards, living together with human and other animals. Pictured in a village, Anhui Province, China (Photo by Hui Tang).

miological investigation³⁾.

3. Rural Areas : the Vulnerable Spot in China's Public Health System

All human cases in China have occurred in rural areas, and WHO's comprehensive data reflect that most cases in the world have occurred in similar settings. The Chinese government believes that control over the rural areas is crucial to the prevention and control of avian influenza, which mirrors WHO's recommended strategic actions regarding the avian influenza pandemic threat. There are facts, however, that suggest that there are obstacles to the prevention and control of the disease, and thus a relevantly high probability of acquiring the infection in China's rural areas. First, the

⁴⁾ Available at [http : //www.moh.gov.cn/](http://www.moh.gov.cn/)
(Accessed November 21, 2005)

⁵⁾ Available at [http : //www.chinacdc.net.cn/](http://www.chinacdc.net.cn/)
(Accessed November 23, 2005)

chance of human exposure to infected birds remains high, as more than 70% of China's poultries are bred in rural backyards where the standards of health care, hygiene and sanitation are poor (Image photograph is shown in Figure 1). Second, rural residents have extremely limited access to related information and understand almost nothing about avian influenza. Third, the performance of the animal epidemic prevention system remains poor in rural areas where veterinary services are rare. Finally, because of poverty, most rural residents cannot afford the loss of their poultries, so they do not want to report outbreaks. This, in turn, leads to the dangerous consumption of sick poultry.

Of the overall disease surveillance and response network in China, rural areas remain extremely vulnerable spots in the public health system. It is difficult to deal with a potential human influenza pandemic right now because of the inadequacies of rural public health systems. In July 2005, Gao Q, in an important speech about health sector reform and development⁶⁾, mentioned that rural disease control and prevention institutions suffer from a lack of good human resources, necessary equipment, facilities, material resources and financial security. The results of a survey conducted by some experts from China's Development Research Center of the State Council has officials worried. The survey found that 89.8% of the rural physicians have a low educational qualification: 70.6% have are graduates of a technical secondary school and 19.2% have no school record.

Rural clinics whose capital assets are less than 20,000 RMB (about 2,500 U.S. dollars) account for 65.9% of all and those whose drug stocks are less than 5,000 RMB (about 625 U.S. dollars) account for 51% of all (Han and Luo, 2005).

The inadequacies of the rural public health system are mainly attributable to insufficient government investment. The rural population accounts for 70% of the country but only 30% of the national health expenditures (Gao, 2004). The Development Research Center of the State Council's declaration that "the medical reform, on July 28, 2005, is unsuccessful" triggered a profound discussion on health sector reform issues such as equal accessibility and efficiency of health services. This discussion coupled with the lessons learned from the SARS crisis, have made the government aware of the urgent need to build a sound public health system in rural areas and to invest more financial, human and material resources into preventive and basic clinical services.

Confronting the potential pandemic threat, the government now has plans to strengthen the rural early warning system. By educating rural residents as to the health risk factors, and by providing them with financial and administrative support when they suffer an economic loss from an outbreak, the government believes that the reporting and detection of avian influenza cases will undoubtedly improve. In the long term, however, the government shoulders the heavy responsibility of reducing poverty in rural areas and promoting equitable access to essential health services including essential drugs.

⁶⁾ Available at <http://politics.people.com.cn/>
(Accessed August 1, 2005)

4. Perspective

WHO experts note that, to stop the circulation of the disease in birds and to detect it early, the rapid reporting of suspected cases and proper treatment of both bird and human cases represents a great challenge for the country. The government needs to promote further monitoring of both animals and humans, provide financial and administrative support for rural residents whose birds were slaughtered during the outbreaks, and to improve health services in rural areas⁷⁾.

Collaborations on a global scale with different international organizations, in different departments within states and on non-governmental levels, ranging from health, environment to financial and administrative policy are essential for the prevention and control of avian influenza. A potential threat to human health has an impact not only on one country or area, but also on the entire world. Therefore, strengthening global collaborations and cooperatively sharing advanced technology and know-how in terms of dealing with communicable diseases will benefit the future of all people³⁾.

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⁷⁾ "WHO Experts Says A Key to Preventing Avian Influenza is to Strengthen Awareness of Public Health," *Xinhua News*. January 29, 2006.

鳥インフルエンザ：中国保健医療体制の現状と対策

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中国大陸における鳥インフルエンザの蔓延やヒトへの感染例の発生は、中国の保健医療体制に対し、大流行を抑制する試練となっている。SARS 危機以降、中国政府は保健医療体制の再建と強化に取り組み、政策の透明化や情報公開にも努めてきている。しかし、長期にわたって保健医療体制の脆弱な農村地域は、依然として様々な問題点を抱えている。すなわち、感染した家禽との高い接触機会や疾患に関する情報伝達の制限、医療に関する人的および物質的資源の欠乏が感染予防や疾病管理の障害となっており、農村地域における流行の危険度を高めている。保健医療体制を再建・強化すること、貧困がもたらす農村地域の問題を解決すること、そしてインフルエンザ大流行を回避することに、中国政府は重大な責任を担っている。

キーワード：鳥インフルエンザ，保健医療体制，農村地域，中国

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