CHINA'S REACTION TO H1N1 PANDEMIC FLU

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Executive Summary

1. The global spread of H1N1 virus (popularly known as "Swine Flu") prompted many countries to intensify their efforts to minimize its impact on people's health and socio-economic stability.

2. In stark contrast to its initial response toward the SARS outbreak, the Chinese government swung into action against the H1N1 flu from the very beginning. The strong *esprit de corps* among key government leaders were different from the discordant response in the initial stage of the SARS outbreak in 2003.

3. Quarantines and on-board temperature checks were among the primary measures that Chinese officials had taken to slow the transmission of H1N1.

4. Such anti-virus measures were a natural response toward an unknown but potentially disastrous disease. Indeed, Beijing's initial response was no different from that of other countries (regions), such as Singapore, Hong Kong, and the United States.

5. For decision makers in Beijing, SARS was an additional factor that drove aggressive government response. Not surprisingly, China readopted the anti-SARS measures in responding to the H1N1 outbreak.

6. China's virus-containment efforts appeared to have been an amazing success. Until early September 2009, the number of H1N1 cases was maintained at a relatively low level. No H1N1-caused fatal cases were reported until early October.

7. The containment strategy has bought the government more time to prepare for the next potentially more lethal wave of H1N1 attack. In early September, China became the first country to mass produce a vaccine against the H1N1 flu pandemic.

8. However, senior Chinese health officials and international health experts also agreed that the costs of China's tough measures would have to be evaluated to see whether they were worth the benefits. The costs include direct financial cost, social-economic losses, as well as soured diplomatic relations with Mexico and Canada.

9. To government leaders, such costs became secondary in their efforts to demonstrate to the Chinese people and the world of a caring government fully in charge.

10. In addition, many local governments were aiming for greater social and political stability as the People's Republic of China was then poised to celebrate its 60th anniversary.

11. Beginning in September, with the rapid spread of H1N1 cases, China has increasingly focused on vaccination and surge response capability building in tackling the threat of the pandemic flu.

12. But in doing so, Beijing faces some daunting challenges, such as potential underreporting and misreporting, and the widespread suspicion on the validity and safety of the H1N1 vaccine.

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China's Response to the H1N1 Flu Pandemic

1.1 An offshoot of the 1918 Spanish Flu virus, the novel H1N1 virus was first detected in people in North America in April 2009. It was popularly referred to as "swine flu" because many of its genes were very similar to influenza viruses that normally occur in pigs in North America.

1.2 Thus far, the H1N1 has proven to be a relatively benign virus. Scientists still do not know exactly how many people are infected, but the virulence of H1N1 seems to be close to that of the routine seasonal influenza, and well below that of the dreaded 1918 pandemic virus and SARS (see Table 1)

TABLE 1 THE CLINICAL SEVERITY AND TRANSMISSIBILITY OF DIFFERENT PATHOGENS

Virus	1918 "Spanish Flu"	Avian Influenza	Seasonal Influenza	SARS	H1N1 ("Swine Flu")
R_0	1.5 (1st wave) 3.5 (2nd wave)	0	1.1-1.2	2-4	1.4
CFR (%)	2.5	>60	0.1-0.2	> 15	0.1-0.3

Note: R_0 is used to measure transmissibility. It is the virus reproduction number, or number of contacts of infected people that results in the transmission of the virus. CFR or case fatality rate is used to measure clinical severity.

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1.3 The spread of the H1N1 flu virus is thought to occur in the same way as seasonal influenza. Most patients have recovered without needing medical treatment.

1.4 In the U.S., about 70 percent of people who have been hospitalized with the H1N1 virus have been previously placed at "high risk" of serious seasonal flu-related complications, which include pregnancy, diabetes, heart diseases, asthma and kidney disease.

1.5 More recent data however suggests that the virus can cause life-threatening viral pneumonia much more commonly than the typical flu. This prompted the World Health Organization on October 16, 2009 to warn hospitals to prepare for a possible wave of very sick patients and to urge doctors to treat suspected cases quickly with antiviral drugs.

China's Initial Response

2.1 In stark contrast to its initial response to the SARS outbreak, the Chinese government swung into action against the H1N1 flu from the very beginning.

2.2 On the very day it received reports from the WHO, China activated its national pandemic preparedness and response plan. Airports began to stringently screen inbound passengers from Mexico and other countries with confirmed H1N1 cases. The Ministry of Agriculture (MOA) ordered a ban on pork and pork products from Mexico, the United States, and Canada.

2.3 Both President Hu Jintao and Premier Wen Jiabao urged the governments at each level to step up efforts to keep the virus from entering China. The State Council declared fighting the spread of the virus a "priority" and ordered a host of measures be put into place, including the creation of a direct reporting system on the epidemic leading to "early discovery, early reports, early diagnosis, early quarantine and early treatment."[1]

[1] *People's Daily* (人民日报), April 29, 2009, p. 1.

2.4 On May 1, a Mexican passenger who transited through Shanghai was confirmed in Hong Kong to have H1N1 flu. Even though he was the only known Mexican sufferer in China, the government immediately suspended direct flights from Mexico to Shanghai.

2.5 Meanwhile, the authorities embarked on a nationwide manhunt, asking local authorities to quarantine all passengers who were on flight AM098. By May 4, all the 166 passengers of that flight who stayed in China were tracked down and quarantined in 18 provinces. None of them were later found to have H1N1.

2.6 On May 11, the report of the first confirmed H1N1 case in the mainland provided further impetus to gear up efforts to construct a great wall against the virus. Top leaders called for enhanced vigilance and stricter steps against the influenza while Hu urged governments at all levels to "spare no effort to put all emergency response measures in place in order to curb further spread of the disease" and Wen presided over an emergency State Council meeting, which concluded that China was facing a "complicated and grave" situation with regard to the threat of the flu virus.

2.7 The strong *esprit de corps* among key government leaders were in sharp contrast to the discordant response toward the 2003 SARS by central leaders, who until late April 2003 failed to sing from the same song book.[2]

2.8 As containing the spread of the virus became a top national priority, a torrent of state action was unleashed. On May 22, 2009 China began tests on every inbound international flight. Masked technicians in head-to-toe biohazard suits would inspect each passenger and check for fever with a thermal forehead scanner.

2.9 China was the only country conducting on-board temperature checks and quarantining groups of passengers.

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[2] Yanzhong Huang, "The SARS Epidemic and its Aftermath in China: A Political Perspective", in Stacey Knobler *et al*., eds., *Learning from SARS: Preparing for the Next Disease Outbreak* (Washington DC: The National Academies Press, 2004), pp. 116-136.

2.10 Until the end of May, if a passenger on board was found to have a higher than normal temperature, the entire flight would be quarantined, and passengers moved to reserved places for further medical observation.

2.11 By early July, China had thrown tens of thousands of people into government-designated quarantine facilities.[3]

2.12 According to the US Embassy in Beijing, 2,046 American citizens had been quarantined by the end of October, with 215 testing positive for H1N1.[4]

2.13 In order to track down a person for quarantine, the government mobilized a considerable part of the state apparatus, including the Ministry of Health, the disease prevention agencies at different levels, provincial public security bureau, district police office, street residential committees, as well as the person's social network.

In the Shadow of SARS

3.1 The initial government response was a natural response toward an unknown but potentially disastrous disease. As far as this is concerned, Beijing's response in the initial phase of the outbreak was no different from that of other countries or regions, such as Singapore, Hong Kong, and the United States.

3.2 Policy makers have their reasons to "overreact". In a major disease outbreak, the political and economic stakes are often so high that politicians choose to err on the side of precaution.

3.3 As suggested in the 1976 Swine Flu fiasco, decision makers sometimes can be so overwhelmed by the consequences of being wrong that they may not be able to tell the difference between consequences and likelihood.

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3 *China Daily*, July 7, 2009.

4 *New York Times*, November 12, 2009

3.4 For decision makers in Beijing, SARS was an additional factor that justified aggressive government response. The country was still gripped by the memories of SARS; indeed, the official guidelines on H1N1 prevention and control unveiled by the Ministry of Health clearly targeted a SARS-like virus.

3.5 SARS also played a crucial role in policy learning: decision-makers, overwhelmed by the complexity of the problems they confront, lean heavily on existing policy frameworks to navigate the social world's complexities, adjusting only at the margins to accommodate distinctive features of new situations.

3.6 Not surprisingly, China readopted the anti-SARS measures, such as quarantines and travel restrictions, as the "natural" policy response to the H1N1 outbreak.

3.7 Like SARS, H1N1 flu has been categorized by China as a Group-B infectious disease but officially dealt with as if it was a Group-A one, which under the Law on Disease Prevention and Control is reserved only for the two most dangerous acute infections: plague and cholera.

3.8 The prospect of a SARS-like virus spreading like gangbuster led the central government to earmark five billion *yuan* ($731 million) to the prevention and control of H1N1, more than twice the amount the central government committed to fighting SARS (two billion *yuan*).

3.9 The government funding enabled China to treat all hospitalized H1N1 patients for free while providing free lodging and meal for everyone quarantined at a government designated hotel.

Assessing China's H1N1 Containment Efforts

4.1 Until early July, Beijing had maintained a containment-based strategy, which focuses on stopping the virus at its borders.

4.2 By that time, many countries had scaled down their response measures. For example, Singapore after mid-May no longer required passengers returning from Mexico or the United States to be subject to enforced self-quarantine.

4.3 The retreat from a containment-based strategy in those countries was driven by three developments: 1) the epidemic appeared less lethal than expected; 2) it was impossible for an open society to stem the spread of such a highly contagious disease; and 3) countries wanted to conserve their medical resources in order to prepare for a second, potentially more virulent attack

4.4 Statistically, China's virus-containment efforts have been an amazing success. By July 6, of a total of 94,512 confirmed infections worldwide, only 2,040, or 2.2 percent, were in China, even though nearly a fifth of the world's population lives within its borders. The number of cases per one million population is lower than most of the East Asian countries (Table 2).

TABLE 2 NUMBER OF CASES IN EAST ASIA, JULY 6, 2009

Country	# of Confirmed cases	% of world total	# of cases per 1 million population
India	129	0.1	0.1
Indonesia	20	0.0	0.1
China	**2,040**	**2.2**	**1.6**
Malaysia	112	0.1	4.4
Japan	1790	1.9	14.1
South Korea	202	0.2	18.3
Philippines	1,709	1.8	18.6
Thailand	2,076	2.2	31.5
Singapore	1,955	2.1	391.7
World total	**94,512**	**100**	**13.9**

Source: World Health Organization, Pandemic (H1N1) 2009 - update 58
Note: After July 6, countries are no longer required to test and report individual cases to WHO. Hence the number of cases reported after that understates the real number of cases.

4.5 Until early September, the number of H1N1 cases maintained at a relatively lower level (<5,000). No H1N1-caused fatal cases were reported in China until early October.

4.6 By November 9, China reported that 30 people had died after contracting H1N1, while at the same time India's H1N1 death toll surpassed the 500 mark.

4.7 The containment strategy appears to have bought the government more time to prepare for the next viral wave.

4.8 In early September, China became the first country in the world to mass produce the vaccine against the H1N1 flu pandemic. By late October it had produced nearly 53 million doses, compared to the 22.4 million doses available in the United States.[5]

4.9 This led even some Western media outlets to reevaluate their criticism of China's H1N1 reaction. On November 12, *New York Times* published a piece titled "China's Tough Flu Measures Appear to Be Effective," which praises China's approach.

4.10 But senior Chinese health officials and international health experts also agreed that the costs of China's tough measures will have to be evaluated to see whether they were worth the benefits.[6] The costs include direct financial cost (5 billion *yuan* earmarked by central government plus provincial funding), social-economic cost (the negative impact on domestic pork industry as well as tourism and international trade), and foreign policy cost.

4.11 As far as foreign policy cost is concerned, the quarantine of Mexico nationals suspected of exposure to H1N1 triggered a diplomatic row between China and Mexico.

4.12 Almost at the same time, China clashed with Canada over the former's ban on pork products from Canada.

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5 http://www.foxnews.com/story/0,2933,569966,00.html

6 *New York Times*, November 12, 2009.

4.13 By early July, even though China had only been engaged in combat with H1N1 for 8 weeks, signs of fatigue, resource depletion had already set in.

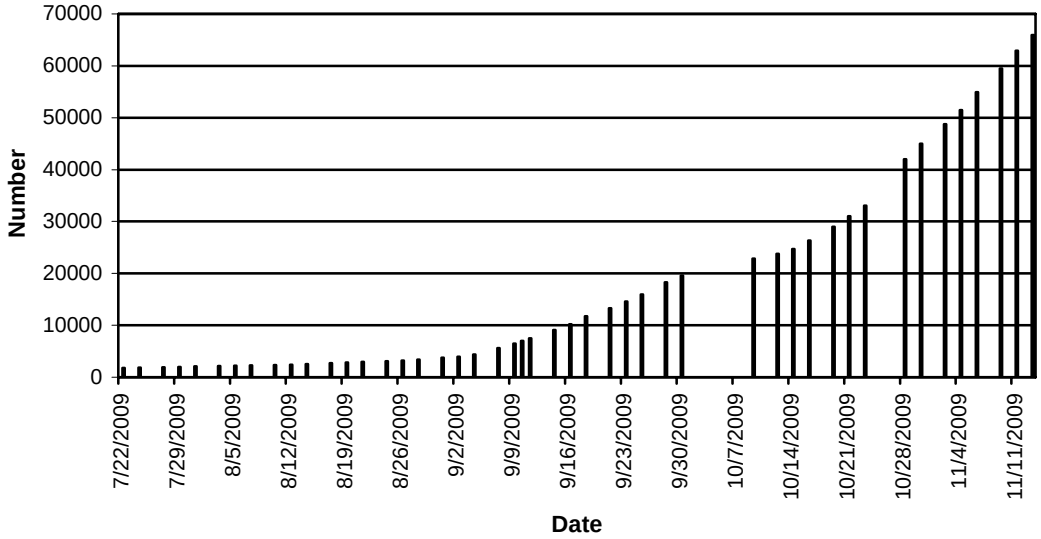
4.14 As admitted by a senior health official, free treatment and strict quarantine policy had put a strain on the government's economic and human resources.

4.15 When most of public health resources were diverted to H1N1 prevention and control, it also led to the neglect of other public health challenges, such as Hand, Foot, and Mouth Disease (HFMD). Between March and May, HFMD outbreak had resulted in 400,000 cases, and 155 deaths.

4.16 While the containment strategy slowed down the spread of the virus in China, the number of domestic cases continues to increase. By mid-August, domestic cases had outnumbered the imported ones.

4.17 Compared to the low number of H1N1 cases in summer, China has seen an explosive growth of the H1N1 cases in the fall, from around 4,000 in early September to nearly 66,000 in mid-November (Figure 1).

FIGURE 1 NUMBER OF CASES IN CHINA, JULY – NOVEMBER 2009



Source: Ministry of Health.

The Political Factor

5.1 In making public health-related decisions, it is important that decision makers act on the foresight of science and adjust policy directions based on available new evidence.

5.2 The question of whether it was necessary for China to take such stringent measures to begin with is debatable. After all, H1N1 turned out to be a relatively mild virus, with Chinese scientists confirming that and sharing their study with government leaders as early as May 9th.[7]

5.3 Due to the stringent government containment measures, almost the entire population in China has not been exposed to the virus. The failure to build up natural immunity could undermine China's ability to handle the next, potentially more lethal viral wave.

5.4 On June 19, community level outbreaks began to be observed in Guangdong province, suggesting that a mitigation-based strategy would be more relevant and more cost-effective. After days of hesitation, the Ministry of Health officials confirmed the outbreaks in Guangdong, which led to the formal admission that the spread of H1N1 was not containable.[8]

5.5 By that time, Hong Kong, also known for its stringent containment policy, had ceased the practice of tracking down people that had close contact with confirmed cases and placed priority on treating severe cases instead.

5.6 The ability of science to drive interventions against public health threats was compromised in part because science itself is not politically neutral in China. Having benefited financially and institutionally from the 2003 SARS epidemic, the Ministry of Health had strong interest in overstating the threat. With the

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[7] *Finance and Economics* (财经), no. 14, July 6, 2009. Full text of the paper is available at < http://www.scichina.com:8080/kxtb/CN/article/showZhaiYao.do?id=413537#>.

[8] "Mainland Officials Concede They Can't Contain Swine Flu," *South China Morning Post*, June 30, 2009, p. 6.

discourse on H1N1 dominated by some leading public health experts in China, voices against the draconian approach were marginalized and not reported by the official media outlets until early July.[9]

5.7 Chinese leaders, too, had strong incentives to pursue the aggressive policy response. They were more interested in creating the impression that the government was acting differently this time around and that it indeed cared about people's health and wellbeing.

5.8 On the eve of the 20th Anniversary of the Tiananman crisis, a survey conducted by the *China Youth Daily* actually helped shore up the regime's legitimacy. Eighty-five percent of the Chinese supported the draconian government measures.[10]

5.9 Party leaders in the campaign against H1N1 did emphasize "science" and "rule by law". Yet, when political leaders made H1N1 prevention a top national priority, lower-level government officials had to seriously take into account the consequences of inaction. The increasing pressure from the top level thus created an implementation structure that made heavy-handed measures more appealing to local government officials.

5.10 According to the influential *Caijing* magazine, the cost borne by public health personnel, H1N1 patients and those who had close contact with them was secondary when it came to social and economic stability, which became particularly important as the PRC was poised to celebrate its 60th anniversary.[11]

5.11 In late June, the Beijing municipal government warned that individuals who flout prevention rules would be prosecuted. Government officials at every

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9 *Finance and Economics* (财经), no. 14, July 6, 2009.

10 *China Youth Daily*, May 26, 2009, available online at <http://news.anhuinews.com/system/2009/05/26/002261874.shtml>

11 *Finance and Economics* (财经), no. 14, July 6, 2009.

level were tripping over themselves to declare how swiftly and effectively they were handling outbreaks in their jurisdictions.

5.12 Since the implementation structure hinges upon central leaders' commitment, the stringent policy eventually lost its momentum after the shift of leadership attention. On July 5, central leaders' attention began to be captured by a serious riot in Xinjiang, which resulted in the death of about 200 people. After July 5, H1N1 ceased to take the headlines of official media outlets.

5.13 On July 6, the Ministry of Health announced that H1N1 patients would soon stop receiving free treatment from the government. Two days thereafter, the Chinese health authorities issued a directive allowing mild cases to be treated at home while abandoning the practice of imposing precautionary quarantine on people in "close contact" with infected cases.[12]

5.14 The stringent border screenings and temperature checks nevertheless remained in place until late July.

Current Developments

6.1 Beginning in September, H1N1 has spread rapidly across China. Even remote interior regions were not spared. On October 6, China reported its first H1N1 death. The victim was an 18-year-old woman in Maizhokunggar county, Tibet. This was followed by reports of another two H1N1 deaths in Qinghai and Xinjiang, respectively.

6.2 With the beginning of new school year in the fall, large-scale outbreaks were also reported by schools and universities. In late October, there was a massive H1N1 outbreak among freshmen of Beijing University of Aeronautics and Astronautics, who were receiving military training off campus.

[12] Ministry of Health, http://www.moh.gov.cn/publicfiles/business/htmlfiles/mohwsyjbgs/s9990/200907/41662.htm

6.3 By November 16, China reported 69,160 confirmed cases of H1N1, including 53 fatalities. Close to 90 percent of China's flu infections are H1N1 influenza cases.[13]

6.4 With more H1N1 cases reported, schools and kindergartens across China have stepped up health checks for students and teachers. Some schools in China were closed in an effort to slow down the spread of H1N1.

6.5 In November, the Ministry of Health emphasized the need for each province to stockpile Tamiflu, with amount equivalent to 2 percent of the provincial population. It also gave permission to more hospitals to treat severe H1N1 cases.

6.6 The government also launched a campaign to promote the H1N1 vaccination. As of mid-November, about 16.6 million people had been vaccinated.

6.7 But in tackling the H1N1 outbreak, Beijing faces at least two challenges. The first challenge is the widespread suspicion on the validity and safety of the H1N1 vaccine. A survey conducted by Beijing Health Bureau suggested that only 60 percent of the parents supported the vaccination of their children.[14]

6.8 The second is potential underreporting and misreporting. On November 4, the Ministry of Health issued a warning against "cover-up, underreporting, and delayed reporting." The directive also asked local health authorities to adopt "international standards" in counting H1N1 fatalities by including any H1N1 related fatality, suggesting many of the H1N1 deaths were not reported as such by local health authorities.[15]

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13 *China Daily*, November 18, 2009

14 *Xinjing bao*（新京报）, October 30, 2009

15 Renminwang（人民网）, November 9, 2009

6.9 While limitations in medical capacity and failure of hospitals to test everyone with flu symptoms may contribute to the underreporting, deliberate cover-up at the local level may explain the unusually low H1N1 fatality rate in China. In a recent article, Dr. Zhong Nanshan, one of the most respected SARS crusaders, suggested that some local governments had deliberately concealed suspected cases by not testing severe pneumonia death to see if they were actually H1N1 deaths.[16]

[16] *Guangzhou ribao* (广州日报)，October 19, 2009