

Containing Pandemic and Epidemic Diseases in Asia

EXECUTIVE SUMMARY

How prepared is Asia for pandemic and epidemic diseases? While efforts by national governments and international organizations to prevent and control pandemics in the region have been instrumental in mitigating disaster in the short-term, they have also exposed more systemic weaknesses that call into question Asia's preparedness for future outbreaks. Future preparedness is important, because infectious diseases of a global or regional nature threaten the health and lives of large numbers of people as well as paralyze economic activity. Asia is particularly susceptible due to increasing migration and global travel, high population density in urban areas, more rapid spread of tropical diseases because of climate change, and underdeveloped healthcare systems. However, accurate calculations of what and how much effort and money to invest in preparedness and response plans are also important, as overreaction has proven to be costly. The key question, then, is how governments, international organizations, and businesses in the region can collaborate to build systemic safeguards against pandemics and epidemics, as well as ensure rapid action to minimize economic and social costs when unexpected diseases hit.

DISEASES AND RISK

Infectious diseases of both a global and regional nature are becoming more prevalent. Asia is at serious risk. The past two decades have seen more than 30 re-emerging diseases and unexpected outbreaks of new infectious diseases. Global pandemics have included HIV/AIDS, diphtheria, malaria, measles, poliomyelitis, and H1-N1 (swine flu); regional epidemics have included Severe Acute Respiratory Syndrome (SARS), and H5-N1 (avian flu). Those diseases accounted for about 15 percent of the 37 million deaths worldwide in 2009, and more than a third of the diseases were in the Asia-Pacific region.¹ (See Table 1)

The global pandemics that have killed the most people in the human history are the bubonic plague, cholera, and influenza.² The pandemics that have most affected Asia are influenza and SARS. In the past century, two influenza pandemics began in Asia and spread globally. The Asian flu pandemic of 1957-58 began in southern China, infecting up to four million people worldwide and killing almost two million. A decade later, the Hong Kong flu infected an estimated one to three million people worldwide and killed half a million. In the latest decade, cases of avian flu affecting humans were reported in Asia, with 440 people in 15 countries infected, resulting in 262 human deaths. Although avian flu virus has not been reported as transferred human-to-human, the risk of a more extensive outbreak remains significant. In 2003, about 8,000 cases of SARS were reported, resulting in 800 deaths, mainly in East Asia.³

Asia is currently going through a series of major transitions including globalization, urbanization, and climate change, which will present future challenges for disease control. By 2020, 400 million business travelers and tourists are expected in the Asia-Pacific region annually, compared to 100 million in 2000. The increase of close contact between people in confined spaces could promote disease transmission. By 2050, Asia's urban population will increase by 20-25 percent, which means that 1.5 billion people will live in urban areas.⁴ This rapid urbanization, which has led to over-crowding in big cities such as Hong Kong, Beijing, Shanghai, Tokyo, Mumbai, and Jakarta, could increase the risk of infectious disease transmission. In addition, climate change could also spread infectious diseases, as rising global temperatures affect global ecosystems and lead to more tropical diseases such as malaria and dengue fever expanding into temperate regions. Since the 1970s, climate change has contributed to 150,000 more deaths every year from pandemic disease, according to the Australian think tank the Lowy Institute, with over half of the deaths in Asia.⁵

HOW DISEASES AFFECT ASIAN SOCIETIES AND ECONOMIES

Pandemics and epidemics in Asia have caused massive losses in terms of human lives and business continuity. Businesses suffer in terms of employee well-being and productivity, customer base, and business partnerships.⁶ According to a conservative estimate based on experiences with past pandemics, if a global influenza pandemic breaks out, about 25 percent of the world's population (1.5 billion people) would fall ill; worker absenteeism would reach as high as 35 percent or more.⁷

TABLE 1: PANDEMICS AND EPIDEMIC DISEASES AFFECTING ASIA (NUMBER OF CASES)

| | YEAR | CHINA | HONG KONG | INDIA | INDONESIA | JAPAN | KOREA | MALAYSIA | PHILIPPINES | SAUDI ARABIA | SINGAPORE | TAIWAN | THAILAND | VIETNAM |
|---------------------------------|-----------|---------|-----------|--------|-----------|--------|-------|----------|-------------|--------------|-----------|--------|----------|---------|
| AVIAN FLU^o | MAR, 2010 | 38 | 24 | 0 | 163 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 116 |
| DIPHTHERIA | 2008 | 0 | 0 | 6,081 | 219 | 0 | 0 | 4 | 65 | 0 | 0 | 0 | 7 | 17 |
| H1N1 (SWINE FLU)* | JAN, 2010 | 666 | 67 | 1,106 | 10 | 145 | 170 | 77 | 30 | 124 | 19 | 41 | 196 | 53 |
| HIV/AIDS[^] | 2007 | 700 | 0.5 | 2,400 | 270 | 9.6 | 13 | 80 | 8.3 | NA | 4.2 | 16.2 | 610 | 290 |
| MALARIA[^] | 2006 | 99.9 | 0.04 | 10,650 | 2,518 | NE | 6.5 | 14.6 | 124.2 | 1.5 | NE | 0.03 | 257 | 70.3 |
| MEASLES | 2008 | 131,441 | 68 | 48,181 | 15,369 | 11,015 | 1 | 334 | 341 | 158 | 18 | 16 | 7,016 | 352 |
| POLIO | 2008 | 0 | 0 | 559 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | 0 | 0 |
| SARS^o | 2003 | 7,429 | 3,510 | 3 | 2 | 0 | 3 | 5 | 14 | 0 | 238 | 680 | 9 | 63 |
| TUBERCULOSIS[^] | 2007 | 1,175 | 5.5 | 2,186 | 484 | 36 | 61 | 32 | 378 | 16 | 1.2 | 14.4 | 110 | 245 |

Notes: Shading denotes top three countries with the most cases. Data provided only for countries where a disease is considered to be endemic. NE = "not endemic" (infection is not maintained in the population). NA= "not available."

^oCumulative cases. ^{*}Cumulative fatal cases. [^] Existing cases, in thousands. Otherwise, new cases.

Sources: WHO Vaccine Preventable Diseases: Monitoring System 2009 Global Summary; WHO World Malaria Report 2008; WHO Global Tuberculosis Control: Epidemiology, Strategy, Financing, 2009; WHO Global Tuberculosis Control: A Short Update to the 2009 Report; UNAIDS 2008 Report on the Global AIDS Epidemic; Center for Disease Control, Taiwan; Hong Kong Department of Health Centre for Health Protection; Asia Business Council analysis

From an economic perspective, a pandemic would cause a disruption in public transportation systems, schools, public services (such as police, ambulance, and fire services), commerce, logistics (such as cargo shipping and ground transport), and public facilities (such as libraries and sports facilities). A severe pandemic or epidemic—as defined by more than 25 percent of the population being affected—would result in shortages of essential products and goods, including food, pharmaceutical products, and fuel, due to supply chain and logistics failures. In addition, because societies and economies are increasingly interdependent thanks to travel and trade, the potential economic impact of a pandemic or epidemic could even be larger and more widespread. Recent estimates agree that a pandemic or epidemic event over a year could reduce global GDP by more than 2.5 percent, or \$3 trillion.⁸ According to the Asian Development Bank, the cost of SARS in terms of lost GDP for East and Southeast Asia was about \$18 billion, or 0.6 percent of global GDP in 2003. Tourism, transportation, and retailing were the hardest hit.⁹

ASIAN PRACTICES IN COMBATING PANDEMICS AND EPIDEMICS

Challenges and Failures

Due to the high cost of treatment for many infectious diseases (drugs and vaccines), and growing populations in most Asian countries, developing countries in Asia are challenged by inadequate healthcare financing and resources, which hinder efforts to address the problem. Compared to Japan and the United States, China, India, and Indonesia spend fewer government resources on healthcare and have less than one-fifth of the physicians, nurses, and hospital beds per capita.¹⁰ (See Table 2)

Asian countries are largely ineffective in crafting pandemic and epidemic management plans that go beyond generic World Health Organization (WHO) recommendations. China, India, and Indonesia have lacked country-specific operational plans to respond to different phases of a pandemic. They have not had detailed vaccination strategies, logistics for drug provisions, or continuity plans for essential public services during pandemic or epidemic outbreaks. For example, China's lack of a comprehensive vaccination strategy led to public confusion about the safety and effectiveness of the swine flu vaccine during a mass vaccination program in September 2009, which caused delays.¹¹

In addition, a lack of transparency regarding pandemic diseases in Asian countries, especially at the early stage, has had huge impacts on controlling pandemics.¹² Examples of communication failures have delayed outbreak control, undermined public trust, and caused confusion. Critics have accused the Chinese, Thai, and Indonesian governments of attempting to hide SARS and H5-N1 outbreaks in their territories.¹³

Besides national governments, international organizations also play a large role in providing information and services to help prevent infectious diseases, especially among poor populations that national efforts may neglect. However, they also fall short, partly due to funding constraints. The WHO's annual budget is less than \$1 billion. Moreover, the WHO has admirable but vague goals and limited decision-making influence on member countries' policies due to its weak country representations. As a result, its accomplishments are often difficult to evaluate, and its performance is often criticized or questioned. For example, both China and Canada immediately

expressed concerns about a WHO travel advisory that recommended against non-essential travel to their countries due to SARS, and strongly urged the WHO to reassess its decision in early 2003, even though an outbreak was continuing at the time.

TABLE 2: HEALTH EXPENDITURE, WORKFORCE, AND CAPACITY

| | YEAR | CHINA | INDIA | INDONESIA | JAPAN | U.S.A. |
|--|-------------|--------------|--------------|------------------|--------------|---------------|
| GOVERNMENT HEALTH EXPENDITURE[^] | 2006 | 9.9 | 3.4 | 6.2 | 17.9 | 19.3 |
| PHYSICIANS AND NURSES* | 2000-2007 | 24 | 19 | 9 | 116 | 120 |
| HOSPITAL BEDS* | 2000-2008 | 22 | 7 | 6 | 140 | 31 |

Notes: * Per 10,000 people (annual average number). ^ As percent of total government expenditure.

Source: WHO World Health Statistics 2009; Asia Business Council analysis

Best Practices

Effective prevention and mitigation strategies at the national level anticipate the magnitude of the impact of a pandemic or epidemic, link surveillance and response measures, and provide operational procedures that involve a broad range of sectors in preparing for and responding to disease outbreaks. Previous success cases in Asia suggest that clear operational procedures and responsibilities should be a priority in preventing and mitigating pandemics. Moreover, quick reactions and strong leadership by governments are key factors.

Although lacking many healthcare resources during the SARS outbreak of 2003, Vietnam succeeded by completely isolating patients and implementing infection-control measures from an early stage of the epidemic. As a result, Vietnam was the first country to be removed from the list of countries with local transmission of SARS, on April 28, 2003. Its quick removal was especially significant because it was one of four countries initially identified by the WHO as having SARS cases, on March 15. Vietnam since then has conscientiously implemented detection and protection

measures, as well as disclosed accurate information on pandemic and epidemic diseases to its citizens.

In addition, a look at national pandemic and epidemic response plans suggest that, among Asian countries, Japan has been the most effective in preparedness planning as well as specific measures targeting prevention, pandemic control, and mitigation. The Japanese government provides detailed action procedures for key stakeholders during each phase of a pandemic or epidemic, clear responsibilities, and guidelines for long-term capacity development. For example, during the SARS outbreak in 2003, the Japanese government implemented health-check measures at key transportation entry points to Japan and strategies for distributing drugs to its population. It also offered specific international cooperation plans including bilateral assistance to China, Taiwan, and Southeast Asian countries to help those countries fight against SARS and prevent the disease from entering Japan.¹⁴ As a result, Japan had no confirmed cases of SARS. Japan was also unaffected by the avian flu, with no confirmed cases as of the end of 2009. It also has an adult HIV/AIDS prevalence rate of less than 0.1 percent.

RECOMMENDATIONS

Businesses, governments, and international organizations all have important roles to play in minimizing the impact of pandemics and epidemics. Businesses play a crucial role in protecting employees' health and safety, and in minimizing human resource-related disruptions during pandemic or epidemic outbreaks.

Businesses should have a continuity plan as well as special contingency plans in the case of a pandemic outbreak. The business continuity plan should identify necessary resources to continue business in the event of a disease outbreak, in terms of personnel, information, equipment, financial allocations, legal counsel, infrastructure protection, and accommodations. Once a continuity plan is done, it should be continually tested and reworked to adapt to various levels of risk so it can ensure that business continues through all phases of the emergency. Businesses in sectors that are essential to the normal functioning of society, including defense, law and order, finance, transport, telecom, energy, food, water, and health, need to ensure that disruptions to their daily operations are minimal.¹⁵

In addition, governments and businesses need to cooperate more closely on long-term pandemic disease control. Some key measures include the following:

Support regional and national pandemic preparedness planning

Key industries most likely to be affected by pandemic and epidemic outbreaks, and those that act as first responders, should coordinate with governments to identify specific practices to help improve pandemic preparedness. For example, the Mass Transit Railway (MTR) Corporation in Hong Kong worked with the government following the SARS outbreak in 2003 to implement frequent cleaning practices and apply a disinfectant, nano silver-titanium dioxide coating,¹⁶ to areas frequently touched by passengers.¹⁷

Expand the role of pharmaceutical companies in government preparedness

Expanded public–private partnerships with pharmaceutical companies will likely help improve the availability of drugs and vaccines, which have been thus far limited by price control policies.¹⁸ India and China both are countries with huge drug markets. The rapid growth of the pharmaceutical industries in China and India has led to the revision of national drug and pharmaceutical policies and management, resulting in less government control of the industries. By expanding public-private partnerships, pharmaceutical companies would be able to insure both supply and quality of drugs for long-term pandemic or epidemic diseases such as HIV/AIDS and malaria. However, these partnerships are likely to prove more difficult in many countries, especially smaller ones without a significant medical research base.

Assist countries planning to manufacture their own vaccines

Businesses can also help risk-prone Asian countries by contributing experts to advise governments on how to develop and manufacture vaccines that are best suited to national priorities and needs. China and India have increased vaccine production capacity and expanded access to both seasonal vaccines and pandemic vaccines. As a result, they now have the capability to manufacture their own vaccines. In 2009, the Chinese government allocated nearly \$725 million for H1-N1 research and vaccine production. Production began in early June and involved 11 Chinese pharmaceutical companies, with a manufacturing capacity of 360 million doses per year.

CONCLUSION

Pandemic and epidemic diseases are becoming more prevalent. Asia is at serious risk due to globalization, urbanization, and climate change. Pandemics and epidemics have huge impacts on Asian societies and economies, including massive losses in terms of human lives and a potential reduction of the global economy in the range of \$3 trillion, if a pandemic were to last for a full year. Thus, businesses, governments, and international organizations all have roles to play in minimizing the impact of pandemics and epidemics by providing information and services to help prevent infectious diseases among poor populations, strengthening regional and national pandemic preparedness planning, and expanding public–private partnerships with pharmaceutical companies in government preparedness.

¹ World Health Report 2008, The World Health Organization (WHO). See

http://www.who.int/whr/2008/whr08_en.pdf

² Garrett, L. *The coming plague: Newly emerging diseases in a world out of balance*. London: Penguin Books, 1996.

³ World Health Report 2009, WHO. See <http://www.who.int/whosis/whostat/2009/en/index.html>

⁴ According to an Asian Disaster Reduction Center (ADRC) study (2008), a majority of Asia's urban growth will be in the following developing countries: Bangladesh, China, India, Indonesia, Pakistan, the Philippines, and Vietnam. See

http://www.adrc.asia/events/RTFmeeting20080130/PDF_Presentations/2-Thematic_overview_URR_Asia.pdf

⁵ "Malaria, dengue the sting in climate change," Michael Perry, Reuters, November 20, 2008. See <http://www.alertnet.org/thenews/newsdesk/SYD416089.htm>

⁶ The supply chain implication of a pandemic or epidemic and the potential for resulting disruptions must be considered by all businesses. The supply chain plays a significant role in almost all kinds of industries as business now is highly interdependent.

⁷ The World Health Report 2007 – *A safer future: global public health security in the 21st century*, WHO. See http://www.who.int/whr/2007/whr07_en.pdf

⁸ For example, predictions in "Pandemic Economics: The 1918 Influenza and its Modern Day Implications" by Thomas Garrett, or "A Potential Influenza Pandemic: Possible Macroeconomic Effects and Policy Issues" by the U.S. Congressional Budget Office. The World Bank estimated that "In a moderate pandemic flu scenario, studies have suggested that the economic losses from illness and death in the first year of the pandemic could amount to 1.3 percent of world GDP or more. Combined with preventive costs of close to two percent of GDP, total costs could exceed three percent of world GDP in a moderate pandemic scenario." World Bank, September 2009. See <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20649058-menuPK:34480-pagePK:64257043-piPK:437376-theSitePK:460700.html>.

⁹ It was estimated by Milan Brahmbhatt, a senior economist with the World Bank's East Asia and Pacific region. <http://seekingalpha.com/article/133813-swine-flu-s-economic-impact>
World Bank: Avian Flu: Economic Losses Could Top US\$800 Billion, November 8, 2005. See <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20715408-pagePK:64257043-piPK:437376-theSitePK:460700.html>

¹⁰ "Swine flu: Is SARS a guide for the economic impact?" Vidya Ranganathan, Reuters, April 27, 2009. See <http://www.reuters.com/article/latestCrisis/idUSSP438854>

¹¹ "China worries swine flu vaccine campaign faltering," Ben Blanchard and Yu Le, Reuters, December 11, 2009. See <http://www.reuters.com/article/idUSTRE5BA0G320091211>

¹² Christine Loh and Civic Exchange. *At the Epicentre: Hong Kong and the SARS outbreak*. Hong Kong: Hong Kong University Press, 2003.

¹³ “Asian Reactions To The Avian Flu Crisis: Lessons For Beijing,” Eric Teo and Chu Cheow. *China Brief*, Volume: 4, Issue: 5, March 7, 2004. See

[http://www.jamestown.org/single/?no_cache=1&tx_ttnews\[tt_news\]=26334](http://www.jamestown.org/single/?no_cache=1&tx_ttnews[tt_news]=26334)

¹⁴ “Severe Acute Respiratory Syndrome (SARS)--Current Situation in Japan and Measures taken by the Government of Japan,” Ministry of Foreign Affairs, Japan, June 19, 2003. See

http://www.mofa.go.jp/policy/health_c/sars/measure0521.html

¹⁵ “Business Pandemic Planning Guide--Swine Flu Disaster Plan from the World Health Organization,” November 4, 2009. See

http://diseases-viruses.suite101.com/article.cfm/business_pandemic_planning_guide

¹⁶ Nano silver-titanium dioxide coating is a non-toxic disinfectant, which has been certified as effective in killing a wide range of bacteria and viruses.

¹⁷ “Hong Kong testing anti-bacterial nano-coating in subways,” George Elvin, *Environment & Health*, November 5, 2006. See

http://www.nanotechbuzz.com/50226711/hong_kong_testing_antibacterial_nanocoating_in_subways.php

¹⁸ For example, India’s pharmaceutical price control policies in the 1970s-80s contributed to decreases in investment, productivity, R&D, and overall profitability.

Narayana, P.L. *The Indian Pharmaceutical Industry: Problems and Prospects*, NCAER, India. 1998.

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