

Diseases without borders: Managing the risk of pandemics

Pandemics such as influenza (flu), AIDS, plague, and smallpox have caused episodes of overwhelming misery and economic and social disruptions throughout history. Today, a pathogen that originates in a chicken flock or a goat herd in a remote village in Asia or Africa and is then transmitted to humans can reach major cities on all continents within 36 hours. Because everyone is vulnerable, management of pandemic risk is the quintessential global public good that can yield benefits for all but can be supplied only through collective action. Any country's efforts to reduce the risk are of limited benefit unless all other countries take supportive measures.

Sources of pandemics and development implications

Pandemics do not start in a vacuum; their onset is shaped by human action. A staggering 2.3 billion infections by zoonotic (animal-borne) pathogens afflict people in developing countries every year. Some 75 percent of pathogens capable of causing human disease are now animal-borne. This is a major concern because health, nutrition, and food and income security all decline when livestock and people are diseased. The poorest, often living close to livestock or wild animals, are most vulnerable. This disease burden persists because of weak veterinary and human public health systems that fail to detect diseases and allow them to spread. Adding to the risks, livestock numbers are projected to grow very quickly in developing countries. Some pathogens spread not just across species but also through trade and travel across borders and continents. Even worse, some become capable of easy human-to-human spread and thus have great impact, like AIDS, flu, or severe acute respiratory syndrome (SARS). Any country's failure to stop contagion early at its animal source can cause a pandemic. A severe flu pandemic could more than double the total burden of disease. Moreover, economic activity would suffer from worker absenteeism, cascading service disruptions, and human reactions to fear and rumors, which can spread faster than the disease itself. Much of the economic costs would result from avoidance behaviors; these costs could account for as much as 60 percent of total economic costs. Poor countries, especially fragile and conflict-affected states, may be least able to cope.

Preventing a pandemic

To stop contagion, it is essential to act early, at the source, and quickly. Early warning requires cooperation from farmers and communities. If farmers who report disease are punished by having their livestock destroyed without compensation, they will hide disease from the authorities. The main cause of pandemic risk is low capacity of public veterinary and human health systems. Bringing them up to meet minimum international standards requires only modest resources: \$3.4 billion a year for all developing countries, compared with the current level of barely \$450 million. The expected annual benefits of robust systems are at least \$37 billion, more than 10 times the costs. Because public health authorities failed to detect the disease early

on—a failure of public health service delivery—AIDS spread unchecked for decades. The costs of this manmade delay are still rising. In contrast, prompt public health action to isolate infected people helped stop the SARS outbreak. Contagion is far less likely to take off in countries that detect disease early and implement effective control measures promptly. To date, no mechanism ensures the strengthening of veterinary and human public health systems in countries that are unable to detect and control diseases, although such “weak links” put all countries at risk.

Mitigating impacts of a pandemic

Contingency planning, and periodic simulation exercises by governments, firms, and communities, as part of disaster risk preparedness, can mitigate impacts. Health sector plans can help cope with surges of patients. Networked industries like power, transport, finance, and food distribution can avoid major disruptions when the main firms have business continuity plans. Likewise, security and other government services need operational continuity plans in the event of high worker absenteeism. Communications in-country and across borders are vital, as the differing degrees of SARS contagion within Canada clearly demonstrated. Advance planning for truthful, complete, coordinated, and timely communications about the disease and government responses can reduce uncertainty and rumors. Too few governments, communities, and firms make and test contingency plans for complex disasters (including pandemics), despite evidence that these activities are highly beneficial.

In short, pandemics are an undermanaged risk. Pandemic prevention and preparedness tend to be sidelined, especially in the health sector, where the responsibility often rests. Health authorities focus on immediate problems and do not readily work with veterinary authorities to prevent diseases of tomorrow or coordinate societywide preparedness. Why such neglect? The economic and social impacts of contagion are often ignored, so the total risk is underestimated. Recent experience shows how wide this gap can be. The 2003 SARS outbreak, which killed about 10 percent of the 8,000 people it infected, caused \$54 billion in economic damage (mostly canceled travel, lost retail trade, and associated cross-border economic shocks). A severe flu pandemic could cost 4.8 percent of global gross domestic product (GDP), or more than \$3 trillion, trigger-

BOX S7.1 *An emergency response to a top global catastrophic risk*

How H5N1 avian flu galvanized the international community

Why an emergency response? Two goals:

- Control H5N1 avian flu at its source in poultry to reduce pandemic risk to humans and the world economy.
- Prepare all countries to cope with a pandemic.

Results? Notable achievements, but risks remain:

- Largest global public health program to date reduced risk through prevention and preparedness; assistance was delivered quickly to over 100 developing countries.
- H5N1 avian flu was controlled in most of the 63 countries in Africa, Asia, and Europe where it appeared but still circulates in a dozen countries. Preventing renewed spread of this virus is technically possible and cost-effective, yet most of the required investments in veterinary and human public health systems are unfunded.
- Preparedness for pandemics was boosted, as evidenced by responses to the 2009 H1N1 flu pandemic.
- The onset of the financial crisis in 2008 and decline in media attention sidelined pandemic prevention, leaving weaknesses in veterinary and public health systems unaddressed and undermining the sustainability of investments made.

Source: WDR 2014 team.

How did it work?

- Initiated by the United States and the European Commission, the International Partnership on Avian and Pandemic Influenzas *engaged all countries*.
- After launch at the United Nations (UN) General Assembly in 2005, *political support* was galvanized at five ministerial conferences in 2006–10.
- A UN System *coordinator* worked with the World Bank to support the World Health Organization (WHO), the World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO), and others to develop a common strategy rapidly.
- *Financing* of \$3.9 billion in 2005–10 helped over 100 developing countries. No new fund was created; instead, the World Bank monitored financing gaps in recipient countries and organizations.
- Partners agreed on *a strategy to reduce health risks* at the animal-human-environment interface (One Health), steered by the WHO-OIE-FAO tripartite.
- The United Nations and partners founded a *network for preparedness*, the Towards a Safer World Initiative, but sustainable funding and other support remain uncertain.

ing a global recession. The international community has not yet expressed its demand for pandemic risk reduction by adopting explicit goals but instead resorts to emergency responses that contain the threat only temporarily (box S7.1). Because risk governance is not backed by resources and authority, numerous weak links persist in global defenses against contagion. Fearing trade and travel restrictions, countries may hide diseases, facilitating their spread; incentives for compliance with disease reporting are weak or absent. Governments with resources try to protect their own populations by spending large amounts on ex post measures (vaccines, masks, and antivirals), although prevention at the source of the threat has much higher benefit-cost ratios. In particular, the promising One Health approach to reducing disease risks through systematic collaboration between animal and human health services is underfunded.

Promising precedents

The international community has already eradicated two devastating scourges: smallpox in 1979, and rinderpest (cattle plague) in 2011. Smallpox killed as many as 500 million people in the 20th century alone. Rinderpest, with its high fatality rate, decimated herds and economies for centuries and catalyzed the founding of the World Organisation for Animal Health (OIE) in 1924. Intergovernmental cooperation, science-based disease control strategies, mass vaccination, and surveillance were among the elements behind these successful campaigns. The disease risk was reduced to zero. The benefits are lasting and already outweigh the control costs many times over. International coordination and strong public health agencies broke the chain of transmission of SARS. Faced with the H5N1 avian flu threat, the in-

ternational community rapidly mobilized and deployed resources for zoonotic disease control and pandemic preparedness, but the effort dissipated soon after the threat left the headlines.

Current and future generations would benefit if the international community set a goal to reduce pandemic risk. The goal would empower international organizations to raise risk awareness and motivate prevention and preparedness; provide relevant knowledge, capacity building, and technical assistance to developing countries; assess the performance of national veterinary and human public health systems and their collaboration; and mobilize resources for strengthening these systems.

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