

The International Implications of Avian Influenza Conference Outcomes

Thematic Summary

Avian influenza is an ancient virus which lives harmlessly in wild waterfowl, but which can become extremely virulent in new host species. In the last few years, the unstable H5N1 strain of the virus has caused hundreds of millions of deaths in domesticated fowl and over 70 deaths in humans. So far the virus has not become transmissible between humans, but if it does we could be facing a highly infectious, highly pathogenic pandemic.

The possibility of a human pandemic has low-risk, high-impact characteristics, making it hard for governments to know where the “minimum readiness threshold” lies. What proportion of total resources should be devoted to an event which is 90% unlikely to happen in any given year, but which could be globally devastating if it did?

A virulent pandemic could kill millions of people, cause severe economic damage and lead to conditions of anarchy in some parts of the world. Developing countries – particularly in East Asia – are the most likely locations for a human pandemic to originate due to the conditions under which people and animals live. The effects of a pandemic would also be much greater in developing countries, particularly for the poor.

Avian influenza is best understood as a transnational threat requiring an internationally coordinated response. In the age of frequent and rapid international travel, political borders will provide little protection from the virus – so it is in every country’s interest to prevent an outbreak occurring anywhere in the world. To do that we need to share information and pool resources.

International agencies led by the World Health Organisation have responded to the recent growth in outbreaks of the H5N1 virus among avian populations by updating guidelines for national pandemic preparedness and identifying priorities for spending on anti-pandemic resources. Foremost of these are improvements to animal and

human influenza surveillance systems, increased laboratory capacity and international exchange of information, building a common stockpile of antiviral drugs for rapid deployment to the scene of an outbreak in humans and integration of response management.

Background

On Monday 7 November 2005 CARE Australia and the Lowy Institute for International Policy co-hosted a conference looking at the international implications of avian influenza. The conference was attended by Australians at senior levels in the government, business, academic, humanitarian and media sectors. Though drawn from conference outcomes, for the most part this report does not reproduce the remarks of participants or personally attribute comments or opinions.

The purpose of the conference was to look beyond the short-term, domestically focused management aspects of the threat and draw out its wider international implications – political, strategic, economic and humanitarian. It began with an examination of the epidemiology of the virus and the nature of the risks it poses, and also looked at how response planning is being coordinated between national governments and international agencies.

Epidemiology and Risk Factors

Avian Influenza

Avian influenza is an ancient virus that has lived in the gastrointestinal tracts of some wild aquatic bird species for centuries, spreading around the world as they migrate back and forth. These waterfowl have innate immunities which allow them to host the virus unharmed, and which therefore disfavour the genetic mutations for which the virus has a natural propensity. But when, through commingling, wild waterfowl spread the virus to non-immune avian species, new variants can arise which may become highly pathogenic and highly infectious, causing disease and death in large numbers.

Commercial poultry farming in East Asia – particularly China, Cambodia, Vietnam, Thailand and Indonesia – has been seriously affected by recent outbreaks of the H5N1 strain of avian influenza, which is the most genetically unstable of the different classes of influenza and the most likely to be pathogenic in new host species. In

recent months Kazakhstan, Turkey, Romania, Russia, Croatia, Greece and Kuwait have also detected birds infected with H5N1 within their borders. For the first time wild birds could be carrying not just the common avian influenza viruses that led to the emergence of H5N1 in Asia, but also the H5N1 strain itself.

Human Influenza

The widespread nature of these outbreaks in both domesticated and wild bird populations has generated a spike in global concerns that conditions are now ripe for the H5N1 virus to jump the species barrier and become transmissible between humans. Other variants of the virus originating in waterfowl have already spread directly to non-avian species including pigs, horses, cats and various sea mammals, and indirectly to humans via both poultry and pigs. The transmission within a new species seems to occur when the avian virus mixes genetically with less pathogenic influenza viruses common to the new host species.

The main threat from H5N1 in migrating waterfowl is to avian populations, but the risk of a human-transmissible virus emerging outside East Asia also becomes higher. No record exists of transmission directly from wild birds to humans, but three strains have so far become adapted to human hosts, probably via other species. These three strains equate with the human influenza pandemics of 1918-19, 1957 and 1968, which differ from typical annual human influenza epidemics in their deadliness. Estimates are that the Spanish Flu of 1918-19 killed between 40 million and 100 million people, although the more recent pandemics killed many fewer. In contrast with typical annual human influenza, the avian influenza pandemics tended to cause death among the young and middle-aged with strong immune systems (not just in the elderly and very young), and by primary viral pneumonia rather than secondary infections.

Animal husbandry practices in parts of many East Asian countries – where several species of animals, including humans, live in very close proximity with each other – provide the conditions under which the influenza virus is most likely to jump the species barrier. Most of the 133 instances of human infection by the H5N1 virus have occurred in East Asia, and around half have resulted in death. To date there has been no confirmed case of human-to-human transmission of the virus, and if such a transmission has occurred it has not continued beyond a second human host. If it had, the world could already be suffering a highly infectious, highly pathogenic human influenza pandemic.

Risk Management

Judging the likelihood of an avian influenza outbreak in humans is an extremely complex technical task because it requires input from a disparate range of academic disciplines and government functions, as well as sustained international information exchange. It is not possible to quantify accurately the likelihood of a pandemic occurring – all we can do is take note of changes in the risk environment and try to respond accordingly. But if one commonly-cited assessment is accurate – that an avian influenza pandemic in humans is 10% likely to happen in the next couple of years – we have a serious problem on our hands.

Based on past experience we know that the effects of a pandemic as widespread and deadly as avian influenza will have far-reaching consequences in humanitarian, economic and security terms. So the challenge for risk managers in government and business is to judge correctly the amount of resources that should be spent on preparing for a pandemic that is, by the common estimate, 90% *unlikely* to happen in any given year. Defining this “minimum readiness threshold” is in many ways the underlying task for rich nations preparing for a pandemic event.

For the poorer nations of Asia – which are also the most likely locations from which a human-transmissible strain could emerge – the equation is rather different. With less state capacity, they are more constrained in the action they can take to prevent a pandemic from occurring, or once a pandemic has occurred. The involvement of the international community is essential if developing countries are to mitigate the risks of a pandemic – both for their sakes and for ours. In contrast with the previous instances of virulent influenza in humans, the frequency and speed with which international journeys are undertaken nowadays makes containing a highly infectious virus within the region of its outbreak virtually impossible.

International Implications of an Outbreak

Political and Security Implications

Infectious disease is usually framed as a public health issue. Some might think that by promoting infectious disease to the security agenda we make the mistake of confusing its effects with those of international politics, but in practice those effects can be remarkably similar. An event which kills tens of thousands of people, frightens millions more into inactivity, slices billions of dollars from the economy and

seriously threatens provision of basic services could equally be the result of a nuclear explosion, large-scale conventional warfare or a highly pathogenic infectious disease pandemic. Of those three scenarios, an infectious disease pandemic is the most likely by many orders of magnitude.

A high rate of infection, disease and death can destroy the veneer of society very quickly. When a government can no longer protect its citizens from harm the social contract lapses, collective action breaks down and the potential for chaos multiplies. Because weak states are particularly vulnerable, developing regions can destabilise very quickly and even undermine global order. Acknowledging the security implications of a pandemic is an important step to take because it can motivate governments and other actors to mobilise anti-pandemic resources of an order higher than would otherwise be available. While care must be taken that raising the profile of the risk does not lead to counter-productive public hysteria, it is also true that a common threat – understood widely and well in advance – can unite us.

The SARS experience of 2003 had serious social and economic consequences well beyond the deaths it caused, even though governments acted rapidly, cooperated effectively and managed to limit the spread of disease. They were aided in this by the nature of the SARS infection itself, which becomes symptomatic before it is infectious and is therefore much easier to isolate along with its human hosts. Influenza, by contrast, does not become evident in its host until a couple of days after the person becomes infectious, making effective quarantine extremely difficult. That characteristic alone amplifies the importance of preventing an initial infection from occurring.

Economic Implications

Pandemics of H5N1 influenza in domestic fowl have caused huge economic losses to the chicken farming and egg production industries. Nearly 200 million birds have been killed by the virus or culled to halt its propagation. In rich countries the effects do not spread noticeably beyond those industries, but in poorer countries they can be devastating. In East Asia, many millions of chickens have been destroyed over the last couple of years – at the cost of tens of billions of dollars – in an effort to control H5N1 outbreaks, with significant negative impacts on food security and growth.

Beside the economic impacts that would be caused by a human pandemic, however, the damage to chicken farming industries is merely trifling. To begin with, tens of

thousands of people would likely die from the disease in Australia alone. Many more would become sick and unable to work for a period, and would, in turn, remove healthy people from the workforce to care for them. Most people would be unwilling to interact more than was absolutely necessary in the hope of avoiding the infection. Businesses based on public gathering or personal services (for example in transport, retailing, hospitality and tourism) would grind to a halt. A crucial question would be whether basic services such as utilities maintenance and distribution of food could be maintained.

Substantial secondary effects would flow from damage to economic confidence. Markets could fail and much domestic and international trade could break down. Financial markets would factor in higher risk assessments very quickly, further damaging investor confidence. Direct costs to government would be substantial, including the provision of vaccines to key workers, running quarantine operations, monitoring the spread of disease and bearing associated medical costs. But it is also true that while some sectors would suffer gravely, others could benefit in time from the redistribution of spending.

Significant difficulties arise in trying to quantify the economic effects of a pandemic, because of the large number of variables and the wide spread of their likely values. The best approach begins with a series of possible infection scenarios, each of which yields a range of cost estimates. But despite the difficulties in generating accurate numbers, modeling the economic effects of a pandemic is still important for planning policy responses and intervention strategies. A series of models can give rise to a series of flexible responses quickly adaptable to the detailed characteristics of a pandemic.

Development Implications

The effects of pandemic avian influenza in humans would be much greater in developing countries, where the probability of death from communicable diseases is much higher. Poorer states have less capacity to plan for and respond to disease pandemics and also exhibit demographic, social and commercial traits less resistant to the spread of infectious disease. These include areas of high population density, rapid population growth, close-quarters animal husbandry and a propensity for public disruption and in some cases civil war. The timing of an outbreak would regulate its effects because consumption is still directly linked to seasonal production cycles.

Perhaps the most serious general impact of a pandemic in developing countries would be the number of people driven into poverty. In cases where one breadwinner supports a great many family members, a single death can be catastrophic. Negative economic impacts would take hold very quickly, curtailing the provision of social services and leading to rapid de-urbanisation. Whereas internal migrants might normally expect to earn their keep in the informal economy, there would be few opportunities to do so in a pandemic situation. Rural areas would then be playing host to critical masses of internally displaced people, which in turn could help spread the infection and severely reduce basic medical, sanitation, and sustenance provision.

It would be extremely difficult for the international humanitarian community to operate in regions caught in the grip of a pandemic because of the lack of personal security for their staff and because access to many areas would be curtailed by quarantine restrictions. Capacity would also be reduced because of the many competing calls on national and international resources. Rich governments that could otherwise be relied upon to provide support in times of emergency would be busy responding to the pandemic in their own backyards.

International Coordination and Response Planning

Strategic Lessons

The central lesson from SARS and previous pandemics of virulent influenza is that transnational threats require transnational responses. In the face of avian influenza, countries will stand or fall together because once a pandemic takes hold in one country it is virtually certain to spread across the world. In the case of avian influenza, prevention is vastly better than the cure. It is in every country's interest to do whatever it can to prevent an outbreak in humans wherever it might occur.

For the global community, the best chance of preventing an outbreak – or dealing successfully with one that does occur – will come with effective international coordination. Rich and poor countries alike must pool their resources and share information, recognising that in our globalised world political borders cannot prevent the spread of highly infectious disease. The imperative for rich countries in particular is to concentrate more on assisting developing countries to reduce the likelihood of an outbreak. More broadly, rich countries should continue to pursue the

development agenda as the conditions of poverty make a human-transmissible strain of the virus more likely to appear.

Science is advanced enough to deal effectively with a pandemic if its resources can be adequately marshalled. Vaccine development infrastructure is already in place for tackling annual human influenzas, and given time should be able to mitigate the effects of an avian strain. In the meantime the judicious international deployment of antiviral drugs such as Tamiflu and Relenza – widely stock-piled by developed countries in particular – could prevent a breakout epidemic of avian influenza becoming pandemic. The success of that tactic will depend on how rapidly the antivirals can be made available where needed, but also presupposes that the virus has not developed a resistance to the drugs, which could happen if they are deployed unnecessarily or in a piece-meal fashion. Ultimately, it is political and economic factors that will determine the nature of our response.

Practical Measures

Fortunately, the recent spike in global concern has already improved networks of international exchange. In the last month there has been a series of multinational meetings at senior bureaucratic and ministerial level. The World Health Organization – the lead international agency in fighting avian influenza – held a major planning conference at its Geneva headquarters in November in conjunction with the Food and Agriculture Organization, the World Organisation for Animal Health and the World Bank. Some of the larger international humanitarian non-government organisations have also turned their attention to the problem, although there is still a considerable lack of engagement in the NGO sector generally.

An element common to the outcome of many of these meetings is the recognition that more should be done to tackle the virus at source, in avian and other animal populations, rather than exclusively planning for its emergence. China, which is suffering repeated outbreaks of the virus in domestic fowl, announced recently that it was in the process of vaccinating all 14 billion of its chickens. If equally drastic and costly measures are to be avoided elsewhere, a considerable and rapid investment is needed from the international community. The WHO has called for US\$35 million over the next six months alone to fund its strategic recommendations, and many governments – including Australia's – have made unilateral pledges of support to high-risk countries.

The WHO and its partner organisations will direct resources to controlling the source of the virus in birds, improving systems of surveillance for animal and human influenza, building laboratory capacity, developing rapid containment plans, helping countries to develop integrated national plans, and encouraging them to share information freely. They have moved to create a stockpile of antiviral drugs, pledged by national governments and drug manufacturers, which can be rapidly deployed to the location of an outbreak. In January 2006, financial donors will meet in Beijing to discuss the deployment of anti-pandemic resources in more detail.

Conference Participants

Major general (Ret.) Peter Abigail AO	Australian Strategic Policy Institute
Ms Laurie Altman	3M Australia
Ms Karen Baylis	CARE Australia
Ms Piroska Bisits Bullen	International SOS
Dr Hamish Black	International SOS
Mr Alan Blair	Singapore Airlines
Mr Bassim Blazey	Department of Foreign Affairs and Trade
Mr Bill Bowtell	Lowy Institute for International Policy
Mr David Byers	Exxon-Mobil
Ms Elizabeth Carr	Macquarie Bank
Mr Dale Cleaver	Australian Red Cross
Mr Ivan Cook	Lowy Institute for International Policy
Mr Adam Cresswell	The Australian
Professor Peter Curson	Macquarie University
Mr Andrew Derijk	Roche Products
Professor Peter Doherty AC	Melbourne University
Ms Geraldine Doogue	Australian Broadcasting Corporation
Mr David Duguid	3M Australia
Mr Christian Enemark	Australian National University
Mr Ian Fliedner	BP Australia
Mr Barry Ford	Holden
Dr Darrin Gilchrist	Roche Products
Dr Robert Glasser	CARE Australia
Ms Pauline Gregg	Insurance Australia Group
Mr Allan Gyngell	Lowy Institute for International Policy
Mr John Hallam	3M Australia
Dr Alan Hampson	Influenza Consultant
Mr Tim Harcourt	Austrade

Mr Kevin Hobgood-Brown	Deacons Lawyers
Dr Peter Hodsman	BioDiem
Ms Jane Jose	CARE Australia
Dr Doug Kean	Office of National Assessments
Ms Charlotte Kennedy	Lowy Institute for International Policy
Dr Matthew Klein	Department of Foreign Affairs and Trade
Dr John Knight	Johnson & Johnson Pharmaceutical
Dr Irene Lai	International SOS
Ms Martine Letts	Lowy Institute for International Policy
Ms Rosita MacDonald	Lowy Institute for International Policy
Professor Warwick McKibbin	Lowy Institute for International Policy
Ms Lisa Middlebrook	Lowy Institute for International Policy
MS Mary Murnane	Department of Health and Ageing
Mr Paul O'Callaghan	Australian Council for International Dev.
Dr John Pournoor	3M Public Health Solutions
Mr Murray Proctor	Australian Agency for International Dev.
Mr Nicholas Scofield	Allianz Australia
Ms Carol Sherman	CARE Vietnam
Professor Adrian Sleight	Australian National University
Ms Deborah Smith	Sydney Morning Herald
Ms Liping Sun	Embassy of China
Mr David Templeman	Emergency Management Australia
Professor Rod Tiffin	Sydney University
Dr Trevor Tingate	Abbott Australasia
Mr Thomas Tsai	Baxter Healthcare
Ms Jessica Walker	CARE Australia
Professor Hugh White	Lowy Institute for International Policy
Mr Robert Yallop	CARE Australia