

A, B, Cs of Avian and Human Influenza¹

Avian Influenza: what is it?

Avian Influenza is an infectious disease in birds (both domestic and migratory) that is also found in other species, such as pigs and tigers, occasionally. It is an influenza Type A viral infection that occurs throughout the world and was first documented (in Italy) more than a 100 years ago. Aquatic birds (ducks, geese) are the natural hosts of all known Influenza A viruses; often they carry these viruses with no symptoms. When infection in birds does cause symptoms it can range from mild to severe. Highly pathogenic avian influenza (HPAI) is now endemic in many parts of Asia. Throughout 2005, the disease spread westward from Asia to different parts of Europe. In February 2006, outbreaks among birds were recorded in Nigeria, India and elsewhere.

Influenza viruses tend to be highly unstable. This means that, over time, viruses change and may transmute into a form that can readily infect humans. In 1997, an outbreak of avian flu (H5N1) in Hong Kong resulted in 18 human cases of infection and 6 deaths. 1.5 million birds were culled at this time and it appeared that the problem had abated. However, in 2003, new outbreaks of avian flu were recorded with 3 cases and 3 deaths reported in Vietnam. Between 2003 and the end of 2005, 144 cases have been recorded in Cambodia, China, Indonesia, Thailand and Vietnam. 76 of those patients died. This, in effect, indicates a case fatality rate (CFR) of a little over 50%. However, the actual CFR is possibly lower as it is not automatic that all people who have been infected and/or died, have been recorded. In the first weeks of 2006, new outbreaks and deaths of individuals were reported in China, Indonesia, Iraq, and Turkey.

Bird Flu: what is it?

See “avian influenza” above

Background: what is the history of pandemic influenza?

Influenza is an ancient disease. Hippocrates was the first to describe it in 412 BC although the term “influenza” was not coined until the 14th century. Pandemics occur approximately every 30 to 40 years.

The worst known pandemic took place in 1918-1919. An estimated 40-50 million people are understood to have died. This pandemic began with little fanfare when simultaneous outbreaks were detected in the Spring, 1918. When the second wave began in August, no country was prepared or spared. The majority of deaths occurred in a 16 week period between September-December 1918. Although it is known as the “Spanish flu” its origin(s) are uncertain. This particular virus hit the young hardest; their rapid immune response system worked to their detriment. The highest death tolls were among young adults, between 20 and 35 years, including, in particular, pregnant women; as many as 71% of those infected died². The highly pathogenic Spanish Flu virus infected an estimated 20% of the world’s population. The estimated global

¹ This note was prepared specifically for the AHI-Humanitarian Action meeting 22-24 February. It is important to note that there is a wealth of information on numerous sites. Some of these are noted at the end of this document.

² Garrett, Laurie “The Next Pandemic?” Foreign Affairs, Volume 82, July/August, 2005, USA

mortality rate was 2.5% - 3%. The mortality rate was especially high among indigenous people. An estimated 14% of the population of the Fiji islands died.

In contrast to the Spanish Flu, the pandemics of 1957-1958, and 1968-1969, were significantly less deadly - approximately 2 million and 1 million died respectively - since the virus was a much milder strain and health care systems had improved. Advances in knowledge of viruses helped. During the pandemic of the late 1960s health systems were better able to cope.

Case Fatality Rate/CFR: what determines this?

The deadliness or lethality of the virus is clearly a critical factor. Other important factors include the speed of detection, adequacy of treatment, and the effectiveness of surveillance systems as poor data on infection and death rates will give rise to a misleading picture.

Characteristics of a Pandemic: what are they?

A pandemic is different to other types of disasters or emergencies that require extraordinary interventions. Some of its unique characteristics include:

- Its impact will be widespread and not localized; external assistance, if any, is likely to be limited or inadequate, except in the initial stages.
- Contrary to other types of upheaval, a pandemic will result in reduced contact and social interaction. Movements are likely to be restricted, quarantines imposed, and public gatherings banned.
- The duration of a pandemic is uncertain but it differs to many other catastrophic events in that it will not be a short, sharp, shock.
- Although the date of the next pandemic is unknown, WHO says a pandemic may be imminent. Pandemic-related monitoring and warning systems, allows societies, businesses and individuals to be informed and to implement preparedness and precautionary measures.
- The impact of a pandemic on people's health, well-being, and coping mechanisms has great implications for maintenance of essential and emergency services. The knock-on effects of reduced staffing levels will be felt in all areas of human endeavor.
- A pandemic will also impact on production and consumption patterns and is likely to have adverse consequences for trading systems and economies everywhere.

Coordination beyond national structures: who does what?

Within the United Nations, the UN Deputy Secretary General chairs a Steering Committee that sets policy and guidance geared to a coordinated UN response.³ At the country level, the UN Country Team, under the leadership of the Resident and/or Humanitarian Coordinator, is responsible for UN preparedness and support to national authorities. With specific reference to bird and animal health issues, FAO is the UN's technical agency while WHO is responsible for human health issues.

³ Members of the Steering Committee that is supported by the UN Influenza Systems Coordinator, Dr. David Nabarro, include UNDG, UNDP, WHO, FAO, DPKO, OCHA, UNICEF, the Department of Safety and Security, the Department of Management, and the Medical Service.

Within the humanitarian arena, the Inter-Agency Standing Committee Working Group initiated, in November 2005, a process of consultation to determine what action needs to be taken by humanitarian entities to plan and prepare for a pandemic, including pre-pandemic and post-pandemic effects.

Guidance and Tools: what is available?

Contrary to the situation throughout much of 2005, recent months have seen a mushrooming of initiatives that have contributed to a growing reservoir of insights and literature that is readily available on different sites. (*See List end of this document.*) In addition to material available on such sites as FAO and WHO, the UN has mapped out a UN strategy and a Guidance Note on preparedness planning is under preparation. The IASC has also initiated a process to define an overall humanitarian agenda and related initiatives including the development of guidance specific to humanitarian action.

H5NI: why is it so “famous”?

Usually, influenza viruses are specific to certain species, whether humans, birds, horses or pigs to take but a few examples. Since 1959, instances of *human* infection with an *avian* influenza have occurred on only ten occasions prior to the current spate of infections. The H5N1 strain is an exception in that it is highly pathogenic. It is also of great concern that it has crossed the species barrier and infected a growing number of humans with frequent deadly outcomes. Scientists and others are also worried that the H5N1 virus will develop the type of characteristics - if given enough opportunities - to start another pandemic. Its continued geographic spread creates increasing opportunities for human exposure. The virus has met all the prerequisites to start a pandemic except one, namely, the ability to spread efficiently and in a sustainable way between humans.

Migratory birds: what is their role?

The actual role of migratory birds in spreading the virus is not well understood. However, scientists are increasingly convinced that “at least some migratory waterfowl are now carrying the H5N1 virus, in its highly pathogenic form, sometimes over long distances.”⁴ As a result, it appears that the virus is being introduced to domestic poultry in areas that lie along migratory routes.

Prevention: can it work?

The short answer is that there are different schools of thought on this. A longer response is that prevention, in the sense of preventing the emergence of an influenza pandemic, is THE goal of a two-pronged AHI strategy that is geared to containing - and thus preventing - the spread of H5NI in fowl and its direct transmission to humans. (The other prong of the strategy is focused on preparedness measures.) In sum, prevention may work but only if certain measures are taken.

Critical to prevention are improved bio-security arrangements for animal husbandry especially in relation to backyard poultry. Early detection through enhanced surveillance and safe handling of sick/dead birds are vital immediate needs. Compensating farmers for culling is also critical. Equally important is the level of awareness of the general public including, in particular, among those who are in direct

⁴ WHO “Avian influenza (“bird flu”) Fact Sheet, Geneva, January 2006.

contact with poultry, whether in the production (household or factory) or consumption (transportation, marketing, preparation for eating and disposal of uncooked remains) of chickens.

Important control measures, once the presence of H5N1 has been detected, include rapid culling of all infected or exposed birds, proper disposal of carcasses, quarantining and rigorous dis-infection of farms, and compliance with strict sanitary or bio-security measures. Restrictions on the movement of live poultry, both within and between countries, are also important.

However, experience shows that it is often difficult to secure compliance with anti-H5N1 measures especially in situations where backyard poultry flocks are scattered throughout rural or peri-urban areas. In such settings, close interaction between birds and people are a way of life and livelihood.⁵

In addition to measures at the household and community level, efforts at the national, regional and international level are also crucial both in preventing or limiting the scope of a pandemic and in responding to it once it has started.

There is a growing understanding of how the virus operates and of the counter-measures that are effective. In sum, prevention means attacking and addressing the problem at source and not allowing avian flu to become a global health problem with significant social, economic and political consequences.

Pandemic: can it be averted?

WHO advises that modeling studies undertaken in 2005 suggest that if effective anti-virals are rushed to a region in which a pandemic strain first emerges, coupled with other public health measures, it may prove possible to contain or slow the spread of the pandemic virus. This will depend on several factors including identification of the first cases immediately after they occur, the ability to rush anti-virals to the affected area, and the ability to treat everyone who may have been exposed to the virus. It will also be essential that the movement of people – in and out of the infected area – is effectively controlled. All such interventions need to occur within three weeks of the virus emerging. WHO does not know if such measures can be realistically undertaken. However, given the health, social and economic ramifications of a pandemic, such an approach must be pursued.

“Throughout history, no human interventions have managed to stop a pandemic once it starts...There’s a chance that we could smother the spark of a fire before it catches on. It will depend then on spotting an outbreak of human transmission quickly and acting quickly.” Dr. Margaret Chan, WHO

Preparedness: what is happening?

It is well recognized that many countries and regions have been developing and enhancing disaster risk management systems, including disaster preparedness capabilities, for decades. While the threat inherent in the H5N1 virus poses particular challenges, existing multi-hazard risk management systems are of tremendous importance in mobilizing action to deal with a pandemic. In addition, an incredible

⁵ China now produces 12-15 billion chickens a year, a dramatic increase from 12 million a decade or two ago.

amount of work has already been undertaken by governments and local authorities, as well as by individual communities, to initiate or strengthen preparedness systems that are AHI-specific.⁶ A growing number of countries have preparedness measures in place, particularly at the central level. Within and outside the United Nations, including the private sector, “business continuity” programmes have been developed. However, it is also apparent that much more work needs to be done, and the development of preparedness capabilities needs to be accelerated.

Preparedness: what is needed from a humanitarian perspective?

Indeed! Currently, there appears to be great variation within the humanitarian arena in that some entities have dedicated teams, resources, and tools available to strengthen and/or accelerate preparedness structures and capabilities. The IASC Working Group decided (November, 2005) to ascertain what action is needed by humanitarian actors and thus the 22-24 February, 2006 meeting when, it is anticipated, humanitarian agencies will map out key issues and ways to address these. It is well understood (a) that it is of crucial importance to take account of existing initiatives at the national, as well as the international, level and (b) that preparedness activities should, whenever appropriate, contribute to and enhance indigenous preparedness capabilities including, in particular, at the community level. It is also apparent that action must occur **now** (a) to address the humanitarian implications, if any, of the existing pre-pandemic period and (b) to prepare for an actual pandemic whatever its severity.

As noted by the WHO Director General, Dr Lee, in the past, “pandemics have announced themselves with a sudden explosion of cases which took the world by surprise. This time, we have been given a clear warning” since Asia and Europe experienced unprecedented outbreaks of the highly pathogenic H5NI in 2004 and 2005.⁷

There is a wealth of literature, and experience-based insights, to provide guidance on the critical measures that need to be taken to secure a minimum level of preparedness for disasters that threaten the well-being of vulnerable individuals and communities. Taking account of the work done in the lead-up to the World Conference of Disaster Reduction (January 2005) and since then on the specifics of AHI, there are a number of core issues that need to be addressed including definition of an overall

- Risk analysis pertinent to humanitarian concerns,
- Contingency Plans,
- Humanitarian Strategy, Policy and Programme,
- Institutional/Coordination arrangements,
- Level of “political”/senior decision-making support,
- Minimum preparedness requirements (basic standards)
- Consensus on risk communication
- Information-sharing
- Community-level support/processes
- Stand-by Arrangements including Rapid-Response Teams, and
- Identification of added value/support in the event of a severe pandemic.

⁶ The latter part of 2005 saw a number of regional and international-level meetings including, for example, a WHO/FAO/OIE meeting for member states (November 2005) that set out an overall vision and strategy, a pledging conference in Beijing (January 2006) that mobilized \$1.9 billion.

⁷ WHO “Avian influenza: assessing the pandemic threat”, Geneva 2005

Transmission: how do people catch avian flu?

It is worth noting that millions of birds are infected and only a very small – in fact tiny – number of those exposed to this avian virus have been infected with it. All evidence to-date indicates that close contact with dead or sick birds is the principal source of human infection by the H5N1 virus. People who, to-date, have been most at risk include those involved in handling, slaughtering, de-feathering, butchering, and preparation of infected birds for consumption. Exposure to contaminated chicken faeces or dead birds may also prove risky. Risks may also occur when birds excrete the virus in their faeces, which dries and becomes pulverized, and is then inhaled.

Note: for a pandemic to occur, a *novel* influenza strain needs to mutate in a way that facilitates efficient and sustained human-to-human transmission.

Reasons to be concerned?

- A pandemic may result in deaths counted in millions. This, in turn, will have devastating social, economic and other consequences.
- A high proportion of those who are most vulnerable are likely to be children and young adults although it is not possible to say, before the actual onset of a pandemic, who is most at risk. A *severe* pandemic, similar to the 1918 “Spanish Flu”, would result in a lot of deaths. WHO has projected that for a *mild* pandemic, morbidity levels could range between 2 and 7.4 million. (Before the emergence of the pandemic virus, it is not possible to determine its lethality, what proportion of people it will infect, and what percentage will die.)
- It is the nature of a virus to mutate often. The history of this virus A/H5N1 strain, including its capacity to spread, is of concern. The virus has demonstrated that it does not need a passport.
- Levels of awareness and investment in prevention, mitigation and preparedness capabilities, are inadequate.
- Early detection, surveillance, testing, rapid response capabilities are stretched.
- It will take some 3-6 months to develop a vaccine once a pandemic occurs.

Note: WHO does not consider it appropriate to make projections based on the 1918 pandemic as this was an exceptional event. However, it is widely acknowledged that a pandemic of whatever severity will place a huge burden on societies including, but not only, on health care systems.

Reasons to be hopeful?

- Whatever the lethality of the pandemic virus, the vast, vast majority of the world’s population will survive. Death rates counted in millions is an awful proposition, but it is equally clear that pandemic survivors will be counted in the billions.
- There is growing awareness of the dangers inherent in this disease both among the public and private sector as well as governance circles.
- There are more dedicated resources than ever before to combat the virus.
- There is growing international and regional collaboration – at many different levels – to contain the spread of the disease and to strengthen risk management systems.
- The longer the disease is contained and/or its spread slowed, the odds against the disease improve.

Annex 1: AHI Resource Material and Websites

WHO	
Access to various WHO sites	http://www.who.int/csr/disease/influenza/pandemic/en/ http://www.euro.who.int/eprise/main/who/progs/csr/cooperation/20050218_1
Checklist for national plan development	http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_4/en/index.html
WHO's pandemic plan (global)	http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_5/en/index.html
Sample national plans	http://www.who.int/csr/disease/influenza/nationalpandemic/en/index.html
WHO pandemic influenza draft protocol for rapid response and containment	http://www.who.int/csr/disease/avian_influenza/guidelines/RapidResponse_27%2001.pdf
FAO	
Access to various FAO sites	http://www.fao.org/ag/againfo/subjects/en/health/diseases-cards/special_avian.html
A Global Strategy for Progressive Control of HPAI	http://www.fao.org/ag/againfo/subjects/documents/ai/HPAIGlobalStrategy31Oct05.pdf
UN System Influenza Coordination (UNSIIC)	
Access to various sites	http://www.unsic.undg.org/content.cfm?id=1482
Sample national plans	http://www.undg.org/content.cfm?id=1483
Useful sites	
HEWS Early Warning Service (AI Monitoring Page)	http://www.hewsweb.org/avian_flu/
New Zealand Business Continuity Plan	http://www.med.govt.nz/irdev/econ_dev/pandemic-planning/business-continuity/planning-guide/planning-guide.pdf
OCHA Internal Avian Influenza website	http://ochadms.unog.ch/avianflu.nsf
Flu Wiki	http://www.fluwikie.com/
InterAction	http://www.interaction.org/disaster/avian/index.html