

Travel Catering Research Centre Briefing Note¹: Avian Flu – Implications for Flight Catering

What is Avian Flu?

Avian influenza or 'bird flu' is a highly contagious disease of birds, caused by influenza A viruses, specifically the highly pathogenic H5N1 strain of the virus. In birds, the viruses cause symptoms from mild illness with low mortality to a highly contagious disease with a near 100% fatality rate. As the virus can remain viable in contaminated droppings for long periods, it can be spread among birds, and from birds to other animals, through ingestion or inhalation. All bird species are thought to be susceptible to avian influenza. Migratory birds such as wild ducks and geese can carry the viruses, often without any symptoms of illness, and show the greatest resistance to infection. Domestic poultry flocks, however, are particularly vulnerable to epidemics of a rapid, severe and fatal form of the disease.

The current concern is that this strain of the virus appears to have 'jumped the species barrier' and has begun to infect human beings. The FCO website stated (February 2006) that: "Most human cases are thought to have acquired their infection following exposure to dead or diseased birds. Evidence suggest that particularly risky exposure occurs during the slaughter, plucking and preparation of poultry for cooking."

Why is it now considered such a serious threat?

This severe form of avian influenza has affected poultry flocks and other birds in several countries since 2003. It began in poultry in South Korea in mid-December 2003, and has affected birds in many countries in Asia including China, as well as Russia, Austria, Azerbaijan, Bulgaria, Germany, Greece, Hungary, Italy, Turkey, Romania, Slovenia, Ukraine, Iran, Egypt, and Nigeria. France has been the most recent country to announce a case of H5N1 in a wild bird.

As of 22 February 2006, 170 people have also caught the infection, as a result of close and direct contact with infected birds. Ninety-two of these have subsequently died. Although there is no firm evidence that H5N1 has acquired the ability to pass easily from person to person, concern remains that the virus might develop this ability, or that it might mix with human flu viruses to create a new virus. It is this ability of avian influenza, to change and to mix, that has given rise to the fear of a new human flu pandemic. According to the World Health Organization (WHO) this would cause a "severe disease, with high mortality, in people". No one will have immunity should an H5N1-like pandemic virus emerge and it will take several months for a vaccine to be developed. The only treatment in the meantime that is possible is with antiviral drugs, these suppress the symptoms of the disease, but do not attack the virus itself. They may, or may not, reduce the number of deaths during the pandemic.

¹ The following sources were used in the compilation of this Briefing Note: World Health Organisation, UK Government Department of Health, UK Government Foreign and Commonwealth Office, Centers for Disease Control and Prevention (USA), US Government National Strategy for Pandemic Influenza.

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The World Health Organisation identifies a number of causes for concern. These include:

- Domestic ducks can now excrete large quantities of highly pathogenic virus without showing signs of illness, and are now acting as a “silent” reservoir of the virus, perpetuating transmission to other birds. This adds yet another layer of complexity to control efforts and removes the warning signal for humans to avoid risky behaviours.
- When compared with H5N1 viruses from 1997 and early 2004, H5N1 viruses now circulating are more lethal to experimentally infected mice and to ferrets (a mammalian model) and survive longer in the environment.
- H5N1 appears to have expanded its host range, infecting and killing mammalian species (such as tigers) previously considered resistant to infection with avian influenza viruses.
- The behaviour of the virus in its natural reservoir, wild waterfowl, may be changing. The spring 2005 die-off of upwards of 6,000 migratory birds at a nature reserve in central China, caused by highly pathogenic H5N1, was highly unusual and probably unprecedented.

So it is not a matter of ‘if’ but ‘when’...

In January 2002, the UK Government’s Chief Medical Officer, Sir Liam Donaldson stated: "Most experts believe that it is a matter of when, not whether, another influenza pandemic strikes."

In early 2005, he reported: "Wherever in the world a flu pandemic starts, perhaps with its epicentre in the Far East, we must assume we will be unable to prevent it reaching the UK. **When** it does, its impact will be severe in the number of illnesses and the disruption to everyday life." (Sir Liam Donaldson, Chief Medical Officer, 1 March 2005)

Later last year he identified that: “Planning to combat pandemic flu is our number one priority. **We regard pandemic flu as public health enemy number one** and we are on the march against it. With good planning and preparation we can reduce the impact of pandemic flu on the health of our population." (Sir Liam Donaldson, Chief Medical Officer, 20 October 2005)

How many people may be affected by a flu pandemic?

Influenza pandemics are remarkable events that can rapidly infect virtually all countries. Once international spread begins, pandemics are considered unstoppable, caused as they are by a virus that spreads very rapidly by coughing or sneezing. The fact that infected people can infect others before their symptoms appear adds to the risk of international spread.

It is extremely difficult to forecast the severity of disease and hence the number of deaths the virus may cause. In past pandemics, 25-35% of the total population were affected. Under the **best case scenario** circumstances, assuming that the new virus causes mild disease, epidemiological models from the Centers for Disease Control and Prevention, Atlanta, USA project that today a pandemic is likely to result in 2 to

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7.4 million deaths globally. In high income countries alone, accounting for 15% of the world's population, models project a demand for 134–233 million outpatient visits and 1.5–5.2 million hospital admissions. In the **worst case scenario**, a more virulent virus is likely to lead to a significantly higher number of deaths. The 1918 pandemic killed at least 40 million people worldwide. In the USA, the mortality rate during that pandemic was around 2.5%, which if applied today would result in 6.5 million deaths in the US alone – 150 million worldwide.

Pandemics can cause large surges in the numbers of people requiring or seeking medical or hospital treatment, temporarily overwhelming health services. Because populations will be fully susceptible to an H5N1-like virus, rates of illness could peak fairly rapidly within a given community. This means that local social and economic disruptions may be temporary. They may, however, be amplified in today's closely interrelated and interdependent systems of trade and commerce. Based on past experience, a second wave of global spread should be anticipated within a year.

High rates of worker absenteeism can also interrupt other essential services, such as law enforcement, transportation, and communications. As all countries are likely to experience emergency conditions during a pandemic, opportunities for inter-country assistance, as seen during natural disasters or localized disease outbreaks, may be curtailed once international spread has begun and governments focus on protecting domestic populations.

How prepared are we for this?

Those governments that are concerned about this threat are largely engaged in three activities at this stage – monitoring and controlling the movement of birds, developing and testing contingency plans, and stockpiling antiviral drugs.

As a precautionary measure, where not already prohibited, the UK has banned imports of live birds and products, including poultry, poultry meat, eggs and unprocessed feathers from the following countries (due to bird flu outbreaks in these countries): Croatia, Turkey, Romania, Russia, Kazakhstan, Thailand, Cambodia, the People's Republic of China including the territory of Hong Kong, Laos, Indonesia, Vietnam, Pakistan, Malaysia, Mongolia, and North Korea. A temporary ban on imports of captive birds from outside of the EU was agreed on 25th October 2005 at the Standing Committee on the Food Chain and Animal Health (SCoFCAH). The ban on commercial bird imports is accompanied by restrictions on the import of pet birds. The European Commission has also banned the import of captive birds from all non-EU countries and placed restrictions on the import of pet birds.

Currently there are no restrictions on people. WHO does not at present recommend any restrictions on travel to any country currently experiencing outbreaks of bird flu in poultry flocks or humans. The World Organization for Animal Health (OIE) maintains an up-to-date list of countries affected. The Foreign and Commonwealth Office Travel Advice states: "There are no specific restrictions for travellers to any of the countries affected by avian influenza, as the risk is believed to be very low. But if you plan on travelling to areas where outbreaks have been reported, you may wish to take the following precautions:

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- Avoid visiting live animal markets, poultry farms and other places where you might come into contact with wild, domestic or caged birds
- Avoid contact with surfaces contaminated with animal faeces or fluids
- Avoid eating or handling poultry, egg or duck dishes, if any of these are undercooked or raw
- Wash hands regularly
- Do not attempt to bring any live poultry products back to the UK”

Although introducing bans on the movement of birds, the development of contingency plans, stockpiling of antiviral drugs, and giving travel advice are desirable the World Health Organisation believes **the world is not prepared for this inevitable event.** Their website stated (February 2006): “Despite an advance warning that has lasted almost two years, the world is ill-prepared to defend itself during a pandemic. WHO has urged all countries to develop preparedness plans, but only around 40 have done so. WHO has further urged countries with adequate resources to stockpile antiviral drugs nationally for use at the start of a pandemic. Around 30 countries are purchasing large quantities of these drugs, but the manufacturer has no capacity to fill these orders immediately. On present trends, most developing countries will have no access to vaccines and antiviral drugs throughout the duration of a pandemic.” According to the WHO, only 24 countries have national contingency plans for dealing with the pandemic. These are listed on the WHO website

What action should flight caterers be taking right now?

The most serious concern for flight caterers at this stage is to ensure **food safety.** Most strains of avian influenza virus are found only in the respiratory and gastrointestinal tracts of infected birds, and not in meat. This is not the case with the H5N1 virus, studies indicate it spreads to virtually all parts of an infected bird, including meat. For this reason, proper handling of poultry and poultry products during food preparation and proper cooking are extremely important in areas experiencing outbreaks of H5N1 avian influenza in poultry.

Current advice from the WHO is that in these areas, poultry **meat** and poultry products can also be safely consumed provided these items are properly cooked and properly handled during food preparation. The H5N1 virus is sensitive to heat. Normal temperatures used for cooking (70°C in all parts of the food) will kill the virus. Consumers need to be sure that all parts of the poultry are fully cooked (no “pink” parts). **Eggs** from areas with outbreaks should not be consumed raw or partially cooked (no “runny” yolks). Raw eggs should not be used in foods that will not be treated by heat high enough to kill the virus (70°C), for example by cooking or baking. In countries with outbreaks, eggs may contain virus both on the outside (shell) and inside (white and yolk).

Operators should also be aware of the risk of **cross-contamination.** Juices from raw poultry and poultry products should never be allowed, during food preparation, to touch or mix with items eaten raw. When handling raw poultry or raw poultry products, persons involved in food preparation should wash their hands thoroughly and clean and disinfect surfaces in contact with the poultry products Soap and hot water are sufficient for this purpose.

The H5N1 virus can survive for at least one month at low temperatures. For this reason, common food preservation measures, such as **freezing and refrigeration, will not substantially reduce the concentration of virus in contaminated meat or kill the virus**. In countries with outbreaks, poultry stored under refrigeration or frozen should be handled and prepared with the same precautions as fresh products.

To date, a large number of human infections with the H5N1 virus have been linked to the home slaughter and subsequent handling of diseased or dead birds prior to cooking. These practices represent the highest risk of human infection and are the most important to avoid. Proper handling and cooking of poultry and poultry products can further lower the risk of human infections.

What plans are flight caterers making?

As a Senior Executive from the industry has pointed out – “we survived in the past years many unpleasant developments with food like the UK [foot and mouth] disease first, the bird flu in HKG, the [mad] cow disease in Central Europe including Germany, the fish-worms and the pork-pestilence... this is nothing new to our industry”. In some respects this view is understandable. Currently, the WHO advises that we are at stage 3 of a pandemic (see below) ie viral transmission in bird but not humans. Hence the industry’s previous experience of food related issues is applicable.

Currently the world is at Stage 3 of the possible six stages leading to a major pandemic, as illustrated in Figure 1.

Figure 1. Stages in the Development of a Flu Pandemic

Inter-pandemic phase New virus in animals, no human cases	Low risk of human cases	1
	Higher risk of human cases	2
Pandemic alert New virus causes human cases	No or very limited human-to-human transmission	3
	Evidence of increased human-to-human transmission	4
	Evidence of significant human-to-human transmission	5
Pandemic	Efficient and sustained human-to-human transmission	6

Source: World Health Organisation

A pandemic can start when three conditions have been met:

- a new influenza virus subtype emerges
- it infects humans, causing serious illness
- it spreads easily and sustainably among humans.

The H5N1 virus amply meets the first two conditions: it is a new virus for humans (H5N1 viruses have never circulated widely among people), and it has infected more than 100 humans, killing over half of them.

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So the key point about a flu pandemic is that, unlike other events - food scares, SARS, 9/11 - this will be outside anyone living's previous experience. The last time a pandemic struck was 88 years ago. Firms therefore should be making plans not only for the situation currently facing the industry, but also for stages 4, 5 and 6 of a pandemic.

A major challenge is that **in terms of both timing and severity the experts are unable to give clear guidance**. Stelios Hadji-Ioannu, easyJet's founder, explained that for his company making contingency plans without knowing the odds was almost impossible (BBC Radio 4, 25 February 2006). He recognises however that his airline might be unable to fly for several months in the event of a pandemic – not so much because it would not have the staff but because no one would want (or be permitted) to fly anywhere. He believed easyJet could continue to 'trade' for six to nine months with its existing cash flows, but if the pandemic effect lasted longer this his airline might go out of business. Relative to other industry players, he thought his company's cash flow position was relatively good.

Forecasting is also made more problematic due to public opinion, agencies and even governments taking action beyond what is necessary at each specific stage of the pandemic event. For instance, poultry sales in France declined by 25% even prior to the confirmed cases of bird flu in turkeys (reported on 26 February 2006). Likewise Japan has banned the import of poultry and pate de foie gras. This is despite the fact that eating cooked poultry is not hazardous to health.

Hence it is likely that **even before Stage 6 – the pandemic itself – there will be serious disruption to the industry**. This is likely to be chaotic – in the sense that it will happen spontaneously in different places at different times in response to real or perceived dangers. Such sporadic events are likely to include:

- reduced use and/or consumption of poultry and poultry related products
- increase in demand for special meals, especially vegetarian
- food handlers (in food manufacturing, flight kitchens and aeroplanes) refusing to handle poultry products
- a significant but erratic decline in air travel to and from places and countries around the world
- cabin crew and air crew refusing to fly to 'high risk areas'

What will happen if a pandemic breaks out (Stage 6)?

If an influenza pandemic appears, we could expect the following:

- The pandemic virus may spread rapidly, leaving little or no time to prepare.
- Vaccines, antiviral agents and antibiotics to treat secondary infections will be in short supply and will be unequally distributed. It will take several months before any vaccine becomes available.
- Medical facilities will be overwhelmed.

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- Widespread illness may result in sudden and potentially significant shortages of personnel to provide essential community services.
- The effect of influenza on individual communities will be relatively prolonged when compared to other natural disasters, as it is expected that outbreaks will reoccur.

The US Government's National Strategy for Pandemic Influenza "recognize(s) that a virus with pandemic potential anywhere represents a risk to populations everywhere. Once health authorities have signaled sustained and efficient human-to-human spread of the virus has occurred, a cascade of response mechanisms will be initiated, from the site of the documented transmission to locations around the globe. ... While we [will] work to prevent a pandemic from reaching our shores, we recognize that slowing or limiting the spread of the outbreak is a more realistic outcome and can save many lives. In support of our containment strategy, we will:.....

- Encourage all levels of government, domestically and globally, to take appropriate and lawful action to contain an outbreak within the borders of their community, province, state or nation.
- Where appropriate, use governmental authorities to limit non-essential movement of people, goods and services into and out of areas where an outbreak occurs.
- Provide guidance to all levels of government on the range of options for infection-control and containment, including those circumstances where social distancing measures, limitations on gatherings, or quarantine authority may be an appropriate public health intervention.....
- Determine the spectrum of public health, medical and veterinary surge capacity activities that the U.S. military and other government entities may be able to support during a pandemic, contingent upon primary mission requirements, and develop mechanisms to activate them.

The US government recognises that the "movement of essential personnel, goods and services, and maintenance of critical infrastructure are necessary during an event that spans months in any given community." They will seek to maintain the essential elements of economic and social activities. To ensure this, they will encourage private organisations to continue their operations, but also "determine the spectrum of infrastructure-sustainment activities that the U.S. military and other government entities may be able to support during a pandemic, contingent upon primary mission requirements, and develop mechanisms to activate them". This is likely to mean the imposition of curfews to prevent public disorder or looting, and may even include the imposition of martial law.

What is likely to be the effect on the flight catering industry?

The World Health Organisation website (February 2006) stated: "Should a pandemic occur, transport ... systems would be severely disrupted.....A flu pandemic could spread extremely quickly and with little warning. Some countries might close their borders, international transport could be severely disrupted or halted, and travel could become medically inadvisable."

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Experts believe that avian flu will spread globally very quickly due to “asymptomatic air travellers” – that is to say people infected with the virus but who do not yet exhibit symptoms. In the event of an outbreak, it is likely that one of the first things unaffected countries will do is halt all air travel from infected areas, or halt all forms of travel between countries. This is most likely to be adopted by those countries or regions that have a physical barrier (seas or oceans) between themselves and other regions, such as the UK, Ireland, Australia, North and South America.

The implication of this is that flight caterers will have to lay off staff even before the outbreak occurs in their immediate locale. Even if this does not happen, it is likely that during an outbreak only essential workers will be allowed to leave their homes and flight kitchens are likely to be closed. Given the significant increase in demand for health services and the impact of the outbreak on institutions’ and families’ ability to prepare and cook food, it is conceivable that flight kitchens could be requisitioned by the authorities in order to prepare and transport meals for feeding the local population.

Conclusion

A major flu pandemic appears to be inevitable. This event is likely to affect the flight catering industry earlier than most other industries, as governments may reduce or even halt air travel between countries and continents in an effort to contain the outbreak. These attempts are likely to slow but not prevent the global spread of the virus. Flight catering companies therefore need contingency plans in place to respond to the effect this outbreak will have on their business, their operations and their employees.

Useful websites

<http://www.who.int/csr/disease/influenza/pandemic/en/index.html>

<http://www.who.int/csr/disease/influenza/nationalpandemic/en/index.html>

http://www.oie.int/eng/en_index.htm

<http://www.whitehouse.gov/homeland/pandemic-influenza.html#section8>