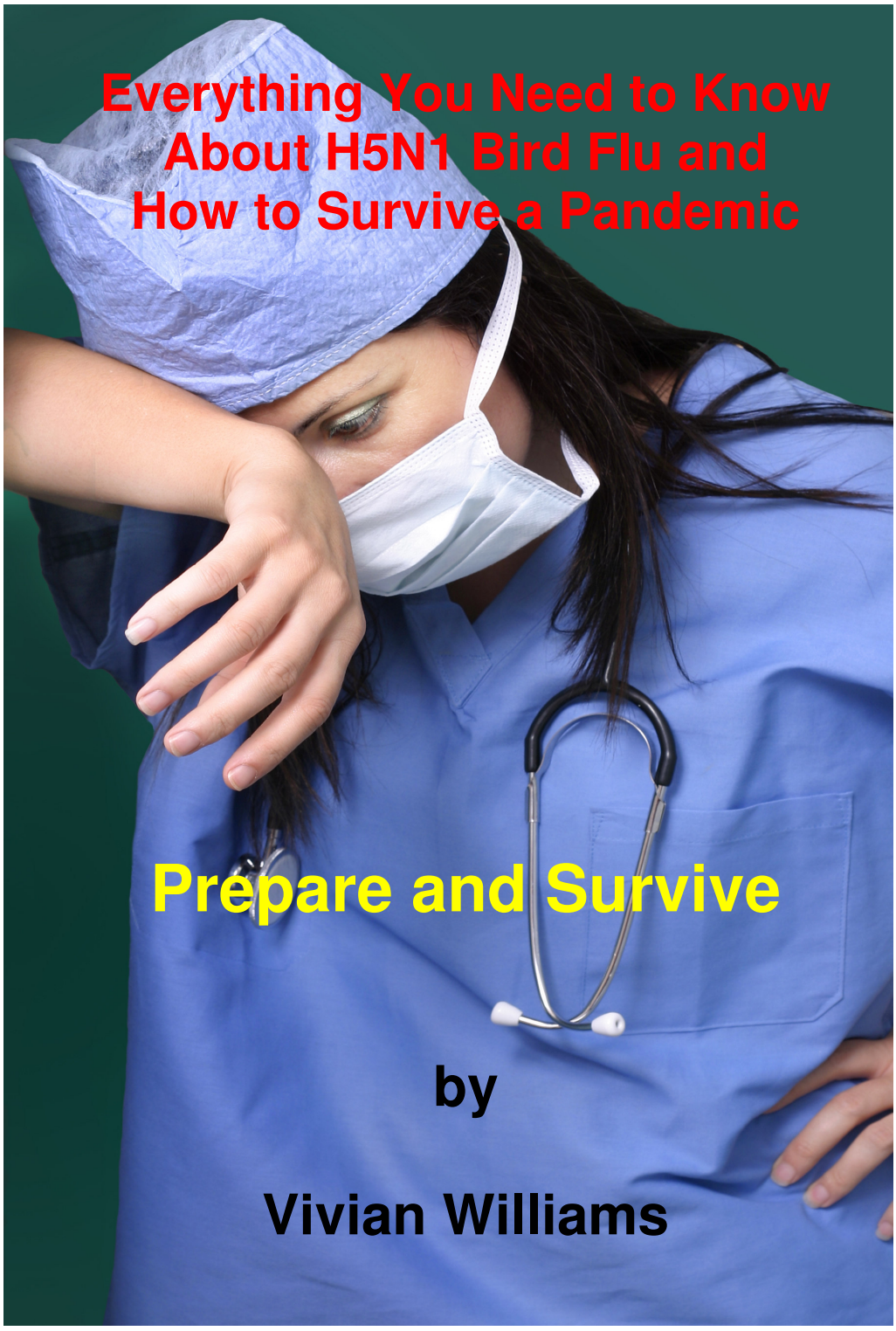
Bird Flu Survival Guide



Contents

Introduction to Bird Flu Survival Guide

The contents of this book are intended to inform about the dangers of a possible bird flu pandemic and how to prepare and survive should the worst happen. The fact that a silent and deadly killer virus is amongst us already, and slowly but surely spreading to every corner of the globe, is indeed cause for concern.

At the time of writing, the H5N1 virus has been responsible for the deaths of many millions of domestic fowl and over 190 humans have been infected, with more than 100 deaths reported.

To date, these fatalities have occurred some distance from our shores, and our government tells us there is no reason to panic. However, these statistics do warrant alarm as this could possibly be a signal to the birth of a new and overdue pandemic.

Based on historical patterns, influenza pandemics can be expected to occur, on average, three to four times each century when new virus subtypes emerge and are readily transmitted from person to person. However, the occurrence of influenza pandemics is unpredictable. In the last century, the great Spanish Flu pandemic of 1918–1919, which caused an estimated 40 to 50 million deaths worldwide, was followed by pandemics in 1957–1958 and 1968–1969.

In 1957-1958, an outbreak was reported in Hong Kong and within months had spread globally killing more than 2 million people.

In 1968-69, the pandemic was less severe but still accounted for around 1 million deaths worldwide, with many millions more suffering acute symptoms.

Experts agree that another influenza pandemic is inevitable and imminent.

Within the pages of this book, you'll find relevant information concerning the facts about Avian (Bird) flu and why it is considered a very real threat to humanity. But the principle reason for writing this book is to alert you, the reader, of the impending dangers, which we could all face right here in the United Kingdom.

Not only are we faced with the consequences of a deadly viral infection, for which there is no cure, we should also take into account the civil unrest, which will ultimately follow any significant outbreak.

Our government has a contingency plan, which will spring into operation at the first hint of a human infection of bird flu, but many questions concerning the possibilities of a breakdown in law and order need be addressed now.

During the 1960's and 70's many people in the UK lived with the daily threat of nuclear annihilation. The years of the cold war and Russia's hard line pro-

communist stance, presented an era of insecurity and uncertainty for the future of the people of the UK and the world as a whole.

In today's world, the unstable political and religious arenas, adorned with fundamentalist views and backed by terrorist atrocities, harbours an even greater threat to mankind. Political and economic instability has for many decades proven to bring civil unrest, violence and bloodshed to the countries whose leaders have lost all but control of the population.

Western intervention, as apparent in Iraq, appears to have the opposite effect to that intended, and to a larger degree inflames the situation further by adding another dimension to the worsening internal problems.

In our dismal efforts to crack and defeat worldwide terrorism, we rely on information gathered by intelligence agencies. Sometimes this information can be misleading or completely wrong. If the information is analysed and illustrates a threat, military action can quickly follow, which with counter measures, gives rise to the next generation of dissidents and bombers.

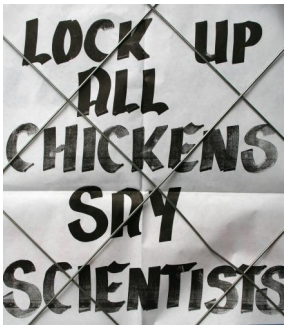
The world will never be a safe place while its inhabitants hold steadfast their ideals, political and religious beliefs to the exclusion of all rational deliberation. But the world now faces an unseen enemy. This foe does not distinguish between man, woman, child, politics, religion, creed or colour. And its mission is undeniably that of survival, whatever it takes and however many lives it destroys.

Our future battles will not be drawn out against our fellow man, rather with Mother Nature herself, who as we all know can unleash the most powerful forces known to man.

With the wealth of information contained within this book, you will at least be able to prepare yourself for any worst case scenario, the consequences of which we can only try to imagine.

The message is simply to be aware and to be ready.

Prepare and survive.



Chapter: 1. Avian (Bird) Flu – The Facts

In this first section of this book we will address the many questions you may have relating to H5N1 bird flu, in order to help you fully comprehend its devastating effectiveness.

What is bird flu (avian influenza)?

Bird flu is a viral infection caused by avian (bird) influenza (flu) viruses. These flu viruses occur naturally among all birds. Wild birds throughout the world carry the viruses in their intestines, but are not usually affected by them and very seldom develop any ill-effects. However, avian influenza is highly contagious amongst birds and when it strikes, domesticated fowl, including chickens, ducks, geese and turkeys are particularly vulnerable, due no less to them living in such close proximity.

Infection with avian influenza viruses in domestic poultry causes two specific types of disease that can be distinguished by low and high extremes of virulence. The 'low pathogenic' form can go undetected and usually causes only mild symptoms, such as ruffled feathers and a decrease in egg production. However, the 'high pathogenic' form can spread much more rapidly through flocks of poultry. This form causes disease that can affect multiple internal organs and has a very high mortality rate of up to 90-100%, often within just 48 hours.

How do avian influenza infections spread among birds?

Infected birds can spread the influenza virus through their saliva, nasal secretions and feaces. Birds that are susceptible can become infected with the virus when they come into contact with contaminated excretions in the soil or with other surfaces that are contaminated with excretions or secretions.

Domesticated birds can become infected with the avian influenza virus through direct contact with infected waterfowl or infected poultry or through contact with contaminated surfaces, such as dirt or cages, and water or feed that have been contaminated with the virus.

Can avian influenza viruses infect humans?

Although bird flu viruses do not usually infect humans, It is now believed that the major pandemic of 1918-1919 was indeed caused by a variant of the bird flu virus H1N1. More recently, more than 170 confirmed cases of human infection with the bird flu virus H5N1, a particularly agressve strain, have occurred since 1997, and as of March 2006, more than 100 have subsequently died.

The first documented infection of humans with an avian influenza virus occurred in Hong Kong in 1997, when the H5N1 strain caused severe respiratory disease in 18 humans, of whom 6 died. The infection of humans coincided with an epidemic of highly pathogenic avian influenza, caused by the same strain, H5N1 in Hong Kong's poultry population.

Extensive investigation of that particular outbreak determined that close contact with live infected poultry was the source of human infection. Studies at a genetic level further determined that the virus had spread directly from birds to humans. At the time a limited transmission to health care workers occurred, but did not cause any severe disease.

The rapid destruction of all infected birds followed within a few days of the findings. Eventually, Hong Kong's entire poultry population, estimated at around 1.5 million birds, were systematically culled in an effort to reduce further direct transmission to humans, and may have averted a pandemic.

That particular event alarmed public health authorities, as it marked the first time that an avian influenza virus had been transmitted directly to humans, which caused severe illness with a high mortality rate. Fears were raised again in February 2003, when an outbreak of H5N1 avian influenza in Hong Kong caused 2 human infections, resulting in 1 death among members of a family who had recently travelled to southern China.

Another child in the family died during that visit, and although bird flu was suspected, the actual cause of death was not confirmed.

Two other strains of avian influenza viruses have recently caused severe illness in humans. An outbreak of the highly pathogenic H7N7 strain of avian influenza, which began in the Netherlands in February 2003, caused the death of one veterinarian two months later, and a mild illness in 83 other humans.

Mild cases of avian influenza H9N2 in children also occurred in Hong Kong in 1999 (2 cases) and in mid-December 2003 (1 case). H9N2 is not generally highly pathogenic in birds.

A more recent cause for alarm ensued when laboratory tests confirmed the presence of H5N1 avian influenza virus in humans. These cases were reported in the northern part of Vietnam in January 2004. The victims displayed severe respiratory problems

Beginning in late June 2004, new outbreaks of lethal avian influenza A (H5N1) infection among poultry were reported by several countries in Asia including Cambodia, China, Indonesia, Malaysia, Thailand, and Vietnam.

From August to October 2004, sporadic human cases of avian influenza A (H5N1) were reported in Vietnam and Thailand. In early December 2004, a resurgence of outbreaks were reported in poultry and further human cases were again reported in Vietnam.

More recently, on February 2, 2005, the first of four separate human cases of H5N1 infection were reported from Cambodia. And on July 21, 2005, the first human cases of H5N1 were reported from Indonesia. Indonesia continued to report human cases from August 2005 into February 2006.

In October, November and December 2005, Thailand reported new human cases of H5N1, and Vietnam continued to report new human cases in November 2005. China reported the country's first confirmed human case in November 2005 and continued to report human cases in December 2005 and into 2006.

On January 5, 2006 Turkey reported the country's first confirmed human case and has continued to report human cases since. The first confirmed human infection with avian influenza A (H5N1) in Iraq was reported on February 2, 2006.

Since May 2005, new outbreaks of the H5N1 virus have been reported among poultry in China, Russia, Turkey, Kazakhstan, Romania and Ukraine. Also, during the same time period, China, Mongolia, Croatia and Romania have reported outbreaks of H5N1 in wild migratory birds.

Hong Kong reported the death of one wild bird In January 2006, and since February 1, 2006, the first cases of H5N1 or H5 infections in poultry or wild birds have been reported in many other countries including Iraq, Iran, Egypt, Jordan, Nigeria, Azerbaijan, Bulgaria, Greece, Italy, Slovenia, Austria, Bosnia and Herzegovina, India, Slovak Republic, Switzerland, Niger, Hungary, Serbia and Montenegro, Pakistan, Germany and France

Closer to home are reports from Germany, where it was confirmed that a domestic cat had died from an H5N1 infection and in France 2 confirmed cases of bird infection were recently reported.

Inevitably the UK will also experience an outbreak. It's just a question of when.

How do humans become infected with avian influenza viruses?

The majority of avian influenza infections in humans have resulted from direct or close contact with infected poultry such as domesticated chickens, ducks, turkeys and geese, or surfaces which have been contaminated with secretions and excretions from infected birds.

The spread of avian influenza viruses from an infected person to another healthy person is, for the time being, quite rare. At this point in time, transmission has not been observed to continue beyond one person. During an outbreak of avian influenza among poultry, there is a very serious health risk to people who have been in direct or close contact with infected birds or with surfaces that have been contaminated by infected birds.

What are the symptoms of avian influenza infection in humans?

The symptoms of avian influenza in humans can range from typical human influenza-like symptoms such as high temperature, cough, sore throat, and muscle aches, to more serious eye infections, pneumonia, severe respiratory diseases, and other severe and life-threatening complications. The symptoms of avian influenza can depend on which specific virus subtype and strain caused the initial infection.

How can an avian influenza infection be detected in humans?

A medical laboratory test is required to confirm avian influenza infection in humans and to distinguish the specific virus subtype.

What are the risks of avian influenza to human health?

There are two main risks for human health from avian influenza. The first is the risk of direct infection when the virus passes from an infected bird to humans, sometimes resulting in severe disease. And secondly, the risk that the virus, if given the opportunity, will mutate into a form that is highly infectious to humans and can be spread easily from one person to another.

Does the seasonal flu vaccine offer any protection from avian influenza?

The influenza vaccine for the 2005-06 season does not provide any protection against any form of avian influenza. There is no vaccine to protect humans against an avian influenza outbreak, and any vaccine that could be produced will only be sufficient to treat about 20% of the world's population.

The process used for creating vaccines is painstakingly slow and considered by some to be very outdated. The technology dates back to the 1950s and involves cultivating the virus in chicken's eggs. The vaccine manufacturing process can take up to six months with a further six months needed to distribute the vaccine to the general public.

Is there any risk of avian influenza infection by eating poultry?

Currently, there is no evidence which suggests that properly cooked poultry or

eggs could be a source of infection for avian influenza viruses. To find out more about avian influenza and food safety issues, visit the World Health Organisation's website. http://www.**who**.int

What precautions should be taken to reduce the risk of infection from wild birds?

As a safety measure, the public should observe wildlife, including wild birds, from a distance. This can protect from possible exposure to pathogens and minimises disturbance to the animals. Avoid touching any wild birds. If there is contact with wildlife do not rub eyes, eat, drink, or smoke before washing your hands thoroughly with soap and hot water. Do not touch dying or dead wildlife.

What are the risks to humans from the H5N1 outbreak?

Although the H5N1 virus does not usually infect humans, more than 170 human cases, some fatal, have been reported. Most of these cases have occurred due to direct or close contact with infected poultry or contaminated surfaces. In a few cases, person-to-person spread of the H5N1 virus have been observed.

The spread of the H5N1 virus from person to person has been quite rare, and so far has not continued beyond one person. However, all influenza viruses have the ability to quickly mutate, and scientists are concerned that the H5N1 virus will one day be able to infect humans and spread easily from one person to another. And because these avian influenza viruses do not usually infect humans, there is little or no natural immune protection against them within the human population.

If the H5N1 virus were to gain the capacity to spread easily from person to person, an influenza pandemic (worldwide outbreak) could begin. No one can predict when a pandemic might occur. However, experts from around the world are watching the H5N1 situation in Asia and Europe very closely and are preparing for the possibility that the virus may begin to spread more easily from person to person.

How does the H5N1 virus differ from the seasonal flu viruses that infect humans?

Although a few avian influenza viruses have crossed the species barrier to infect mammals and humans, the H5N1 virus has recently caused the largest number of reported cases of severe disease and fatalaties. In the current situation in Asia, more than half of the people infected with the virus have subsequently died. Most cases have occurred in previously healthy children and young adults. However, it is possible that the only cases currently being reported are those in

the most severely ill people and that the full range of illness caused by the H5N1 virus has not yet been fully established.

Unlike common flu, in which an infection can cause mild respiratory symptoms in most people, an H5N1 infection can follow an unusually aggressive clinical course, with rapid deterioration and a high fatality rate. Primary viral pneumonia and multi-organ failure have been common among people who have become infected with the H5N1 influenza.

Why is the H5N1 strain of particular concern?

Of the 15 avian influenza virus subtypes, H5N1 is of particular concern for several reasons. H5N1 mutates rapidly and has a documented tendency to acquire genes from viruses infecting other animal species. Its ability to cause severe disease in humans is now evident and has been documented on at least two occasions.

In addition, laboratory studies have demonstrated that isolates from this virus have a high pathogenicity and can cause severe disease in humans. It is known that birds that survive infection will continue to excrete the virus for at least 10 days, orally and in faeces, facilitating further spread at live poultry markets and by migratory birds.

H5N1 variants demonstrated a capacity to directly infect humans in 1997, and have done so again in Vietnam in January 2004. The epidemic of highly pathogenic avian influenza caused by H5N1, which began in mid-December 2003 in the Republic of Korea and is now being seen in other Asian countries, is therefore of particular public health concern.

The spread of infection in birds increases the opportunities for direct infection of humans. If more humans become infected over time, the likelihood also increases that humans, if concurrently infected with the common human form and avian influenza strains, could serve as a host for the emergence of a new subtype, with sufficient human genes to be easily transmitted from person to person. Such an event would mark the beginning of an influenza pandemic.

How is infection with H5N1 virus in humans treated?

Most H5N1 viruses that have caused human illness and death appear to be resistant to amantadine and rimantadine, the two antiviral medications commonly used for the treatment of patients with influenza. Two other antiviral medications, oseltamivir (Tamiflu) and zanamavir (Relenza), might work to treat influenza caused by the H5N1 virus, but additional studies and tests are needed to demonstrate their current and ongoing effectiveness.

Some governments around the world are stockpiling Tamiflu and Relenza in the hope that these 2 antiviral treatments will stem the spread of a major outbreak. Currently, the UK has enough to treat about 40% of the population.

Is there a vaccine to protect humans from H5N1 virus infection?

Currently, there is no commercially available vaccine to protect humans against the H5N1 virus that is being reported in Asia and Europe. However, vaccine development efforts are hurriedly taking place. Research studies to test a vaccine that will protect humans against the H5N1 virus began in April 2005, and a series of clinical trials is still under way.

The problems facing all manufacturers is the inability to produce an effective vaccine until the virus has actually infected a human.

Is there a risk in handling other poultry products that come from countries experiencing outbreaks of avian influenza?

Scientists have determined that there is a risk to handling feather products from countries experiencing outbreaks of H5N1 influenza.

There is currently a ban on the importation of birds and bird products from H5N1 affected countries in Asia and Europe. The regulation states that no person may import or attempt to import any birds whether dead or alive, or any products derived from birds, including feathers and hatching eggs, from the following countries:

Cambodia, Indonesia, Japan, Laos, Kazakhstan, Malaysia, People's Republic of China, Romania, Russia, South Korea, Thailand, Turkey, Ukraine, and Vietnam.

Can a person become infected with the avian influenza virus by cleaning a bird feeder?

The risk of becoming infected with the H5N1 virus from bird feeders is considered very low.

Perching birds are generally the predominate type of birds at feeders. And while there are documented cases of H5N1 causing death in some perching birds, in both free-ranging and experimental settings, most of the wild birds that are traditionally associated with avian influenza viruses are waterfowl and shore birds.

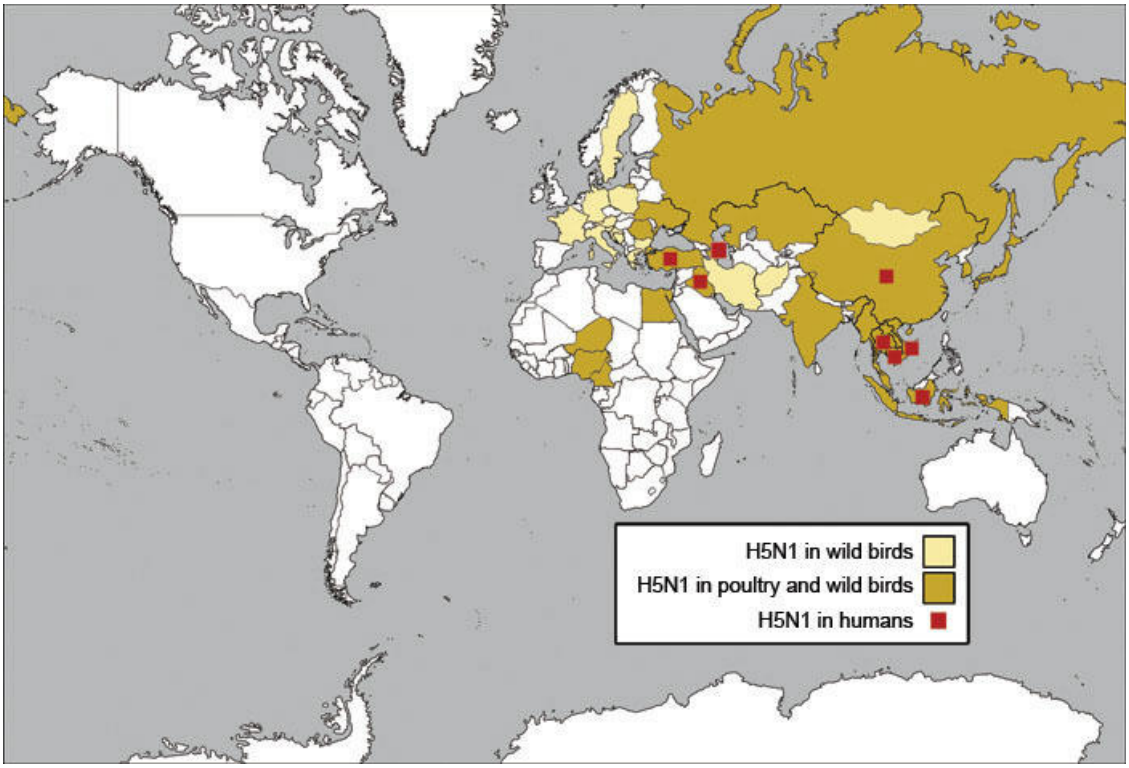
Chapter: 2. The Medical World Prepares For An Influenza Pandemic

What countries have already reported confirmed outbreaks of bird flu?

Countries currently known to have had confirmed cases of H5N1 in birds are:

Albania
Austria (Graz Umgebung, eastern Austria)
Azerbaijan
Bosnia & Herzegovina
Bulgaria
Cambodia
Cameroon
China (including Tibet and Hong Kong)
Croatia (Zdenci municipality only)
Egypt
France (Ain, nr Lyon, eastern France)
Germany (Ruegen Island)
Greece (Pieria and Thessaloniki areas and Skyros Island, northern Greece)
Hungary (Bacs-Kiskun region, southern Hungary)
India
Indonesia
Iran
Iraq (North east corner close to the border with Iran and Turkey)
Italy (Sicily, Calabria and Puglia, southern Italy)
Japan
Jordan
Kazakhstan
Laos
Malaysia (peninsular)
Mongolia
Myanmar (formerly known as Burma)
Niger
Nigeria
Poland (Torunski, central)
Romania
Russia (Novosibirsk region only)
Slovak Republic (Dunajska Streda , near Bratislava, south west Slovak Republic)
Slovenia (Maribor, nr Austrian border)
Switzerland (German border)
Turkey
Thailand
Ukraine
Vietnam

The map below indicates confirmed cases of H5N1 in wild birds, poultry and wild birds and human infections as of 24 March 2006.



Source: PandemicFlu.gov

How much has bird flu cost the world's farming community so far?

The outbreak of bird flu has already cost 300 million farmers more than $10 billion in its spread through poultry around the world.

France's poultry industry, the biggest in Europe, is now losing 40 million euros ($48 million) a month as bird flu hits sales at home and abroad.

Germany's poultry sector has lost more than 140 million euros since last autumn because of bird flu, with demand down around 20% from previous levels. Germany identified more than 140 cases of wild birds with H5N1, as well as a domestic cat.

Hungarian poultry producers have also reported sales down by up to 20% since H5N1 was first found there in dead swans on February 21.

In Greece, where poultry sales are down by up to 80% since the first case was reported in February, announced recently three more H5N1 confirmed cases in swans, bringing the total infected birds there to 22.

The largest losses to poultry farmers has been experienced in Asia, where poultry stocks in Vietnam and Thailand have already fallen by 25% as a result of the disease and control measures such as culling.

The World Bank has issued a report warning that a bird flu pandemic could cost the Asian economy up to $283 billion and lead the region into recession, which will directly have an adverse affect on other country's economies.

The World Bank has also forecast that the financial cost to the world's economy during the first year of any pandemic could reach $800 billion

What changes are required for the H5N1 avian influenza virus to cause a pandemic?

For a pandemic to start, three conditions must be met: 1. A new influenza virus subtype must emerge: 2. It must infect humans and cause serious illness: and 3. It must spread easily and sustainedly (continue without interruption) among the human population.

The H5N1 virus in Asia and Europe has already met the first two conditions. It is a new virus for humans, as H5N1 viruses have never before circulated widely among people, and it has infected more than 170 people, killing over 100 of them. However, the third condition, the establishment of efficient and sustained human-to-human transmission of the virus, has not yet occurred. For this to take place, the H5N1 virus would need to improve its transmissibility among humans. This could occur either by 'reassortment' or adaptive mutation.

Reassortment can occur when genetic material is exchanged between human and avian viruses during co-infection (infection with both viruses at the same time) of a human or pig. The result could be a fully transmissible pandemic virus, which can be spread easily and directly to humans. A more gradual process is that of adaptive mutation, where the capability of a virus to bind to human cells increases during infections of humans.

Chapter: 3. Assessing The Current Situation

The current H5N1 epizootic (animal outbreak) in Asia, Africa and parts of Europe is not expected to diminish significantly in the short term. It is thought that H5N1 infection among birds has become endemic in certain areas, and that human infections resulting from direct contact with infected poultry will continue to occur. So far, the spread of H5N1 virus from person-to-person has been rare and has not

continued beyond one person. There is no evidence for genetic reassortment between human and avian influenza A virus genes, however, the epizootic in Asia continues to pose a very important and very worrying public health threat.

There is no pre-existing natural immunity to H5N1 infection in the human population. If these H5N1 viruses gain the ability for efficient and sustained transmission among humans, an influenza pandemic could result, with potentially high rates of illness and death. In addition, genetic sequencing of influenza A (H5N1) viruses from human cases in Vietnam and Thailand shows resistance to the antiviral medications amantadine and rimantadine, which are two of the medications widely used for the treatment of common influenza.

This would leave only two remaining antiviral medications, Tamiflu (oseltamivir) and Relenza (zanamivir), which should still be effective against currently circulating strains of the H5N1 virus. Efforts to produce vaccine candidates that would be effective against avian influenza A (H5N1) viruses are under way. However, it is likely to be many months before such vaccines could be mass produced and just as long to be made widely available.

Research indicates that currently circulating strains of the H5N1 viruses are becoming more capable of causing disease in mammals than were earlier H5N1 viruses. One study has found that ducks infected with the H5N1 virus are now shedding more virus for longer periods without showing symptoms of illness.

These findings could have implications for the role of ducks in transmitting disease to other birds and possibly to humans also. Additionally, other findings have documented H5N1 infection among pigs in China and H5N1 infection in felines. A domestic cat in Germany was recently confirmed as a victim of the H5N1 virus, which has also been found in tigers and leopards in Thailand.

Epidemiologic investigations of human H5N1 cases in Vietnam during 2005 have suggested transmission of the H5N1 viruses to at least two persons through the consumption of uncooked duck blood. One possible instance of limited person-to-person transmission of H5N1 virus in Thailand has been reported. This possibility is being further investigated in other clusters of cases in Vietnam and Indonesia.

In almost all known human H5N1 cases, each have begun with respiratory symptoms. However, one atypical fatal case of encephalitis in a child in southern Vietnam in 2004 was identified retrospectively as H5N1 influenza through testing of cerebrospinal fluid, feacal matter, and throat and serum samples.

The first symptoms of an infection in humans are fever, cough, sore throat, muscle aches and conjunctivitis. Cases of bird flu are more likely to cause breathing problems and pneumonia, which can be fatal.

Can influenza pandemics be predicted and averted?

Based on historical evidence, influenza pandemics can be expected to occur, on average, three to four times each century when new virus subtypes emerge and are readily transmitted from person to person.

However, the occurrence of influenza pandemics is unpredictable. In the 20th century, the great influenza pandemic of 1918–1919 (Spanish Flu), which caused an estimated 40 to 50 million deaths worldwide, was followed by pandemics in 1957–1958 and 1968–1969.

Scientists in the medical profession agree that another influenza pandemic is inevitable and possibly imminent.

World influenza experts also agree that the prompt culling of Hong Kong's entire poultry population in 1997 most likely averted a pandemic.

Various measures can be taken to help minimise the global public health risks that could arise from large outbreaks of highly pathogenic H5N1 avian influenza in birds. The immediate priority is to halt further spread of epidemics in poultry populations. This strategy works to reduce opportunities for human exposure to the virus.

Vaccination of persons at high risk of exposure to infected poultry, using existing vaccines (Tamiflu) effective against currently circulating human influenza strains, can reduce the likelihood of co-infection of humans with avian and influenza strains, and therefore reduce the risk that genes will be exchanged.

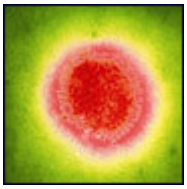
The workforce involved in the culling of poultry flocks must be protected, by appropriate clothing and equipment, against any possibility of infection. These workers should also receive antiviral drugs as a precautionary measure.

When cases of avian influenza in humans occur, information on the extent of influenza infection in animals as well as humans and on circulating influenza viruses is urgently needed to aid the assessment of risks to public health and to guide with the best protective measures.

Scrupulous investigation of each case is also essential. The WHO and the members of its global influenza network, together with other international agencies, can assist with many of these activities. The successful containment of

public health risks also depends on the epidemiological and laboratory capacity of affected countries and the adequacy of surveillance systems already in place. While all these activities can reduce the likelihood that a pandemic strain will emerge, the question of whether another influenza pandemic can be averted cannot be answered with any absolute certainty.

Published information about the clinical course of human infection with H5N1 avian influenza is limited to studies of cases in the 1997 Hong Kong outbreak. In that particular case, patients developed symptoms of fever, sore throat, cough and, in several of the fatal cases, severe respiratory distress secondary to viral pneumonia. Previously healthy adults and children, and some with chronic medical conditions, were affected.



Specific tests for diagnosing all influenza strains found in animals and humans are very reliable. Many laboratories in the WHO global influenza network have the necessary high-security facilities and reagents for performing these tests as well as considerable experience.

Field tests for the diagnosis of human influenza are also available, but do not have the precision of the more extensive laboratory testing that is currently needed to fully understand the most recent cases and determine whether human infection is spreading, either directly from birds or from person to person.

Tamiflu and other antiviral drugs, some of which can be used for both treatment and prevention, are clinically effective against influenza A virus strains in otherwise healthy adults and children, but have some limitations. Some of these drugs are also very expensive and supplies are limited.

Knowledge and experience in the production of influenza vaccines is also significant, particularly as vaccine composition changes each year to match changes in circulating viruses due to antigenic drift. However, at least four months would be needed to produce a new vaccine, in considerable quantities, capable of offering protection against any new virus subtype.

Was the domestic cat in Germany, the first European Union mammal known to die from the deadly H5N1 strain of bird flu?

The domestic cat was found dead on the Baltic island of Ruegen, where dozens of birds infected with H5N1 have been found. Further north, Sweden has detected ‘aggressive’ bird flu in two wild ducks and has tested to confirm H5N1.

Recently, vets from 50 countries met in Paris to discuss ways to combat the worldwide spread of the virus.

The H5N1 infection in the German cat was confirmed by officials at the national laboratory, the Friedrich Loeffler Institute, but tests are continuing to determine if it is the exact strain that has been found in birds.

Another recently confirmed case of the virus being passed on to mammals occurred in a stray dog in Azerbaijan.

Have any cases been confirmed in the UK?

The virus has already been discovered in a parrot in the UK which caught the disease inside a quarantine compound based in Essex. At the time of writing, no outbreaks have been confirmed in the UK in poultry. However a suspected outbreak in the Orkneys is being investigated.

What are the risks to human health during a H5N1 outbreak?

Of the few avian influenza viruses that have crossed the species barrier to infect humans, H5N1 has caused the largest number of detected cases of severe disease and death in humans. In the current outbreaks in Asia and Europe more than half of those infected with the virus have subsequently died.

It is of particular concern that most cases have occurred in previously healthy children and young adults. And it is possible that the only cases currently being reported are those in the most severely ill people, and that the full range of illness caused by the H5N1 virus has not yet been established.

For the most current information about avian influenza and cumulative case numbers, see the World Health Organization (WHO) avian influenza website.

To date, the spread of H5N1 virus from person to person has been limited and has not continued beyond one person. Nonetheless, because all influenza viruses have the ability to change and mutate, scientists are concerned that the H5N1 virus could one day be able to infect humans and spread easily from one person to another.

These viruses do not commonly infect humans, so there is little or no natural immune protection against them in the human population. If the H5N1 virus were to gain the capacity to spread easily from human to human, an influenza pandemic could begin.

No one can predict when a pandemic might occur. However, experts from around the world are united in watching the H5N1 situation in Asia and Europe very closely, and are preparing for the possibility that the virus may begin to spread more easily and widely from person to person.

Chapter: 4. Other forms Of Bird Flu Viruses

There are numerous other H type bird flu viruses. All avian influenza (AI) viruses are of a type A influenza virus in the virus family of Orthomyxoviridae and all known strains of influenza A virus infect birds.

Influenza virus type A is further subdivided into subtypes based on hemagglutinin (H) and neuraminidase (N) protein spikes from the central virus core. There are 16 H types, each with up to 9 N subtypes, yielding a potential for 144 different H and N combinations.

In addition, avian influenza viruses may fall into one of 2 pathotypes: low (LPAI) and high (HPAI) pathogenicity, based on their virulence in poultry populations. Avian influenza virus H5 and H7 strains are found in both low pathogenic and high pathogenic forms. The influenza H9 virus has been identified only in a low pathogenic form.

It is feared that if a strain of avian influenza virus, to which humans have not been previously exposed, undergoes antigenic shift to the point where it can cross the species barrier from birds to humans, the new subtype created could be both highly contagious and highly lethal in humans. If a human infected with the common influenza virus also acquires H5N1, a mutant strain of bird flu that can be transmitted from human to human could develop.

Such a subtype could cause a global pandemic similar to the Spanish flu that killed up to 50 million peopleduring 1918 -1919.

H1N1

A variant of H1N1 was responsible for the Spanish flu pandemic that killed some 50 million people worldwide over the course of a year in 1918 and 1919. A different variant is known to exist in pig populations. Controversy arose in October, 2005, after the H1N1 genome was published in the journal, *Science*. Many fear that this information could be used for bioterrorism.

When he compared the 1918 virus with today's human flu viruses, Dr Taubenberger, a US military pathologist, noticed that it had alterations in just 25 to 30 of the virus's 4,400 amino acids. Those few changes turned a bird virus into a killer that could easily spread from person to person.

H2N2

The Asian Flu was a pandemic outbreak of H2N2 avian influenza that originated in China in 1957, spread worldwide that same year during which a flu vaccine was developed. It lasted until 1958 and caused between one and four million deaths.

H3N2

H3N2 evolved from H2N2 by antigenic shift and caused the Hong Kong Flu pandemic of 1968 and 1969 that killed up to a million people. An early-onset, severe form of influenza A (H3N2) made headlines when it claimed the lives of several children in the United States in late 2003.

The dominant strain of annual flu in January 2006 is H3N2. Measured resistance to the standard antiviral drugs amantadine and rimantadine in H3N2 has increased from 1% in 1994 to 12% in 2003 to 91% in 2005.

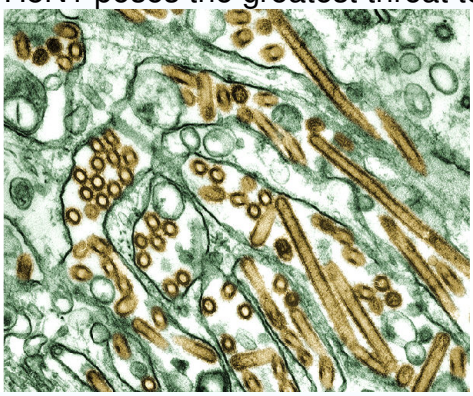
Contemporary human H3N2 influenza viruses are now endemic in pigs in southern China and can reassort with avian H5N1 viruses in this intermediate host. Since 1998, H3N2 viruses have caused epizootics of respiratory disease in pigs throughout the major production regions of the U.S. These outbreaks are significant because swine influenza in North America had previously been caused almost exclusively by H1N1 viruses.

Two anti-genetically distinct reassortment viruses (H3N2) were isolated from infected animals and the findings were: a double-reassortment virus containing genes similar to those of human and swine viruses, and a triple-reassortment virus containing genes similar to those of human, swine, and avian influenza viruses

H5N1

H5N1 is a highly pathogenic form of avian influenza virus. Since 1997, outbreaks of H5N1 flu have caused the death or culling of tens of millions of birds. Over 170 people have been infected by H5N1, with a mortality rate of over 50%. H5N1 has been the focus of much concern amid warnings that the H5N1 strain will likely evolve into a form that causes a global human pandemic with a very high mortality rate.

Scientists and medical experts are continually monitoring worldwide outbreaks of H5N1, and laboratory testing is under way. Of all the strains of avian flu known, H5N1 poses the greatest threat to human health.



The H5N1 virus (Photo Credit: C. Goldsmith)

H7N7

H7N7 has unusual zoonotic potential. In 2003 in the Netherlands, 89 people were confirmed to have H7N7 influenza virus infection following an outbreak in poultry on several farms. One human death was recorded.

H1N2

H1N2 is currently endemic in both human and pig populations. The new A(H1N2) strain appears to have resulted from the reassortment of the genes of the currently circulating influenza A(H1N1) and A(H3N2) subtypes. The hemagglutinin protein of the A(H1N2) virus is similar to that of the currently circulating A(H1N1) viruses and the neuraminidase protein is similar to that of the current A(H3N2) viruses.

H9N2

Low pathogenic avian influenza A (H9N2) infection was confirmed in 1999, in China and Hong Kong in two children, and in 2003 in Hong Kong in one child. All three fully recovered.

H7N2

One person in New York in 2003 and one person in Virginia in 2002 were found to have serologic evidence of infection with H7N2. Both fully recovered.

H7N3

In North America, the presence of the avian influenza strain H7N3 was confirmed at several poultry farms in British Columbia in February 2004. As of April 2004, 18 farms had been quarantined to halt the spread of the virus. Two cases of

humans with avian influenza infection were confirmed in that region. Symptoms included conjunctivitis and mild influenza-like illness. Both fully recovered.

H10N7

In 2004 in Egypt H10N7 was reported for the first time in humans. It caused illness in two infants in Egypt. One child's father was a poultry merchant.

Chapter: 5. Strategies To Slow Down A Pandemic

Vaccines

It's unlikely that a vaccine would be available in the initial stages of a population infection. Once a potential virus is identified, it normally takes at least several months before a vaccine becomes widely available, as it must be developed, tested and finally authorised. The capability to produce vaccines varies widely from country to country. In fact, only 15 countries are listed as 'Influenza vaccine manufacturers' according to the World Health Organisation.

In the US, cutbacks in pharmaceutical production has seen manufacturing companies reduced from 26 to just 4. It is estimated that in a best case scenario situation, 750 million doses could be produced worldwide each year. However, it is likely that each individual would need two doses of the vaccine in order to become inmuno-competent.

Also, it's been suggested that the US government is not taking the flu threat seriously with less than 4.5 million doses of Tamiflu in stock compared to the UK's 14.6 million.

Several countries, have well-developed plans for producing large quantities of vaccine. For example, Canadian health authorities say that they are developing the capacity to produce 32 million doses within four months, enough vaccine to inoculate every person in the country.

Anti-viral medications

Many nations, as well as the World Health Organisation, are working to stockpile anti-viral drugs in preparation for a possible pandemic. Oseltamivir (trade name Tamiflu) is the most commonly sought drug, since it is available in pill form. Zanamivir (trade name Relenza) is also considered for use, but it must be inhaled. Other anti-viral drugs are less likely to be effective against pandemic influenza.

Both Tamiflu and Relenza are in short supply, and production capabilities are limited in the medium term. Some doctors say that co-administration of Tamiflu combined with probenecid could double supplies.

There is also the potential for viruses to quickly evolve drug resistance. Some H5N1-infected people treated with oseltamivir may develop resistant strains of that virus.

Containment

Travel

By travelling less, working from home and closing schools there is less opportunity for the virus to spread among the human population.

Respiratory etiquette

Placing a hand over the mouth when coughing or sneezing can somewhat limit the dispersal of infected droplets. However, It has been suggested recently that covering the mouth and nose with a hand is not very effective in stopping the spread of germs as these germs are retained in the hand, and are then deposited on door handles and on to others through handshakes and other physical contact. Current thoughts would suggest coughing or sneezing into a handkerchief or the crook of the arm would be preferable to limit germ spread.

Masks

No mask can provide a perfect barrier but products that meet or exceed the NIOSH N95 standard recommended by the World Health Organisation are thought to provide good protection. WHO recommends that health-care workers wear N95 masks and that patients wear surgical masks, which may prevent respiratory secretions from becoming airborne. Any mask may be useful to remind the wearer not to touch their face. The mask itself can become contaminated and must be handled as medical waste when removed.

Gloves

Surgical gloves can reduce infection due to contact with contaminated surfaces, especially in crowded public places where coughing or sneezing people have no way of washing their hands.

Studies have shown that disposable nitrile gloves hold up much better in use than vinyl gloves which may fracture and allow viruses to penetrate them. Nitrile has also been shown to be slightly superior to Natural Rubber Latex gloves in similar studies. These studies were carried out in clinical settings, but the same information would apply anywhere there is potential for exposure to pathogens. The gloves can also become contaminated and should be handled as medical waste when removed. As soon as gloves are removed, it's recommended to use a 70% alcohol rub on hands after washing with soap and water.

Hygiene

Most influenza viruses can be eliminated by simple soap and detergents. Frequent handwashing, especially when there has been contact with other people or with potentially contaminated surfaces can be very helpful. Alcohol-based hand sanitizers also kill both bacteria and viruses.

Precautions for individuals in a pandemic

In the case of a flu pandemic, to avoid the risk of contracting H5N1, or indeed, any other strain of the flu virus, people may have to take certain precautions, and make changes to their routine, to minimise the risk of infection. They may also have to prepare for the possibility of their lives being disrupted in a significant way, even if they do not actually become ill themselves.

Social disruption

A flu pandemic could cause major disruption to everyday life, with footpaths and the countryside being partially or even totally off-limits. There may even be restrictions on public gatherings, such as meetings, parties, services at places of worship, and bans on individuals travelling to certain locations.

However, there are a number of things people could do to prepare themselves. Plan for the possibility that usual services may be disrupted. These could include services provided by hospitals and other health care facilities. Also banks, stores, restaurants, government offices, and post offices could be affected. Think of a back-up plan. What would you do, for example, if you could not buy food from the supermarket, because it was closed?

In the long term, think about the possibility of having to grow your own food, and if it's possible, stock up on essentials.

Consider how to care for people with special needs or with severe illnesses or disabilities in case the services they rely on are not available. Is it possible to obtain prescriptions for medicines in advance? Could medicines be delivered to the house?

Now would be a good time to find out about your local health services and whether they have developed contingency plans, should the worst happen.

Work

Find out if you can work from home. Most 'office' type jobs can be carried out on a home PC. Ask your employer about how business will continue during a pandemic. Plan for the possible reduction or loss of income if you are unable to work or your place of employment is closed. Check with your employer or union about sick leave policies. Also check with insurance companies about sickness cover and life insurance policies.

Education

You could help your child's school plan for pandemic influenza. Talk to the school's head teacher, nurse or the health centre. Discuss the plan with teachers, administrators, and parent-teacher associations, and help them put together a strategy if they have not already done so.

Prepare for the idea that you might have to teach your children at home. Start collecting textbooks, audiotapes and writing equipment, and prepare some work exercises for the children to do so that their education doesn't suffer. Also plan recreational activities that your children can do at home, so that they do not begin to suffer from boredom. Be prepared for the possibility of your child's school being closed for a prolonged period of time, meaning that your child, and probably you, will be stuck at home.

Transport

You may have to think about relying less on public transport during a pandemic. For example, store or grow food and other essential supplies so you can make fewer trips to the supermarket or your local store. Stock up on petrol so that you don't have to rely on the bus or train.

Consider other ways to get around should public transport not be available and your car has run out of petrol. A bicycle or motorcycle could come in very useful. Prepare plans for taking care of loved ones who are far away. Make sure you keep in touch with friends and family on a regular basis.

Food storage

Stock up on water and food. During a pandemic you may not be able to get to a supermarket. Even if you can get to a local store, it may be out of supplies or it may not be safe to enter it. Public waterworks services may also be interrupted. Stocking up on supplies can be useful in other types of emergencies too. Store foods that are non-perishable (will keep for a long time) and don't require refrigeration such as tinned fruit, soups and condensed milk.

Ensure there are ample supplies of bottled drinking water for all the family.

Personal health and hygiene

Some things you could do now to help alleviate the risk of infection:

Get a flu jab to help protect yourself from seasonal flu.

Get a pneumonia shot to prevent secondary infection if you are over the age of 65 or have a chronic illness such as diabetes or asthma.

Make sure that your family's immunisations are up to date.

Take common-sense steps to limit the spread of germs. Make good hygiene a habit.

Wash hands frequently. Touching your face with contaminated hands can infect you with any human-adapted flu viruses.

Cover your mouth and nose with a tissue when you cough or sneeze. Put used tissues in a waste basket. Do not use cloth or other reuseable methods.

Clean your hands after coughing or sneezing. Use soap and water or an alcohol-based hand cleaner.

Stay at home if you are sick.

Eat a balanced diet. Be sure to eat a variety of foods, including plenty of vegetables, fruits, and whole grain products. Also include low-fat dairy products, lean meats, poultry, fish, and beans.

Drink lots of water and go easy on salt, sugar, alcohol, and saturated fat.

Exercise on a regular basis and get plenty of rest.

Being informed during a pandemic

Knowing the facts is the best preparation. Identify sources you can count on for reliable information such as the Internet. If a pandemic occurs, having accurate

and reliable information will be critical. Listen to local and national radio, watch news reports on television and read the newspapers. Talk to your local health care providers and public health officials.

Some useful contact details for residents of the UK

Talk to NHS Direct on 0845 4647

Department of Health information page

The Defra helpline for reporting dead/sick birds is 08459 33 55 77

The Department of Agriculture and Food has a bird flu helpline at 01-6072512
http://www.agriculture.gov.ie/index.jsp?file=animal_health/avian_influenza/wildbirdadvice.xml

The 6 Phase Pandemic Period

Below is a list of the 6 phases of a period of pandemic as recognised by the World Health Organisation.

Phase 1: Interpandemic period. Low risk No new influenza virus subtypes dangerous to humans detected in humans or animals.

Phase 2: New virus A new circulating animal influenza virus subtype poses a substantial risk of human disease but no new influenza virus subtypes have been detected in humans.

Phase 3: Pandemic alert period. Self limiting Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact. Even without human intervention it would be self limiting among humans.

Phase 4: Person to person: Small cluster(s) with limited human-to-human transmission but spread is highly localised, suggesting that the virus is not well adapted to humans. An epidemic is possible but has not yet occurred.

Phase 5: Epidemic: Larger cluster(s) but human-to-human spread still localised, suggesting that the virus is becoming increasingly well adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).

Phase 6: Pandemic period: increased and sustained transmission in general population.

The distinction between phase 1 and phase 2 is based on the risk of human infection or disease resulting from circulating strains in animals. The distinction is

based on various factors and their relative importance according to current scientific knowledge. Factors may include pathogenicity in animals and humans, occurrence in domesticated animals and livestock or only in wildlife, whether the virus is enzootic or epizootic, geographically localised or widespread, and/or other scientific parameters.

The distinction between phase 3, phase 4 and phase 5 is based on an assessment of the risk of a pandemic. Various factors and their relative importance according to current scientific knowledge may be considered. Factors may include rate of transmission, geographical location and spread, severity of illness, presence of genes from human strains (if derived from an animal strain), and/or other scientific parameters.

The pandemic stage 6 may be marked by two or more waves. For example, the initial wave of the Spanish Influenza pandemic in the spring of 1918 was so mild in its effects that it received the dismissive nickname of the '3 day flu'. But when the second wave hit North America a few months later in the summer of 1918, it was lethal.

Apparently in the interim the novel H1N1 pandemic strain had added the gene or genes that made the final wave a killer. Perhaps the effects of the lethal second wave would have been even more devastating if the innocuous first wave had not already passed through the population, leaving in its wake at least some immune response to the surface antigens presented by the H1N1 in both waves.

CIDRAP (Center for Infectious Disease Research and Policy), which has its roots in the U.S. HHS National Vaccine Program Office, provides a thorough overview of Pandemic Influenza. CIDRAP's overview originally set forth a model listing five numbered stages for the pandemic itself, preceded by four additional pre-pandemic stages, each numbered as zero, that overlapped the WHO's first five stages of a pandemic. CIDRAP's overview has since adopted the WHO's 6-stage model.

Preparations for a potential influenza pandemic

Ongoing detailed mutually coordinated onsite surveillance and analysis of human and animal H5N1 avian flu outbreaks are being conducted and reported by the USGS National Wildlife Health Center, the Centers for Disease Control and Prevention, the World Health Organization, the European Commission and the National Influenza Centers. Visit their websites to find more up-to-the-minute information.

United Nations

In September 2005, David Nabarro, a leading UN health official warned that a bird flu outbreak could happen anytime and had the potential to kill 5-150 million people worldwide.

Chapter: 6. What Does All This Information Amount To?

Summary

Below is a summary of what we've learned so far about Avian (bird) flu and the H5N1 virus.

(Photo) Patients fill an emergency hospital in Camp Funston, Kansas, believed to be the site of the first wave of the 1918 'Spanish flu' epidemic. The virus eventually killed tens of millions of people.

Photograph courtesy National Museum of Health and Medicine, Armed Forces Institute of Pathology, Washington, D.C.

The last major flu pandemic occurred during 1918 -1919. At the time it was thought that this deadly infection was caused by Purulent Bronchitis, a condition known to have been responsible for the deaths of many active servicemen from 1916 during World War 1.

The Pandemic of 1918-1919, which was responsible for the deaths of around 50 million people worldwide, was known in the UK as Spanish Flu. Unlike common flu, which adversely affects mainly the elderly and very young, those most at risk appeared to be apparently healthy people aged between 25 and 35.

It is now believed that this killer flu was a type of bird flu, which attacks the human body's immune system, destroys the delicate tissues deep within the lungs finally causing the victims to drown in their own fluid and blood.

Between 1918 and 1919, 150,000 people perished in the UK as a direct result of the influenza pandemic.

The strain known as H5N1 has been known since 1997, when it was detected in poultry in Hong Kong. Over 1.5 million birds were destroyed. In 2004 it resurfaced all over Asia.

Outbreaks have now been confirmed in many other countries including Germany and France.

Avian flu spreads rapidly among bird populations because it is highly infectious and can be transmitted by saliva or by coming into direct contact with

contaminated birds. It can be easily spread among birds, and from birds to other animals through ingestion or inhalation.

In the UK, one case has already been confirmed in a parrot, which caught the disease inside a quarantine compound based in Essex.

The H5N1 virus only needs to mutate once in order to be passed from person to person.

There's a strong possibility that the H5N1 virus could, if mixed with the human type, cause a hybrid strain that would cause an unprecedented number of fatalities worldwide.

Health experts say that a human transferable form of the H5N1 virus could kill between 100,000 and 150,000 people in the UK within just 2 months. And if left uncontrolled could wipe out half the world's population.

The incubation period is known to be about 3-5 days. Anyone infected with a human form of H5N1 could pass the virus to others during this time without realising they have the infection.

Anyone infected with a human strain of H5N1 could spread the virus by sneezing, coughing or by bodily contact such as a handshake.

There are no vaccines available to treat a human form of H5N1, and it would take many months to create an effective cure, which could only be made available to a selection of the general public.

The current H5N1 bird flu virus could mutate at any time and may already have.

No one is immune from bird flu. One of the most deadly viruses known to man.

Why is the UK at such high risk?

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. However, there have been a number of confirmed cases of infection in ducks, geese and swans.

Britain plays host to millions of migratory birds each year, any one of which could be carrying the potentially fatal H5N1 strain.

The UK is rated as no.9 of the top 25 countries most at risk from a pandemic. But the real problem doesn't lie with the 'at risk' factor. The potential rate at which the disease might spread is much more of a concern.

There are many factors which make the UK the world's no.1 country for spreading any human form of the disease. Foreign tourism, travel and densely populated cities and urban areas all add up to the UK being a ticking time bomb.

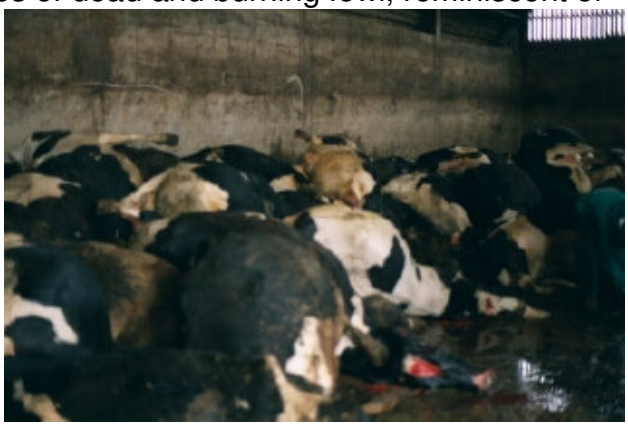
It's impossible to screen every single visitor to our shores for a possible Avian flu infection, and with more than 30 million visitors annually, the likelihood of one infected person arriving in the UK is extremely high.

If you consider also, the number of UK citizens travelling abroad each year, which totalled more than 66 million in 2005, the possibility of someone bringing in an infection becomes a realistic probability.

When you take into account all the available information relating to bird migration and human travel to and from the UK, the probability of bird flu reaching us is assured. The only question is when?

The first confirmed case of bird flu in the UK, prior to any outbreak, could be that of a single duck, goose or swan that has flown in from any country in Europe, bringing with it the fear that many more could follow. And with many bird sanctuaries situated around the country, it wouldn't take long for an infection to spread unchecked throughout the wild bird population.

Britain's poultry farmers are on alert, but just one confirmed death from bird flu among any flock of chickens or turkeys in this country, will justify the whole flock being mercilessly slaughtered. Pictures of dead and burning fowl, reminiscent of the mad cow disease fiasco some ten years ago, will be beamed into every home and become the subject of every newspaper headline.



When should we panic? The government will tell us all to remain calm and that they have the situation under control. What else would they tell us? The truth?

What are the current plans to deal with a possible outbreak in the UK?

Bird keepers and breeders

All keepers and breeders are advised to be vigilant about the health of their birds. They should also start to plan ahead. Each individual keeper or breeder should have in place a means of isolating their birds from wild birds in an emergency, and consider the advice to keepers, available on the Defra website or through their local animal health office.

Local private veterinary practices should also be able to advise on appropriate measures.

Contingency plans

A two-mile exclusion zone would be established around the site of any outbreak, plus a wider six-mile monitoring and observation zone would be in force. If the infected bird or birds are on a farm, all poultry there would be systematically culled.

Movements to and from the farm would be controlled and vehicles and individuals disinfected. All free-range poultry, currently numbering around 19-20million throughout the UK, would be isolated and kept locked inside coops or barns around the clock.

Vaccination

Your usual annual flu vaccination will not provide any protection against avian flu. However it's believed that it will reduce the chance of human and avian flu swapping DNA and developing into a deadly hybrid disease.

A completely new vaccine would have to be produced to tackle any new strain of flu. However, this cannot be produced until the pandemic begins, as scientists need to work with the actual mutated virus. Prototype vaccines, which offer some protection against the H5N1 strain are currently being developed.

Some antiviral drugs, which are already available, may help limit symptoms and reduce the chances the disease will spread. Currently the antiviral drug Tamiflu, made by Swiss-based pharmaceutical company Roche, stands the best chance of curbing pandemic bird flu. But results can only be predicted based on trials.

The Government has ordered 14.6million courses of the drug Tamiflu, which is enough to treat around a quarter of the UK's population.

Priorities for vaccination would include key workers, such as front line NHS staff, the police and fire service plus vulnerable groups such as the elderly and those with diabetes, heart conditions, asthma and pregnant women.

What should you do if you find a dead wild bird?

The Department for Environment, Food and Rural Affairs (DEFRA) says you shouldn't contact them if you find a single dead bird, as it is most likely that it died from natural causes.

DEFRA are only looking for incidents where a large number of birds have died in a small area. This should be reported to their hotline on 0845 9335577.

An experienced vet or scientist will assess details of the event and decide whether to investigate further.

How serious is the threat to the UK?

The World Health Organisation has warned that bird flu could be more serious than SARS.

They believe if the virus mutated into a more lethal strain or one that could be passed from human to human the effect could be catastrophic.

If bird flu reached Britain's shores it could already be too late to contain the disease. Professor Neil Ferguson, who led a team investigating the disease said:

"What can we do if it hits our shores? We couldn't stop it. There would be a constant number of new cases and we would be overwhelmed very rapidly."

He added urgent research is under way to see how far deaths could be prevented in the UK should this scenario occur.

Chapter: 7. Precautionary And Preventative Measures For Surviving H5N1 Bird Flu In The UK

In the next section of this book, we'll be looking at the possible worst case scenarios plus how you can avoid becoming infected with the H5N1 virus and survive the inevitable civil unrest which will undoubtedly follow.

Death and destruction

Scientists and other medical professionals around the world are working flat out to prevent a major pandemic, but there's only so much they can do. The World Health Organisation (WHO) is stockpiling vaccines, which may help prevent the

spread or may be totally useless against a strain of flu never before encountered in humans.

But they are all learning as much as they can about the virus in order to be prepared for the worst. They're testing and experimenting and mathematically calculating. All the time watching and waiting for that very first confirmed human to human infection. Only then will they truly know what they are dealing with.

Should the worst happen, a pandemic will break out all around the world, and each country's government will be responsible for dealing with their panic-stricken population on an unprecedented scale. People will flee the worst hit areas and may even try to cross borders to avoid infection.

Security forces will be mobilised to protect health workers, doctors and hospitals. Government officials will need to be protected from baying crowds of angry and frightened people. The police will initially try to stem the looting, rape and murder, until they themselves either become infected or decide to stay at home to protect their own families.

The worrying aspect is some countries, especially in Asia is that they don't have the resources to control or contain a major outbreak of bird flu, which will allow the virus to spread unhindered.

Should large numbers of people become infected, anarchy will prevail in even the most moderate of civilised societies. Law and order will fall by the wayside as dying victims clutter the streets and bodies are piled up and systematically incinerated.

If this all sounds like scaremongering, you're wrong. People **will** panic and there **will** be civil unrest. No one wants to die. And no one relishes such an excruciatingly painful death.

If we look back over the last 10 years, the world has witnessed a number of major catastrophes. Natural disasters like earthquakes and hurricanes have caused mass destruction and killed many thousands. The Tsunami of 2004 was responsible for the deaths of around 300,000 people and affected a number of Asian countries.

There have been numerous terrorist attacks all over the world, where thousands of people have died. But, the one thing all these events have in common is that they have occurred on a local scale. The aftermath can be dealt with, cleaned up and eventually become yesterday's news. The poorer countries get financial aid from the wealthier nations and in time lives are rebuilt.

If we are to face a pandemic, the life of every single man, woman and child in the world is at risk. And the consequences of such a global disaster will be evident

for many years to come. Could this be a test of human dignity and benevolence? Maybe, but in this uncertain time in history, it's as well to know who your true friends are.

Can we prepare for a world depression?

How would the world's economies cope with such a disaster? Poultry farm stocks will be culled or quarantined and other farms will be restricted from moving livestock. Some Asian countries are already counting the economic cost of the outbreak as other countries cut back on International trade.

The travel industry would most likely be the next to collapse, as people will stay close to their homes to avoid picking up an infection from other travellers. Closely related to travel is the holiday and tourist industry, which would likely be next in the firing line.

Life insurance companies will have to dig deep into their reserves to meet the thousands of claims, which will eventually lead to their downfall.

All sections of the food industry involved with poultry and eggs will cease to trade, as people decide not to take chances with what will be perceived as possibly contaminated products.

Hospitals and health institutions will become overwhelmed with sick and dying from every corner of the communities.

Businesses and companies of all sizes will feel the pressure as thousands of employees fall victim to the deadly virus.

The very fact that most people will confine themselves to the relative safety of their homes will have an adverse affect on the world economy.

We can't really prepare for a world depression, because the very people we depend on to run our economies will themselves be at risk.

Some precautions travellers can take to protect themselves now

If you must travel abroad for either business or pleasure, it's wise to heed the warnings and take some precautions.

If you are visiting countries with reported outbreaks of H5N1 bird flu among poultry, you should take note of the following advice:

Do **not** visit bird or poultry farms or markets

Avoid close contact with live or dead poultry

Do **not** eat any poultry or poultry products, including eggs

Wash your hands **frequently** with soap and water

Do **not** attempt to bring any live birds or poultry products back to the UK

Try to **avoid** over-populated areas

If you have been in contact with live or dead poultry in an affected country be aware of the symptoms of bird flu in humans. They are very similar to ordinary flu symptoms and can appear suddenly. They may include:

A fever (temperature of 38℃ or more)
Cough
Shortness of breath
Headache
Sore throat
Sore eyes
Muscle aches

If you develop these symptoms whilst visiting any country with confirmed H5N1 bird flu, even if you have not been in close contact with live or dead poultry, you should seek medical advice locally and urgently.

If you develop the above symptoms within seven days of leaving an affected country, it is vitally important that you seek immediate medical attention.

Stay confined to one room and do not go outside your home.

Make others aware of your symptoms.

List all the people you may have come into contact with over the last 7 days.

If you sneeze or cough, cover your nose and mouth with a disposable handkerchief. Place the handkerchief in a plastic bag and seal it. Wash your hands and face each time this occurs.

Do not touch other people or let them touch you.

Wait for medical assistance.

And just how would we cope here in the UK?

You just have to look at how we cope with normal problems such as extreme weather conditions to find the answer. 50mm of snow and the country's highways system grinds to a halt. A few wet autumn leaves on the lines and the railways come to a standstill. A week of heavy rain and many parts of the country is under

feet of water. Six months of dry weather and we're experiencing the worst drought for decades.

If we can't prepare to deal with a few natural events, which occur annually, what hope do we have of coping with such a crisis?

Could our health service cope? No. The NHS is already stretched beyond its limits both financially and in terms of staffing. Every Accident and Emergency ward in the country would be in turmoil as staff try to fend off desperate infected victims.

Paramedic vehicles would become the target of ruthless thugs, looking for a quick bird flu fix. Criminals will seize the opportunity to make money from stolen vaccines, even if they're useless.

Your local doctor's surgery would be besieged with the sick, dying and people who think they're sick and dying.

The government will be telling us to stay calm, while they mobilise the security forces to protect those considered valuable hierarchy and most worth saving. If by this time a vaccine is available, there will not be enough for everyone, so who will decide who gets it first? And who should get it first?

Government officials? Emergency services staff? The forces? Celebrities? The rich and famous? Someone might just have to make this decision one day. But chances are your name won't be on the list. When people realise that they have a very good chance of being infected with a lethal strain of bird flu and absolutely no hope of being cured, the inevitable will happen. Let's look at this aspect in more detail.

Chapter: 8. Preparing For A Worst Case Scenario

As soon the first outbreak of H5N1 bird flu is confirmed in the UK, whether in a bird, a mammal or a human, be on your guard. Don't be misled by the government telling you it's an isolated case and they have everything under control. You can't trust the government. Remember BSE (bovine spongiform encephalopathy) or Mad Cow Disease as it was more commonly known?

Can you remember government ministers being interviewed and telling us beef was perfectly safe to eat? If it was, why did the EU ban the import of British beef for 10 years?

Who can you believe?

All you can do is stay tuned to the news channels for the very latest updates. But don't trust the reporting of just one channel. The BBC is a trusted source but may be under instruction from the Home Office to tone down reports or to restrict actual accounts of events. Sky News has more independence and is more likely to give much more detailed accounts of current issues. Reuters and CNN are also good alternatives to the BBC.

If you have access to the Internet, you can get up to the minute reports from numerous news sources as well as latest reports from the World Health Organisation World Health Organisation

If you're curious about what the government has planned, should we face a pandemic, check out the **UK INFLUENZA** PANDEMIC **CONTINGENCY PLAN**

When a confirmed outbreak of H5N1 bird flu has been established in the UK, you'll know that this could be the beginning of a long and perilous era, in which your sole duty to yourself and your family is to survive.

At work, be aware of people around you. Have any of them recently returned from a holiday in an affected country? Listen carefully for people complaining about aches and pains and look out for people sneezing and coughing. Anyone could be harbouring and growing a mutated strain of H5N1 within their own body at any time.

Are any work colleagues off sick? Ask questions and find out why. Try to stay ahead of the situation at all times and make your family aware also.

Try to avoid areas where people might tightly congregate, like the supermarket, churches, post office, pubs and clubs, cafes and restaurants. Avoid major gatherings like football or rugby matches, pop concerts or festivals. Think about it! The person standing next to you could be infected.

Should H5N1 bird flu mutate to humans and a single case of human to human infection be confirmed, you'll need to hurriedly put together an action plan. The incubation period for the virus is between 3 and 5 days, so you won't have much time.

Your action plan could involve you staying indoors for some considerable time, so you'll need food and provisions for each person living in the house. If you leave this to the last minute you will not be able to stock up and you'll expose yourself to unnecessary risk.

There has only to be a hint of something like a petrol shortage and the pumps are dry within hours. Such is the way we are.

It's thought that when the bird flu pandemic strikes, it will kill indiscriminately, so no one is safe or immune. 3 – 9 months after the first strike, if we haven't contained it by then, there will be another wave of infections and possibly more. How long this will go on for we don't know. The pandemic of 1918-1919 just seemed to fade away, as mysteriously as it arrived.

It would be a good idea to start building up your body's immune system by eating a diet of healthy foods. Nutrition plays a large part in helping us stave off viral and bacterial infections. Eat plenty of whole grain foods and cereals. Good carbohydrates like fruit and vegetables including potatoes are essential for a healthy body and mind.

For protein, choose lean meats and fish. Cut out saturated fats wherever possible but do not completely eliminate fats from your diet. Use light olive oil for cooking and dressings.

Drink plenty of fresh water daily. It's recommended that we drink at least 2.5 litres of water a day.

Take regular exercise. Exercise can help boost the immune system and also helps relieve stress, and there could well be a lot of that about. Two 30-minute sessions a day is all that's required to stay in shape both physically and mentally.

Learn to sleep properly. We each need around 8 or 9 hours sleep a day for our bodies to repair vital tissues. Sleep helps us to build antibodies, which fight off infections and strengthens our immune system

Stock up now on these top natural herbs for boosting the immune system. All contain beneficial properties and are available from herbalists, holistic and alternative medicine practitioners.

Usnea
Garlic
Maitake (Grifola frondosa)
Echinacea
Cordyceps
Astragalus
Reishi

Prepare for life indoors

When H5N1 bird flu strikes in the human population, everyone will be advised to stay indoors. Your safety and that of others will depend on everyone staying isolated in their own homes. If necessary, this confinement will be enforced by the police and military.

Should this happen, only those that have thoroughly prepared, stand a chance of surviving months of 'imprisonment'. At the first opportunity, following an outbreak of bird flu in humans, it's advisable to stock up on foods and other essential items.

Below is a list of basic essential provisions. Ensure you have enough food for everyone including pets and enough to last at least 3 months. Keep an inventory of food stocks and rotate foods according to 'use by' dates.

Foods and Drinks

Rice	Cereals	Tomato Ketchup
Tinned Baked Beans	Tea	Instant Mashed Potatoes
Flour	Coffee	Tinned Potatoes
Tinned Fruit	Tinned Meats	Sugar
Tinned Soup	Salt	Olive Oil
Tinned Vegetables	Tinned Spaghetti	Tinned Tomatoes
Baby Foods (if applicable)	Pasta	Seasonings/Spices
Tinned Salmon	Powered Milk	Honey
Vegetable Oil	Dried Fruits	Soya Products
Pet Foods (if applicable)	Condensed Milk	Lots of Bottled Water

Medicinal

Cold and Flu Medicines	Latex Gloves	Selection of Plasters
Anti Diarrhea Pills	Vitamins	Face Masks
Ibuprofen /Paracetamol	Antacid Tablets	Antiseptic Liquid
Cough Drops/Lozenges	Antiseptic Cream	Eye Drops
First Aid Kit (Large)	Large Bandages	Nasal Spray
Decongestant	Antihistamine	Eye Protection (Goggles)

Personal

Feminine Products	Tooth Paste	Cold Sore Cream (if app)
Baby Wipes	Shaving Cream/Blades	Vasoline (Petroleum Jelly)
Soap/Body Wash	Contact Lens Solution	Deodorant
Shampoo	Cotton Wool	

Sanitary/Hygiene

Liquid Soap	Antibacterial Soap	Disinfecting Liquid
Disinfecting Wipes	Laundry Powder/Liquid	Toilet Paper
Bleach	Washing Up Liquid	Tissues

Other

Electric Generator	Reading Glasses	Vacuum Flask
Fire Extinguisher	Nail Clippers	Water Containers
Pure Water Filter	Tweezers	Polythene Food Bags
Vacuum Flask	Scissors	Bin Liners/Rubbish Sacks
Flashlight/Torch	Sewing Needles	Airtight Food Containers
Batteries	Cotton Thread	Calor Gas Stove & Gas
Comb/Hairbrush	Matches/Lighter	Extension Leads
Large Supply of Candles	Battery Operated Radio	Activities/Books/Games
Water Purification Tablets		

Essential items of protective clothing like masks, gloves and overalls will sell out fast in the shops and no one should be caught out. Order yours online now before it's all gone:

Respirators, Gloves & Disinfectant

Bird Flu Masks UK

US stockists may be able to supply you quicker and cheaper

http://www.labsafety.com/birdflu/

Bird Flu Kits

You may be able to purchase some doses of Tamiflu

http://www.tamiflu.com/

How Tamiflu Works

Tamiflu works by binding to the neuraminidase on the surface of the virus particles, and stopping it from functioning. When the neuraminidase helper is

blocked, this means that newly formed viral particles cannot be released from the infected cells. This prevents the flu virus from spreading and infecting other cells.

Tamiflu confines the infection to a much smaller area. This makes the symptoms of the infection less severe and also makes it is easier for the body's immune system to kill the virus. The medication has been shown to reduce the duration of the illness by approximately one day, and to reduce the risk of developing flu-related complications, such as chest infections that require antibiotics.

Tamiflu has been shown to be effective in treating people with common types of flu. The medication was also seen to be well tolerated with a good safety profile. This medicine is only effective against the influenza virus. It will not work against illnesses that are caused by other agents.

At the moment it is not known whether this medicine will be effective at treating or preventing flu if you have a weakened immune system, for example due to HIV infection or treatment with immunosuppressant medicines such as chemotherapy or corticosteroids.

It is also not known if it will be effective for treating flu in people with chronic heart disease or respiratory disease, or in people with medical conditions that are sufficiently severe or unstable to potentially require admission to hospital

If bird flu strikes in the human population, one can only imagine the mayhem, chaos and confusion that will follow.

In the final section of this book, we'll be addressing the very real possibility of a complete breakdown in law and order and the devastating consequences.

Chapter: 9. Batten Down The Hatches

Bird flu is real. The H5N1 strain is **very real**. Millions of poultry and other birds have died in its lethal grasp. Humans have died and are dying now due to mere contact with infected birds. The virus has only to do what it does best to survive, mutate in order to find new hosts in which to flourish.

Current vaccines can at best only slow down the spread. A new vaccine will need to be developed to cure infected humans and control further spread. But this can't be done until a human passes the virus to another human, and by this time it could already be too late for most of us.

Any effective vaccine will be slow to arrive and there will not be nearly enough for everyone. When the population realises that they face certain death if infected, they will react with predictable hostility.

Any available vaccine will be distributed to those considered to be the most valuable citizens of society and who have the most to offer during the crisis. Medical staff, police and fire services and the armed forces will be first in line along with politicians and royalty. No doubt people with money will be able to bribe and buy their way to safety.

Most people will not be prepared for a pandemic and at first, we'll see the typical British patterns of complacency, followed by an awareness of the possibilities. Although at first, people will carry on with their daily lives as normal, many will begin to start stocking up on food items and petrol.

Petrol stations will see large queues of motorists, as we did when there was a threat of shortage due road transport companies industrial action brought on by searing price increases. As petrol station queues are reported in the media, more people will join them and supplies will soon run out. Those unfortunate enough to have not filled up their tanks, will be feeling some malice against those who have.

Fights on the forecourts will ensue and the first signs of panic will be clearly evident. Next, supermarkets and corner shops will experience panic buying of food items, bottled water and sanitation supplies. Unrest will break out in the aisles as frustrated people wait in long queues. But soon the traditional British queue will have given way to looting as people begin to realise it's every man for himself.

The media's attention will focus on this and politicians will try to calm the situation by telling us they have everything under control. In the meantime, all police leave will be cancelled and there will be a heavy police presence on our streets. The army will be preparing to intervene should the situation become ugly, with possible scenes of rioting and looting on a grand scale.

The criminal element will be very active, taking advantage of food and fuel shortages. There will be a noted increase in street muggings and aggravated burglary. The human survival instinct will be kicking in.

As news of more confirmed deaths are reported, every single person will be a suspected carrier of the disease. Work colleagues, room mates and even your own friends and family. The person in the queue in front or behind you in the supermarket could be infected. Your next door neighbour could be infected. Any of your relatives could be infected.

A wave of panic will slowly but surely wash over the entire nation.

All travel in and out of the country will be halted, with planes being grounded indefinitely. All public transport will cease to operate, but car traffic will, for a short time, increase ten-fold as people try to get to 'safe houses', gather relatives or move out into the country.

Hospitals and doctor's surgeries will first be besieged by sick and dying people, then by people in panic, who at this stage will be quite prepared to kill for a dose of vaccine. Eventually hospitals will become fortresses with armed security posted at every entrance and exit.

City centres will become no-go areas as young and old alike run pitched battles with the police and army. All around will be broken glass from shop front windows, overturned cars and fires burning uncontrollably at every turn. The fire service, protected by soldiers, will be stretched beyond all limits and at this stage the country will be heading for martial law.

A curfew will try to be imposed in order to keep people, both criminal and innocent off the streets. Meanwhile scientists will be under extreme pressure to develop further vaccines and to monitor the spread of the virus looking for further mutated strains.

By this time, electricity and gas supplies will have been cut as staff fail to report for work. Hospitals will be relying on emergency generators to power only essential life-saving equipment. When all these events take place, you can only hope and pray for the return of some form of normality, which in any event will be some time coming.

Faced with no fuel, food or communication, it will be down to every individual to protect themselves from the virus and marauding thugs moving ever closer to your front door. No electricity means no street lighting so the nights will be illuminated only by the moon and the rising flames from abandoned and burning buildings.

If this all sounds like Armageddon, it could possibly be the closest thing to it that you will ever experience.

Chapter: 10. The Survival Plan

To survive such chaos and destruction, you must plan and prepare. At the first sign of an H5N1 bird flu infection in the UK, start stocking up on essential supplies. Look at the check list mentioned earlier, and begin buying these items over a consecutive period of days. Don't tell anyone you're stocking up, or you could become a prime target of violent thieves or even your jealous neighbours.

Go to your bank and draw out a large sum of cash. Banks and ATMs will not be opened for business during riots and civil unrest and will be heavily guarded against criminals during this period. In some circumstances your cash may be able to buy you out of trouble, but in any case keep it safe and well hidden somewhere in your home.

During the throes of a raging pandemic, you may not be able to leave your home, so make it as secure as possible from intruders. Keep all curtains and blinds shut and don't advertise the fact you're at home. Be vigilant, especially at night.

If you have an electricity generator, don't use it after dark. The sound will attract awareness to your activities and could invite unwelcome attention. Position the generator in a shed, garage or even the loft. Try to soundproof the area but allow for adequate ventilation.

When cooking food, try to keep a lid on pots and pans and don't use the kitchen extractor fan. The smell of cooked food may attract uninvited dinner guests. Put all empty tins and food packaging into rubbish sacks and don't leave them outside your house or flat. Put them in a shed or garage or keep them somewhere in the house.

Your water supply may be cut off or may be contaminated. Waterworks staff, like you, may be unable to travel to and from work. Ensure you have ample supplies of bottled water for drinking and cooking. Should the water supply be contaminated, you can treat it with purification tablets or by boiling.

Every time you step out of the house, to visit an outbuilding like a shed or garage, wear a mask or respirator. Cover your eyes with protective goggles and wear a protective overall or disposable suit. The virus will be airborne and you could become infected simply by breathing the air.

Make sure you have a battery operated radio and stay tuned into the world news channels. Check local radio stations for news about what's happening in your particular area. If your mobile phone is still working and you have family or friends in other parts of the country, call them and exchange information. At this

point the flow of information may be stifled but it's important to try and find out what's going on in other areas or if indeed a cure has been developed.

In this worst case scenario, you can expect to be housebound for up to 3 months or longer. The virus is known to come in waves and each wave can last around 3 months before dying down then eventually striking again. 3 months is a long time to be confined to your home so make sure you have some activities, books and games to help pass the time and keep you sane.

If you have children in the house, try to keep them quiet and occupied. You could use the time to help educate them as they will be missing a lot of school time.

When society comes apart and law and order is compromised, there's a very real danger of being attacked by others hell bent on taking your food, possessions and even your life. You must be prepared to defend yourself, your family and your home against any threat from intruders.

Some criminals may have guns and will be prepared to use them in a desperate situation. If you can't get a gun, and thankfully most people will not have access to such a weapon, then ensure you have other adequate means of self-defence. Knives, clubs, air guns, spear guns and crossbows can be very effective deterrents.

If you live in a built up area, you might consider talking to your close neighbours and working on a joint 'watch' rota. If each family takes turn in watching the streets for trouble, it should alleviate the stress levels for all concerned. There's safety in numbers and the more people you have on your side the better, but be absolutely sure you can trust them.

If you subscribe to any religion, now would be a good time to make your peace with God.

It's everyman for himself

It's hard to imagine right now, but the worst case scenario has to be imagined in order to prepare for the worst. Should a pandemic strike, major civil unrest culminating in riots, looting and murder is a very real prospect. The only safe place will be inside your own home.

Take an hour out of your day to think about it in depth and draw up an action plan for such an emergency. At the very first sign of an outbreak in the UK, start to put your plan into action. If you wait until people are dying it will be much too late.

Dr Shigeru Omi, WHO Regional Director for the Western Pacific recently said, "While we still have a window of opportunity, we must do everything we can to

avert an influenza pandemic as we simultaneously prepare for a worse-case scenario,"

With no hope of a cure for H5N1 bird flu, everyone is going to be very much on their own. Even if all the world's flu vaccine manufacturers focused their efforts in making such vaccines for H5N1, they could only make a few hundred million doses in a year, which won't go very far in a world of 6.4 billion people.

Should the H5N1 bird flu get a grip on humanity, the consequences will be devastating. It would take at least a decade for the world to fully recover from such a pandemic, which would be documented as the most horrendous loss of life in human history.

Remember, during an outbreak you can't expect any help from the government or local authorities. Everyone will be on their own…it's every man for himself.

Dealing with death

No one wants to think about losing a close relative at any time, and during our normal lives we hardly give it a second thought. If the worst should happen, there will be death all around and you may have to be prepared to deal with it at close quarters.

If someone close to you dies during a pandemic, you will not have the option of calling an ambulance or doctor. You may not even be able to take the body to a hospital, which means you'll be faced with the alternative of dealing with the funeral arrangements yourself.

If a person dies of bird flu, the virus will still be active for many hours after death, so it's vital that the body is handled only while wearing full protective clothing. Ideally, the body should be incinerated in some way, but if that's not possible then a burial should be arranged as soon as possible after the death.

If you're unable to leave your house then the garden, if you have one, is the next best place. Ensure the body is tightly wrapped in sheets or blankets, and buried at least 4 feet deep to avoid detection from wild dogs and foxes. If you do not have a garden, you may have to move the body to some open space for burial.

Whatever you do, dispose of the body. Don't leave it in the house where there may be a risk of disease to other members of the household. You can always arrange for a proper ceremony when the dangers have passed and life begins to return to some form of normality.

Heaven forbid if any of us should have to go through such a terrible experience.

Chapter: 11. More Vital Information Resources

Below are extracts from a NHS leaflet concerning H5N1 bird flu entitled 'Important information for you and your family' published in October 2005

HOW WILL A FLU PANDEMIC DIFFER FROM AN OUTBREAK OF 'ORDINARY' FLU?

It is difficult to say just how serious a pandemic will be. It depends on how easily the particular virus spreads, which age groups are affected most, the severity of the symptoms it produces, and how many deaths it causes.

A flu pandemic may occur in two waves several months apart, with each wave lasting about two to three months.

It is likely that pandemic flu will affect far more people than 'ordinary' flu. Around a quarter of the population may be affected by the end of the pandemic.

WHAT WILL THIS MEAN FOR THE UK?

Once in the UK, a flu pandemic will spread across the country in a matter of weeks and may cause:

High levels of influenza

Intense pressure on health services

Disruption to many aspects of daily life

Many deaths.

HOW LIKELY AM I TO CATCH PANDEMIC FLU?

You are more likely to catch it than 'ordinary' flu because it will spread rapidly and very few people will have any immunity to it.

Everyone will be at risk. Some groups of people may be more at risk than others, but every pandemic is different. Until the virus starts spreading it is very difficult to predict who these groups might be.

With 'ordinary' flu those groups of people more likely to become seriously ill include:

The very young

People aged 65 and over

People with existing medical conditions such as lung diseases, diabetes, cancer, kidney or heart problems

People who are immunosuppressed because of certain treatments like chemotherapy or corticosteroids, or illnesses such as HIV/AIDS.

These may be different in a pandemic.

IF IT ARRIVES IN THE UK, HOW CAN I PROTECT MYSELF AND MY FAMILY AGAINST CATCHING IT?

The virus is spread through the air when people cough or sneeze. There are some basic measures that you can take to reduce the risk of infection. Face masks will have little place in preventing the spread of the virus but you can:

Cover your mouth and nose when coughing or sneezing, using a tissue whenever possible.

Dispose of dirty tissues promptly and carefully – bag and bin them

Avoid non-essential travel and large crowds of people whenever possible

Maintain good hygiene – washing hands frequently in soap and water protects against picking the virus up from surfaces and passing it on

You can read the leaflet in full by clicking on this link: NHS Leaflet

The UK government has drawn up an Influenza Pandemic Contingency Plan, see www.dh.gov.uk/pandemicflu

This recognises the exceptional demands that are likely to be placed on the National Health Service.

You'll also find further information by visiting these websites:

Centers for Disease Control
http://www.cdc.gov
http://www.pandemicflu.gov
http://www.cdc.gov/flu/avian/index.htm
http://www.cdc.gov/business

World Health Organization
http://www.who.int

International SOS
http://www.internationalsos.com

Occupational Health Disaster Expert Network
http://ohden.sph.unc.edu/pandemic/index.htm

There are many scientific and government agencies offering up to the minute news of the latest worldwide outbreaks of bird flu. It would be a good idea to monitor these reports on a daily basis. Below is a list, from which you will be able to obtain accurate facts and figures.

www.thepoultrysite.com/avianflu/bird-flu-news.asp

www.msnbc.msn.com

http://story.news.yahoo.com

http://birdfluprotection.com/current_news/index.php

www.scidev.net/ms/bird_flu/

www.microbes.info/news/bird_flu.php

http://news.bbc.co.uk/1/hi/in_depth/

www.cdc.gov/flu/

www.topix.net/health/avian-flu

www.cnn.com

www.foxnews.com

www.sky.com/skynews/home

http://news.yahoo.com

www.ananova.com

www.scidev.net

www.eurofins.com/news/news-birdflu/en

Important information for you and your family

In addition to the specific webpages listed above, the following links are to websites (and web pages) that provide useful and regularly updated information on avian influenza.

Department for Environment, Food and Rural Affairs (Defra)

Health Protection Agency (HPA) (opens new window)

European Centre for Disease Control and Prevention (ECDC)

Food and Agriculture Organization of the UN (FAO)

World Health Organisation (WHO) (opens new window)

National Travel Health Network and Centre (NaTHNaC)

Bird flu is real and the rising death toll is real. No one can afford to be complacent and everyone should at the very least be aware of the risk of an H5N1 bird flu infection.

Watch the TV news and listen to reports as often as you can. Check out the Internet news channels for the very latest reports. Stay in touch with friends and family and make them aware of the dangers facing us all. Keep informed and inform others. Be vigilant and be ready.

Prepare and survive.

Resources & Acknowledgements

World Health Organization

Health Protection Agency

European Centre for Disease Control and Prevention

Health Protection Agency

Centre for Disease Control

Channel News Asia

NHS Direct

BBC News

Roche