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## White paper

# Bird Flu: Chicken is safe—are people?

## Overview

On November 11, 2005 an article in *The Wall Street Journal* reported sales of chicken, duck meat and eggs throughout China plunging by as much as 60% in recent weeks. This sharp decline has been largely attributed to diners avoiding poultry products in a panic over the possibility of contracting avian influenza (bird flu). One week earlier, in the United States, President Bush requested more than \$7 billion in emergency funding from Congress to prepare the country for the possibility of a flu “pandemic.”

What are the facts about the recent bird flu outbreaks? What does President Bush’s massive flu protection proposal mean with regard to the safety of consumers of poultry products and the population in general?

These topics are recent enough and serious enough to be on the minds of many people today, particularly when they walk into a restaurant. The topics are also related enough to be thought of as two aspects of the same problem. It is very important for consumers and those in the poultry and allied food supply and service industries to know that they are *not* one, but two separate issues:

### **1. Bird flu in birds**

Bird flu outbreaks are a threat to domesticated poultry flocks in areas where handling and processing practices are substandard. The virus is carried and spread by wild migratory birds. Most of the cases of humans contracting the disease have occurred in rural Southeast Asia, where the victims had direct and sustained contact with diseased birds. There has been no confirmed case of the disease being transmitted from one human to another. No poultry flocks in the United States have been affected. There is no possibility of contracting the virus by eating properly cooked chicken.

## 2. Bird flu in people

President Bush's proposal for funding accelerated research for new flu vaccinations is a response to the perceived low-level of the U. S. preparedness to deal with simultaneous outbreaks of a contagious disease, or "pandemic." The program is designed to prepare for and prevent widespread outbreaks of serious contagious diseases that are passed from human to human. This is not how bird flu works. President Bush's program is *not* a response to the threat of people contracting bird flu from eating chicken, in this country or any other.

The purpose of this White Paper is to separate fact from perception about the current bird flu outbreaks and related talk of infectious disease "pandemics," and to show why people should not be worried about contracting bird flu by eating chicken and poultry. In addition, we will present the basics of safe food handling that should be practiced by *all* foodservice professionals, *all* the time.

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## Bird Flu and Bush Program—Separate Issues

Widespread media reports of isolated outbreaks of bird flu in Asia and Europe during the past two and a half years have done much to draw attention to potential dangers of this disease spreading to human populations and what measures can be taken to prevent it. Unfortunately, the factual reporting of any kind of *potential* danger has a way of spawning rumors and myths that trigger irrational and unreasonable panic. It is as if certain things world health officials have said that are merely *possible* have already occurred.

Here is what we know about the bird flu outbreaks, followed by some basic facts about the virus and the disease.

During the late summer and fall of 2005, birds infected with the avian influenza virus H5N1 were found in parts of China and several other Southeast Asian countries. Recent outbreaks have also been reported in Turkey, Romania and Croatia. Millions of birds, both wild and domesticated, have either died of the disease or been killed to prevent its spread.

For most of the world, especially those involved in the poultry and foodservice business, there are two big questions:

1. Is chicken safe to eat? The answer is YES!
2. Can bird flu infect humans on a large scale like other forms of flu? NO!

Regarding the first question, both the World Health Organization (WHO) and the U.S. Centers for Disease Control (CDC) have stated unequivocally that conventional cooking will inactivate (kill) the H5N1 virus. Proper cooking means core food temperatures for

poultry meat reaching at least 160° F (71°C), or no pink visible. In addition, poultry eggs from areas of bird flu outbreaks should be cooked fully—not raw, or partially cooked (runny yolk)—and raw eggs should only be used in foods that will be properly cooked, baked or heat-treated in other ways.

Following are the summary notes from the WHO International Foods Safety Authorities Network from November 11, 2005:

- Conventional cooking (temperatures at or above 70°C in all parts of a food item) will inactivate the H5N1 virus. Properly cooked poultry meat is therefore safe to consume.
- The H5N1 virus, if present in poultry meat, is not killed by refrigeration or freezing.
- Home slaughtering and preparation of sick or dead poultry for food is hazardous: this practice must be stopped.
- Eggs can contain H5N1 virus both on the outside (shell) and the inside (whites and yolk). Eggs from areas with H5N1 outbreaks in poultry should not be consumed raw or partially cooked (runny yolk); uncooked eggs should not be used in foods that will not be cooked, baked or heat-treated in other ways.
- There is no epidemiological evidence to indicate that people have been infected with the H5N1 virus following consumption of properly cooked poultry or eggs.
- The greatest risk of exposure to the virus is through the handling and slaughter of live infected poultry. Good hygiene practices are essential during slaughter and post-slaughter handling to prevent exposure via raw poultry meat or cross contamination from poultry to other foods, food preparation surfaces or equipment.

*Source: WHO INFOSAN note no. 7/2005, 11.4.05]*

[http://www.who.int/foodsafety/fs\\_management/No\\_07\\_AI\\_Nov05\\_en.pdf](http://www.who.int/foodsafety/fs_management/No_07_AI_Nov05_en.pdf)

Regarding the second question, the risks to human populations are negligible. Bird flu, as its name indicates, is almost exclusively carried and contracted by birds. It is not a brand new disease, but it has been in the news due to recent and severe outbreaks in poultry flocks in Asia and parts of Central and Eastern Europe. Since 2003, an estimated 150 million infected birds have died from virulent forms of the disease or been destroyed.

The disease does not spread easily from animals to humans, and it is extremely rare for the current strain to be passed from one human to another. Given this knowledge, why has the level of concern for the safety of human populations risen to the point that the Bush Administration would propose a program of such urgency?

World health authorities are concerned that the bird flu virus could mutate into a form more easily passed and spread by humans. If such a form were to reach urban areas, it is likely that the mobility of urban populations will spread the disease quickly to many parts of the world—possibly within weeks—creating what many refer to as a ‘pandemic.’ This is the principle concern of a flu preparedness program as it relates to bird flu. In fact, “flu shot” inoculation programs have been in place for years to combat the spread of the annual strain of type A human influenza. The bulk of the money in President Bush’s

proposal is earmarked for vaccine research and testing of existing drugs for effectiveness in treating any human variation of H5N1 that may emerge. Since the populations involved in the pandemic scenario are large, scientists also need to develop new, faster methods for manufacturing vaccines. All of this takes time and money. Obviously, the sooner such resources can be put into play, the more effective a program of prevention will be.

No bird flu pandemic is in the process of happening anywhere, and cannot happen without the outbreak and spreading of some new form of the virus. No such mutated forms have been discovered, and there is no evidence to suggest they exist at present. However, since scientists believe such a scenario is likely to occur some time in the future, governments and health authorities around the world are treating it as a very serious threat. But people should realize that *this threat has little or nothing to do with poultry consumption*. In the event of a pandemic of human-borne bird flu, there are many things people will be able to do in order to avoid contracting the disease and spreading it further. Eating or not eating chicken won't be one of them.

Here are some basic facts about the outbreaks of the bird flu virus:

**The current form** of avian influenza (bird flu) is the virus strain H5N1 and was first isolated in 1997.

- Bird flu is a contagious viral disease occurring almost exclusively in birds.
- A mild form of the virus is quite common in wild migratory birds and carried with few ill effects.
- However, it is believed that when the virus is introduced to domesticated poultry flocks and is allowed to circulate for a few months, it can mutate into a highly pathogenic form.

**The current outbreak** of bird flu is significant because of the number of countries simultaneously reporting infected poultry flocks. For many of these countries, it was the first time avian influenza had ever been found.

- According to the WHO, countries reporting cases from December 2003 through November of 2005 include Japan, China, Republic of Korea, Vietnam, Cambodia, Indonesia, Thailand, Laos, Malaysia, Russia, Kazakhstan, Mongolia, Turkey, and Romania. Japan, Republic of Korea and Malaysia have since announced control of their poultry outbreaks and are now considered free of the disease.
- It is likely that migratory birds are now carrying some form of the highly pathogenic version of the virus. Spread of the disease to new areas is expected.
- Health experts estimate that control of the disease in poultry flocks will take several years.

**Humans get the virus** almost exclusively through direct contact with diseased birds or their feces.

- Since 1997, there have been 135 confirmed cases of human infection from the H5N1 virus resulting in 69 deaths. Most of these have occurred since early 2003.

- According to WHO reports, most cases of human infection have occurred in rural areas of Southeast Asia where it is common for families to raise small flocks of poultry, which often roam freely in yards and homes.
- Infection is considered to have most likely occurred during slaughtering, defeathering, butchering and preparing diseased poultry for cooking. Poor hygiene practices combined with environments where droppings are spread freely creates conditions favorable for transmitting the disease to humans.

More facts can be seen at:

[http://www.who.int/csr/disease/avian\\_influenza/avian\\_faqs/en/index.html](http://www.who.int/csr/disease/avian_influenza/avian_faqs/en/index.html)

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## Is chicken safe to eat?

Avian influenza cannot be transmitted through cooked food. To date, no evidence indicates that anyone has become infected following the consumption of properly cooked poultry or poultry products, even when these foods were contaminated with the H5N1 virus.

All leading health authorities have stated that in areas not affected by current bird flu outbreaks, poultry and poultry products can be prepared and consumed as usual without fear of becoming infected with the bird flu virus. Even poultry and poultry products from countries that have experienced recent outbreaks can be consumed safely, provided they are cooked thoroughly to a core food temperature of 160° F (71°C), which kills the virus.

Consumers as well as foodservice workers should also be aware of the risk of cross-contamination. When preparing food, juices from raw poultry and poultry products should never be allowed to touch or mix with items eaten uncooked, such as salad vegetables. Cutting boards, utensils and countertops should be washed with soap and hot water immediately after contact with raw poultry products, and anyone handling poultry products should wash their hands thoroughly before handling other foods.

Instances of people contracting bird flu by eating chicken improperly prepared at a restaurant are remote. Health regulations that govern the production, storage, handling, and preparation of poultry, particularly in the U. S., are stringent. Under current circumstances, those in charge of enforcement are likely to be even more vigilant.

To date, there have been no incidents of bird flu in U. S. poultry flocks. Canadian officials are investigating one possible occurrence in that country. As of this writing, however, they have been unable to confirm the presence of H5N1 virus. Federal authorities and industry associations have erected multiple lines of defense to prevent bird flu from entering the country. The U. S. has banned the import of bird and bird products from affected regions and is currently employing aggressive surveillance of migratory birds and domestic flocks.

For decades, U.S. chicken consumers have benefited in price, availability and safety from modern, large scale poultry manufacturing and processing methods. Today, those

methods are proving to be a stout barrier against food borne contaminants. In response to consumer concerns and misperceptions, Perdue issued a recent press release that describes some of the company's normal procedures:

...U.S. poultry from companies like Perdue are raised in environmentally controlled houses, which protect them from contact with potential disease carriers. Strict bio-security procedures for all aspects of live production are designed to prevent the introduction of disease onto a farm. Our producers, flock supervisors and poultry veterinarians monitor the health of every flock. In addition, we routinely test any flock showing signs of disease, even if there is no suspicion of avian influenza, and conduct additional random testing of flocks prior to processing. And if avian influenza should occur, we will work closely with federal, state and local authorities to contain and eradicate the disease.

[http://www.perdue.com/athome/news/atHomePR.asp?release\\_id=1119](http://www.perdue.com/athome/news/atHomePR.asp?release_id=1119)

Prevention of food borne illness has always been one of the driving forces behind innovations in commercial cooking equipment. Companies like Henny Penny offer programmable fryers and rotisseries that make proper cooking nearly automatic. In addition to appealing taste and texture, every programmed cooking cycle is calculated to achieve the optimal done temperature. [Henny Penny fryers](#), in particular, make use of a rectangular fry pot design to promote turbulence for more even cooking. Another example are [Henny Penny rotisseries](#). A combination of radiant heat and counter-rotational convection heat speeds up the roasting process and results in more even cooking. Cooking with food temperature probes instead of timers is another way restaurants and delis utilize the right equipment to help prevent illness.

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## Practice Safe Food Handling!

Current concern over the impact of bird flu on the health and safety of worldwide poultry supplies underscores the vital importance of following proper storage, handling, preparation, and cooking procedures for *all* foods. To put this in perspective, it is estimated that each year in the U.S. alone there are 76 million cases of food borne illness that cause 5,000 deaths. By contrast, in two years 69 people have died from bird flu in Asia, none in the U. S. In the event of a bird flu pandemic, it won't matter what you eat or don't eat. It may matter who prepares it and how well they have followed basic food safety procedures.

Critical to both issues under discussion in this paper is that the foodservice industry remains the largest point of contact between the food supply and the population at large. It has been demonstrated that proper food handling can help prevent nearly all food borne illnesses. But direct responsibility to consumers lies not only with owners and managers who institute procedures, but with food *handlers* who must understand and follow them. Fortunately, the science behind food safety is simple and the procedures are clear cut.

The principles of food safety rest on four major areas of concern:

1. Personal hygiene
2. Food core temperatures
3. Chilling time
4. Cross contamination

Most food borne illnesses are transmitted by humans. Even if food is contaminated from a prior source, biological agents such as viruses, bacteria or parasites can be easily passed to other foods and objects simply by handling them. One food handler with poor hygiene habits can potentially expose a large number of people to disease agents. Good hygiene—washing hands frequently with soap and hot water—is all that is necessary to prevent this from happening.

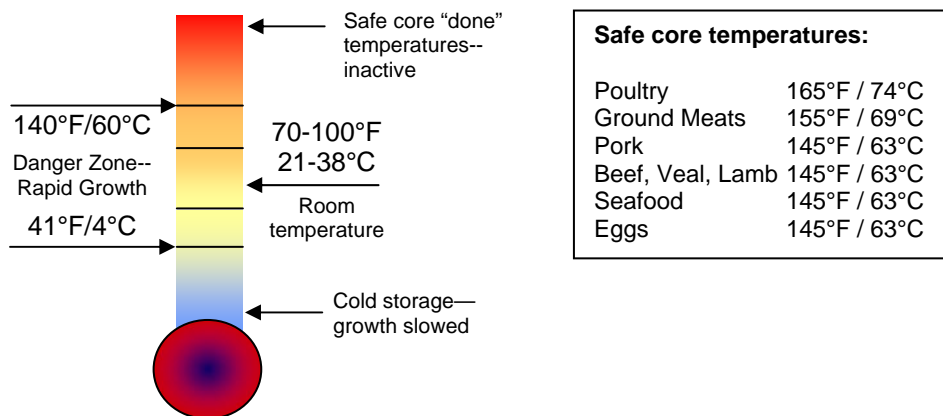
Infections and illness are mostly a matter of numbers. When bacteria and viruses are present in large numbers they can overwhelm an organism’s natural defenses, causing fever, tissue and organ damage, and sometimes death. The opposite is true as well. It is normal for many of these same agents to inhabit living organisms in low concentrations. The key to keeping food safe for consumption is controlling their *rate* of growth. Both food temperature and time affect the rate at which bacteria and viruses multiply.

Scientists have known for a long time that bacteria multiply rapidly in many foods when internal food temperatures fall between 41°F and 140°F (4-60°C) (Fig. 1).

*Food temperature between 41°F and 140°F (4-60°C) is known as the “Danger Zone.”*

As food is chilled and stored at temperatures lower than 41°F/4°C growth is slowed. At around 0°F/-18°C bacteria are considered dormant. At temperatures above 140°F/60°C heat begins to retard bacterial growth. At safe core or “done” temperatures disease causing agents can no longer survive.

Fig 1: Danger Zone

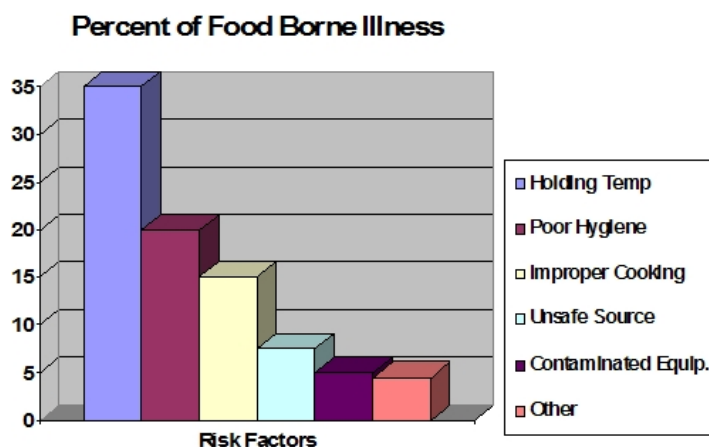


Time comes into play as a matter of how long bacteria are permitted to multiply at what rate. The goal of safe food practices is to simply limit the amount of time food spends in the danger zone.

*In general, the total amount of time food temperatures can safely remain in the danger zone before consumed or discarded is four (4) hours.*

The biggest culprit in the incidence of food borne illness is unsafe holding temperatures, which includes hot holding and cooling/cold storage (Fig. 2.) Any time that cooked food spends in an inadequate hot holding or heated display environment is an opportunity for bacteria to multiply. Many foodservice kitchens overlook the lengthy time it takes to chill hot food to safe low temperatures in conventional refrigerators or walk-in coolers for storage.

Fig 2: Risk factors of food borne illness



The right equipment gives food handlers the means to observe and control internal food temperatures. For example, many Henny Penny [heated display merchandisers](#) and [heated holding cabinets](#) can be equipped with a food temperature probe that allows workers to monitor internal food temperatures on digital displays. Chilling hot food quickly in blast chillers prior to cold storage is the safest and most efficient way to cool foods through the danger zone. [Henny Penny blast chiller/freezers](#) not only chill large quantities of food quickly, they can also be operated in probe mode, giving food handlers better control of internal temperatures during cooling.

The layout and procedures in the foodservice kitchen can have a big impact on food safety strategies. Cross-contamination can happen when raw meat, poultry and fish is prepared in the same area of the kitchen. A safe kitchen is designed for a completely separate work flow of chicken from cool storage to brooding and cooking. Accessory equipment, such as [brooding machines](#) and [roisserie spit stands](#) help accomplish preparation tasks quickly and with a minimum of direct food handling.

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## Conclusion

At home or at a restaurant, chicken makes the most nutritious, affordable and popular meals today. It is important for people to understand that it remains safe to eat. To date, there are no facts to support any perception that there is any new or potential danger in consuming properly cooked chicken. Modern poultry production methods and commercial foodservice safe food cooking and handling practices are your best protection against contracting any food borne illness.

The potential for widespread outbreaks of dangerous flu or other contagious diseases is a good reason for everyone involved in preparing food, at home or at work, to consider the simple preventive measures of good personal hygiene, thorough cooking and sensible holding and storage of cooked food.

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For information on Henny Penny Food Safety Training, please contact: Tim Kasler, Henny Penny, (937) 456-8440, [tkasler@hennypenny.com](mailto:tkasler@hennypenny.com)

Visit Henny Penny at [www.hennypenny.com](http://www.hennypenny.com)

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## Additional information

### **Top Ten Causes of Food Borne Illness**

- Cooling or cold holding
- Time and temperature abuse
- Inadequate hot holding
- Poor personal hygiene
- Inadequate reheating
- Inadequate cleaning and sanitizing of equipment
- Improper use of leftovers
- Inadequate cooking
- Cross contamination
- Unsafe food source

## **Definition of Terms**

<i>Bird Flu:</i>	the common reference for a variety of avian influenza viruses
<i>Avian influenza:</i>	a virus of a certain type that predominately affects birds
<i>H5N1:</i>	designation for the virus strain responsible for recent outbreaks of Bird Flu in Asia and Eastern Europe
<i>WHO:</i>	World Health Organization
<i>CDC:</i>	U. S. Centers for Disease Control
<i>Pandemic:</i>	term used to describe widespread simultaneous outbreaks of contagious disease
<i>Core temperature:</i>	refers to the internal temperature of food
<i>Food borne illness:</i>	any illness or disease caused by a biological, chemical or physical contaminant present in food.
<i>Cross-contamination:</i>	refers to the method by which disease causing agents typical of one type of food are physically spread directly to other types of food through proximity and poor hygiene.

# Five keys to safer food



## Keep clean

- ✓ Wash your hands before handling food and often during food preparation
- ✓ Wash your hands after going to the toilet
- ✓ Wash and sanitize all surfaces and equipment used for food preparation
- ✓ Protect kitchen areas and food from insects, pests and other animals

### Why?

While most microorganisms do not cause disease, dangerous microorganisms are widely found in soil, water, animals and people. These microorganisms are carried on hands, wiping cloths and utensils, especially cutting boards and the slightest contact can transfer them to food and cause foodborne diseases.



## Separate raw and cooked

- ✓ Separate raw meat, poultry and seafood from other foods
- ✓ Use separate equipment and utensils such as knives and cutting boards for handling raw foods
- ✓ Store food in containers to avoid contact between raw and prepared foods

### Why?

Raw food, especially meat, poultry and seafood, and their juices, can contain dangerous microorganisms which may be transferred onto other foods during food preparation and storage.

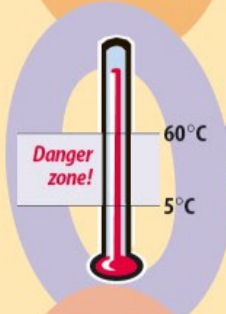


## Cook thoroughly

- ✓ Cook food thoroughly, especially meat, poultry, eggs and seafood
- ✓ Bring foods like soups and stews to boiling to make sure that they have reached 70°C. For meat and poultry, make sure that juices are clear, not pink. Ideally, use a thermometer
- ✓ Reheat cooked food thoroughly

### Why?

Proper cooking kills almost all dangerous microorganisms. Studies have shown that cooking food to a temperature of 70°C can help ensure it is safe for consumption. Foods that require special attention include minced meats, rolled roasts, large joints of meat and whole poultry.



## Keep food at safe temperatures

- ✓ Do not leave cooked food at room temperature for more than 2 hours
- ✓ Refrigerate promptly all cooked and perishable food (preferably below 5°C)
- ✓ Keep cooked food piping hot (more than 60°C) prior to serving
- ✓ Do not store food too long even in the refrigerator
- ✓ Do not thaw frozen food at room temperature

### Why?

Microorganisms can multiply very quickly if food is stored at room temperature. By holding at temperatures below 5°C or above 60°C, the growth of microorganisms is slowed down or stopped. Some dangerous microorganisms still grow below 5°C.



## Use safe water and raw materials

- ✓ Use safe water or treat it to make it safe
- ✓ Select fresh and wholesome foods
- ✓ Choose foods processed for safety, such as pasteurized milk
- ✓ Wash fruits and vegetables, especially if eaten raw
- ✓ Do not use food beyond its expiry date

### Why?

Raw materials, including water and ice, may be contaminated with dangerous microorganisms and chemicals. Toxic chemicals may be formed in damaged and mouldy foods. Care in selection of raw materials and simple measures such as washing and peeling may reduce the risk.