



International Food Safety Authorities Network (INFOSAN)

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INFOSAN Information Note No. 2/04 - Avian Influenza

Highly Pathogenic Avian Influenza H5N1 outbreaks in poultry and in humans: Food safety implications.

The recent outbreaks of highly pathogenic H5N1 avian influenza in poultry in Asia have raised concerns about the source of infection and the risk of human transmission. WHO is aware of recent concerns over the possibility that the avian influenza, in addition to direct contact with live infected animals, could spread through contact with contaminated poultry products. To date there is no epidemiological information to suggest that the disease can be transmitted through contaminated food or that products shipped from affected areas have been the source of infection in humans.

Poultry: The avian influenza virus survives on contaminated raw poultry meat and can be spread through contaminated food products (e.g. frozen meat). In general, low temperatures increase the stability of the viruses. The virus can survive in faeces for at least 35 days at low temperatures (4°C); at 37°C viruses were detected for 6 days in recent stability tests on faecal samples with the H5N1 2004 viruses. The avian influenza viruses can also survive on other surfaces such as the poultry house environment for several weeks. Due to this survival capability, common food preservation processes such as freezing and refrigeration will not substantially reduce the concentration or virulence of these viruses on contaminated meat. **Normal cooking (temperatures at or above 70°C) will inactivate the virus.** To date there is no epidemiological evidence that people have been infected through consumption of well-cooked contaminated poultry meat.

From the above, it can be concluded that well cooked poultry meat is safe but handling of frozen or thawed raw poultry meat before cooking can be hazardous if good hygienic practices are not observed (see recommendations in box below).

In addition, in areas currently experiencing avian influenza outbreaks in poultry, the practice of marketing live birds with further extensive exposure to potentially contaminated parts of a chicken during home slaughtering, defeathering, eviscerating, etc. may pose a significant risk to persons involved in these activities. From the limited studies available, it appears that almost all parts of an infected bird are contaminated with the viruses.

In poultry outbreak areas, contacts between humans and live poultry should be limited as much as possible by restricting movements of live birds and by using care in potentially hazardous activities such as raising free ranging poultry flocks in and around homes and home-slaughtering of poultry.

Eggs: The Avian Influenza virus can be found inside and on the surface of eggs. Although sick birds will normally stop laying, eggs laid in the early phase of the disease could contain viruses in the albumen and yolk as well as on the surface. The survival time of the viruses (see above temperatures of survival) on surfaces such as eggs is sufficient to allow wide dissemination. **Only proper cooking will be able to inactivate the virus present inside the eggs.** There is no epidemiological evidence to suggest that people have been infected by consumption of eggs or egg products. In one instance, pigs have been infected probably through feed containing unprocessed eggs from an avian influenza infected poultry flock.

Recommended good hygienic practices to avoid spreading of the virus through food: (adapted from the WHO 5 Keys to safer food) :

- Separate raw meat from cooked or ready-to-eat foods to avoid contamination: Do not use the same chopping board or the same knife. Do not handle both raw and cooked foods without washing your hands in between and do not place cooked meat back on the same plate or surface it was on before cooking. Do not use raw or soft boiled eggs in food preparations that will not be heat treated/cooked.
- Keep clean and wash your hands: After handling frozen or thawed raw chicken or eggs, wash thoroughly with soap your hands, surfaces and utensils that have been in contact with the raw meat.
- Cook thoroughly: Thorough cooking of poultry meat will inactivate the viruses. Either ensure that the poultry meat reaches 70°C or that the meat is not pink. Egg yolks should not be runny or liquid.

Tigers: Recently, a large number of tigers were infected with H5N1 and died in a breeding zoo in Thailand probably after being fed with contaminated chicken. So far there is no clear understanding whether or not they were fed with whole dead chickens or carcasses, but there are indications that it was carcasses from a slaughterhouse. If the tigers were fed with whole dead chickens, they would probably have been infected through close contact with viruses present on the feathers and in the respiratory tract of the chickens. On the contrary, if they were fed with carcasses coming from a slaughterhouse, they would have been more likely infected by the consumption of the contaminated bones and meat. The latter case would also indicate that infected poultry may have been processed for human or animal consumption and that infection could occur through the consumption of raw meat.

Additional guidance on food safety implications :

WHO has developed two guidance notes on the food safety implications of the current outbreaks. The first note is on the general food safety consideration related to the outbreaks in poultry while the second one deals with the specific conditions found in rural areas in Asia currently experiencing poultry outbreaks. Both notes are available at: <http://www.who.int/foodsafety/micro/avian/en/>. WHO has also developed guidance for people living in areas experiencing outbreaks. This can be found at: <http://www.wpro.who.int/avian/docs/advice.asp> .

Further general information on the current avian influenza outbreaks is available at: http://www.who.int/csr/disease/avian_influenza/en/.

The WHO “5 keys to safer food” good hygienic practices recommendations can be found at: <http://www.who.int/foodsafety/consumer/5keys/en/>. These recommendations are available in several languages.

Background on Avian Influenza:

Avian influenza is an infectious disease of birds caused by influenza A viruses. Migratory waterfowl - most notably wild ducks - are the natural reservoir of all influenza A viruses. Avian influenza also has a highly pathogenic form, first identified in Italy more than 100 years ago and previously known as “fowl plague”. Of the 15 main subtypes of influenza A viruses, only strains within the H5 and H7 subtypes cause highly pathogenic avian influenza, which is highly contagious and rapidly fatal in susceptible avian species. Chickens and turkeys are particularly susceptible to epidemics; direct or indirect contact of domestic flocks with wild waterfowl has been implicated as a frequent cause. Live bird markets have also played an important role in the spread of epidemics. Birds that survive infection excrete virus for at least 10 days, orally and in

faeces, thus facilitating further spread. Unlike chickens, ducks are known to be resistant to the viruses and can be asymptomatic carriers of the viruses thus also contributing to further spread.

Avian influenza viruses normally infect only birds and pigs. Since 1959, viruses of the H5, H7, and H9 subtypes have crossed the species barrier to infect humans on 10 occasions. Most avian influenza viruses affecting humans have caused mild respiratory symptoms or conjunctivitis, with one important exception: the H5N1 strain. H5N1 has caused severe disease with high fatality in 1997, 2003, and 2004. Studies comparing virus samples over time show that H5N1 has become progressively more pathogenic for mammals, and is now hardier than in the past, surviving several days longer in the environment. Evidence further suggests that H5N1 is expanding its range of mammalian susceptible species. In 2004, H5N1 caused fatal disease in naturally infected large felines (tigers and leopards) and experimentally infected domestic cats - species not previously considered susceptible to disease caused by any influenza A virus.

The public health concerns :

The outbreaks of highly pathogenic H5N1 avian influenza in poultry that began in Asia in 2003 have, to date, been accompanied by 44 confirmed human cases, of which 32 have died. The majority of cases have occurred in previously healthy children and young adults. Most, but not all, of these cases have been linked to close contact with infected poultry or their secretions.

H5N1 is of particular concern for several reasons. H5N1 mutates rapidly and can acquire genes from other viruses including human influenza viruses. The current epidemic of highly pathogenic avian influenza caused by H5N1 in Asian countries, is therefore of particular public health concern. If more humans become infected over time, the likelihood also increases for the emergence of a novel subtype with sufficient human genes to be easily transmitted from person to person. Such an event would mark the start of an influenza pandemic. Historically, influenza pandemics occur in cycles of 20 to 30 years. In the 20th century, the great influenza pandemic of 1918–1919, which caused an estimated 40 to 50 million deaths worldwide, was followed by milder pandemics in 1957–1958 and 1968–1969. WHO and influenza experts worldwide agree that H5N1 has considerable pandemic potential. With the virus now endemic in large parts of Asia, the probability that this potential will be realized has increased. While it is impossible to accurately forecast the magnitude of the next pandemic, we do know that much of the world is unprepared for a pandemic of any size and for the widespread socioeconomic disruptions that would result from having large numbers of people quarantined, unwell or dying.