



International Food Safety Authorities Network (INFOSAN)

(Update) 30 April 2009

INFOSAN Information Note No. 2/2009 – “Human-animal interface aspects of Influenza A/H1N1”

The influenza outbreak in humans caused by Influenza A/H1N1 - considerations at the human-animal interface

SUMMARY NOTES

- The World Health Organization (WHO) has declared an outbreak of human cases of Influenza A/H1N1 a Public Health Emergency of International Concern (PHEIC)¹ under the International Health Regulations (2005), and has now raised the influenza pandemic alert level from phase 4 to phase 5.
- The implicated virus is being described as a new subtype of Influenza A/H1N1 not previously detected in swine or humans, containing a mix of swine, human and avian influenza virus genes.
- The implicated virus has not been isolated in pigs, research efforts are needed to investigate its possible presence in pigs and the susceptibility of animals to this new virus.
- If this virus is shown to infect or cause disease in animals, virus circulation in animals could worsen the regional and global situation for public health.
- Influenza A/H1N1 has not been shown to be transmissible to people through eating pig meat or other products derived from pigs.

ADVICE TO CONSUMERS

In the on-going spread of Influenza A/H1N1, concerns about the possibility of this virus being found in pigs and the safety of pork and pork products has been raised.

Influenza viruses are not known to be transmissible to people through eating processed pork or other food products derived from pigs.

Heat treatments commonly used in cooking meat (e.g. 70 °C/160 °F core temperature) will readily inactivate any viruses potentially present in raw meat products.

Pork and pork products, handled in accordance with good hygienic practices recommended by the WHO, FAO, Codex Alimentarius Commission and the OIE, will not be a source of infection.

Authorities and consumers should ensure that meat from sick pigs or pigs found dead are not processed or used for human consumption under any circumstances.

For further information, please refer to the INFOSAN information note on this issue (http://www.who.int/foodsafety/fs_management/infosan_archives/en).

Introduction

Following information from the United States of America (USA) and Mexico, WHO has declared the ongoing outbreak of human cases of Influenza A/H1N1 virus infection as a Public Health

¹ PHEIC – means an extraordinary event which is determined, as provided in these Regulations: (i) to constitute a public health risk to other States [Countries bound by the IHR] through the international spread of disease and (ii) to potentially require a coordinated international response; (Article 1, Definitions, IHR (2005))

Emergency of International Concern (PHEIC)². In addition, WHO has raised the influenza pandemic alert level from phase 4 to 5 in a range of 6 phases³. The human outbreak has now spread with many suspected cases in countries outside Mexico and USA, primarily in persons travelling from Mexico. WHO is continuously updating Member States about human health issues related to the outbreak through the National IHR Focal Points. Since the pathogen involved has genetic material of animal (avian and swine) origin, the three international Organizations, the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (OIE) and WHO, involved in diseases at the human-animal interface, have taken steps to inform Member States further about this aspect of the outbreak. This INFOSAN Note has been prepared in collaboration between the Organizations to elucidate issues related to the human-animal interface as well as considerations related to handling and trade of animals and animal products.

General information about the current outbreak in humans

An unusual increase in the number of influenza-like illness (ILI) cases was detected in Mexico starting at the end of March 2009. From 17 to 28 April 2009, 1551 suspected cases of influenza with severe pneumonia have been reported (7 confirmed deaths)⁴. These do not necessarily all represent cases of Influenza A/H1N1 virus infection.

As of 30 April 2009, the US Government has reported 91 laboratory confirmed human cases of Influenza A/H1N1 virus infection. One death has been reported. The viruses have the same genetic pattern based on preliminary testing. The virus is being described as a new subtype of H1N1 not previously detected in swine or humans. Also, as of 30 April, the Government of Mexico has reported 26 laboratory-confirmed human cases of Influenza A/H1N1 virus infections. Investigation is continuing to clarify the spread and severity of the disease in Mexico. Suspect clinical cases have been reported in 31 of the country's 32 states.

Human-animal interface aspects of Influenza A/H1N1 in pigs

Swine influenza (not the Influenza A/H1N1 virus currently causing human infections) is, in general, a highly contagious respiratory disease of pigs caused by one of several swine influenza viruses (SIVs). Morbidity in pigs tends to be high and mortality low (1-4%). Often, pigs do not show signs of infection. Outbreaks in pigs occur year round, with an increased incidence in autumn and winter in temperate zones. Swine influenza is not notifiable to the OIE (www.oie.int), therefore its international distribution in animals is not well characterized. Respiratory disease in pigs due to SIV is thought to occur in most countries in the world, and outbreaks have been reported from North and South America, Europe, Africa and in parts of eastern Asia. Many countries routinely vaccinate swine populations against swine influenza.

Swine influenza viruses do not normally infect humans. However, outbreaks and sporadic human infection with SIVs have been occasionally reported and serosurveys have demonstrated exposure of humans in certain risk groups. Most commonly, infection occurs in people in direct and close contact with pigs such as farm and abattoir workers. Onward transmission of SIVs among people in close contact with each other has occurred on a few occasions. Human influenza viruses have also been transmitted from people to pigs.

Transmission among and between pigs and humans is likely to occur through direct or indirect contact with respiratory secretions or inhaling large droplets or aerosols spread through coughing and sneezing. The clinical picture of SIV infection in people is generally similar to that of human seasonal influenza. It is likely that most people, especially those who do not have regular contact with pigs, do not have immunity to SIVs and thus would be susceptible to SIV infection, although cross-protectivity studies are ongoing to explore this question further. Currently, there is no vaccine to protect people from SIV infection.

Swine influenza viruses are most commonly of the H1N1 subtype, but other subtypes are also circulating in pigs (e.g., H1N2, H3N1, H3N2). As with all influenza viruses, SIVs change, evolve

² http://www.who.int/csr/don/2009_04_26/en

³ http://www.who.int/csr/disease/avian_influenza/phase/en

⁴ http://new.paho.org/hq/index.php?option=com_content&task=view&id=1283&Itemid=569

and reassort continuously. Pigs can be infected by avian influenza and human influenza viruses, as well as SIVs. When influenza viruses from different species infect pigs (or other animals) simultaneously, the viruses can reassort (i.e. swap genes) and new viruses that are a mix of swine, human and/or avian influenza viruses can emerge. This type of reassortment has already happened in pigs, for example, a triple reassortant with swine, avian and human genes has been circulating in the swine population of the USA since at least 1998. This type of reassortment can also occur in humans. The currently circulating influenza A/H1N1 virus is also such a reassortant, composed of genes of swine, avian and human origin. This particular combination has so far not been seen in humans or in swine, and the origin of this reassortment, and when and where it happened, is not known. This virus is now being transmitted from human to human in a sustained manner. The role of swine in the emergence of this virus is currently under further investigation.

Explanation about International Health Regulations principles in relation to this event

The International Health Regulations (2005) (IHR (2005))⁵ are the overall public health framework for WHO, WHO Member States and other partners to deal with public health events of international concern. The IHR (2005) provides critical mechanisms⁵ which facilitate interaction and information sharing between WHO, countries and other partners, to coordinate actions and to manage public health across the globe. These mechanisms have, and continue to be, followed and utilized during this event.

In response to cases of Influenza A/H1N1, the Director-General of WHO convened a meeting of the IHR Emergency Committee to assess the situation and advise her on appropriate responses. Following this meeting, the Director-General declared this event a PHEIC on the 25 April 2009.

The declaration of a PHEIC allows the Director-General to issue “Temporary Recommendations”⁶, to prevent or reduce the international spread of disease and avoid unnecessary interference with international traffic. The Director-General is recommending, on the advice of the Committee, that all countries intensify surveillance for unusual outbreaks of ILI and severe pneumonia. WHO is recommending that trade and travel is not restricted in response to this event at this time.

Further recommendations may be developed once new information is available and as this event evolves. Countries will be informed of additional recommendations through their National IHR Focal Point and the WHO public website. Any recommendations associated with pigs and pork will also be communicated through the International Food Safety Authorities Network (INFOSAN). Such INFOSAN information will be shared with National Chief Veterinary Officers through the OIE and FAO networks.

Assessment and management of risk - as it relates to pigs, pig movement, and pig meat

To improve our understanding of the current situation it is important to determine: (1) if the Influenza A/H1N1 virus currently affecting humans is circulating in the pig populations in Mexico; (2) the prevalence and distribution of the virus in swine populations (if any); and (3) the clinical presentation of infections with this virus in pigs (it is known that pigs infected with SIVs do not always show signs of infection, thus this virus may be circulating without associated clinical signs). Urgent research efforts are needed in order to know the susceptibility of animals to this new virus, and if relevant to implement biosecurity measures including possible vaccination to protect susceptible animals.

Swine influenza, per se, is not an OIE listed disease and there is currently no justification in the OIE Animal Health Standards Code for the imposition of trade measures on the importation of pigs or their products. However, if Influenza A/H1N1 virus would be shown to cause disease in animals, virus circulation could worsen the regional and global situation for public health. These assessments will inform possible decisions regarding implementation of movement restrictions of pigs in affected regions and underpin any decisions regarding trade restrictions relative to live pigs.

⁵ For further information, see <http://www.who.int/ihr/en> and the INFOSAN Information Note on “The identification, assessment and management of food safety events under the International Health Regulations (2005)” at: http://www.who.int/foodsafety/fs_management/infosan_archives/en. Both are available in 6 languages.

⁶ See *Article 15*, IHR (2005)

Following the declaration of this event by the Director-General of WHO as a PHEIC, countries of the world are introducing increased surveillance for respiratory disease in humans. It would therefore be important to complement such measures by similarly increasing surveillance in pigs.

Influenza viruses can occur in meat, particularly if the animal was clinically diseased at the time of slaughter. It is important to apply the international standards set by the OIE and the Codex Alimentarius Commission to minimize the likelihood of viral presence in meat. However, the risk of spreading influenza viruses to naive animal populations through trade of meat and meat products is negligible. No specific measures are presently recommended in addition to the good biosecurity practices currently recommended by the OIE and the FAO. Depending on the outcome of scientific investigations, additional measures to protect animal health and prevent the spread of influenza viruses to other previously unaffected animal populations could be contemplated in the future.

However, such measures are subject to the above-described assessment investigations and they should not be introduced for food safety reasons. Pork meat is usually cooked or otherwise processed prior to consumption, and cooking time/temperature regimes for pork meat will readily inactivate any influenza virus potentially present. Thus, it can be concluded that consumption of pork and its products, processed in accordance with good hygienic practices recommended by the Codex Alimentarius Commission and the OIE, will not be a source of infection.

In the regions where this novel influenza virus is circulating among humans, and possibly may be circulating in pigs, investigations of ILI among persons in at-risk groups such as farm workers, owners (and their families) of backyard pigs, slaughterhouse workers, specialized pig workers such as farrowers, veterinarians and pig processing factory workers and associated pig populations should be conducted. Specific information campaigns and targeted guidelines on protection measures should be developed and disseminated to these groups pending the outcome of needed animal investigations.

Suggested action for countries where Influenza A/H1N1 virus may be circulating in pigs

Competent local authorities (veterinary and medical) should work in collaboration with relevant national agencies to monitor the situation with regard to the presence and prevalence of respiratory illness in pigs and more specifically the infection by Influenza A/H1N1 virus. Compilation of this type of information will assist to better understand the origin of the emergence and the dynamics of this virus.

Suggested recommendations to persons in contact with pigs (in general)

Until we know more about this event, veterinary authorities should remain vigilant and investigate unusual swine respiratory illness reported by pig farmers. Veterinary and human health authorities need to consider possible associations of unusual swine respiratory illness and human ILI.

Precautions for handling swine potentially infected with swine influenza virus are assumed to be the same as for poultry potentially infected with Highly Pathogenic Avian Influenza (HPAI), although further work is needed. Because this virus has already demonstrated transmissibility among humans, it might pose an additional zoonotic risk when compared to H5N1 avian virus. Proper hygiene precautions should be taken when handling and disposing of sick or dead pigs. The review of existing biosecurity measures on farms is recommended.

ILI in workers who are in contact with pigs should be immediately reported to responsible community and national health authorities and the etiology investigated.

As specific information becomes available, targeted guidelines on protection measures will be developed and disseminated.

Suggested communication messages relative to pork consumption

The risk of infection of H1N1 virus through ingestion pig meat or other products derived from pigs has never been established. In any case, heat treatments commonly used in cooking meat (e.g. 70 °C/160 °F) or other appropriate processing will readily inactivate any viruses potentially present in raw meat products. It can therefore be concluded that pork meat and its products,

handled in accordance with good hygienic practices recommended by the Codex Alimentarius Commission and the OIE, will not be a source of infection.

Food safety recommendations (in general)

- Pork meat and pork products from healthy pigs can be safely consumed provided these items are properly cooked (i.e. 70 °C/160 °F in all parts of the food, no pink meat and the juices run clear) and properly handled during food preparation to avoid cross-contamination.
- Good hand hygiene and proper cleaning and disinfection of surfaces and utensils are always important.
- Meat from sick pigs or pigs found dead should not be processed or used for human consumption under any circumstances⁷.

Additional Information:

The WHO “Five Keys to Safer Food” initiative can be useful in educating food handlers and consumers with regards to the safe handling of food, as well as a general precautionary measure against foodborne illnesses.

We have included the link to information regarding the initiative below:

- 5 keys for safer food website: <http://www.who.int/foodsafety/consumer/5keys/en>
- 5 keys for safer food manual: <http://www.who.int/foodsafety/consumer/5keysmanual/en>
- 5 keys for safer food poster: <http://www.who.int/foodsafety/publications/consumer/5keys/en>

Additional Information on Influenza A/H1N1 in humans: <http://www.who.int/csr/disease/swineflu/en>

Additional Information on Influenza A/H1N1 in animals: http://www.fao.org/index_en.htm

INFOSAN serves as a vehicle for food safety authorities and other relevant agencies to exchange food safety information and to improve collaboration among food safety authorities at both the national and international level.

INFOSAN Emergency, embedded in INFOSAN, links official national contact points to address outbreaks and emergencies of international importance and allows for the rapid exchange of information. INFOSAN Emergency is intended to complement and support the existing WHO Global Outbreak Alert and Response Network (GOARN).

INFOSAN is operated/managed by WHO, Geneva. It currently includes 177 Member States.

More information is available at: www.who.int/foodsafety

⁷ Codex Alimentarius Commission Code of Hygienic Practice for Meat

http://www.codexalimentarius.net/download/standards/23/cxp_001e.pdf

OIE Terrestrial Animal Health Standards Code: Chapter 1.6. Control of biological hazards of animal health and public health importance through ante- and post-mortem meat inspection. http://www.oie.int/eng/normes/mcode/en_chapitre_1.6.2.htm