WORLD ORGANISATION FOR ANIMAL HEALTH
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OIE Situation Report for Highly Pathogenic Avian Influenza

Latest update: 31/05/2018

The epidemiology of avian influenza (AI) is complex. The AI virus constantly evolves by mutation and re-assortment with the emergence of new subtypes causing significant threat to both animal and human health, and the risks they present can vary, as well as the response in different countries.

This report presents an overview of historical and current AI disease events reported to the OIE by its Members through the World Animal Health Information System, WAHIS.

The epidemiology of the disease in the last 13 years was characterized by two main panzootics. The first panzootic started in 2004, peaked in 2006, and afterward the virus activity progressively decreased up to 2012. Since 2013 a second panzootic has been observed, with maximal activities in 2015 and 2017. Currently the second panzootic period is ongoing. The objective of this report is to provide an historical background of Highly Pathogenic Avian Influenza (HPAI) epidemiology since 2005, to provide context to the current situation and consider what might happen next.

Current Global Situation (as of 31 May 2018)

1. What is the current status of HPAI situation?

This section presents the cumulative data for the period from 2013 to present and highlights the situation for the months of March - May 2018 (as of 31 May).

As shown in Table 1a, the HPAI situation in the past five years is considered significant for three reasons: 1) the substantial number of countries and territories affected by HPAI in domestic birds; 2) the substantial number of outbreaks (affected farms, villages, or backyards) in this period; and 3) the high diversity of circulating subtypes during the period, which makes control and eradication complex.

	January 2013- May 2018
Number of countries and territories affected by HPAI in domestic birds	68
Number of outbreaks reported in domestic birds	7,011
Number of subtypes reported in domestic birds	12

Table 1a. *Selected characteristics of the global epizootic of HPAI in domestic birds, for 2013-2018.*

In the period from March to March 2018, 15 countries and territories (Bangladesh, Bhutan, Bulgaria, Cambodia, China [People's Rep. of], Chinese Taipei, Iraq, Italy, Korea [Rep. of], Mexico, Nepal, Netherlands, Saudi Arabia, South Africa and Togo) in four world regions (Africa, Americas, Asia and Europe) were affected in domestic birds (Table 1b).

	March -May 2018
Number of countries and territories affected by HPAI in domestic birds	15
Number of outbreaks reported in domestic birds	65
Number of subtypes reported in domestic birds	6

Table 1b. *Selected characteristics of the global epizootic of HPAI in domestic birds, for the period March - May 2018*

2. Differences and similarities between the current panzootic and the 2005-2012 panzootic.

This section presents a comparison of the data between the previous panzootic, which occurred from 2005 to 2012, and the current global panzootic, which have been ongoing since 2013.

As shown in Table 2, in the current panzootic: 1) the number of countries and territories with domestic birds affected has been slightly higher than in the previous panzootic; 2) the number of outbreaks reported in domestic birds has been comparable with the previous panzootic; and 3) the number of circulating subtypes reported in domestic birds has been much higher than in the previous panzootic.

The main difference between the two panzootics is the number of circulating subtypes in domestic birds, as the number of subtypes reported in the past five years was three fold higher than the number of subtypes reported in the previous HPAI panzootic.

	January 2005- December 2012	**January 2013- May 2018**
Number of countries and territories affected by HPAI in domestic birds	65	68
Number of outbreaks reported in domestic birds	8,345	7,011
Number of subtypes reported in domestic birds	4	12

Table 2. *Selected characteristics of the current panzootic of HPAI in domestic birds (2013-2018) and the previous panzootic (2005-2012)*

3. What is the geographical distribution of the countries with HPAI in domestic birds ?

This section presents the cumulative geographical distribution of the disease and reported subtypes for the period from January 2013 to present and highlights the distribution for the months of March - May 2018 (as of 31 May).

As shown in Figure 1, from January 2013 to May 2018, all regions of the world were affected by HPAI outbreaks in domestic birds, with 68 countries and territories reporting the disease present at least once. The most affected regions were Asia, Africa and Europe. While in the Americas the disease was present in the northern part of the region and almost absent from its central and southern part.

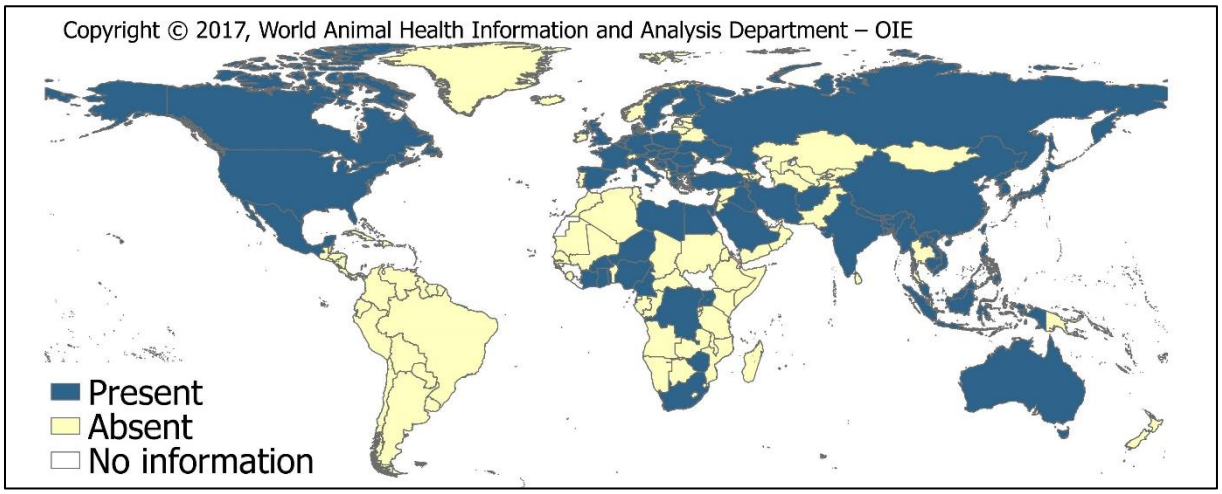


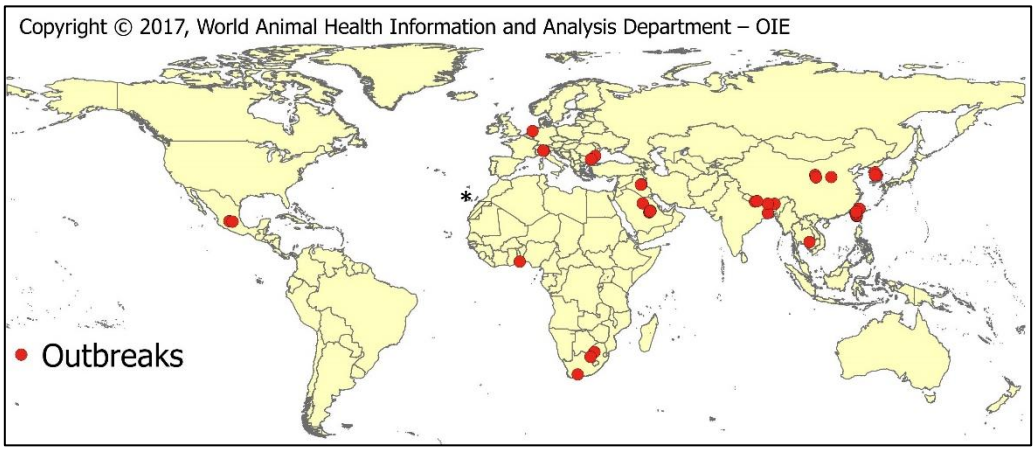
Figure 1. *Countries and territories affected at least once by HPAI outbreaks in domestic birds, January 2013 - May 2018.*

During the period January 2013 – May 2018, 12 different AI subtypes were reported, as shown in Table 3. Europe reported the highest virus diversity (7 subtypes), followed by Asia and the Americas (6 subtypes each), Africa (3 subtypes), and Oceania (1 subtype). Subtypes H5N1, H5N2 and H5N8 were frequently reported and widespread in four out of five regions.

Region	Subtypes
Africa	H5N1, H5N2, H5N8
Americas	H5N1, H5N2, H5N8, H7N3, H7N8, H7N9
Asia	H5N1, H5N2, H5N3, H5N6, H5N8, H7N9
Europe	H5N1, H5N2, H5N5, H5N6, H5N8, H5N9, H7N7
Oceania	H7N2

Table 3. *Distribution of different HPAI subtypes at regional level in domestic birds (January 2013- January 2018)*

The distribution of the most recent HPAI outbreaks in domestic birds is shown in Figure 2.



**Data provided by Morocco*

Figure 2. *HPAI outbreaks reported for March - May 2018 in domestic birds (N=65)*

Sixty-five new HPAI outbreaks in domestic birds were reported from March to May 2018, in Africa, Asia, the Americas and Europe, involving 6 different subtypes. The countries and territories reporting new outbreaks and the aggregated number of poultry killed and disposed of is presented in Table 4.

Region	Count of countries and territories reporting new outbreaks	List of countries and territories reporting new outbreaks	Subtypes reported	Aggregated count of poultry killed and disposed of
Africa	2	South Africa, Togo	H5N1, H5N8	1,372
Americas	1	Mexico	H7N3	1,066
Asia	9	Bangladesh, Bhutan, Cambodia, China (People's Rep. of), Chinese Taipei, Iraq, Korea (Rep. of), Nepal, Saudi Arabia	H5N1, H5N2, H5N6, H5N8, H7N9	2,466,265
Europe	3	Bulgaria, Italy, Netherlands	H5N8, H5N6	31,915
Oceania	0			0
Total	15			2,787,861

Table 4. *HPAI subtype distribution at regional level in domestic birds (March - May 2018)*

4. Impact of HPAI on domestic birds?

This section presents the cumulative number of losses (deaths and animals killed and disposed of) for the period from 2013 to present and highlights data for the period from March to May 2018 (as of 31 May).

As shown in Table 5, HPAI outbreaks in domestic birds resulted in the loss of approximately 120 million birds during January 2013 – May 2018. More than half (57%) of reported losses occurred in Asia, followed by the Americas (24%) and Europe (12%).

Region	Losses
Africa	8,278,431
Americas	28,224,324
Asia	71,162,159
Europe	14,052,783
Oceania	490,000
Total	122,207,697

Table 5. *Losses (deaths and animals killed and disposed of) due to HPAI outbreaks in domestic birds by region (January 2013- May 2018).*

The recent impact of the disease in domestic birds (March - May 2018), is shown in Table 6.

Region	Losses
Africa	5,585
Americas	2,664
Asia	2,528,631
Europe	328,349
Oceania	0

Table 6. *Losses (deaths and killed and disposed of animals) due to HPAI outbreaks in domestic birds by region (March – May 2018)*

5. What is the epicurve of HPAI outbreaks in domestic birds?

This section presents the epidemic curve of HPAI outbreaks in domestic birds since 2005.

Figure 3 shows the number of outbreaks in domestic birds since 2005 by month. Major peaks can be observed in 2006 (N=1,841), 2008 (N=1,954), 2015 (N=2,454) and 2017 (N=1,830).

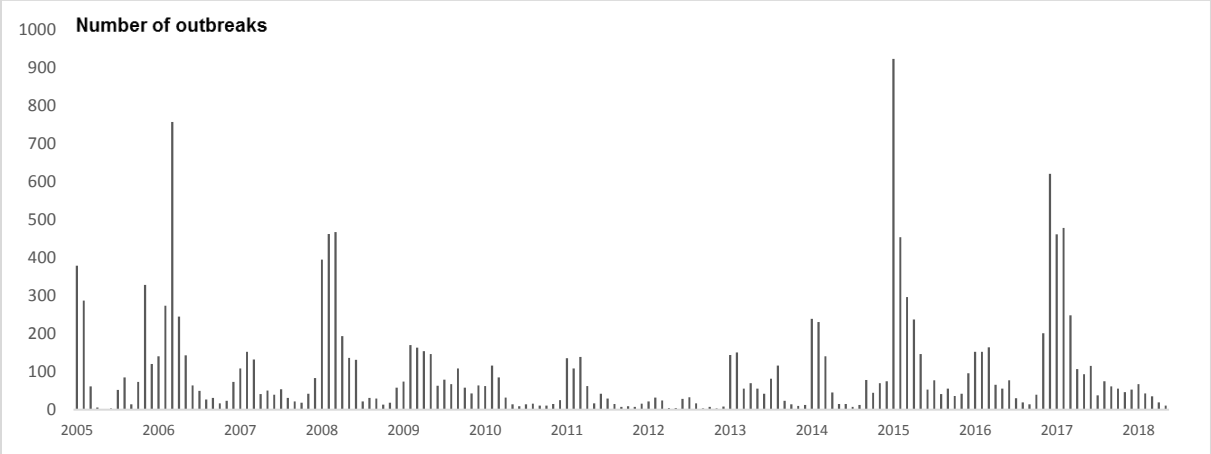
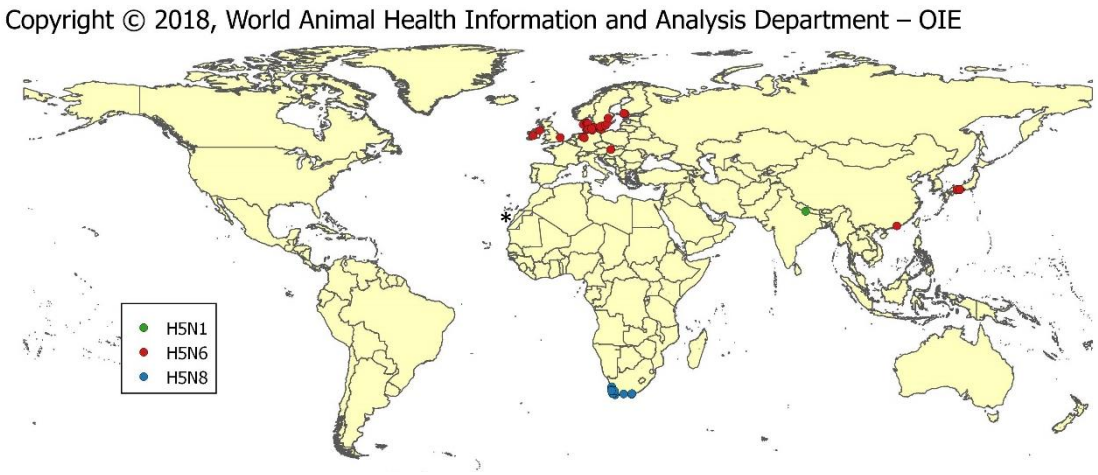


Figure 3. *Number of outbreaks reported in domestic birds by month from 1 January 2005 to May 2018 (N=16,134)*

6. Description of the circulation of HPAI in wild birds in March – May 2018

This section presents the HPAI outbreaks reported to the OIE in wild birds in March - May 2018. As shown in Figure 4, eight countries and territories reported HPAI in wild birds (Denmark, Hong Kong (SARC), India, Ireland, Netherlands, South Africa, Sweden and the

United Kingdom). The viruses responsible for these outbreaks were in subtypes H5N1, H5N6 and H5N8.



**Data provided by Morocco*

Figure 4. *HPAI outbreaks reported for March - May 2018 in wild birds (N=72)*

Understanding the Current Global Situation

1. H7N9

Low pathogenic (LP) H7N9 virus was first detected in poultry in China in 2013 and continues to circulate in several provinces of the country. In February 2017, the LP H7N9 virus mutated to become highly pathogenic (HP) H7N9 virus in poultry and rapidly spread to other provinces of China. The virus also poses a significant risk to the public health causing more than 1,600 human infections since its emergence in 2013. Live bird markets remain the main source of the virus spreading among poultry, and from poultry to humans.

The Chinese Government conducted extensive surveillance in all provinces to understand the extent of LP and HP H7N9 distribution. There has been closure of live bird markets and farms in affected provinces and stamping out of positive birds. Poultry movement control in affected provinces and biosecurity measures were increased. To limit the spread of infection, the Chinese Government has implemented a nationwide vaccination programme in the country. Currently the outbreaks of H7N9 in poultry seem to be decreased compared to previous years, as a result of reduced virus circulation due to vaccination and there are fewer human cases reported.

USA reported a different strain of HPAI H7N9 of North American wild bird lineage in a chicken broiler breeder flock in March 2017. Based on full genome sequence analysis, this virus is not the same as the China H7N9 virus that has impacted poultry and infected humans in Asia. The United States H7N9 is a very different virus, genetically distinct from the China H7N9 lineage. The flock in the USA was depopulated and enhanced surveillance was implemented. The event in the USA was closed on 11 August 2017.

2. H5N1

The Asian lineage HPAI H5N1 virus first emerged in China in 1996 and spread to Asia, Europe, Middle East and Africa and grouped under different genetic clades. Currently the virus continued to be reported in Asia and Africa in both poultry and wild birds. The virus has become enzootic in Asia and Africa and continues to cause outbreaks in poultry and sporadic human infections.

In late 2005, the Asian lineage H5N1 was introduced to Europe and several European countries experienced outbreaks in poultry and wild birds in the subsequent years. The last outbreak of H5N1 occurred in France in 2015 and the virus is not related to the H5N1 viruses circulating in other parts of the world and appears to have evolved from a low pathogenic avian influenza virus circulating in Europe.

In 2015, America and Canada reported novel reassortant H5N1 outbreaks with Eurasian and North American origin in poultry. This virus was different from the H5N1 strain circulating in Asia.

As of May 2018, 860 human infections have been reported to WHO from 16 Countries and Territories. All cases of H5N1 infection in humans have been associated with close contact with infected live or dead birds, or H5N1-contaminated environments. Countries affected should focus on strengthening biosecurity measures to prevent introduction of disease into flocks and avoid contact between wild birds and poultry.

3. H5N8

The HPAI H5N8 outbreaks continued to be reported from a few countries in Europe, Africa, and Asia in poultry and/or wild birds. Some of these countries are located on the migratory route which attracts lot of wild birds suggesting the likely spread of the virus along the route.

Since HPAI H5N8 subtypes cause high mortality in domestic poultry, veterinary services in at-risk countries have recommended increased prevention efforts through bio-security to minimize contact between wild birds and poultry and enhanced surveillance and preparedness. They are also strengthening their wild bird surveillance activities in areas where viruses have been detected and in other areas where there are significant populations of migratory waterfowl.

The majority of wild bird migration across Europe, Africa, and Asia subsides after the winter season. While wintering locations of these migratory birds are often stable, additional movement within a region may be affected by local weather conditions, food resources, access to open water, etc.

4. H5N6

HPAI H5N6 viruses first emerged in China in 2013 and have been reported by several Asian countries. The Asian lineage H5N6 causes severe clinical signs in poultry and associated mortality. The outbreaks in these countries have led to significant destruction of poultry and disposed of for control measures by the veterinary authorities. This group of H5N6 viruses has also been associated with human infection, including a number of deaths. A total of 19 laboratory-confirmed cases of human infection with influenza A (H5N6) virus, including six deaths, have been reported to WHO from China since 2014.

In 2017 – 2018, a new variant strain of HPAI H5N6 emerged and these outbreaks are ongoing in Asia and Europe. These viruses are different from the H5N6 viruses associated with the human infections in China. Detection of this new strain of H5N6 virus in migratory bird species pose a potential threat for the dissemination of this virus by wild birds within and outside Asia and Europe.

5. H5N2

H5N2 HPAI outbreaks continue to be reported from Chinese Taipei since its origin in 2012. Russia for the first time in December 2017 reported an outbreak of H5N2 in birds. These H5N2 viruses cause varying levels of pathogenicity in poultry that led to significant losses for the poultry industry.

6. H7N3

A reoccurrence of HPAI H7N3 outbreaks was reported from Mexico in March 2018. The national veterinary authorities applied measures to control the outbreaks, including quarantine of the affected premises and culling of the birds. H7N3 AI viruses have been reported previously in Americas infecting wild birds and domestic poultry.

Key messages

- In 2017-2018 there have been new and reoccurring outbreaks of HPAI H5N8 and H5N6 in Asia, Europe, and the Middle East. Veterinary authorities in these countries have responded to contain outbreaks in poultry with stamping out measures, heightened surveillance, and recommendations to poultry owners to increase biosecurity. The widespread reporting of HPAI H5N6 in wild birds of Asia and Europe highlight the constant risk and the need to apply strict biosecurity measures by veterinary authorities at farm level to prevent the introduction.

- The zoonotic avian influenza viruses that have been detected in China (H7N9 and H5N6) and parts of Africa and Asia (H5N1), pose the most significant public health risks. Veterinary Authorities have struggled to control the situation, which has allowed these viruses to continue to circulate in poultry populations. This creates the risk of reassortment from co-infections of different influenza viruses, and public health risks through exposure of people to avian influenza viruses during rearing and slaughter. Although there are seasonal trends, the risk is year round since the viruses have become established and self-sustaining in bird populations. The role of commercially farmed poultry, backyard poultry, live bird marketing systems, and wild birds of differing species in maintenance of the virus and transmission will have a local context that needs to be understood through epidemiological study.

- The OIE Standards, and the transparency of reporting through the OIE's World Animal Health Information System, provide the framework for Veterinary Services to implement effective surveillance, reporting, and controls for avian influenza. Wild bird surveillance can indicate periods of heightened risk, and at these times measures to improve on-farm biosecurity may reduce the likelihood of exposure of poultry. The Veterinary Services of OIE Members respond to their national situations in accordance with their national policies and their economic and technical resources.

  There is no scientific evidence that supports the killing or culling of free-ranging wild birds, or other free-ranging wildlife, to control avian influenza. Detections of avian influenza, including HPAI, in wild birds alone do not result in a country losing its status

as free from HPAI, and there is no justification for imposition of restrictions on trade in poultry or poultry products for such countries.