FAOAIDEnews
Animal Influenza Disease Emergency

Situation Update 68
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HPAI outbreaks reported in this publication refer to officially confirmed cases only.
The information is compiled from the following sources: World Organisation for Animal Health (OIE), national governments and their ministries, and the European Commission (EC) – these sources are responsible for any errors or omissions.

Emerging zoonotic diseases in a changing world

As human population expands, economic development proceeds in certain sub sectors of the population and new technologies arise, societies around the globe face more complex and previously unknown challenges. Without a doubt we are experiencing a rapidly evolving world: a place where domestic struggles meet regional priorities that are moulded by international concerns and global issues. We now face climatic change, energy insecurity, nuclear proliferation, hegemonic contestation, deepening regionalism, international terrorism, radicalism, a new multipolar order, and novel diseases. This very last challenge is the one this article deals with. Briefly, the emergence of zoonotic diseases such as Nipah virus in 1999 in Malaysia, Severe Acute Respiratory Syndrome (SARS) in 2002 in China, Monkey Pox in mid 2003 in the United States, Highly Pathogenic Avian Influenza A virus subtype H5N1 (H5N1 HPAI) since early 2004 mainly in Southeast Asia but also in Europe and Africa, and Pandemic H1N1 Influenza in 2009 in North America, have heightened public awareness of the multidimensional linkages between wild animals, livestock production and global public health.

In an increasingly affluent, informed and interconnected world heading towards nine billion by 2050, animal production systems of all types will be pressed to provide the kind of high-quality protein people crave. Moreover, as four billion people in countries with emerging economies move slowly out of poverty, global meat consumption will grow at about five millions metric tons per year; while globally, in 2009, it reached about 280 millions metric tons. In fact recently, a report by the International Panel for Sustainable Resource Management (IPSRM) titled *Environmental Impacts of Consumption and Production* concluded that energy, in the form of fossil fuels, and agriculture, especially the raising of livestock for meat and dairy products, are the two areas currently having a disproportionately high impact on people and the planet's life support systems. This and other publications provide further evidence that, as academics, netizens, opinion leaders, influential bodies, scholars and civic actions groups advocate for transformational measures to mitigate impacts and reduce pressures on the environment, the forthcoming decades will bring more extraordinary changes.

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Despite strong economic incentives, excessive livestock production to meet growing demand of food animals can exacerbate problems of soil degradation, forest encroachment via deforestation and land clearing, biological impoverishment, and through overgrazing and intensive feed production, a loss in the soil's ability to sequester carbon, as well as reductions in the amounts of cereals available for human consumption. As of right now, world agricultural production accounts for 18 percent of the total greenhouse gas emissions that are contributing to atmospheric imbalances and 60 percent of the phosphorus and nitrogen pollution. For comparison, the largest contributor to greenhouse gases is the world energy sector with 62 percent of total emissions, according to the United Nations Environmental Programme (UNEP). Ironically, as if this is not enough, further climatic changes are expected to affect agricultural production via water and heat stress, and changes in the spread of diseases, infections and pests. In a nutshell, as concentrations of atmospheric gases reach record levels, global temperatures are expected to increase by 1.8 to 5.8˚C (i.e. degrees Celsius) by the end of this century. The hydrologic cycle will be altered, since warmer air can retain more moisture than cooler air. This means that some geographic areas will have more rainfall, while others more drought and severe weather events. If this holds true in the future, rising temperatures and changing rainfall patterns will have a substantial effect on the burden of infectious diseases that are transmitted by insect vectors, contaminated waters, and through humid-environment macroparasites.

As global public health is repositioned in international agendas, it is imperative for disease emergence not be looked at in isolation, but must now be systematically viewed alongside dynamic changes in farming landscapes, animal agriculture intensifications, natural resource depletions, land utilisation patterns, trade globalization, human behaviours, food consumption, and evolving trends in agricultural production, distribution and marketing systems. Attention to and analysis of these changes will reveal the feasible and viable options to address the root causes that underpin pathogen evolution, establishment and persistence. Additionally, with population growth and labour opportunities arising in urban centres, mass movements within resource-poor countries against a backdrop of collapsed public health systems can create devastating epidemics. Migrants in their cross-country treks are exposed to disease vectors to which they have little resistance, and the diseases they pick up then move with them to their new places of residence –also infecting the people already living in that area. Conversely, individuals travelling between countries and continents for business or pleasure may find themselves in the midst of new urban centres within few hours, but for less than the incubation period for a typical infection to ensue. We must admit that these changes will drive our approach and actions.

Another factor to consider is that there are communities who have gotten used to recurrent natural disasters and living with infectious diseases who have developed deeply embedded understandings of risks and resilience that ultimately influence the way they view and respond to hazards and threats. It is for this reason that cultural and social dimensions must be embraced, leveraged and made central to bring people, with their incentives and motivations, back into spotlight. In years to come, an important challenge in veterinary public health will be to balance the need for adequate population intake of animal-source protein and essential nutrients with the rapid selection, amplification and spread of pathogens in animal production systems. Evidently, addressing disease burdens on host populations must also consider livelihoods, poverty alleviation, food security, and environmental stewardship while constantly reassessing successes, failures, threats and opportunities.

As noted above, the numerous challenges faced by the international health community are daunting, yet not impossible to overcome. A principal obstacle is to rightly position the impacts of emerging zoonotic diseases on animal and human populations as a salient theme in global agendas, especially as it competes with other equally important and pressing priorities weighed by influential nation-states. The last decade has fortunately experienced an upsurge of narratives and discourses calling for a paradigm shift from selfish divergence towards unified, coordinated and

interdisciplinary mechanisms across agricultural, ecological, nutritional, public health, scientific and veterinary communities worldwide, with the goal of making our world a safer one to live in. As altruistic as this rhetoric may be, the factual evidence suggest that, as a whole, we have reengaged in the classical case of triage, that is, the prioritized assignment of economic, human and physical resources on the basis of where these can be best used, where they are most needed, or where are they most likely to achieve success when suddenly faced with a previously unknown disease. Yes, common sense indeed argues that one can not worry of things not yet known, but in this case, when the health and welfare of humanity is at stake, common sense is verily just not enough.

We must recognize that decades of extraordinary scientific and technological progress now grant collective confidence that development and diffusion of best practices and continuing innovation can advance our world much further in forecasting emerging zoonotic diseases that arise at the animal-human-ecosystem interface, and also now offers other cardinal directions for a healthy and prosperous environment for all.

Is the global health community following a strategic vision or engaging in fire-fighting?

Diseases will be always part of our lives. Pathogenic agents need animal, human and plant hosts to survive and thrive. The science and art dealing with the maintenance of health and the prevention, alleviation, or cure of diseases rests firmly on this premise. Human and veterinary medicine have spoken for long to each other, but with the emergence of SARS and H5N1 HPAI, a realization that these two disciplines needed to closely interact became absolute. This is the perfect case that illustrates how health within medical communities was seen then, and how it is perceived now. We can no longer address health independently. The simple truth is that there is only one health.

With this rationale in mind, the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (OIE), the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), in collaboration with the World Bank and the United Nations System Influenza Coordination (UNSIC), conceptualized the *One World, One Health*™ approach, which is a collaborative, international, cross-sectoral, multidisciplinary mechanism to address threats and reduce risks of detrimental infectious diseases at the animal-human-ecosystem interface. It strategically builds on the lessons learned from, and achievements of, the responses to H5N1 and H1N1 epizootics. This approach is acknowledged as a feasible and viable model to address the multidimensional challenges that are rapidly evolving in a changing world. While some regions are bound to benefit more than others, it is expected that the potential for *One Health* approaches to reduce disease burdens might be greater in specific hotspots, especially in developing countries in the tropics, than those estimated in studies conducted in developed countries.

Although very likely to deliver substantial benefits to animal and human health and the environment, *One Health* will probably encounter commercial, cultural, and political resistance, and face numerous technical and logistical challenges. As a bankable start, to showcase the potential of this approach to both donors and sceptical stakeholders, a number of experts and strategists suggest the initiation of a worldwide early alerting and reporting mechanism that could be enabled by aggregation of open source, event-focused, web-based threats and hazards platforms. In addition to its easy justification and investment worthiness, this timely gathering of disease intelligence is critically essential for the world to avoid wandering aimlessly in a wilderness of growing uncertainties.

MOST RECENT H5N1 AI OUTBREAKS 2006-2010

Note: This list has been compiled on the basis of information up to 31 July 2010.

2010

July	Egypt, Viet Nam
June	Bangladesh, Russian Federation
May	China, Indoensia, Israel, **Mongolia**
April	Cambodia, Lao PDR
March	Bhutan, **Bulgaria**, China (Hong Kong), Myanmar, Nepal, Romania
January	India

2009

March	Germany

2008

November	Thailand
September	Togo
July	Nigeria
June	Pakistan
May	Japan, Korea (Republic of), United Kingdom
March	Turkey
February	**Switzerland**, Ukraine
January	Saudi Arabia

2007

December	Benin, Iran, Poland
October	Afghanistan
August	France
July	Czech Republic
June	Ghana, Malaysia
April	Kuwait
January	Côte d'Ivoire, Hungary

2006

August	Sudan
July	**Spain**
June	Niger
May	Burkina Faso, Denmark
April	Djibouti, Sweden, West Bank & Gaza Strip
March	Albania, Austria, Azerbaijan, Cameroon, **Croatia**, **Greece**, Jordan, Kazakhstan, Serbia, **Slovenia**
February	**Bosnia-Herzegovina**, **Georgia**, Iraq, **Italy**, **Slovakia**

***Green**: areas which never had reported outbreaks in poultry*

Sources: World Organisation for Animal Health (OIE), European Commission (EC), FAO and national governments

AT A GLANCE

The latest HPAI outbreaks for the period 1 June – 31 July 2010

Note AIDEnews publishes reports of **confirmed HPAI cases** using the following sources: OIE, European Commission, FAO and national governments.

AFRICA

EGYPT

A total of eight H5 HPAI positive cases were reported in five governorates during 1 - 30 June: Dakahlia (1), Fayoum (2), Menoufia (1), Qalioubiya (1) and Sixth of October (3) (The number of outbreaks in the governorate is in brackets); two cases during 1 – 31 July in Qalioubiya (1) and Sixth of October (1) Governorates. All of the outbreaks were in household poultry, except for one commercial farm in the Dakahlia Governorate.

ASIA

BANGLADESH

An H5N1 HPAI outbreak in Dhaka Division (Narayanganj District) was reported on 19 June.

INDONESIA

The Participatory Disease Surveillance & Response (PDSR) programme through 33 Local Disease Control Centres covers 71,033 villages in 84% of Indonesia's 448 districts and municipalities in 29 of its 33 provinces. During May 2010, PDSR conducted surveillance in 1,978 villages (2.8%). The overall HPAI incidence was 0.6 infected villages per 1000 villages under surveillance. The disease incidence did not vary very much as only a few provinces reported new infected villages. The four provinces with the highest incidence values were Yogyakarta (6.8 per 1000 villages), Sumatera Barat (2.2 per 1000 villages), Kalimantan Timur (1.7 per 1000 villages) and Lampung (1.6 per 1000 villages). The number of newly infected villages found during May by island was: 14 in Sumatra, 29 in Java, and 2 in Kalimantan.

VIET NAM

Outbreaks of H5N1 HPAI occurred in Quang Nam and Thai Nguyen Provinces in June and Gia Lai Province in July and were reported on the Government website. The last outbreak occurred on 18 July 2010 in chickens and Muscovy ducks in Ia Hrung Commune, Ia Grai District of central Gia Lai Province.

EUROPE

Russian Federation

A total of 367 wild birds were found dead on 5 June on Ubsu-Nur Lake, Republic of Tuva. The lake borders the north-western Uvs Province of Mongolia. Affected species included Great Crested Grebe (*Podiceps cristatus*), Goosander (*Mergus merganser*), Grey Heron (*Ardea cinerea*), Gadwall (*Anas strepera*) and Eurasian Spoonbill (*Platalea leucorodia*). Samples tested positive for H5N1 by PCR.

SUMMARY OF CONFIRMED HPAI OUTBREAKS

(As of 31 July 2010)

Sources: OIE, European Commission (EC), FAO and national governments – WHO for human cases/deaths

Note: H5N1 unless otherwise indicated. Highlighted countries indicate those in which there has been only one officially confirmed H5N1 outbreak or occurrence. Dates of the last outbreak within this year are in bold.

AFRICA	First outbreak	Latest outbreak	Animals affected to date	Human cases / deaths to date
Benin	7 November 2007	15 December 2007	Domestic poultry	-
Burkina Faso	1 March 2006	20 May 2006	Domestic poultry - wild birds	-
Cameroon	21 February 2006	28 March 2006	Domestic poultry – wild birds	-
Côte d'Ivoire	31 March 2006	31 January 2007	Domestic poultry – wild birds	-
Djibouti	6 April 2006	6 April 2006	Domestic poultry	**1 / 0**
Egypt	17 February 2006	**6 July 2010**	Domestic poultry – wild birds – donkeys*	**110 / 35**
Ghana	14 April 2007	13 June 2007	Domestic poultry	-
Niger	6 February 2006	1 June 2006	Domestic poultry	-
Nigeria	16 January 2006	22 July 2008	Domestic poultry – wild birds	**1 / 1**
Sudan	25 March 2006	4 August 2006	Domestic poultry	-
Togo	6 June 2007	8 September 2008	Domestic poultry	-

ASIA	First outbreak	Latest outbreak	Animals affected to date	Human cases / deaths to date
Afghanistan	2 March 2006	2 October 2007	Domestic poultry – wild birds	-
Bangladesh	5 February 2007	**19 June 2010**	Domestic poultry	**1 / 0**
Bhutan	**18 February 2010**	**14 March 2010**	Domestic poultry	-
Cambodia	12 January 2004	**22 April 2010**	Domestic poultry – wild birds	**10 / 8**
China	20 January 2004	**9 May 2010** wild birds	Domestic poultry – wild birds	**39 / 26**
China (Hong Kong SAR)	19 January 2004	**26 March 2010**	Wild birds	-
India	27 January 2006	**30 January 2010**	Domestic poultry	-
Indonesia	2 February 2004	**May 2010**	Domestic poultry – pigs (with no clinical signs)	**167 / 138**
Japan	28 December 2003	7 May 2009 (raccoons, seropositive)	Domestic poultry – wild birds – raccoons (with no clinical signs)	-
Kazakhstan	22 July 2005	10 March 2006	Domestic poultry – wild birds	-
Korea, Rep. of	10 December 2003	12 May 2008	Domestic poultry – wild birds	-
Lao PDR	15 January 2004	**27 April 2010**	Domestic poultry	**2** / **2**
Malaysia	7 August 2004	2 June 2007	Domestic poultry – wild birds	-
Mongolia	10 August 2005	**3 May 2010**	Wild birds	-
Myanmar	8 March 2006	**1 March 2010**	Domestic poultry	**1 / 0**
Nepal	8 January 2009	**8 March 2010**	Domestic poultry	-
Pakistan	23 February 2006	17 June 2008	Domestic poultry – wild birds	**3 / 1**
Thailand	23 January 2004	10 November 2008	Domestic poultry – wild birds – tiger	**25 / 17**
Viet Nam	9 January 2004	**18 July 2010**	Domestic poultry	**119 / 59**

NEAR EAST	First outbreak	Latest outbreak	Animals affected to date	Human cases / deaths to date
Iran	2 February 2006	10 December 2007	Domestic poultry - wild birds	-
Iraq	18 January 2006	1 February 2006	Domestic poultry – wild birds	**3 / 2**
Israel	16 March 2006	**2 May 2010**	Domestic poultry – Emu (zoo)	-
Jordan	23 March 2006	23 March 2006	Domestic poultry	-
Kuwait	23 February 2007	20 April 2007	Domestic poultry – wild birds - zoo birds	-
Saudi Arabia	12 March 2007	29 January 2008	Domestic poultry	-
West Bank & Gaza Strip	21 March 2006	2 April 2006	Domestic poultry	-

* Journal of Biomedical Science : http://www.jbiomedsci.com/content/17/1/25

EUROPE	First outbreak	Latest outbreak	Animals affected to date	Human cases / deaths to date
Albania	16 February 2006	9 March 2006	Domestic poultry	-
Austria	10 February 2006	22 March 2006	Wild birds – cats	-
Azerbaijan	2 February 2006	18 March 2006	Wild birds – domestic poultry – dogs	**8 / 5**
Bosnia-Herzegovina	16 February 2006	16 February 2006	Wild birds	-
Bulgaria	31 January 2006	**29 March 2010**	Wild birds	-
Croatia	21 October 2005	24 March 2006	Wild birds	-
Czech Republic	20 March 2006	11 July 2007	Wild birds – domestic poultry	-
Denmark	12 March 2006	22 May 2006	Wild birds – domestic poultry	-
France	17 February 2006	14 August 2007	Wild birds – domestic poultry	-
Georgia	23 February 2006	23 February 2006	Wild birds	-
Germany	8 February 2006	10 January 2009 mallard, wild	Wild birds – domestic poultry – cats – stone marten	-
Greece	30 January 2006	27 March 2006	Wild birds	-
Hungary	4 February 2006	23 January 2007	Wild birds – domestic poultry	-
Italy	1 February 2006	19 February 2006	Wild birds	-
Poland	2 March 2006	22 December 2007	Wild birds – domestic poultry	-
Romania	7 October 2005	**27 March 2010**	Wild birds – domestic poultry – cat	-
Russian Federation	15 July 2005	**5 June 2010** wild birds	Domestic poultry – wild birds	-
Serbia	28 February 2006	16 March 2006	Wild birds – domestic poultry	-
Slovakia	17 February 2006	18 February 2006	Wild birds	-
Slovenia	9 February 2006	25 March 2006	Wild birds	-
Spain	7 July 2006	9 October 2009 (H7)	poultry	-
Sweden	28 February 2006	26 April 2006	Wild birds – domestic poultry - game birds - mink	-
Switzerland	26 February 2006	22 February 2008	Wild birds	-
Turkey	1 October 2005	9 March 2008	Domestic poultry – wild birds	**12 / 4**
Ukraine	2 December 2005	11 February 2008	Wild birds – domestic poultry – zoo birds	-
United Kingdom	30 March 2006	22 May 2008 (H7N7)	Wild birds – domestic poultry	-