H5N1 HPAI
Global overview - April 2009
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WORLDWIDE SITUATION

One hundred and thirty-seven outbreaks of H5N1 HPAI in poultry were reported officially worldwide in April 2009 from five countries: Bangladesh, China, Egypt, Indonesia and Viet Nam. One case of H5N1 infection was confirmed in a wild bird in Hong Kong SAR, China, during the same period. The number of reported outbreaks/cases by country and their location are illustrated in Figures 1 and 2, respectively.

FIGURE 1
H5N1 HPAI outbreaks reported in poultry worldwide in April 2009
(Source: FAO EMPRES-i)

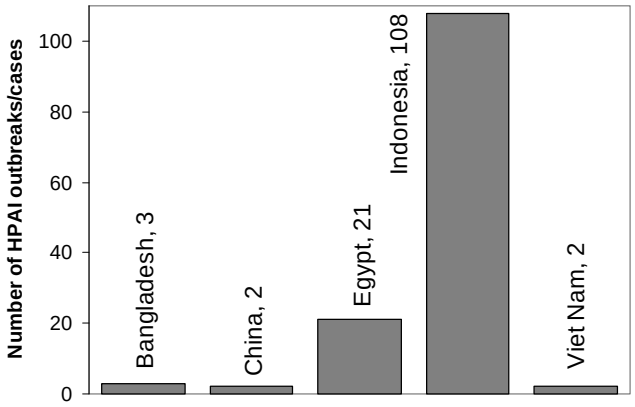


Figure 2
H5N1 HPAI outbreaks reported in poultry in April 2009
(Source: FAO EMPRES-i)

NOTE: H5 cases are represented for outbreaks where N-subtype characterization is not being performed for secondary cases or if laboratory results are still pending. Countries with H5 and H5N1 occurrences only in wild birds are not considered infected countries according to OIE status. The original data have been collected and aggregated at the most detailed administrative level and for the units available for each country.

The evolution of the number of outbreaks/cases over the last six months by species group (wild or domestic) and by geographical area is represented in Figures 3 and 4, respectively. The evolution of the number of confirmed cases of H5N1 AI infections in humans reported to the World Health Organization (WHO) by country between November 2003 and April 2009 is illustrated in Figure 5.

FIGURE 3
Weekly number of reported H5N1 HPAI outbreaks/cases per species (poultry vs. wild birds) between November 2008 and April 2009
(Source: FAO EMPRES-i)

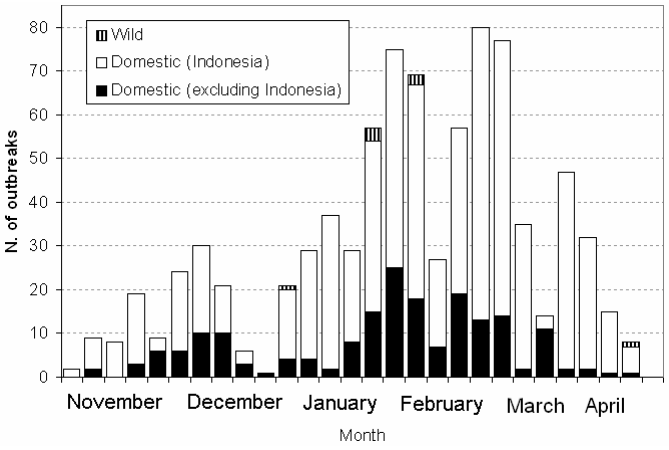


FIGURE 4
Weekly number of H5N1 HPAI outbreaks/cases reported by region between November 2008 and April 2009
(Source: FAO EMPRES-i)

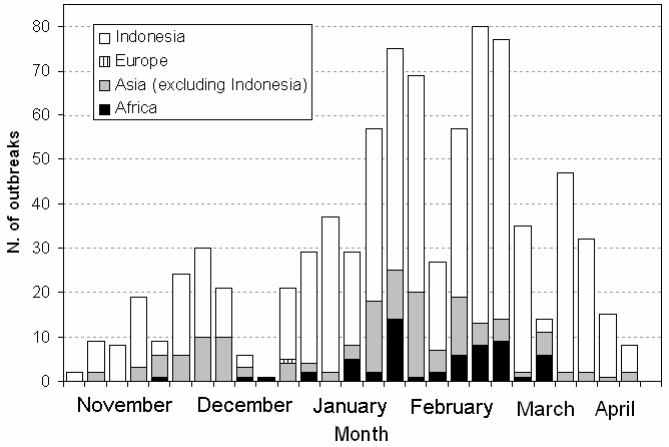
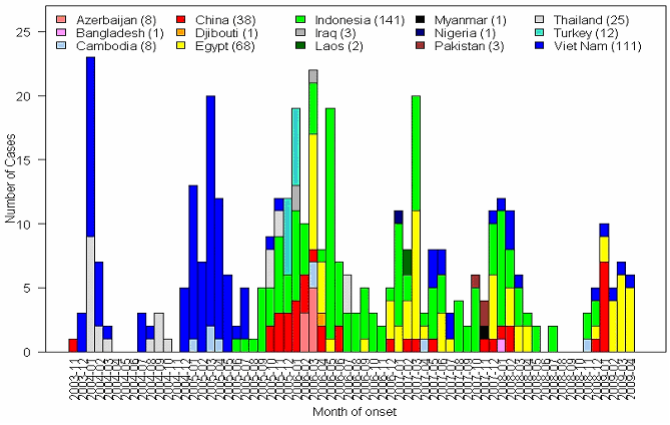


FIGURE 5
Confirmed cases of H5N1 AI infections reported in humans by country between November 2003 and April 2009
(Source: World Health Organization)

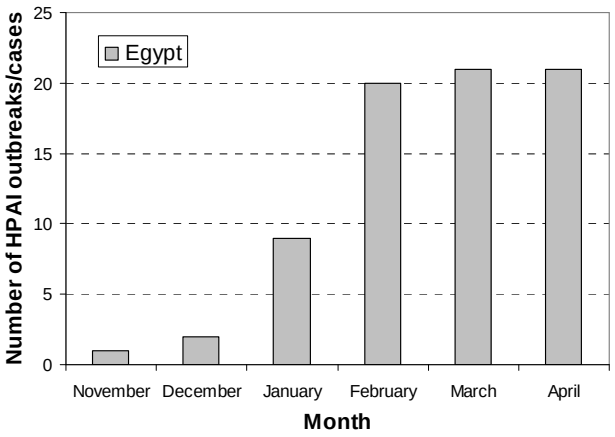


SITUATION BY CONTINENT/REGION

Africa

Confirmed outbreaks of H5N1 HPAI in Africa over the last six months are presented in Figure 6.

FIGURE 6
Number of reported H5N1 HPAI outbreaks in poultry between November 2008 and April 2009 in Africa
(Source: FAO EMPRES-i)



Egypt, which reported its first H5N1 HPAI outbreak in February 2006, is considered endemic with regular reporting of outbreaks in almost all of the 29 governorates. The Egyptian veterinary authorities reported 21 H5N1 HPAI outbreaks in poultry in 13 governorates: Alexandria (2), Bani Suwayf (1), Gharbia (2), Giza (1), Kafr el-Sheikh (3), Kalubia (1), Luxor (1), Minya (2), Minufiyah (2), Sharkia (1), Sixth October (3), Suez (1), and Sohag (1). Almost all these outbreaks were in household/village poultry production systems, with only two cases being reported from commercial farms. Although the vaccination status of most of the affected birds is not reported, there is an indication that outbreaks occurred in both vaccinated and unvaccinated birds.

Participatory disease surveillance (PDS) activities are now implemented in three governorates, namely Sharkia, Behaira and Gharbeia. During April 2009, the PDS teams detected three out of the 19 HPAI confirmed outbreaks in the household poultry sector. The PDS teams suspected outbreaks that matched the HPAI case definition in eight villages. Of these, H5 HPAI cases were confirmed in only three villages.

Surveillance activities are being undertaken targeting both poultry and migratory wild birds around selected important bird areas (IBAs) during winter. In addition, poultry farms are required to test their birds and receive certification (HPAI negative status) prior to any transportation. During April 2009, 1,736 samples were collected for this purpose and none were positive. Compliance with certification for poultry transportation is sub-optimal, as only registered farms seek such services. During the reporting period, active and passive surveillance was carried out on 13 commercial poultry farms, of which two were confirmed to have H5N1 HPAI infections. Similarly, 161 samples were collected from the backyard/household poultry sector, of which 19 were confirmed positive. Fifty-one samples were also collected at road check points and only one was proved positive for HPAI.

The current government policy is to vaccinate poultry in backyard/household settings twice a year and to allow commercial poultry companies to vaccinate their flocks with registered vaccines of their choices. Although there is no official vaccination data, it is assumed that vaccines are widely used in the commercial poultry sectors. There are at least 21 imported vaccines used in Egypt. Only inactivated vaccines are used, mostly H5N1 Re-1 Chinese vaccine type for household poultry and H5N2 vaccine type for commercial farms. All AI vaccines used in Egypt are imported.

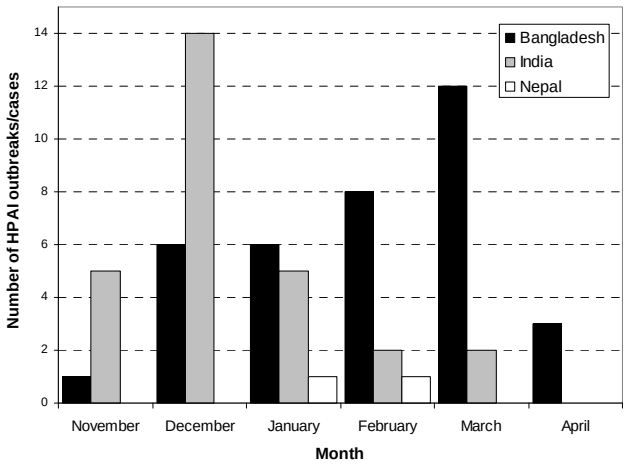
FAO, in collaboration with the General Organization of Veterinary Services (GOVS), has conducted an assessment of the current AI mass vaccination strategy in Egypt. The results of the assessment revealed that the current strategy has limited impact on HPAI control. Vaccination in the household/village poultry sector has low coverage and flock immunity levels, and malpractices may have contributed to spread of infection. GOVS has no data on AI vaccination programmes and practices in the commercial sector. There is no post-vaccination monitoring in the household/village and commercial poultry sectors. The study emphasized that vaccination against H5N1 HPAI should only be considered as a tool within a broader disease control package, including improvement of surveillance systems, outbreak investigation and disease management, and application of bio-security measures along the poultry value chain. The assessment study identified limitations and malpractices of the current mass AI vaccination strategy and made concrete recommendations for risk-based targeted approaches with post-vaccination monitoring and exit strategies.

During the reporting period (April 2009), the Egyptian health authorities confirmed eight new human HPAI H5N1 cases (3 deaths) in six different governorates: two baby boys (around 2 years old) from Behaira, a 6-year old boy from Kalubia, a 33-year old woman from Kar El-sheikh (fatal), a 25-year old woman from Cairo (fatal), a 1.5-year old girl from Kar El-sheikh, a 4-year old girl from Sohag (fatal) and a 34-year old woman from Gharbia. All these cases had histories of close contact with dead and/or sick poultry. As indicated above, most of the human cases were in children under six years of age. In April 2009, the total number of H5N1 human infections in Egypt reached 68, with 26 being fatal cases.

South and Central Asia

Confirmed outbreaks/cases of H5N1 HPAI in South Asia over the last six months are presented in Figure 7.

FIGURE 7
Number of reported H5N1 HPAI outbreaks in poultry between November 2008 and April 2009 in South Asia
(Source: FAO EMPRES-i)



In **Bangladesh**, three outbreaks of H5N1 HPAI were reported in Gaibandha, Narsinghdi, and Dhaka Districts. With outbreaks of H5N1 HPAI reported almost every month since the first occurrence in February 2007, the status of the country is believed to be endemic. Poultry vaccination against H5N1 HPAI is prohibited by the government. As of 30 April 2009, a total of 323 outbreaks were recorded in 47 out of 64 districts in both commercial farms and backyard holdings. Nearly 1.7 million birds have been culled as of 30 April 2009. FAO is coordinating and supporting active surveillance that is currently conducted in 150 upazillas (sub-districts) across the country, including the innovative use of the Short Message

Service (SMS) gateway (method of sending and receiving SMS messages between mobile phones and a computer) as a reporting tool. Daily, 450 community animal health workers employed by the active surveillance programme send SMS coded text messages to the Department of Livestock Services, reporting disease and death in poultry. SMSs of suspected AI events are automatically forwarded to the livestock officer in the area, who starts an investigation.

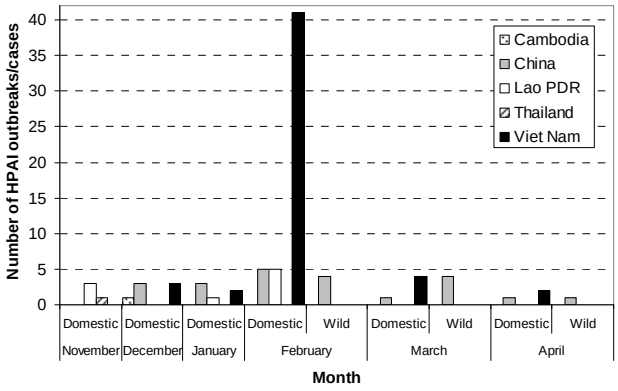
In **India**, no outbreaks were reported during April 2009. This ends a wave of outbreaks that started in November 2008, over five months after the previously reported outbreak. During the period between 30 March 2009 and 5 May 2009, 23,041 active surveillance samples were received at the High Security Animal Disease Laboratory (HSADL), Bhopal. Testing was completed on 24,562 samples and another 3,774 are pending. The periodical reports (available on-line at http://www.dahd.nic.in/birdflue.htm) also include the number of samples received and tested per state. An Uttar Pradesh Wildlife Department project has collected about 240 samples since January 2009, mostly from migratory bird species. Another 150 wild bird samples have been submitted from samples collected at Chilika Lagoon, Orissa and Koothankulam Reserve, Tamil Nadu, from birds trapped as part of an FAO-facilitated satellite tag marking project (http://www.fao.org/avianflu/en/wildlife/sat_telemetry_india.htm). Samples are in the process of being tested at HSADL. The project is to continue for a three-year period.

In **Nepal**, no HPAI outbreak was reported during April 2009. Measures taken seem to have succeeded in containing the disease to just one district (Jhapa). The major threat is to the intensive commercial production areas in the central region. The haemagglutination (HA) gene from the virus isolated from the index case was sequenced at the Veterinary Laboratory Agency (VLA), demonstrating ~99% similarity with publicly available sequences from contemporary viruses in Eastern Asia, including viruses originating from India (West Bengal).

South East Asia

Confirmed outbreaks/cases of H5N1 HPAI in South East Asia over the last six months are presented in Figures 8 and 9.

FIGURE 8
Number of H5N1 HPAI reported outbreaks/cases in poultry/wild birds between November 2008 and April 2009 in South East Asia (excluding Indonesia)
(Source: FAO EMPRES-i)



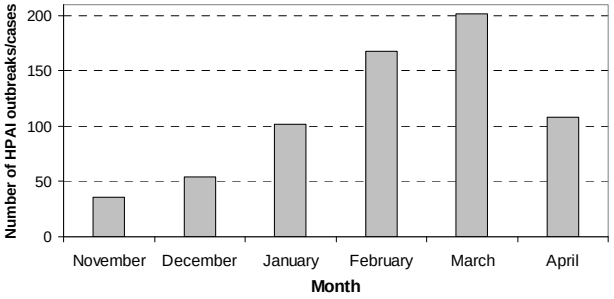
In **Cambodia**, after the human case and poultry outbreak reported in Kandal Province in December 2008, no additional H5N1 HPAI events have been reported. Cambodia regularly reports the results obtained from their surveillance activities through an animal health hotline at the National Veterinary Research Institute (NaVRI) that receives reports on suspicious cases from the field. During April 2009, NaVRI received five calls reporting sick and dying poultry, and received 17 samples of different types of sparrows collected by the Wildlife Conservation Society, all with negative results.

In **China**, the carcass of a feral pigeon found in Tuen Mun, Hong Kong, SAR, tested positive for the H5N1 virus. In addition, an HPAI outbreak was reported in a live chicken market in Tibet.

On mainland China, vaccination coverage officially reported is still very high in all provinces. Mean vaccination coverage through September 2008 is reported to be higher for most provinces than for the same period in 2007. Additionally, all but one province, Xinjiang, reported 80% vaccination coverage or higher

Indonesia continues to report a high number of H5N1 HPAI outbreaks in poultry, as it has for the past three years. HPAI is endemic on Java, Sumatra, and Sulawesi islands, with sporadic outbreaks reported from other areas. Incidence varies widely. Only two of its 33 provinces have not reported the occurrence of H5N1 HPAI. The high number of reported outbreaks each month is partially explained by the implementation of the 'participatory disease surveillance and response' (PDSR)* programme that targets village-type poultry production systems (both backyard and small-scale intensive) and reports evidence of virus circulation in the village environment. The programme is supported by FAO with USAID financial support and is operating in 331/448 (74%) districts through 31 Local Disease Control Centres (LDCCs) in 31 out of 33 provinces in Java, Sumatra, Bali, Sulawesi and Kalimantan, including all known endemically infected areas. Larger and less densely-populated provinces report HPAI outbreaks more infrequently than more densely populated provinces. H5N1 HPAI outbreaks in Indonesia affect the smaller, more dispersed poultry populations, while no outbreaks are being reported by medium- or large-scale poultry producers.

FIGURE 9
Number of reported outbreaks of H5N1 HPAI between November 2008 and April 2009 in Indonesia in poultry
(Source: FAO EMPRES-i)



During April 2009, PDSR officers visited 2,560 villages. The prevalence of infection for April was 11.9%. This is lower than the March prevalence of 15%. During the previous 6 months, PDSR officers visited 17.5% of the villages (11,342) in the 331 districts under PDSR surveillance. The average village infection rate during the previous six months was 11.6%. Since May 2008, 32.9% of villages under PDSR coverage have been visited.

In April 2009, for the second consecutive month, **Lao People's Democratic Republic** reported no H5N1 HPAI outbreak.

Thailand has not reported any H5N1 HPAI activity after the two outbreaks recorded in October and November 2008.

* PDSR case definition in Indonesia: *When poultry mortality events are encountered in which more than one bird died suddenly, with or without clinical signs, Participatory Disease Surveillance and Response (PDSR) teams carry out an influenza type A rapid test. A mortality event consistent with clinical HPAI and a positive rapid test in affected poultry is considered a confirmed detection of HPAI in areas where HPAI has previously been confirmed by laboratory testing.*

In **Viet Nam**, two H5N1 HPAI outbreaks were reported on poultry farms during April 2009 in Quang Ngai and Thanh Hoa Provinces. Disease control measures include stamping out of infected farms, movement restrictions for 21 days, compensation (up to 70% of market value; around USD 1.3/bird) and vaccination. Vaccination is implemented throughout the country in two annual campaigns (March/April and October/November), but in some areas age-based vaccination is being applied. By the end of April 2009, 107.9 million poultry were reported vaccinated during the first round, of which 54.2 million ducks and 53.7 million chickens. Recently the Department of Animal Health changed the vaccination regulation, with full financial support now available for vaccination of commercial flocks below 2000 head/flocks (instead of 500 previously applied).

Based on the monitoring of surveillance activities, three currently circulating virus clades have been isolated: 1) HA clade 1 (predominant in Southern Viet Nam and also isolated in Cambodia); 2) HA clade 2.3.4 (predominant in Northern Viet Nam and also circulating in China); and 3) HA clade 7 (detected in poultry seized at the Chinese border and at markets near Hanoi on active surveillance samples).

There was one human case: a 23-year old woman from Thanh Hoa Province, who died on 22 April 2009. Investigation into the source of infection indicated that poultry had died of H5N1 HPAI around her household. Of the 111 human cases confirmed to date in Viet Nam, 56 have been fatal.

Europe

The last case in Europe was reported in a wild duck shot on 10 January 2009 in Bavaria, Germany. This was the first and, so far, only case of H5N1 HPAI infection in Europe in 2009. The last H5N1 HPAI event was detected in October 2008 on a mixed poultry farm, also in Germany.

Non-infected countries/territories

There have been no HPAI outbreaks reported in the **Pacific Community**, **Oceania**, **Papua New Guinea** (outbreaks have occurred in the Indonesian province of West Papua) or **the Philippines**. To date, no outbreaks have been reported in **Timor-Leste**, but here surveillance capacity is weak. In South Asia, **Sri Lanka**, **Maldives**, and **Bhutan** have not experienced disease. Some Asian countries regularly report the negative results obtained from their surveillance activities and suspected cases. **Bhutan** produces a clinical surveillance report weekly for each administrative level (available at http://www.moa.gov.bt/birdflu/main/reports.php?show=all).

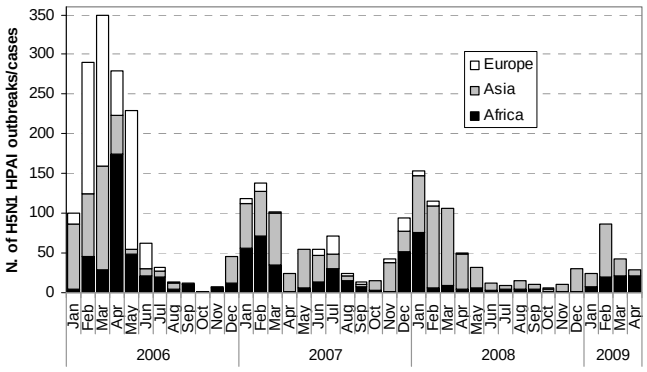
Iraq, where the last H5N1 HPAI outbreak was in February 2006, reported recent laboratory results of their surveillance activities for April 2009 for all governorates except Kurdistan Province, in the north of the country. All samples taken were negative for H5N1 [poultry farms (603), backyard poultry (1,174), game and wild birds (1,379), and markets and slaughterhouses (5,053)]. Poultry farms in Babel and Najaf Governorates were found infected with a H9N2 low pathogenic strain of AI.

CONCLUSIONS

Since 2003, 62 countries/territories have experienced outbreaks of H5N1 HPAI. Effective control measures for outbreaks in poultry have been associated with reduced risk of human infections in several countries. However, H5N1 HPAI remains entrenched in poultry in parts of Asia and Africa (Egypt) and thus the risk of human infection remains, as proven by the nine human cases reported this month in two countries considered endemic (Egypt and Viet Nam).

Data from previous years have shown a peak in the number of outbreaks/cases during the January-March period in both poultry outbreaks (Figure 12) and human cases (Figure 5) with February 2009 representing the peak in this period.

FIGURE 10
Number of reported H5N1 HPAI outbreaks/cases by continent since January 2006
(Source: FAO EMPRES-i)



It is difficult to undertake thorough epidemiological analysis of the situation of H5N1 HPAI globally, based on official disease reporting and the poor disease outbreak investigations carried out in some affected countries related to risk factors for introduction and spread of H5N1 HPAI in those countries. HPAI prevalence and incidence are likely to be much greater. The disease remains most active in those countries considered endemic: Bangladesh, China, Egypt, Indonesia and Viet Nam. The disease seems to be under control in those countries that experienced a re-emergence of HPAI over the last few months, namely Cambodia, India Lao People's Democratic Republic, Nepal and Thailand. It remains unknown whether these new cases occurred because of (a) re-introduction of the infection, or (b) the undetected circulation of the virus at a low level.

April 2009 showed similar activity when compared to April 2007 and 2008, both in terms of affected countries (5 vs. 8 - Figure 11) and number of outbreaks (21 vs. 44 & 23 - Figure 12). When compared to April 2006, however, H5N1 HPAI activity seems to be much lower in April 2009. April 2006 experienced particularly high activity (18 countries reporting 267 outbreaks/cases), reflecting when the panzootic was spreading across Europe. Although there has been an improvement in disease awareness, outbreaks/cases of HPAI are still likely to be under-estimated and under-reported in many countries and regions because of limitations in the capacity of veterinary services to implement sensitive and effective disease surveillance for H5N1 HPAI, and because of the weakness of compensation schemes.

FIGURE 11
Number of countries by continent that reported H5N1 HPAI in April 2006, 2007, 2008 and 2009
(Source: FAO EMPRES-i)

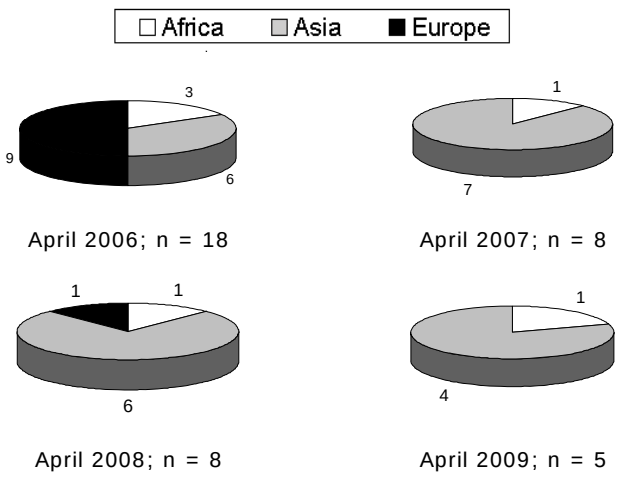
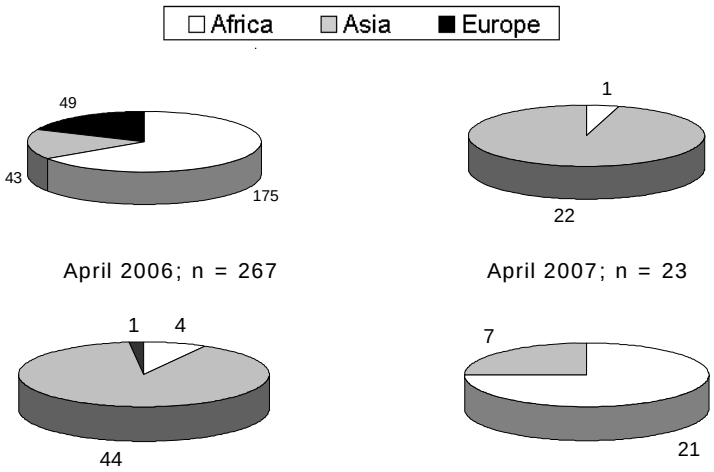


FIGURE 12
Number and distribution of H5N1 HPAI outbreaks/cases by continent in April 2006, 2007, 2008 and 2009
(Source: FAO EMPRES-i; Indonesia data are not included, because the epidemiological unit definition for the PDSR data was modified from household level to village level in May 2008 and is not comparable)



An animated map showing the evolution of outbreaks over the last six months including April 2009 is available at: www.fao.org/ag/againfo/programmes/en/empres/maps.html.

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EMPRES welcomes information on disease events or surveillance reports on H5N1 HPAI (and other TADs) both rumours and official information. If you want to share any such information with us please send a message to glews@fao.org. Information will be treated confidentially if requested.