



MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories

Michigan Department
of Community Health



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New updates in this issue:

- **Michigan Surveillance:** Overall activity remains low; individual influenza reports increased slightly.
- **National Surveillance:** Overall activity is low but increasing; 7 states are at regional or local activity.
- **Avian Influenza:** Myanmar (and potentially Pakistan) report first human cases of H5N1; multiple countries report poultry outbreaks (including the first in Benin).

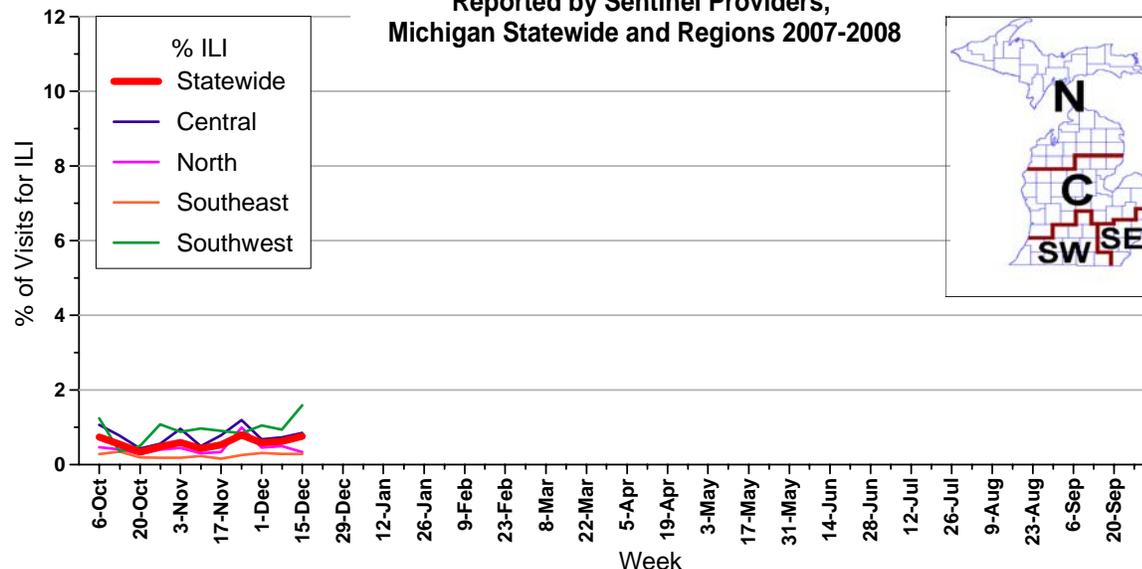
Michigan Disease Surveillance System: The week ending December 15 saw aggregate flu-like illness reports decrease slightly from last week's levels, while individual influenza reports slightly increased. Both aggregate and individual reports are slightly lower than levels seen at this time last year.

Emergency Department Surveillance: Emergency department visits due to respiratory complaints decreased slightly this past week, while constitutional complaints showed a slight upturn. Both constitutional and respiratory complaints are consistent with numbers seen this time last year. Ten constitutional alerts in the C(3), N(1), SE(1) and SW(5) Influenza Surveillance Regions and ten respiratory alerts in the C(4), N(1) and SW(5) Influenza Surveillance Regions were generated last week.

Over-the-Counter Product Surveillance: OTC product sales activity remained fairly steady this week, with very slight increases seen in electrolytes and cough/cold sales. The indicators levels are comparable to those seen at this time last year, except for chest rubs, which are slightly higher.

Sentinel Surveillance (as of December 19): During the week ending December 15, 2007, the proportion of visits due to influenza-like illness (ILI) in Michigan increased slightly from last week to 0.8% of all visits. This represents 42 cases of ILI out of 5531 total patient visits; twenty-four sentinels provided data for this report. The proportion of visits due to ILI remained relatively unchanged in the in the Central (0.9%), North (0.3%), and Southeast (0.3%) regions, while the Southwest increased slightly to 1.6% of all visits. Note that these rates may change as additional reports are received.

Percentage of Visits for Influenza-like Illness (ILI)
Reported by Sentinel Providers,
Michigan Statewide and Regions 2007-2008



As part of pandemic influenza preparedness, CDC and MDCH highly encourage and recommend year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Rachel Potter at 517-335-9710 or potterr1@michigan.gov for more information.

Laboratory Surveillance (as of December 20): For the 2007-2008 influenza season, the MDCH Bureau of Laboratories has identified 7 influenza isolates:

- 5 A/H3N2: Central (1); Southeast (4)
- 2 B/Shanghai: North (1); Southeast (1)

Sentinel laboratories across the state are low positive numbers of influenza tests. Low levels of parainfluenza viruses have been reported from the Southeast region.

***As a reminder, the positive predictive value of influenza rapid tests decreases during times of low influenza prevalence. MDCH suggests that during periods of low influenza activity in your community, all positive rapid tests results be confirmed by sending in a specimen for viral culture; this can be arranged through your local health department.

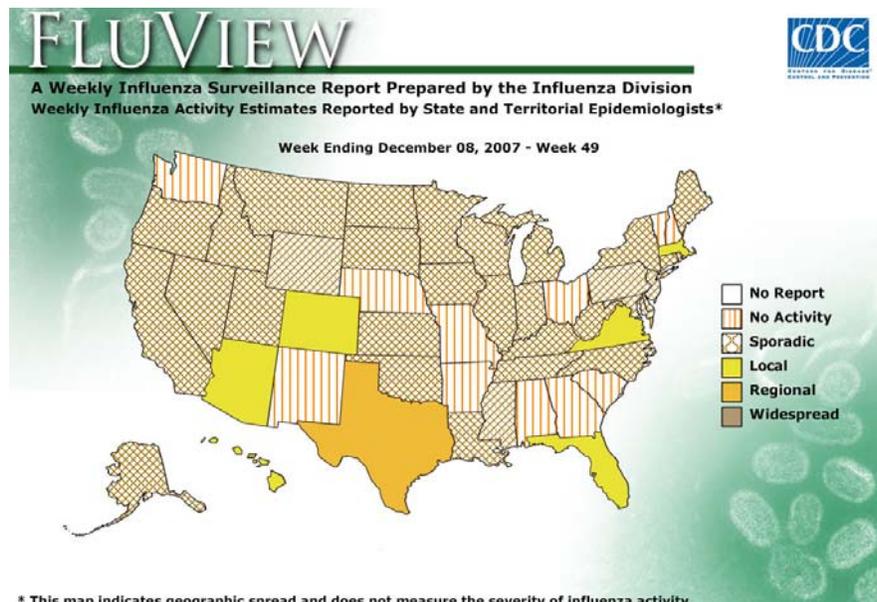
Influenza-Associated Pediatric Mortality (as of December 20): For the 2007-2008 season, there are no confirmed reports of influenza-related pediatric mortality in Michigan.

***Reminder: The CDC has asked all states to continue to collect information on any pediatric death associated with influenza infection. This includes not only any death in a child less than 18 years of age resulting from a clinically compatible illness confirmed to be influenza by an appropriate laboratory or rapid diagnostic test, but also unexplained death with evidence of an infectious process in a child. Refer to http://www.michigan.gov/documents/fluletter_107562_7.pdf for the complete protocol. It is important to immediately call MDCH to ensure that appropriate clinical specimens can be obtained.

Congregate Settings Outbreaks (as of December 20): There have been no reports for the 2007-2008 influenza season.

National (CDC [edited], December 14): During week 49 (December 2-8, 2007), a low level of influenza activity was reported in the United States. During week 49, WHO and NREVSS laboratories reported 2,559 specimens tested for influenza viruses, 121 (4.7%) of which were positive, including 12 influenza A (H1) viruses, two influenza A (H3) viruses, 97 influenza A viruses that were not subtyped, and 10 influenza B viruses. The proportion of deaths attributed to pneumonia and influenza was below the epidemic threshold. The proportion of outpatient visits for influenza-like illness (ILI) and acute respiratory illness (ARI) was below national and region-specific baseline levels. One state reported regional activity, six states reported local influenza activity; 32 states, the District of Columbia, and Puerto Rico reported sporadic influenza activity; and 11 states reported no influenza activity.

To access the entire CDC weekly surveillance report throughout the influenza season, visit <http://www.cdc.gov/flu/weekly/fluactivity.htm>



International, WHO (Weekly Epidemiological Record, November 28): During weeks 46–47, the level of overall influenza activity in the world remained low. Only sporadic activity was observed in some countries of the northern hemisphere: Belgium, the Islamic Republic of Iran, Norway and Switzerland detected influenza A for the first time in the 2007–2008 winter season.

Japan. Regional outbreak was reported with influenza A (H1N1) detected.

United States of America. A slight increase in the level of influenza activity was observed in weeks 46 and 47, with 3 states reporting localized activity. Of all samples tested, 2.8 % were positive for influenza, predominantly influenza A.

During weeks 46-47, sporadic influenza activity was detected in Belgium (B), Bulgaria (H1), Canada (A, B), China (B predominant, H3), Hong Kong Special Administrative Region of China (A, B), Denmark (B), France (A), Islamic Republic of Iran (H1, B), Japan (H1), Republic of Korea (H1), Madagascar (H1), Mexico (A), Norway (A, B), Poland (A, B), Russian Federation (B predominant, H1, H3), Sri Lanka (A), Switzerland (A, B) and United Kingdom (H1). Croatia, Italy, Latvia, Luxembourg, Mongolia, Panama, Portugal, Romania, Slovenia, Spain, Tunisia, Ukraine reported no influenza activity.

MDCH reported **SPORADIC ACTIVITY** to the CDC for the week ending December 15, 2007.

For stakeholders interested in additional information regarding influenza vaccination and education, the MDCH publication *Michigan FluBytes* is available online at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html. *FluBytes* is published weekly during the influenza season.

End of Seasonal Report

Avian Influenza Activity

WHO Pandemic Phase: Phase 3 - Human infection(s) with a new subtype, but no human-to-human spread or rare instances of spread to a close contact.

International, Human (WHO, December 13): The Ministry of Health of Indonesia has announced a new case of human infection of H5N1 avian influenza. A 47-year-old male from Tangerang City, Banten Province developed symptoms on 2 December and was hospitalized on 9 December. The source of his exposure is currently under investigation.

Of the 115 cases confirmed to date in Indonesia, 92 have been fatal.

International, Human (WHO, December 14): The Ministry of Health in Myanmar has confirmed the country's first case of human infection with the H5N1 avian influenza virus. The case is a 7-year-old female from Kyaing Tone Township, Shan State (East).

The case was detected through routine surveillance following an outbreak of H5N1 in poultry in the area in mid-November. She developed symptoms of fever and headache on 21 November 2007 and was hospitalized on 27 November. She has now recovered. Samples taken from the case tested positive for H5N1 at the National Health Laboratory in Yangon, and the National Institute of Health in Thailand. The diagnosis was further confirmed at the WHO Collaborating Centre for Reference and Research on Influenza, National Institute of Infectious Diseases in Tokyo, Japan.

A team from the Ministry of Health, the Ministry of Livestock and Fisheries and the WHO Country Office are conducting investigations to confirm the source of her infection. Initial findings indicate poultry die off in the vicinity of the case's home in the week prior to the onset of illness. To date, all identified contacts of the case remain healthy and ongoing surveillance activities in the area have not detected any further cases.

International, Human (WHO, December 15): The Ministry of Health in Pakistan has informed WHO of 8 suspected human cases of H5N1 avian influenza infection in the Peshawar area of the country. These

cases were detected following a series of culling operations in response to outbreaks of H5N1 in poultry. One of the cases has now recovered and a further two suspected cases have since died. Samples taken from the suspected cases have tested positive for H5N1 in the national laboratory and are being forwarded to a WHO H5 Reference Laboratory for confirmation and further analysis. The MoH is taking steps to investigate and contain this event, including case isolation and contact tracing and monitoring, detailed epidemiological investigations, providing oseltamivir for case management and prophylaxis, reviewing hospital infection control measures and enhancing health care-based and community-based surveillance for acute respiratory infections.

WHO is providing technical support to the MoH in epidemiological investigations, reviewing the surveillance, prevention and control measures that have been implemented and carrying out viral sequencing of avian and human isolates.

Multiple poultry outbreaks of H5N1 influenza have been occurring in Pakistan since 2006. In 2007, there have also been outbreaks in wild birds. A majority of the outbreaks discovered have been in the 'poultry belt' of North-West Frontier Province, particularly in the Abbottabad and Mansehra area and cases of infection in wild birds have been identified in the Islamabad Capital Territory.

International, Human (Reuters, December 17): A World Health Organization team headed for Pakistan's North West Frontier Province on Monday to investigate how eight people were infected with bird flu, after the country reported its first human death from the virus.

Health officials confirmed at the weekend that eight people had tested positive for H5N1 in the province since late October, of which one person, who worked in a poultry farm, died. A brother of the dead person, who had not been tested, also died. It was not yet clear if he was a victim of bird flu.

"The team will investigate whom the affected people were in contact with, whether they visited poultry farms or affected persons," Health Secretary Khushnood Akhtar Lashari told Reuters. "The other people tested positive were not from the poultry farm. Five of them have recovered while two were still being treated."

No more new cases have been reported in the last two weeks.

Humans rarely contract H5N1, which is mainly an animal disease. But experts fear the strain could spark a global pandemic and kill millions of it mutates to a form that spreads more easily.

The three-member WHO team, joined by officials from the Pakistan National Institute of Health, will visit Peshawar, where patients were treated, and Abbottabad, where authorities reported the last H5N1 virus case in wild birds on Nov. 30.

Bird flu first appeared in Pakistan in early 2006, and several outbreaks of H5N1 were reported this year. The Pakistani cases bring to nearly 350 the number of people worldwide who are known to have contracted the H5N1 virus, which has killed more than 200 people since 2003.

International, Human (WHO, December 18): The Ministry of Health of Indonesia has announced the death of a previously confirmed case of H5N1 infection. The 47-year-old male from Tangerang District in Banten Province died on 13 December.

Of the 115 cases confirmed to date in Indonesia, 93 have been fatal.

International, Poultry (Xinhua News Agency, December 12): Bird flu has recurred in Viet Nam's northern Bac Giang province, raising the total number of localities currently affected by the disease to 2.

Bird flu virus strain H5N1 has killed over 1000 ducks in the 2 districts of Viet Yen and Yen Dung, local newspaper Saigon Liberation on Wednesday [12 Dec 2007] quoted a report of the country's National Anti-bird Flu Steering Committee.

Bird flu virus strain H7N3, currently hitting South Korea and Canada, has not been found in Viet Nam yet, said Bui Quang Anh, head of the Department of Animal Health under the Vietnamese Ministry of Agriculture and Rural Development.

Viet Nam is focusing on intensifying disease surveillance, monitoring of poultry raising, transport and trade, and vaccination among fowls nationwide.

Bird flu outbreaks in Viet Nam, starting in December 2003, have killed and led to the forced culling of dozens of millions of fowls in the country, according to the department.

International, Poultry (The Canadian Press, December 15): Two domestic chickens in eastern Germany have tested positive for the H5N1 strain of the bird flu virus. The Brandenburg state's Agriculture Ministry regional authorities says the birds were kept with nine other chickens in the Oberhavel region, northwest of Berlin.

After several of the birds died, the remains of two of them were sent for testing on Friday. A federal lab confirmed that they were infected with the H5N1 strain. The remaining birds were slaughtered, and poultry kept within a three-kilometre radius was being checked for the virus.

An outbreak of the disease at a poultry farm in Bavaria in August led to the slaughter of 160,000 birds.

International, Poultry (Agence France Presse [edited], December 15): Saudi Arabia's agriculture ministry has ordered 13,500 ostriches to be destroyed following a new outbreak of bird flu in the kingdom, the Al-Watan newspaper reported on Saturday.

The outbreak of the H5N1 strain of the disease that is dangerous to humans was reported on Thursday evening at a farm in the Al-Kharj region, 80 kilometres (50 miles) south of Riyadh, the Arabic language daily said.

Last month, the Saudi authorities ordered nearly four million birds culled in the face of at least 14 separate outbreaks of avian influenza.

There have been no reports of the disease spreading to humans in the oil-rich desert kingdom.

International, Poultry (Reuters [edited], December 17): Benin, the home of ritual Voodoo sacrifice, became the latest in a string of West African states to report cases of H5N1 bird flu after laboratory tests confirmed the deadly virus on two poultry farms.

Agriculture Minister Robert Dovonou said in a statement late on Sunday test results from a laboratory in Italy confirmed the H5N1 virus in cases discovered this month north of the capital Porto Novo and on a farm in the commercial capital Cotonou.

Benin's immediate neighbors, Nigeria, Togo, Niger and Burkina Faso, have all reported H5N1 cases. Other regional states hit include Ghana, Ivory Coast and Cameroon. Eastern neighbor Nigeria is one of the regional nations worst affected by bird flu. It reported sub-Saharan Africa's first confirmed human death from the disease early this year.

Health experts have said they fear Benin's Voodoo priests could be particularly at risk because of their practice of tearing out the throats of live chickens in ritual sacrifices. Voodoo "convents" are found across Benin and the ancient religion was also carried to the Caribbean, especially Haiti, by slaves shipped to the Americas by European captains and traders.

Benin first announced its suspected bird flu cases on December 7. Health Ministry officials said several hundred birds were slaughtered as a precautionary measure in a 5-km (3-mile) radius around the two separate locations. All farms in a 15-km (3-mile) radius were also disinfected.

The import of poultry into the former French colony on the Gulf of Guinea was banned and restrictions were imposed on the movement of birds between farms.

"The tests carried out on samples sent last week to Italy have shown positive ... The two suspect locations are indeed infected by the group A and type H5N1 flu virus," Dovonou said.

Outbreaks in Africa have raised alarm bells because epidemiologists fear the continent's widespread poverty, lack of proper veterinary and medical facilities and huge informal farming sector could allow outbreaks to go unnoticed for longer, increasing the risk of the virus mutating.

International, Poultry (Food Production Daily [edited], December 17): More than 100,000 birds have been culled in Poland after an outbreak of bird flu was detected on a hen farm. The country's Ministry of Agriculture expects the new outbreak will have a significant economic impact on the Polish poultry industry.

Poland is thought to be one of Europe's largest producers of poultry and poultry products, with annual exports to European markets averaging 230,000 metric tons. The announcement of previous outbreaks of bird flu caused wholesale prices for Polish poultry to drop at least 30 percent, according to media reports.

The highly pathogenic (H5N1) avian influenza outbreak was detected at a large laying hen farm in Mazowsze Province. More than 120,000 birds were culled and 100,000 eggs were destroyed by the Veterinary Service. The exact damage to the economy has not yet been calculated, but earlier indications have not been good.

This is reported to be the 5th case of avian flu registered by Polish veterinary authorities since last week [10-14 Dec 2007], when the deadly virus was discovered at 3 turkey farms in central Poland. A safety zone has been set up around the site to prevent the spread of the virus. The deadly bird flu virus has hit numerous locations across the bloc this year.

International, Wild Birds (Reuters [edited], December 12): The deadly H5N1 bird flu virus has, according to this story, been found in wild birds at a 5th site in Poland, officials said on Wednesday [12 Dec 2007].

A stork and 2 buzzards, which died from the virus, were being kept at a wild bird rehabilitation centre near the town of Ornetka, northeastern Poland, regional government veterinarian Ludwik Bartoszewicz was quoted as saying on the TVN24 Web site.

Emergency services set up a safety perimeter around the site. The rehabilitation centre is home to several other wild birds, including cranes and swans. Since some of the species are endangered it was unclear if culling would proceed as usual.

International, Wild Birds (Hong Kong government website, December 13): Mai Po Nature Reserve will close 21 days after a Grey Heron found in Lok Ma Chau tested positive for H5N1 avian influenza, the Agriculture, Fisheries & Conservation Department says. The department will monitor the situation and review the closure period.

The bird was found sick and was collected on 5 Dec 2007 at the wetland compensation area of the MTR Lok Ma Chau Spurline. The bird was kept in a cage and died the next day. There are no chicken farms within 3 km [1.9 miles] of where the bird was found.

The department will remind poultry farmers, bird shop owners, licence holders of pet poultry and racing pigeons to strengthen precautionary and biosecurity measures. It will also conduct frequent inspections of poultry farms and wholesale markets, and will continue wild bird monitoring and surveillance.

The Food & Environmental Hygiene Department will continue to be vigilant over imported live poultry as well as live poultry stalls and will remind stall operators to maintain good hygiene. As the threat of avian influenza remains, departments will remain vigilant and take necessary preventive and control measures.

Swine Influenza, US (Proceedings of the National Academy of Sciences of the USA, December 18): Abstract from Wenjun Ma et al, available at <http://www.pnas.org/cgi/content/abstract/0710286104v1?etoc>.

Although viruses of each of the 16 influenza A HA subtypes are potential human pathogens, only viruses of the H1, H2, and H3 subtype are known to have been successfully established in humans. H2 influenza viruses have been absent from human circulation since 1968, and as such they pose a substantial human pandemic risk. In this report, we isolate and characterize genetically similar avian/swine virus reassortant H2N3 influenza A viruses isolated from diseased swine from 2 farms in the United States. These viruses contained leucine at position 226 of the H2 protein, which has been associated with increased binding affinity to the mammalian alpha-2,6Gal-linked sialic acid virus receptor. Correspondingly, the H2N3 viruses were able to cause disease in experimentally infected swine and mice without prior adaptation. In addition, the swine H2N3 virus was infectious and highly transmissible in swine and ferrets. Taken

together, these findings suggest that the H2N3 virus has undergone some adaptation to the mammalian host and that their spread should be very closely monitored.

Michigan Wild Bird Surveillance (USDA, as of December 20): For the 2007 testing season, 1655 Michigan samples have been taken so far, comprised of 100 live bird samples, 1120 hunter-killed birds, 160 morbidity/mortality samples, and 275 environmental samples.

H5N1 subtype HPAI has not been recovered from any Michigan samples tested to date, or from the 64,118 birds or environmental samples tested nationwide. The 2007 testing season will run from April 1, 2007-March 31, 2008. For more information, visit the National HPAI Early Detection Data System website at <http://wildlifedisease.nh.gov/ai/>.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at <http://www.michigan.gov/emergingdiseases>.

Please contact Susan Vagasky at VagaskyS@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

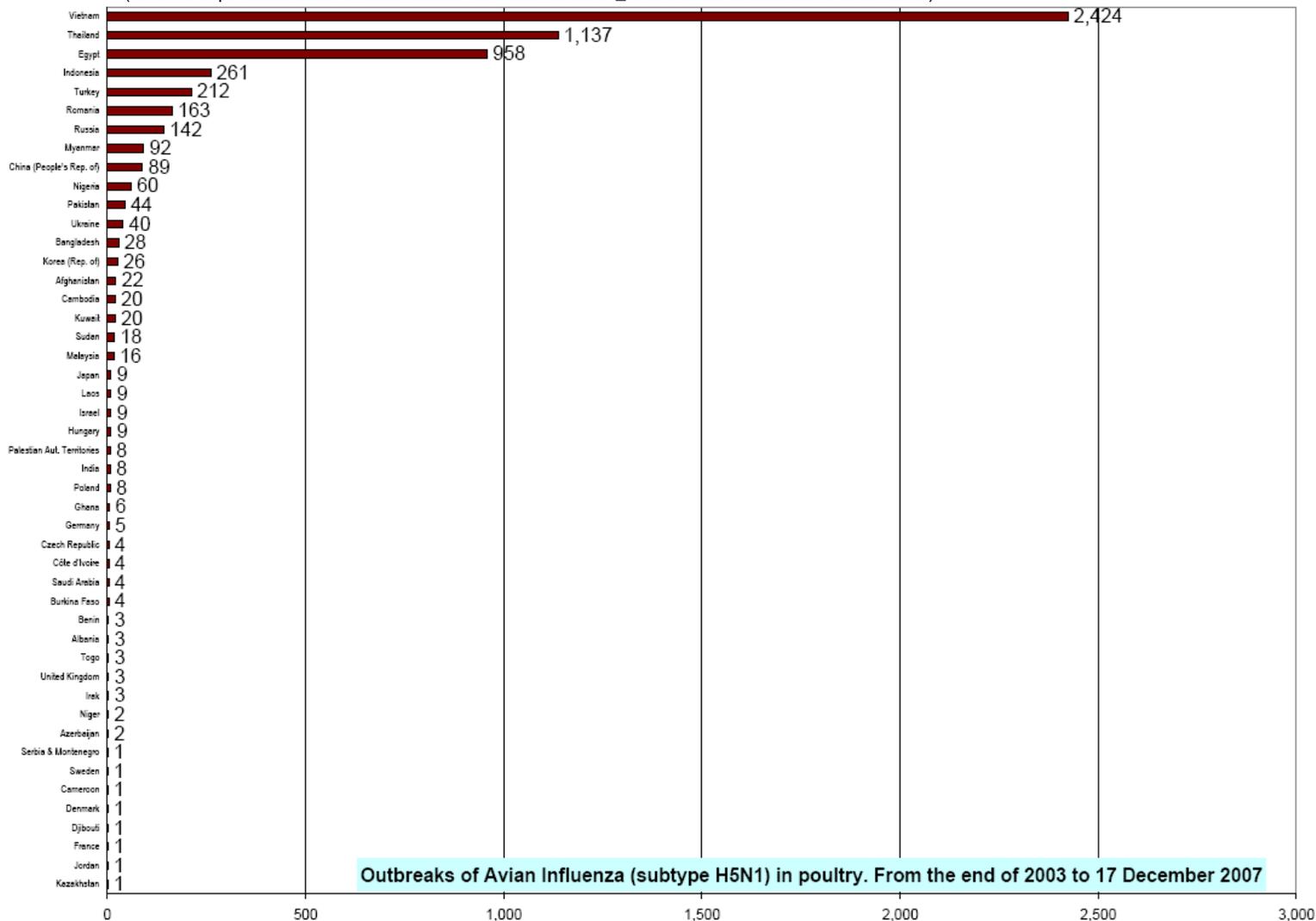
Contributors

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Table 1. H5N1 Influenza in Poultry (Outbreaks up to December 17, 2007)

(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 12/20/2007)



Outbreaks of Avian Influenza (subtype H5N1) in poultry. From the end of 2003 to 17 December 2007

Table 2. H5N1 Influenza in Humans (Cases up to December 18, 2007)

(http://www.who.int/entity/csr/disease/avian_influenza/country/cases_table_2007_12_18/en/index.html Downloaded 12/18/2007)

Cumulative number of lab-confirmed human cases reported to WHO. Total number of cases includes deaths.

Country	2003		2004		2005		2006		2007		Total	
	cases	deaths										
Azerbaijan	0	0	0	0	0	0	8	5	0	0	8	5
Cambodia	0	0	0	0	4	4	2	2	1	1	7	7
China	1	1	0	0	8	5	13	8	5	3	27	17
Djibouti	0	0	0	0	0	0	1	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	20	5	38	15
Indonesia	0	0	0	0	20	13	55	45	40	35	115	93
Iraq	0	0	0	0	0	0	3	2	0	0	3	2
Lao People's Democratic Republic	0	0	0	0	0	0	0	0	2	2	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	1	1
Thailand	0	0	17	12	5	2	3	3	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	7	4	100	46
Total	4	4	46	32	98	43	115	79	77	50	340	209