MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories

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New updates in this issue:

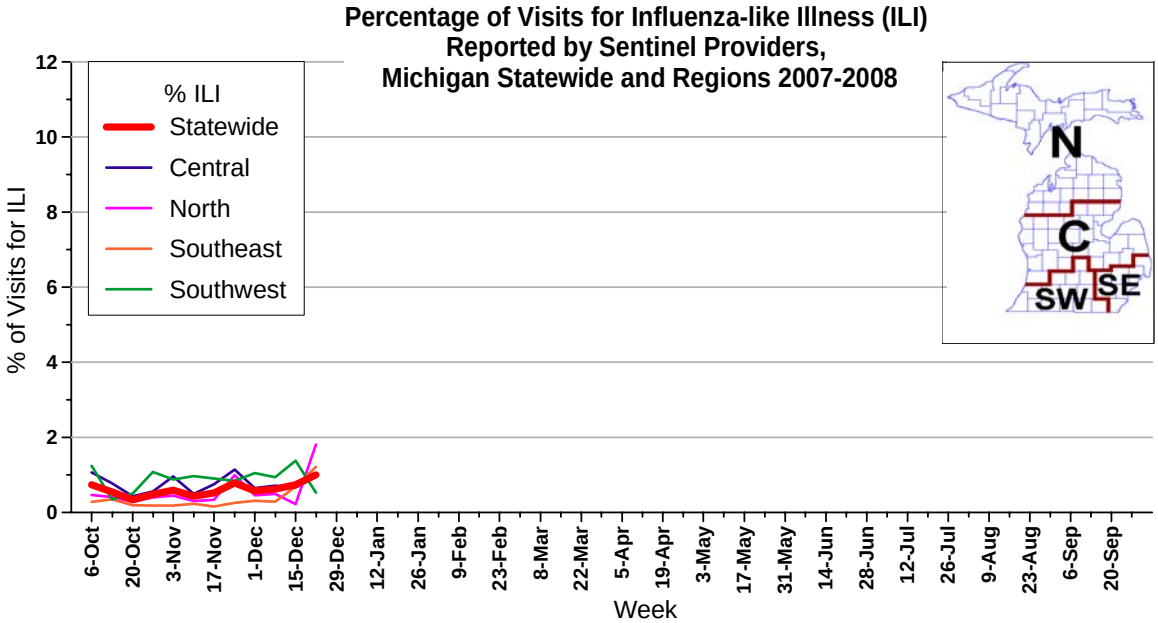
- **Michigan Surveillance:** Individual influenza reports increase.
- **National Surveillance:** Overall activity remains low; 6 states are at local activity levels or higher.
- **Avian Influenza:** Pakistan's first human H5N1 case confirmed; multiple nations with bird outbreaks.

Michigan Disease Surveillance System: The week ending December 22 saw aggregate flu-like illness reports decrease slightly from last week's levels, while individual influenza reports increased, especially in the Southeast Surveillance Region. Individual influenza reports are consistent with numbers seen this time last year, while aggregate reports are slightly lower.

Emergency Department Surveillance: Emergency department visits due to both respiratory and constitutional complaints showed a slight increase last week. Respiratory complaints are consistent with numbers seen this time last year, while constitutional complaints are slightly lower. Ten constitutional alerts in the C(3), N(3), SE(2) and SW(2) Influenza Surveillance Regions and six respiratory alerts in the C(1), N(1) SE(2) and SW(2) Influenza Surveillance Regions were generated last week.

Over-the-Counter Product Surveillance: OTC product sales activity remained fairly steady this week, with very slight decreases seen in chest rub and thermometer 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 27): During the week ending December 22, 2007, the proportion of visits due to influenza-like illness (ILI) in Michigan increased slightly from last week to 0.9% of all visits. This represents 29 cases of ILI out of 3076 total patient visits; sixteen sentinels provided data for this report. The proportion of visits due to ILI remained relatively unchanged in the in the Central (0.4%) region, increased in the North (1.8%), and Southeast (1.4%) regions, while the Southwest decreased to 0.6% of all visits. Note that these rates may change as additional reports are received.



As part of pandemic influenza preparedness, CDC and MDCH highly encourage 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 27): For the 2007-2008 influenza season, the MDCH Bureau of Laboratories has identified 11 influenza isolates:

- 5 A/H3N2: Central (1); Southeast (4)
- 4 A/H3-like: Southeast (3); Southwest (1)
- 2 B/Shanghai: North (1); Southeast (1)

Sentinel laboratories across the state are reporting very low positive numbers of influenza A tests. Low but increasing levels of RSV have been reported from the Southeast and Southwest regions.

***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.

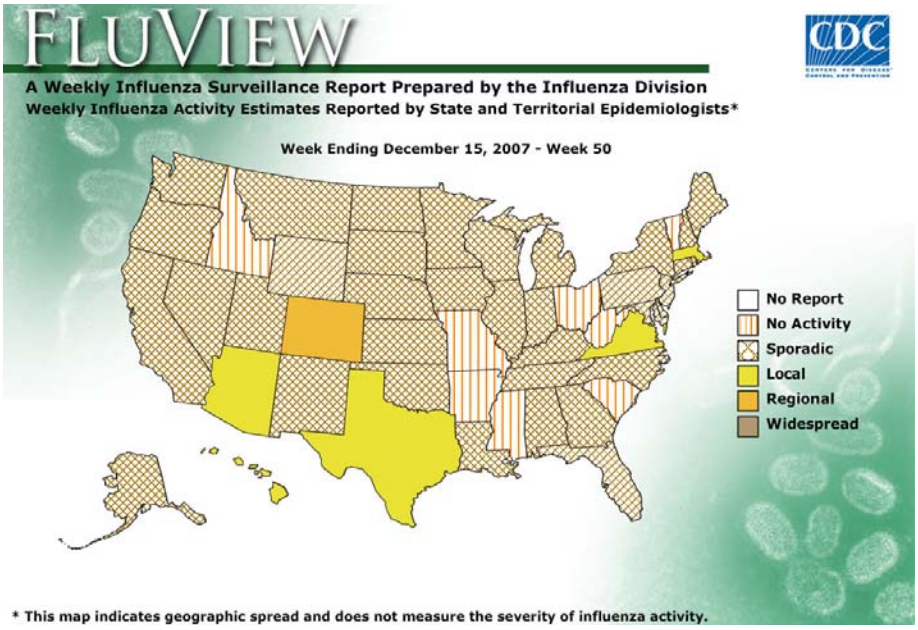
Influenza-Associated Pediatric Mortality (as of December 27): For the 2007-2008 season, there are no confirmed reports of influenza-related pediatric mortality in Michigan.

***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 27): There have been no reports for the 2007-2008 influenza season.

National (CDC [edited], December 21): During week 50 (December 9-15, 2007), a low level of influenza activity was reported in the United States. During week 50, WHO and NREVSS laboratories reported 2,207 specimens tested for influenza viruses, 86 (3.9%) of which were positive, including 22 influenza A (H1) viruses, five influenza A (H3) viruses, 49 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 baseline levels. The Pacific region reported ILI equal to their region-specific baseline. One state reported regional influenza activity; five states reported local influenza activity; 36 states, the District of Columbia, and Puerto Rico reported sporadic influenza activity; and eight 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.

International, Research (Reuters, December 26): Ordinary seasonal flu vaccines may provide a small amount of protection against bird flu, Italian researchers reported Wednesday. Their study is among the first to support the idea that getting an annual flu shot may help people's bodies fight off the H5N1 virus, which has killed 210 people in 13 countries and infected 341.

Cristiana Gioia, Maria Capobianchi and colleagues at the National Institute for Infectious Diseases Lazzaro Spallanzani in Rome tested the blood of 42 volunteers who had been vaccinated against seasonal influenza.

In the laboratory, they added H5N1 virus to the blood and found that in some of the volunteers immune system proteins called antibodies acted against the bird flu virus. They also found a few immune cells called CD4 T-cells seemed to recognize and act against H5N1 virus "and seasonal vaccine administration enhanced the frequency of such reactive CD4 T-cells," they wrote in the journal Emerging Infectious Diseases.

"Our findings indicate that seasonal vaccination can raise neutralizing immunity against (H5N1 avian influenza) virus," the researchers concluded. This could help explain why H5N1, which only rarely affects people, is even rarer among the elderly, Gioia's team wrote.

"This finding may be explained by hypothesizing that older people, although not previously exposed to H5N1 subtype, may have gained protective immunity by previous infections sustained by circulating influenza virus strains," they wrote.

Several types of influenza circulate globally among people at any given time and these strains constantly mutate. This means flu vaccines have to be reformulated every year to match the mutations.

Health experts around the world are trying to boost rates of annual flu vaccination for two reasons -- because flu itself kills between 250,000 and 500,000 people a year, and also to help the world prepare for a pandemic.

MDCH reported **SPORADIC ACTIVITY** to the CDC for the week ending December 22, 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, Global Update (CIDRAP News, December 19): Despite recent spikes in H5N1 avian influenza activity in humans and birds, there have been fewer bird outbreaks in fewer countries this year than in 2006, according to a preliminary report from the United Nations Food and Agriculture Organization (FAO).

As of Dec 10, 30 countries had reported H5N1 cases in birds this year, compared with 54 in 2006, the FAO reported. This year five countries have reported their first outbreaks: Bangladesh, Benin, Ghana, Saudi Arabia, and Togo. Except for sporadic outbreaks in wild birds, most of the H5N1 cases this year occurred in domestic poultry, such as chickens, turkeys, geese, ducks, and quail.

The H5N1 outbreaks seemed to follow a seasonal pattern, in line with evidence that cooler temperatures are more favorable to influenza viruses. The FAO said outbreak numbers in 2007 were high between January and April, declined until September, and then started rising again in November and December.

Increased awareness and improved disease surveillance have enabled countries such as India, Romania, Malaysia, and Turkey to detect and control the spread of the H5N1 virus, the FAO reported. However, the disease persists in Asia, Africa, and Europe and poses a risk for countries that have controlled outbreaks in the past and those that have not experienced infections yet, the organization stated.

The FAO said Indonesia is still having a large number of H5N1 outbreaks in poultry, which largely reflects a new "participatory disease search" program designed to detect infections in backyard poultry. The program, with support from the FAO, is operating in 162 districts and nine provinces.

Among other Asian hot spots for the disease, Vietnam reported H5N1 outbreaks in 22 provinces in May, the FAO reported. It said the disease appears to be endemic in Bangladesh.

China had H5N1 outbreaks in Tibet in March, Hunan province in May, and Guangdong province in September, the agency said. In addition, routine surveillance detected the virus in March and April in the southern Chinese provinces of Fujian, Guangdong, Hunan, Hubei, Sichuan, and Chongqing, the FAO reported. Also, wild bird deaths were reported in Hong Kong but not in mainland China.

The only Middle Eastern country reporting an H5N1 outbreak so far this year has been Saudi Arabia, which had its first cases in March, followed by several outbreaks near Riyadh in November.

In Africa, four countries have reported H5N1 outbreaks in 2007, and the FAO said the virus is considered endemic in Egypt and possibly in Nigeria. "Several countries in West, Central, South, and North Africa are at risk of becoming infected, and early warning, surveillance, and preventive measures should urgently be taken," the organization reported.

Eight European countries have reported H5N1 outbreaks in 2007, the FAO noted.

International, Human (WHO, December 26): The Ministry of Health of Indonesia has announced a new case of human infection of H5N1 avian influenza. A 24-year-old female from West Jakarta municipality, DKI Jakarta province developed symptoms on 14 December, was hospitalized on 19 December and died on 25 December. The source of her exposure is currently under investigation. Of the 116 cases confirmed to date in Indonesia, 94 have been fatal.

International, Human (WHO, December 26): The Ministry of Health and Population, Egypt has announced a new case of human infection of H5N1 avian influenza. The case is a 25 year old female from Bany Suwef Governorate. She was hospitalized on the 21 December and died on 25 December. The source of her exposure is currently under investigation. Egypt reported the last confirmed case of H5N1 in July 2007. Of the 39 cases confirmed to date in Egypt, 16 have been fatal.

International, Human (WHO, December 27): The first case of human infection with H5N1 avian influenza has been confirmed in Pakistan. Laboratory tests conducted by the WHO H5 Reference Laboratory in Cairo, Egypt and WHO Collaborating Center for Reference and Research on Influenza, in London, United Kingdom have confirmed the presence of avian influenza virus strain A(H5N1) in samples collected from one case in an affected family. Additional laboratory analysis, including gene sequencing, is ongoing.

At the request of the Pakistan Government, a WHO team traveled to Pakistan to participate with national authorities in the ongoing investigations of several suspected cases of human H5N1 infections. The following conclusions have been made accordingly:

- The preliminary risk assessment found no evidence of sustained or community human to human transmission.
- All identified close contacts including the other members of the affected family and involved health care workers remain asymptomatic and have been removed from close medical observation.

The Ministry of Health in Pakistan has taken timely steps to investigate and contain this event including case isolation, contact tracing and monitoring, detailed epidemiological investigations, increasing the availability of personal protective equipment, dedicating hospital facilities for any new suspected cases, and other infection control measures. In addition, agricultural authorities, including the Ministry of Food, Agriculture and Livestock and FAO, have been active technical partners for the effective control of this limited outbreak.

International, Poultry (DPA, December 20): A fresh bird flu outbreak has been discovered in Germany, with a state laboratory confirming the presence of the H5N1 virus, an official veterinarian said on Thursday [20 Dec 2007]. The infected bird was in a private hen run at Bensdorf, a village 85 km west of Berlin, said state of Brandenburg vet Hans-Georg Hurttig. All 30 fowl were immediately killed and removed.

He said scientists believed it was a spot outbreak only. The case would only be declared official when a federal laboratory confirmed it. A Brandenburg spokesman said it was still officially considered a "suspected case".

A week ago, the avian influenza virus was discovered at Altglobsow, 75 km north of Berlin, in a hen run with 11 birds.

International, Poultry (OIE, December 24): Today the Dominican Republic reported to OIE the presence of low pathogenic H5N2 avian influenza in poultry. One case (out of 115 susceptible birds) was found in a live bird market in the village of Traspatio, and one case was located in the village of Higuey (out of 15 susceptible birds). Positive results were confirmed at the National Veterinary Services Laboratory in Ames, Iowa on December 21. All susceptible birds have been slaughtered. The source of infection is unknown at this time.

International, Poultry (VietNam Net Bridge, December 24): The dangerous, human-transmissible avian influenza A (H7N3) strain, previously recorded in Korea, Canada and Holland, has reemerged in several Asian countries including Vietnam, according to the National Steering Committee for Avian Influenza Prevention and Control.

The committee held a conference on Tuesday in Ha Noi to discuss the country's response to the recent reoccurrence of the deadly bird flu.

The H7N3 virus found in Vietnam, however, is classified as low-pathogenic, not readily transmitted to humans. The committee has made plans already to import more H7N3 avian influenza vaccines to prevent possible outbreaks.

According to the Ministry of Agriculture and Rural Development, the H5N1 strain reappeared in the northern Cao Bang province's Bao Lam District. Lower temperatures and poultry smuggling from China in the northern provinces have also increased the risk of another outbreak of bird flu in several provinces there.

The committee is directing local officials to improve environmental sanitation in high-risk areas and tighten their control over the transportation of poultry through borders.

International, Poultry (RIA Novosti [edited], December 25): A 5th case of bird flu has been confirmed at a farm in the Rostov Region, south Russia, close to the site of previous outbreaks, the regional emergencies ministry said.

"The outbreak at 2 smallholdings was registered on Saturday [22 Dec 2007]; samples were taken and sent for analysis; they came back positive for bird flu," the ministry said. All 79 birds on the smallholding have been culled. A quarantine zone has been introduced in the Tselinsky district near the site of the 1st case of the deadly virus.

The 1st bird flu outbreak was discovered in late November 2007 at the Gulyai-Borisovskaya poultry farm in the Rostov Region. The farm's entire population of 500 000 chickens was culled. Later, a bird flu outbreak was registered at a smallholding close to the farm. Another outbreak was then discovered at a farm in the Tselinsky district.

The Rostov Region is particularly vulnerable to bird flu as part of the Krasnodar Territory, which is on a route taken by migrating birds in winter. In September 2007, the region was hit by the H5N1 strain, and 230 000 birds were culled.

International, Poultry (DPA [edited], December 25): The 3rd case of the deadly bird flu virus in 10 days has been discovered on a small poultry farm in the German state of Brandenburg, resulting in the culling of 46 chickens, officials said Tuesday [25 Dec 2007]. The H5N1 virus was detected among 15 chickens on a property in the state, which surrounds the German capital Berlin.

The property's owner, who had contacted officials on Monday [24 Dec 2007], was also looking after a neighbouring property with 31 chickens over the Christmas period. As a precaution, the chickens on both properties were destroyed. The 3-km area has been shut off around the properties, which is dominated by small private holdings. Poultry in the surrounding area are now being held in closed pens with owners having been told to immediately report any signs of illness among their birds to local veterinary authorities.

International, Wild Birds (Agence France Presse [edited], December 21): A common buzzard found dead in Hong Kong has tested positive for the deadly bird flu virus, officials said Friday.

Laboratory tests confirmed the bird, found on rural Lantau Island on Monday, was infected with the H5N1 strain, the Agriculture, Fisheries and Conservation Department said. A spokesman reminded people to avoid contact with poultry or wild birds.

The common buzzard is a winter visitor to Hong Kong. Migratory birds have been blamed for the global spread of the disease which has killed at least 209 people and ravaged poultry flocks worldwide since 2003.

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.

HPAI subtype H5N1 has not been recovered from any Michigan samples tested to date, or from the 64,310 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.nbii.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 24, 2007)

(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A AI-Asia.htm Downloaded 12/26/2007)

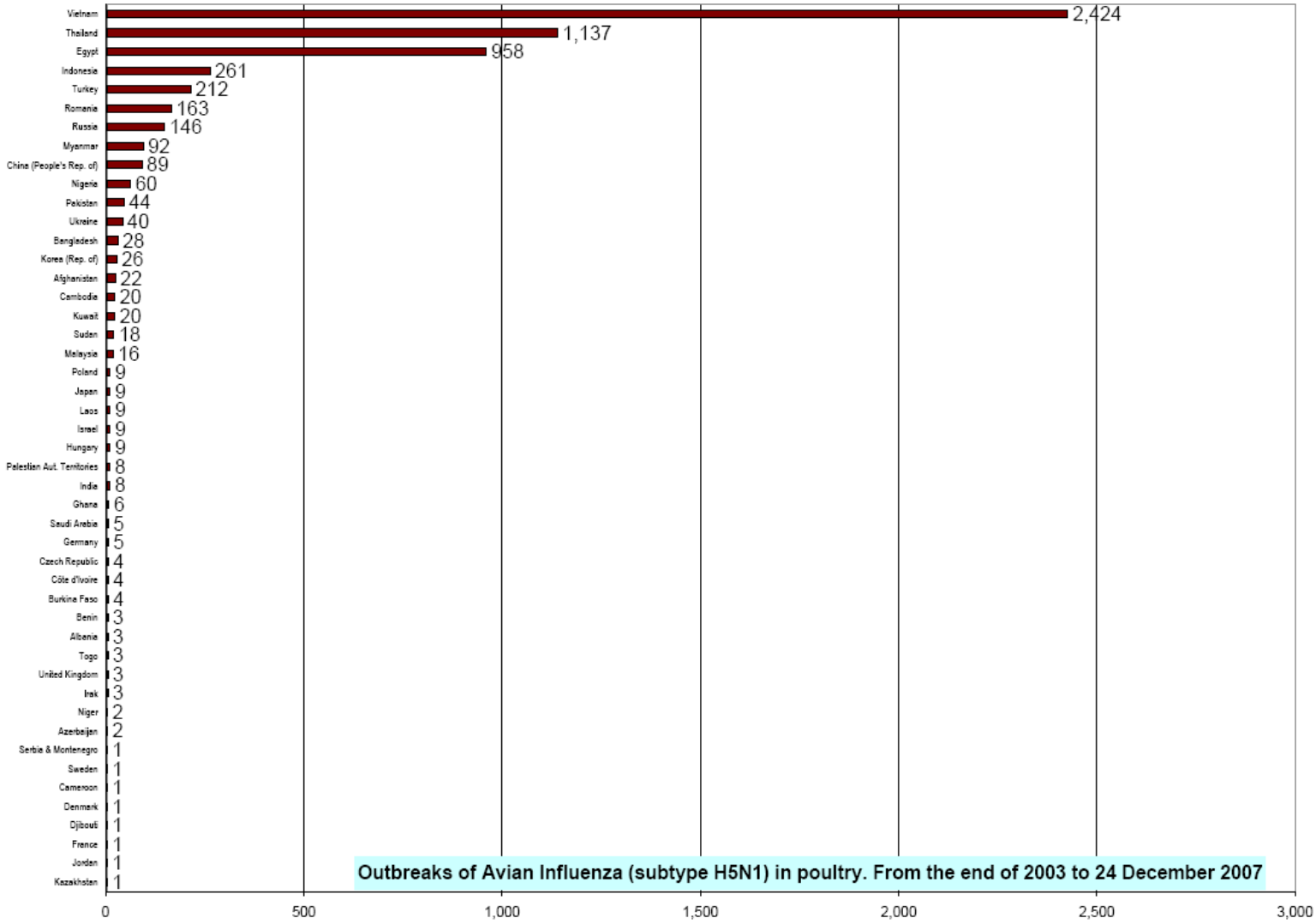

Table 2. H5N1 Influenza in Humans (Cases up to December 27, 2007)

(http://www.who.int/entity/csr/disease/avian_influenza/country/cases_table_2007_12_27/en/index.html Downloaded 12/27/2007)

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	cases	deaths	cases	deaths	cases	deaths	cases	deaths	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	21	6	39	16
Indonesia	0	0	0	0	20	13	55	45	41	36	116	94
Iraq	0	0	0	0	0	0	3	2	0	0	3	2
Lao People's Dem. Rep.	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
Pakistan	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	80	54	343	212