



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:

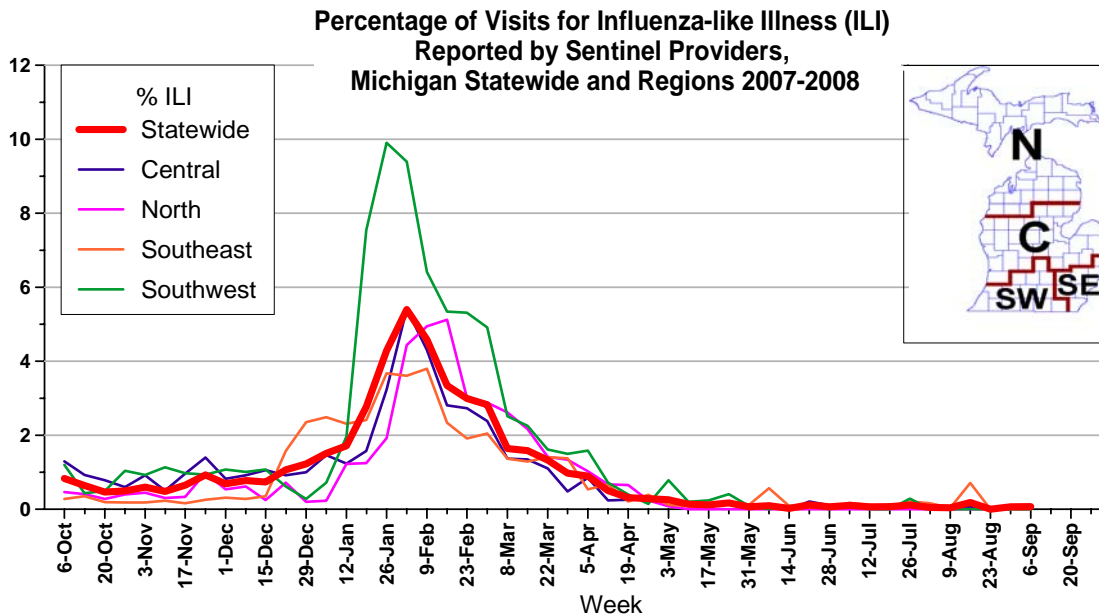
- **Avian Influenza:** Indonesia retrospectively confirms two human H5N1 deaths; Togo and Laos report poultry outbreaks.

Michigan Disease Surveillance System: The week ending September 6 saw both aggregate flu-like disease and individual influenza reports remain steady near last week's levels. Both aggregate flu-like illness and individual influenza reports are expected to fluctuate near baseline levels until the fall.

Emergency Department Surveillance: Emergency department visits from constitutional complaints remained steady near last week's levels, while respiratory complaints increased. Both constitutional and respiratory complaints are consistent with numbers seen this time last year. Seven constitutional alerts in the C(4), N(2) and SE(1) Influenza Surveillance Regions and twelve respiratory alerts in the C(6), N(2), SE(2) and SW(1) Regions, including one statewide alert, were generated last week.

Over-the-Counter Product Surveillance: Overall, OTC product sales were mixed last week. Thermometers showed a very slight drop in sales, chest rubs saw a slight increase, and the remainder held relatively steady near last week's levels. Indicator levels are comparable to those seen at this time last year.

Sentinel Surveillance (as of September 11): During the week ending September 6, 2008, less than 0.1% of all office visits reported by Michigan influenza sentinel sites were due to influenza-like illness (ILI). This represents 2 cases out of 2671 total patients seen. Fifteen practices provided data for this report. 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 September 11): For the 2007-2008 influenza season, the MDCH Bureau of Laboratories has identified 249 influenza isolates:

- 190 A/H3N2: Central (58); Southwest (51); Southeast (49); North (32)
- 4 A/H1N1: Southeast (2); North (2)
- 2 A subtyping unable to be performed: Southeast (2)
- 53 B: Southeast (30); North (10); Southwest (6); Central (6); Indiana (1). 51 have been typed as B/Shanghai/361/2002-like and 2 were B/Malaysia/2506/2004-like (SE).

***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 September 11): For the 2007-2008 season, MDCH has confirmed one influenza-related pediatric mortality in Michigan. The case was a 13 year-old from the Central region with an influenza A/H3N2 and MRSA co-infection; disease onset was in late February.

***The CDC has asked all states to collect information on any pediatric death associated with influenza infection. This includes not only any death in a child (<18 years) resulting from a compatible illness confirmed to be influenza by an appropriate diagnostic test, but also any unexplained death with evidence of an infectious process in a child. See www.michigan.gov/documents/fluletter_107562_7.pdf for the complete protocol. Please immediately call MDCH to ensure that proper clinical specimens are obtained.

Congregate Settings Outbreaks (as of September 11): Congregate setting outbreaks have been reported in all regions of the state, peaking in the first two weeks of February. 7 outbreaks have been culture-confirmed at MDCH; 6 as influenza A/H3N2 and 1 as influenza B for the 2007-2008 season.

Michigan Influenza Season Summary: The 2007-2008 Michigan Influenza Season Summary is now available online at www.michigan.gov/influenza. Overall, this influenza season was moderate in activity with peak activity occurring in early February and was dominated by influenza A/H3N2.

National (CDC): To access the entire CDC weekly surveillance report throughout the influenza season, visit <http://www.cdc.gov/flu/weekly/fluactivity.htm>. The 2007-2008 national influenza season summary is available at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5725a5.htm?s_cid=mm5725a5_e.

International (CIDRAP, September 5): Amid concern about rising resistance to oseltamivir (Tamiflu) in influenza A/H1N1 viruses, a Dutch team this week reported the death of a leukemia patient who was infected with an H1N1 virus that was resistant to the antiviral drug. In a letter in this week's New England Journal of Medicine (NEJM) [week of 31 Aug 2008], the Dutch authors said the case suggests that oseltamivir-resistant H1N1 viruses can cause disease, despite evidence from animal studies that the resistance mutation makes the viruses much less dangerous. The letter said the man's virus was also resistant to amantadine, an older antiviral drug.

On 20 Aug 2008, the World Health Organization (WHO) reported that 31 percent of influenza A/H1N1 isolates from 16 countries that conducted recent tests carried the H274Y mutation, which confers resistance to oseltamivir. Resistance levels ranged from 100 percent (10 of 10 isolates) in Australia to 13 percent (4 of 32 isolates) in Chile.

Emergence of the oseltamivir-resistant H1N1 virus was first noted in Norway in January, and since then researchers have found the virus in 35 countries, including the United States and Canada.

The spread of the oseltamivir-resistant H1N1 virus has puzzled experts because it has not been clearly linked to treatment with the drug. In the case report, authors from Erasmus University Medical Center in Rotterdam wrote that a 67-year-old man who was on chemotherapy in a 3-year battle with chronic lymphocytic leukemia was hospitalized with shortness of breath, a dry cough, and fever. On his 2nd hospital day, he experienced acute respiratory failure, and his physicians placed him on a ventilator and started empirical antibiotic treatment.

Computed tomography (CT) revealed that the patient had patchy lung infiltrates, and tests on samples from his respiratory tract showed he had influenza A/H1N1. On the 6th hospital day the man received oseltamivir, but by day 13 physicians discontinued the drug because sequence analysis of the virus

revealed the H274Y mutation and there was no decrease in the viral load. The authors reported that the mutation was found in samples obtained before the patient began oseltamivir therapy. The man's family and the hospital record revealed that he had had no contact with patients who were taking oseltamivir.

On the 15th hospital day the man's doctors prescribed amantadine, and after a few days his neutrophil count increased, a sign of bone marrow recovery, the group reported.

On day 20 doctors took the patient off the ventilator and instituted zanamivir treatment. However, 2 days later the man had respiratory failure again, and his medical team put him back on the ventilator and discontinued zanamivir therapy. (Like oseltamivir, zanamivir is a neuraminidase inhibitor, but no increase in zanamivir resistance has been reported recently.)

By day 26 physicians detected no influenza virus, but did note that sequence analysis showed an amantadine-resistance mutation in the viral M2 protein (L26F). They wrote that recovery of the immune system was probably responsible for clearing the virus, because the patient had received only 3 doses of zanamivir.

A repeat CT scan taken on day 28 showed that pulmonary infiltrates had progressed. Because of the man's poor prognosis, the ventilator was removed on day 34, and he died 3 days later.

The authors cited animal studies indicating that oseltamivir resistance leaves H1N1 viruses "severely compromised." Despite these reports, they wrote, "the case we describe suggests that this oseltamivir-resistant virus can be pathogenic, at least in an immunocompromised patient."

In an editorial published by Eurosurveillance in January 2008, authorities said resistant viruses with the H274Y mutation had been seen in previous flu seasons but were rare and did not spread easily. But the more recent H1N1 isolates with the mutation were "fitter" and were spreading in the community, they wrote.

International (WHO, August 29): During weeks 33–34, the overall influenza activity in the southern hemisphere declined. Except for New Zealand, where a widespread outbreak was reported. Activity was low in the rest of the world.

China, Hong Kong Special Administrative Region. A decline in the activity of influenza A(H3) and A(H1) viruses was observed. Among the influenza B viruses detected, the majority were of the B/Yamagata lineage.

New Zealand. Influenza activity remained widespread with influenza B viruses predominating and A(H3) co-circulating.

South Africa. Influenza activity declined from regional to sporadic with A(H1) and B viruses detected.

Between weeks 33 to 34, sporadic influenza activity was detected in Canada (H1,B), Chile (B,A) and New Caledonia (H1). Belgium, Cameroon, Germany, Honduras, the Islamic Republic of Iran, Norway, Poland, Portugal, Slovenia and Switzerland reported no influenza activity.

Seasonal influenza reporting to the CDC has ended for the 2007-2008 influenza season.

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 biweekly during the summer months.

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, September 10): The Ministry of Health of Indonesia has retrospectively announced two confirmed cases of human infection with the H5N1 avian influenza virus. The first case, a 38 year old male from Tangerang Municipality, Banten Province developed symptoms on 4 July 2008, was hospitalized on 9 July and died on 10 July. There were free roaming poultry throughout his neighbourhood, including a commercial poultry pen owned by a neighbour.

The second case, a 20 year old male from Tangerang District, Banten Province developed symptoms on 20 July, was hospitalized on 29 July, and died on 31 July. Reports indicate that chickens from the case's household had died in the week preceding the onset of his symptoms and that he had slaughtered and consumed some of his stock during this period.

Of the 137 cases confirmed to date in Indonesia, 112 have been fatal.

International, Poultry (The Straits Times, September 9): Authorities in Laos last week detected a fresh outbreak of bird flu in the north of the country, and have since slaughtered all the poultry affected, a government spokesman said on Tuesday.

The government did not say how many animals were infected with the deadly virus, which was detected in a village about 150 kilometres north of the ancient royal capital Luang Prabang, a Unesco World Heritage site.

'We have killed all of the poultry within a kilometre radius - about 7,000 of them,' and a quarantine zone has been set up on the area's perimeter, foreign ministry spokesman Yong Chanthalangsy said by phone. No human infections were suspected, he said.

Two people have died of bird flu in communist-ruled Laos since 2003, when the virus resurfaced in Southeast Asia, according to World Health Organisation (WHO) statistics. Both deaths were reported last year.

The WHO says 243 people have died from bird flu worldwide.

The H5N1 avian influenza virus mainly kills animals but scientists fear it could mutate to easily jump from human to human, sparking a global pandemic.

International, Poultry (Reuters, September 10): Togo has imposed a quarantine on a southern village after a suspected outbreak of bird flu killed nearly 4,000 poultry in the small West African state, the government said on Wednesday.

The government's website said the sudden death of the birds at Gbata near Avepozo in the coastal Lacs prefecture indicated a possible outbreak of bird flu.

Samples from the dead chickens were being sent to laboratories in Ghana and Italy to test for the highly pathogenic H5N1 strain of the disease, the website added.

Togo, one of a string of West African countries to be hit by outbreaks of bird flu over the past two years, reported several cases last year of H5N1 avian influenza among poultry.

Togo's Agriculture and Livestock Ministry had reinforced an existing ban on the import of poultry and also tightened controls on ports, markets and frontiers with neighbours Ghana, Benin and Burkina Faso, the website said.

The H5N1 strain, which has swept through bird populations in Asia, Europe, the Middle East and Africa, only rarely affects people but has killed 243 out of 385 people infected globally so far, according to the World Health Organisation.

People can catch the virus from close contact with infected birds or by eating their meat if not properly prepared, but scientists fear the virus could mutate and jump between humans, threatening a much more deadly flu pandemic.

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 longer, increasing the risk of the virus mutating.

Michigan Wild Bird Surveillance (USDA, as of September 11): For the 2008 testing season, 623 Michigan samples have been taken so far, comprised of 238 live birds, 339 hunter-killed birds, 21 morbidity/mortality samples and 25 environmental samples.

H5N1 subtype HPAI has not been recovered from any Michigan samples tested to date, or from the 24,499 birds or environmental samples tested nationwide for the 2008 testing season, which will run from April 1, 2008 - March 31, 2009. 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>.

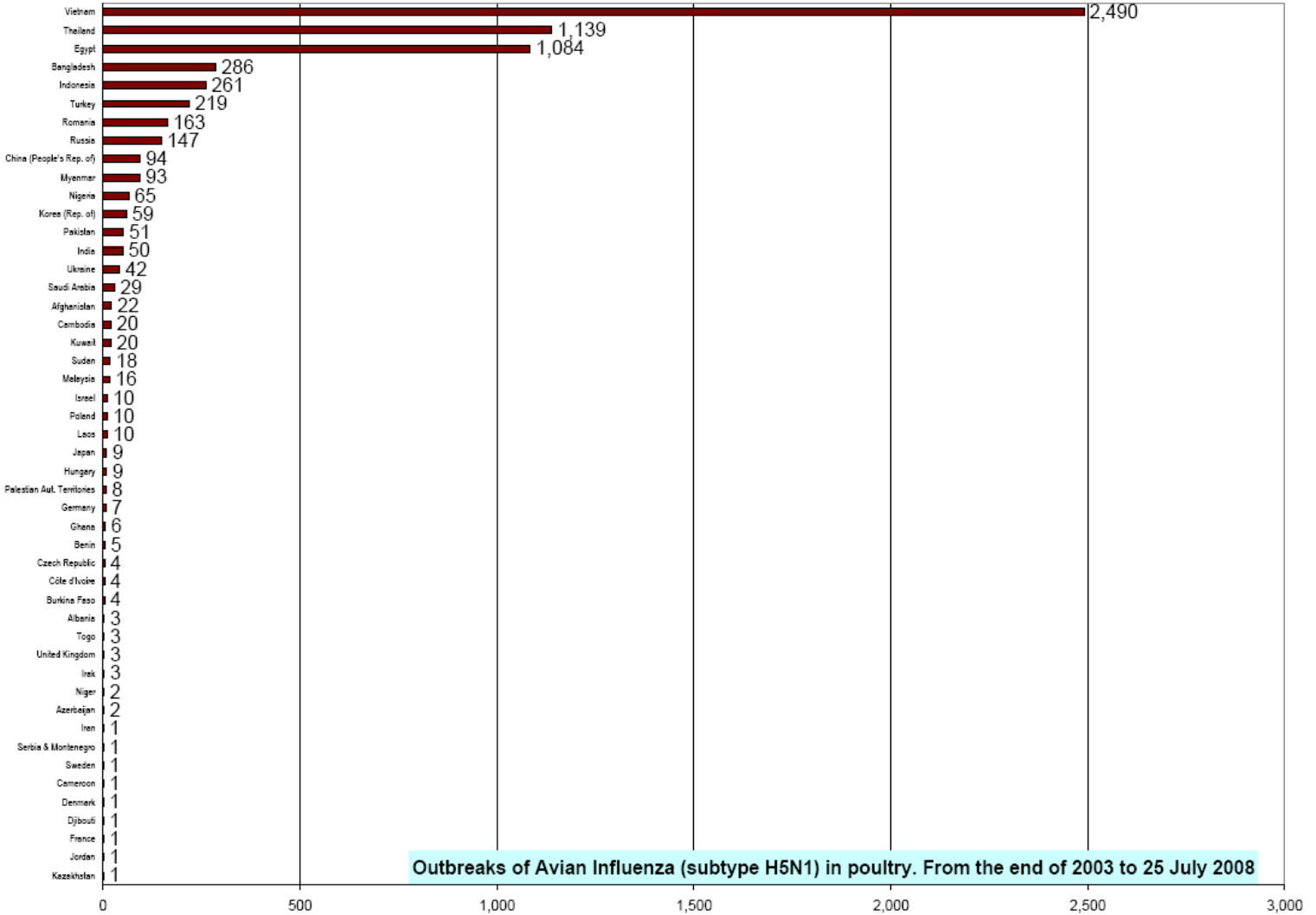
Please contact Susan Vagasky at VagaskyS@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

Contributors

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Table 1. H5N1 Influenza in Poultry (Outbreaks up to July 25, 2008)

(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm Downloaded 7/29/08)



Outbreaks of Avian Influenza (subtype H5N1) in poultry. From the end of 2003 to 25 July 2008

Table 2. H5N1 Influenza in Humans (Cases up to September 10, 2008)

(http://www.who.int/csr/disease/avian_influenza/country/cases_table_2008_09_10/en/index.html Downloaded 9/10/2008)

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

Country	2003		2004		2005		2006		2007		2008		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Cambodia	0	0	0	0	4	4	2	2	1	1	0	0	7	7
China	1	1	0	0	8	5	13	8	5	3	3	3	30	20
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	7	3	50	22
Indonesia	0	0	0	0	20	13	55	45	42	37	20	17	137	112
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	3	2
Lao PDR	0	0	0	0	0	0	0	0	2	2	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	3	1	0	0	3	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	5	5	106	52
Total	4	4	46	32	98	43	115	79	88	59	36	28	387	245