

April-May-June 2006

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2005-2006 Influenza Summary

Introduction

Influenza or the “flu” is a respiratory disease caused by a virus. Two main types of flu viruses infect humans – A and B. Each type includes many related strains, each slightly different from each other. Type A epidemics are generally more frequent and severe than those of type B.

Seasonal Influenza

Influenza is spread from person to person when an infected person coughs, sneezes or talks, releasing droplets into the air. Influenza symptoms include fever, chills, headache, dry cough and aching in the back, arms and legs. The risk of developing severe complications, such as pneumonia and death, increases with age (especially over the age of 65) or in individuals with chronic medical conditions. Symptoms usually appear within one to three days after being exposed. An individual is able to spread the disease as long as they are infected with the virus. This is typically three to five days in adults and up to seven days in children.



Influenza vaccine, CDC

In North Dakota, seasonal influenza affects anywhere from 5 percent to 20 percent of the population each year, resulting in approximately 300 to 500 deaths. The best way to prevent this illness is to get vaccinated every year.

Avian Influenza

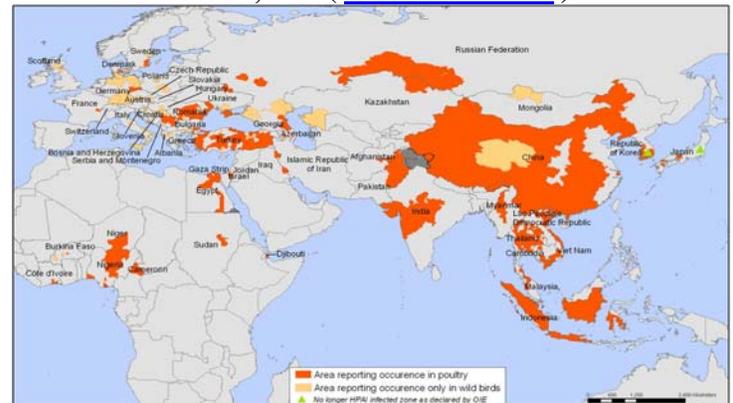
Avian influenza or “bird flu” is an infection found in birds caused by the influenza A virus. There are many different types of bird flu, some that cause

disease and some that do not. In recent times, the term bird flu often has been used to describe the H5N1 avian influenza virus.

In domestic poultry such as chickens or turkeys, infection with avian influenza viruses may cause two different types of illness. They are differentiated by the level of disease severity. The so-called “low pathogenic” form commonly causes only mild symptoms (ruffled feathers, a drop in egg production) and easily may go undetected. The “high pathogenic” form is more severe. It spreads very rapidly through poultry flocks, causes disease and has a death rate that can approach 100 percent, often within days.

The current outbreaks of highly pathogenic avian influenza, H5N1, which began in Southeast Asia in mid-2003, are the largest and most severe on record. Never before in the history of this disease have so many countries been simultaneously affected, resulting in the loss of so many birds. (**Figure 1**)

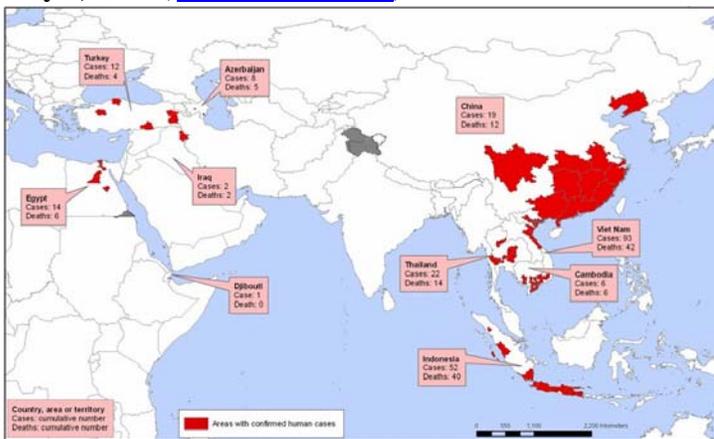
Figure 1. WHO: Areas reporting confirmed H5N1 avian influenza in poultry and wild birds since 2003, status as of June 26, 2006(www.who.int/en/).



The causative agent, the H5N1 virus, has proved to be especially tenacious. Despite the death or destruction of an estimated 150 million birds, the virus is now considered endemic in many parts of Indonesia and Viet Nam and in some parts of Cambodia, China, Thailand, and possibly also the Lao People's Democratic Republic. Control of the disease in poultry is expected to take several years.

The widespread persistence of H5N1 in poultry populations poses two main risks for human health. The first is the risk of direct infection when the virus passes from poultry to humans, resulting in very severe disease. Of the few avian influenza viruses that have crossed the species barrier to infect humans, H5N1 has caused the largest number of cases of severe disease and death in humans. Unlike normal seasonal influenza, where infection causes only mild respiratory symptoms in most people, the disease caused by H5N1 follows an unusually aggressive clinical course, with rapid deterioration and high fatality. Primary viral pneumonia and multi-organ failure are common. In the present outbreak, 229 cases have been reported to World Health Organization (WHO), and more than half of those infected with the virus have died. (Figure 2) Most cases have occurred in previously healthy children and young adults.

Figure 2. WHO: Affected areas with confirmed human cases of H5N1 avian influenza since 2003, status as of July 7, 2006 (www.who.int/en/).

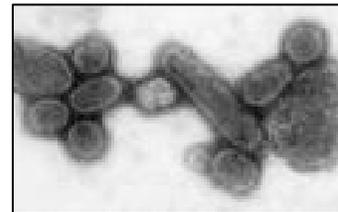


A second risk, of even greater concern, is that the virus – if given enough opportunities – will change into a form that is highly infectious for humans and spreads easily from person to person. Such a change could mark the start of a global outbreak (a pandemic).

On June 16, 2006, a health alert was sent to providers outlining the testing criteria for people who may have been infected with H5N1. For more information about this health alert go to www.ndhan.gov.

Pandemic Influenza

Pandemic influenza or pandemic flu is a world-wide outbreak of influenza type A. Pandemic influenza occurs when a new type of influenza A virus emerges and causes human illness. This virus is easily spread person to person, and most people will have little or no immunity. There have been three influenza pandemics in the twentieth century: (1) 1918 “Spanish flu” [H1N1]; (2) 1957-58 “Asian flu” [H2N2]; and (3) 1968-69 “Hong Kong flu” [H3N2].



Reconstructed 1918 influenza virions, CDC/Dr. Terrence Tumpey/Cynthia Goldsmith

There are two likely ways that new flu viruses may emerge. First, avian or bird flu viruses may change and become easily spread from birds to people. Secondly, a mammal or a person may be infected with two types of influenza viruses, one bird and one human. When this happens, these two types of viruses can exchange pieces of each other and a new virus may result, one that is part bird and part human virus.

Pandemic flu is different from the yearly seasonal flu because it has never been seen or only rarely seen in the human population. The WHO has designated pandemic alert phases indicative of the circulating virus. (Figure 3) According to the WHO, the current situation is classified as Phase 3.

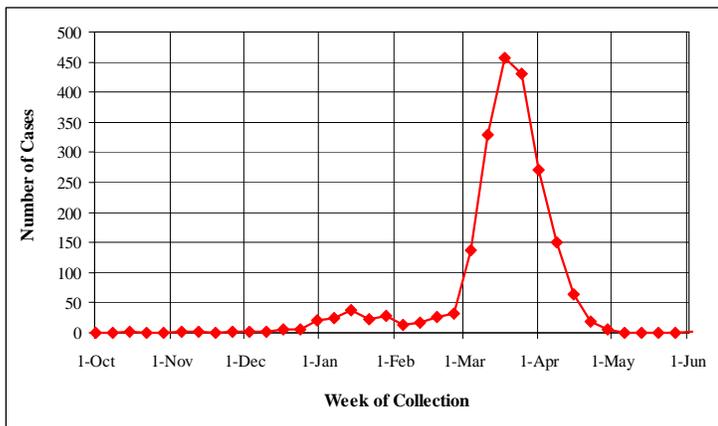
Figure 3. WHO pandemic alert phases

Inter Pandemic new virus in animals, no human cases	Low risk of human cases	1
	Higher risk of human cases	2
Pandemic Alert new virus causes human cases	No or very limited human to human transmission	3
	Evidence of increased human to human transmission	4
	Evidence of significant human to human transmission	5
Pandemic	Efficient and sustained human to human transmission	6

2005-2006 Influenza Season Summary

Influenza activity in North Dakota peaked the week ending March 18, 2006. (Figure 4) During the 2005-2006 influenza season, a total of 2,109 influenza cases were identified via viral culture, DFA, IFA or rapid test.

Figure 4. Number of Reported Influenza Cases, North Dakota, 2005-2006 Influenza Season



The largest number of positive cases was reported in the 11- to 19-year-old age range (661). Type B was the predominant type identified during the 2005-2006 flu season, with 53 percent of the cases being type B (1127). Figure 5 summarizes the 2005-2006 influenza cases by age group and type.

Figure 5. Influenza cases by age group and type, North Dakota, 2005-2006 influenza season

		Type			Total
		A	B	Unknown	
Age Group	<1	39	14	0	53
	1-5	115	158	19	292
	6-10	94	294	34	422
	11-19	141	473	47	661
	20-24	60	70	5	135
	25-34	85	30	5	120
	35-44	73	30	4	107
	45-54	66	21	3	90
	55-64	42	10	5	57
	65+	131	27	14	172
Total		846	1127	136	

There were no influenza-associated pediatric deaths during the 2005-2006 influenza season. In North Dakota, the influenza season typically runs from October to May.

Twenty-one health-care providers and emergency departments provided data as part of the influenza sentinel provider surveillance program. Influenza-like illness (ILI) data was submitted weekly to the North Dakota Department of Health. Other influenza data collected by the NDDoH includes laboratory influenza testing data, institutional ILI outbreak reports and school absenteeism data.

Table 1. Number of influenza cases by county, North Dakota, 2005-2006 influenza season

COUNTY	CASES	COUNTY	CASES
Adams	17	McLean	17
Barnes	11	Mercer	96
Benson	2	Morton	197
Billings	1	Mountrail	8
Bottineau	3	Nelson	0
Bowman	37	Oliver	3
Burke	0	Pembina	88
Burleigh	381	Pierce	0
Cass	225	Ramsey	2
Cavalier	9	Ransom	4
Dickey	68	Renville	1
Divide	0	Richland	5
Dunn	11	Rolette	23
Eddy	0	Sargent	32
Emmons	15	Sheridan	1
Foster	1	Sioux	19
Golden Valley	19	Slope	0
Grand Forks	207	Stark	216
Grant	9	Steele	4
Griggs	0	Stutsman	122
Hettinger	4	Towner	0
Kidder	22	Traill	51
La Moure	12	Walsh	48
Logan	3	Ward	20
McHenry	1	Wells	8
McIntosh	1	Williams	53
McKenzie	32		

For more information about influenza, avian influenza or pandemic influenza, visit,
www.ndhealth.gov/disease
 or
www.ndflu.com.

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Summary of Selected Reportable Conditions

North Dakota, 2005-2006

Reportable Condition	April- June 2006*	January -June 2006*	April- June 2005	January -June 2005
Campylobacteriosis	41	53	49	60
Chlamydia	335	787	406	781
Cryptosporidiosis	7	8	4	4
<i>E. coli</i> , shiga toxin positive (non-O157)	4	6	1	1
<i>E. coli</i> O157:H7	0	0	2	3
Enterococcus, Vancomycin-resistant (VRE)	48	59	6	13
Giardiasis	9	16	9	11
Gonorrhea	22	50	22	44
Haemophilus influenzae (invasive)	1	2	0	1
Hantavirus	0	1	0	0
Acute Hepatitis A	1	1	0	0
Acute Hepatitis B	0	0	0	0
Acute Hepatitis C	0	0	0	1
HIV/AIDS ¹	2	3	5	8
Legionellosis	0	0	0	2
Lyme Disease	1	1	0	1
Malaria	1	2	0	0
Meningitis, bacterial ² (non meningococcal)	0	0	1	3
Meningococcal disease	3	3	0	1
Mumps	9	10	0	1
Pertussis	15	27	32	86
Q fever	0	0	0	0
Rabies (animal)	8	13	15	22
Salmonellosis	10	22	33	46
Shigellosis	7	9	1	3
Streptococcal disease, Group A ³ (invasive)	5	11	4	7
Streptococcal disease, Group B ³ (infant < 3 months of age)	1	2	0	0
Streptococcal disease, Group B ³ (invasive ⁴)	14	19	7	18
Streptococcal disease, other ³ (invasive)	5	6	0	11
Streptococcal pneumoniae ³ , (invasive, children < 5 years of age)	3	5	0	4
Streptococcal pneumoniae ³ (invasive ⁵)	23	43	11	29
Streptococcus pneumoniae ³ , drug-resistant	0	0	2	2
Tuberculosis	1	4	3	4
Tularemia	2	2	0	0
West Nile Virus Infection	0	0	0	0

*Provisional data

¹ Includes newly diagnosed cases and cases diagnosed previously in other states that moved to North Dakota.

² Meningitis caused by *Staphylococcus aureus* and *Streptococcus pneumoniae*.

³ Includes invasive infections caused by streptococcal disease not including those classified as meningitis.

⁴ Includes invasive infections of streptococcal, Group B, disease in persons \geq 3 months of age.

⁵ Includes invasive infections caused by *Streptococcus pneumoniae* in persons \geq 5 years of age.