IDAHO DEPARTMENT OF HEALTH & WELFARE

Disease Bulletin

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Pertussis Rising in Idaho

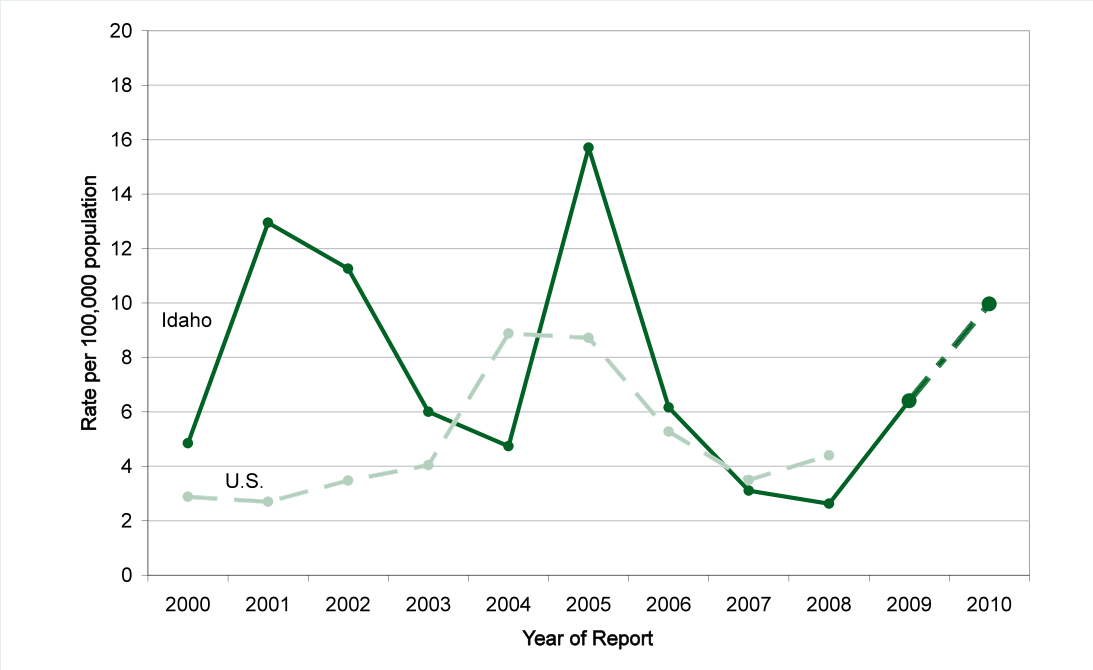
In late June of this year, California health authorities declared an epidemic of pertussis (commonly known as whooping cough) in the state. From January through June of 2010, four times more cases of pertussis were reported in California than had been reported for the same period in 2009; seven infant deaths have also been attributed to pertussis there since January. Increased pertussis activity has been reported in other states, including Michigan, Minnesota, North Carolina, South Carolina, and Idaho.

Pertussis incidence in the United States typically follows a cyclical pattern, with the number of cases peaking every three to five years as a result of waning immunity in the population and increased bacterial circulation. Typically, pertussis rates have been higher in Idaho relative to national rates (Figure). In Idaho, after a sharp increase in pertussis incidence during 2005, rates of the disease gradually decreased until 2009. The 2009 annual incidence rate of 6.4 cases of pertussis per 100,000 population is the highest reported since 2005, indicating a potential cyclical increase in cases; the unexpectedly high number of cases reported thus far in 2010 supports this hypothesis.

During the first 6 months of 2010, 77 cases of pertussis were reported to the Idaho Department of Health and Welfare (IDHW), compared with 45 during the same period in 2009. If the number of cases reported for the remainder of 2010 follows the current trend, the 2010 projected annual incidence will be 10.0 cases per 100,000 population (Figure).

The majority (60%) of reported cases of pertussis in Idaho this year come from the Panhandle region, unlike 2009, when most cases were reported from central and south central Idaho (Table). Nearly half (43%) of all cases

Figure. Annual rate of pertussis per 100,000 population, Idaho and United States, 2000–2010*



* 2010 data are projected based on preliminary case counts for January–June, 2010.

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reported in 2010 to date have been among children aged 5–14 years. The proportion of cases in children aged 10–14 years increased by 57% since 2009; nearly one in three reported cases are in this age group. Although no deaths have been reported in Idaho in 2010, an infant death due to pertussis was reported in 2009.

The diagnosis of pertussis is often delayed or missed. In young infants, atypical presentation contributing to missed or delayed diagnoses is common—the cough may be minimal or absent, and the infant might present with apnea, hypoxia, or seizures. Because pertussis can progress rapidly in young infants and result in hospitalization or death, infants having suspected or confirmed pertussis should be treated promptly. Misdiagnoses of bronchitis or asthma are common in adolescents and adults. Testing relies on nasopharyngeal swab for PCR and culture, although serology can also be helpful, especially in cases presenting later in the clinical course. For more information regarding pertussis tests see **www.aphl.org/aphlprograms/infectious/Documents/Pertussis_Brochure-Final3.pdf**.

The best prevention for pertussis is vaccination, but in Idaho, vaccination coverage is lower than the national average. Infants too young to receive vaccination or young children not fully vaccinated are susceptible to infection from older siblings and adults with incomplete vaccine protection, making up-to-date vaccine coverage important for individuals, families, and communities. Adolescents should receive a single booster dose of tetanus, diphtheria, and pertussis (Tdap); regular check-ups or physical exams for school athletics are opportune times to boost adolescents. Adults who were not given Tdap as an adolescent or teenager should receive Tdap rather than the Td booster regularly administered before 2005. Women who have not received Tdap should receive a dose in the immediate postpartum period, before leaving the hospital or birthing center, if two or more years have elapsed since the last Td. Other family members or caregivers who will have close contact with an infant should also consider Tdap vaccination to protect themselves and the infant from pertussis. Pregnancy is not a contraindication for Tdap and clinicians may recommend Tdap to pregnant women in certain circumstances, such as during a community pertussis outbreak. Providers should make sure patients of all ages are up to date on pertussis-containing vaccines (see immunization schedules at **www.cdc.gov/vaccines/recs/schedules/default.htm**).

Table. Selected demographic characteristics of patients diagnosed with pertussis and reported to IDHW, 2009 and 2010*

	2009 (N=99)	2010 (N=77)
Public Health District		
Panhandle	8.1	59.7
North Central	3.0	1.3
Southwest	8.1	7.8
Central	40.4	18.2
South Central	36.4	6.5
South Eastern	1.0	3.9
Eastern	3.0	2.6
Age (years)		
<1	13.1	11.7
1-4	11.1	13.0
5-9	10.1	14.3
10-14	18.2	28.5
15-19	24.3	7.8
20-44	11.1	14.3
45+	12.1	10.4

*2010 data are preliminary and only include cases reported January 1 – July 1, 2010

Influenza-associated Hospitalizations Identified Through Idaho's Enhanced Influenza Surveillance:
September 1, 2009–May 1, 2010

Overview

On September 1, 2009 Idaho initiated a hospital-based influenza surveillance system using protocols developed by the Centers for Disease Control and Prevention (CDC) Emerging Infections Program (EIP), which is fully implemented at sites in 10 states (CA, CO, CT, GA, MD, MN, NM, NY, OR, and TN) to measure the burden and severity of the 2009–2010 flu season. The Idaho surveillance system collected basic demographic and laboratory information on hospitalized patients from all acute care hospitals in Idaho and additional demographic and in-depth clinical data about hospitalized residents of Ada, Bingham, and Kootenai counties. These three counties were chosen based on geographic representation and the expectation that hospitals in these areas would receive the majority of influenza patients hospitalized in their respective counties.

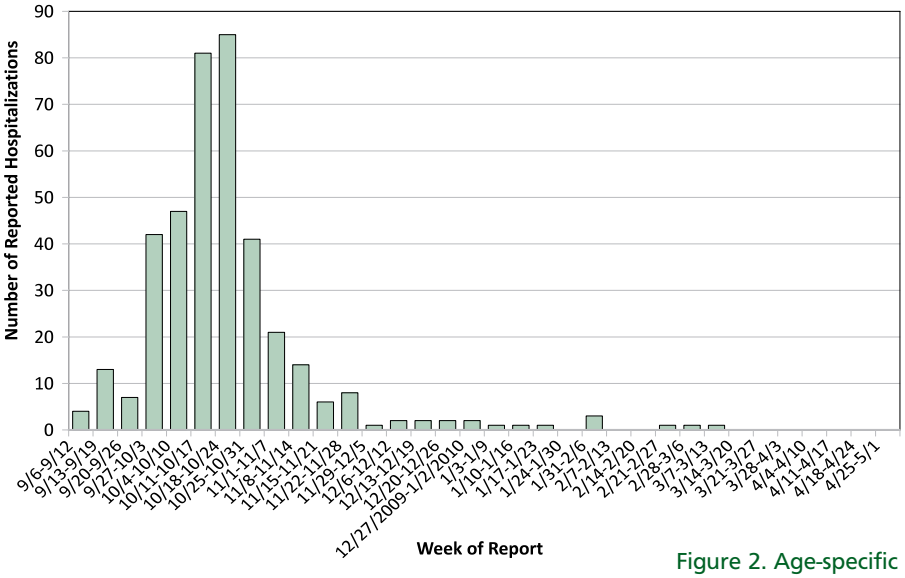
Influenza-associated hospitalizations defined

For Idaho's surveillance system, hospitalizations were considered influenza-associated when any influenza-specific test was positive within 14 days before to 3 days after hospitalization. Influenza-specific tests included the following: a rapid influenza test, a direct fluorescent antibody (DFA) test, or an H1N1 confirmatory test such as the 2009 H1N1-specific polymerase chain reaction (PCR).

Basic demographic data for influenza-associated hospitalizations from all Idaho acute care hospitals

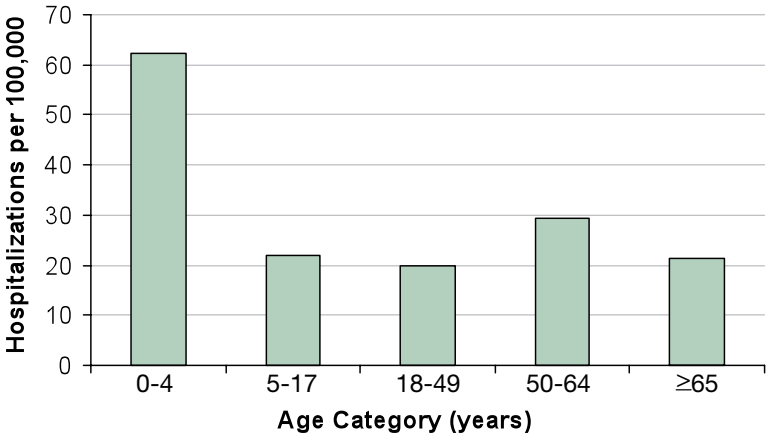
During September 1, 2009 through May 1, 2010, 389 influenza-associated Idaho resident hospitalizations in Idaho were reported through Idaho's surveillance system; the peak of hospitalizations occurred during the second week

Figure 1. Influenza-associated hospitalizations reported into Idaho's enhanced influenza surveillance system, by week of report—September 6, 2009–May 1, 2010.



of October, similar to the end of October peak seen nationally (Figure 1). Among these patients, 46.5% were male, 53.5% were female, and the median age was 29 years (range: <1–87 years). The overall incidence rate of hospitalizations in Idaho for this time period was 27.2 per 100,000 population. Children aged <5 years had the highest age-specific incidence rate of influenza-associated hospitalization during this period (Figure 2). In this age group in Idaho over 60 hospitalizations per 100,000 population were reported. This incidence rate is slightly lower than the average incidence rate reported for all CDC EIP sites in the nation in the same age group (66 hospitalizations per 100,000 population).

Figure 2. Age-specific incidence rates of reported influenza-associated hospitalizations, per 100,000 population—Idaho, September 1, 2009–May 1, 2010.



In-depth clinical data from Ada, Bingham, and Kootenai counties

In-depth case investigations were performed for Ada, Bingham, and Kootenai County residents hospitalized for influenza-associated illness. Detailed information on underlying medical conditions, intensive care unit (ICU) admissions, and median hospital stays (in days) are presented unstratified and stratified by patient age in Table.

Underlying respiratory disease was documented with a high frequency in those hospitalized with an influenza-associated illness; 30% of all patients had asthma and 25% of all patients had chronic lung disease. Respiratory disease was reported with greater frequency in those ≥18 years of age. In addition, 25% of patients had underlying cardiovascular disease. This was also more common in adults. Of note, developmental delay was common in children (20%) was more than twice that observed for all CDC EIP sites during the same time period (8%). The median hospital stay was three days and 19% required admission to the ICU.

Planning is underway for influenza surveillance for the upcoming season to monitor disease severity and trends.

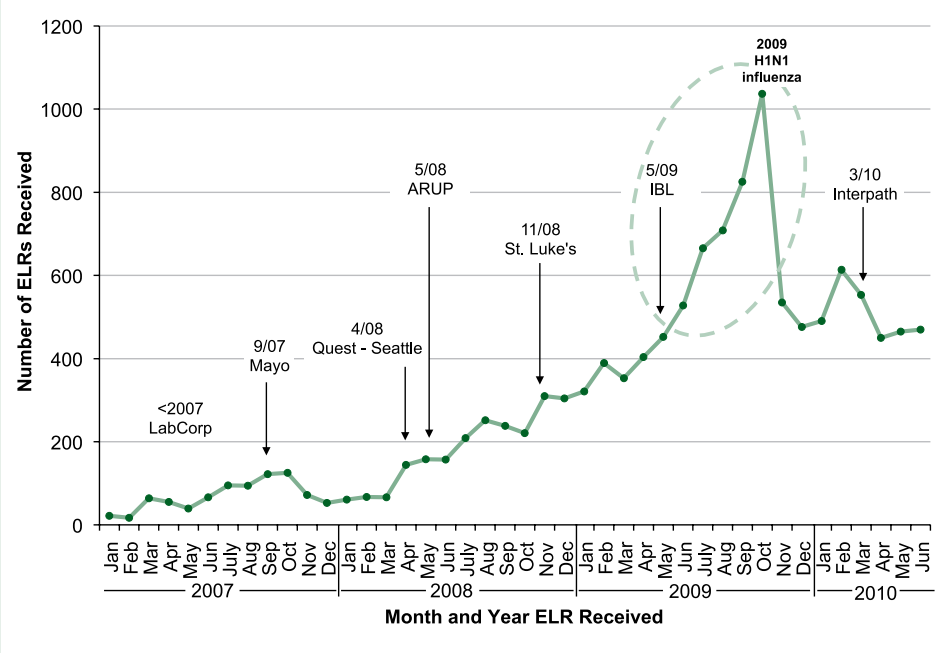
Table. Clinical characteristics of patients with influenza-associated hospitalizations in Ada, Bingham, Kootenai Counties—September 1–May 1, 2010.

	All patients (N=149)	Patients aged 0–17 years (N=40)	Patients aged ≥18 years (N=109)
Underlying medical conditions, No. (%)			
Asthma	44 (30)	4 (10)	40 (37)
Chronic lung disease	37 (25)	4 (10)	29 (27)
Cardiovascular disease	25 (25)	1 (5)	24 (22)
Chronic metabolic disease (including diabetes)	25 (17)	1 (3)	27 (33)
Immunosuppressive condition	17 (11)	4 (10)	13 (12)
Pregnant	10 (7)	0	10 (9)
Developmental delay	8 (5)	8 (20)	0
Renal disease	7 (5)	0	7 (6)
Other characteristics, No. (%)			
ICU admission	28 (19)	4 (10)	24 (22)
Median hospital stay, in days (mean stay in parenthesis)	3 (4.6)	2 (3)	3 (4.9)

Idaho's Continued Success with Electronic Laboratory Reporting

Idaho is a leader among states in implementing electronic laboratory reporting (ELR) to public health for surveillance of reportable diseases and conditions. The percentage of laboratory reports on reportable diseases received via ELR has increased from less than 1% in 2007 to nearly 75% today, not including lab reports for STDs. Data are received via ELR from seven diagnostic laboratories, the Idaho Bureau of Laboratories (IBL), one regional hospital laboratory, and five commercial laboratories (two regional, three national). A third regional commercial laboratory and second hospital laboratory are expected to implement ELR by the end of the year. We estimate that by January 2011, approximately 90% of Idaho reportable disease laboratory reports to Idaho public health will be received via ELR.

Figure: Number of ELRs received by month of receipt



Idaho Disease Bulletin

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ROUTINE 24-Hour
Disease Reporting Line
1.800.632.5927

EMERGENCY 24-Hour
Reporting Line
1.800.632.8000

An electronic version of the Rules and Regulations Governing Idaho Reportable Diseases may be found at http://adm.idaho.gov/adminrules/rules/idapa16/0210.pdf.

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