

## Free Influenza Testing

Isolation and identification of circulating influenza virus strains are an important part of the Connecticut Department of Public Health's (DPH) influenza surveillance system. The DPH encourages physicians to submit throat swabs from patients with a typical influenza syndrome (abrupt onset of fever, myalgia, and cough) to the DPH Laboratory for virus isolation. Specimens should be collected no later than 3 days after onset of symptoms and sent immediately to the DPH Laboratory, on wet ice if possible.

Throat swab collection kits (VRCs) may be obtained by calling the DPH Laboratory at 860-509-8501. Health care providers can submit specimens for influenza testing at no charge from October 1, 2004 through March 31, 2005. Please check "181 V Influenza surveillance" on the microbiology test requisition form and provide all other necessary information. If you have any questions on specimen collection, handling, or transport, please contact the Virus Laboratory at 860-509-8553.

## Influenza in Connecticut: Understanding the 2003-2004 Influenza Season

The 2003-2004 influenza season was notable in the widespread circulation of an influenza A drift variant, evidence of human and avian virus combinations, and resulting concern for development of a major epidemic or pandemic (1,2,3,4). At the onset of this season, the Connecticut Department of Public Health (DPH) endorsed the recommendation of the U.S. Centers for Disease Control and Prevention (CDC) for widespread use of the influenza vaccine, especially among high-risk populations (5). However, commercially available vaccines approved for these groups were not formulated to contain the A/Fujian/411/2002 (H3N2) strain that was rapidly circulating in the western hemisphere (6,7). Moreover, vaccine supplies became limited in many areas especially following influenza

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outbreaks associated with publicized pediatric morbidity and mortality (7,8). Four separate surveillance systems were utilized by the DPH to carefully monitor the 2003-2004 influenza season, assess the impact of influenza on Connecticut residents, and determine the need to alter vaccination recommendations.

### Methods for Conducting Influenza Surveillance in Connecticut

Four surveillance systems were closely monitored between October 2003 and February 2004.

### Reporting of Pediatric Deaths Due to Influenza

Beginning October 1, 2004, the CDC added influenza-associated pediatric mortality (< 18 years) to the list of conditions reportable to the National Notifiable Diseases Surveillance System.

The goals of surveillance are to: (1) monitor and describe the incidence, distribution, and basic epidemiologic characteristics of deaths among children related to influenza virus infection; (2) provide data to guide future influenza immunization policy; and (3) rapidly recognize influenza seasons in which the impact of influenza appears to be unusually severe among children.

Connecticut clinicians are asked to voluntarily report influenza-associated deaths in children (< 18 years) to the Epidemiology Program at 860-509-7994. For surveillance purposes, an influenza-associated death is defined as a death resulting from a clinically compatible illness that was confirmed to be influenza by an appropriate laboratory or rapid diagnostic test. There should be no period of complete recovery between the illness and death.

**Connecticut Influenza Surveillance System:**

Influenza is a laboratory reportable disease in Connecticut. For over 10 years, the DPH has tracked laboratory-confirmed influenza cases as part of this surveillance system. During each influenza season (October-March), the DPH Laboratory offers free virology testing to promote submission of additional clinical specimens for confirmation and typing. As part of this promotion, physicians collect throat swabs from patients within three days of onset of typical influenza symptoms that include; abrupt onset of fever, myalgia, and cough. Specimens are sent immediately to the DPH Laboratory and analyzed for the presence of influenza virus. Summaries of Connecticut laboratory influenza testing are examined daily to determine what strains are circulating, understand the overall disease prevalence, and examine for demographic trends in attack rates.

**Connecticut Influenza Sentinel Provider Surveillance System:**

This system evolved from a seasonal reporting system, developed in the fall of 1996, to a year-round surveillance system in 2001. The system utilizes approximately fifty sentinel health providers who report each week on the number of patients with influenza-like illness (ILI), defined as a cough or sore throat in the absence of a known cause and the presence of a fever  $\geq 100^{\circ}$  F. Patients are reported in four age groups: 0-4, 5-24, 25-64, and 65+ years. In addition to reviewing information on total ILI patients reported, data on the weekly percentage of ILI patients seen are obtained by dividing the total number of ILI patients by the total number of patients seen.

**Hospital Admission Surveillance System:**

Influenza epidemics have long been associated with increased hospital admissions (9). A system created on September 11, 2001, to monitor for possible bioterrorism events, also provided information on the impact of influenza on respiratory morbidity and associated hospitalizations. This system, the DPH Hospital Admission Surveillance System (HASS), receives daily electronic reports from all 32 acute care hospitals on their acute, unscheduled admissions in various diagnosis/syndromic categories. Data from one category, total statewide pneumonia admissions, was tracked throughout the 2003-2004 influenza season.

**122 Cities Mortality Reporting System:** This CDC reporting system was also utilized by the DPH to assess the impact of influenza on mortality. It

provides weekly reports from nine U.S. regions on deaths from all causes by age category. Four Connecticut cities (Bridgeport, Hartford, New Haven, and Waterbury) supply death certificate data to the CDC as part of the New England reporting area. Weekly total pneumonia and influenza deaths in these cities were examined and compared with the influenza and hospital admission surveillance.

**Results of 2003-2004 Influenza Surveillance in Connecticut**

Information from these surveillance systems showed remarkable correlation and proved useful in understanding the course of influenza and influenza-like illness in Connecticut.

**Connecticut Influenza Surveillance System:**

The DPH began receiving reports of laboratory-confirmed influenza tests (LCT) during the week ending October 18, 2003. Submission of these reports increased throughout November with 100 LCT received during the week ending November 29, 2003. Over the next four weeks, a considerable increase in LCT was observed that peaked during the week ending December 20, 2003 when greater than 800 reports were received. By the week ending January 31, 2004, fewer than 25 LCT were received (Figure 1).

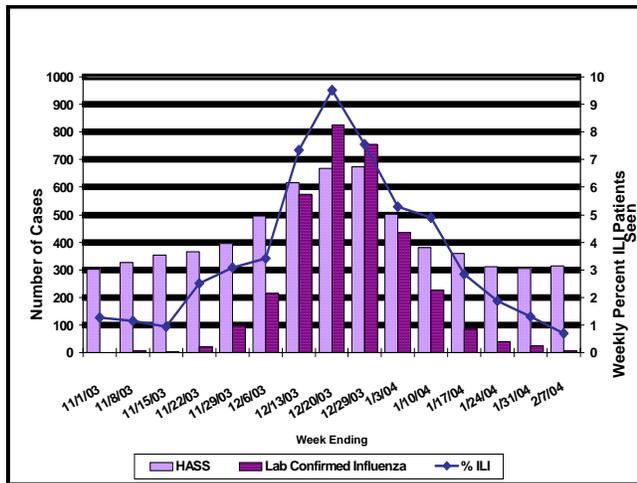
**Connecticut Influenza Sentinel Provider Surveillance System:**

The Connecticut sentinel providers began reporting influenza-like illness (ILI) cases during the week ending October 4, 2003. An increase in ILI reports received was observed between the week ending December 6 and the week ending December 20, 2003. An examination of the weekly percentage of ILI patients seen, however, reveals a more dramatic nine-fold increase starting the week ending November 22, 2003, that also peaked during the week ending December 20, 2003. As was the case with the LCT reports, the weekly percentage of ILI patients seen returned to background levels by the week ending January 31, 2004 (Figure 1).

**Hospital Admission Surveillance System (HASS):**

A review of the HASS weekly total statewide pneumonia hospital admissions revealed an eight-week, 225% increase from the 300 statewide pneumonia admissions seen during the week ending November 1, 2003. The increase was most dramatic during the four-week period starting with the week ending December 6,

**Figure 1. HASS Pneumonia Admissions and Laboratory Confirmed Influenza by 2003-2004 Week, with Weekly Percent Influenza-Like Illness (ILI) Patients Seen**

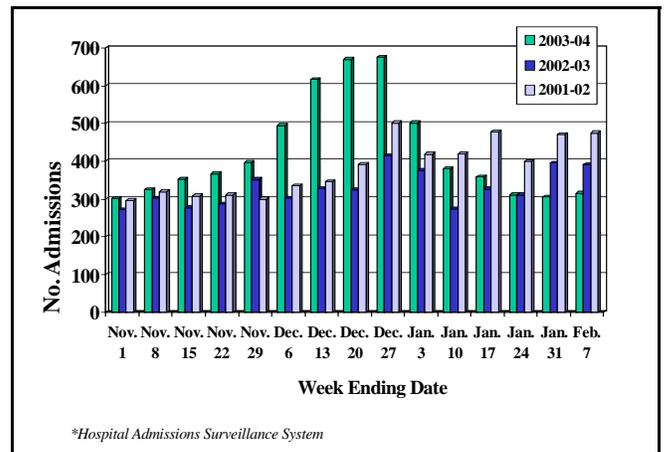


2003. A statistically significant increase of >3-standard deviations was observed during this period which peaked at 675 statewide pneumonia admissions during the week ending January 3, 2004. These reports of statewide pneumonia admissions generally returned to background levels by the week ending January 24, 2004 (Figure 1). Data from previous years were examined to determine if the peaks observed in the HASS database were unique to the 2003-2004 influenza season. In this comparison, 2003-2004 total statewide weekly HASS pneumonia admissions were compared with data from the two previous seasons. This comparison revealed that the pneumonia peak observed in the 2003-2004 influenza season was not present in the previous two seasons (Figure 2).

**CDC 122 Cities Mortality Reporting System:** Periodic peaks were observed in the percent of pneumonia and influenza (P&I) deaths among total deaths reported by the four Connecticut cities that participate in the CDC 122 Cities Mortality Reporting System. The largest of these peaks occurred between the week ending December 6, 2003, and the week ending January 17, 2004. However, no discernable trends could be observed due, in part, to intermittent reporting during the 2003-2004 season.

A weekly report that summarized the results of all four surveillance systems was prepared and distributed to local health departments, hospitals

**Figure 2. Pneumonia Hospital Admissions Reported to the Connecticut HASS\* November-February, 2003-04 vs. 2002-03 & 2001-02**



and other providers. This information was also incorporated into news reports that were distributed to Connecticut press and electronic media. These reports provided timely information on Connecticut influenza cases along with vaccination recommendations to health providers, local health officials and members of the public. Use of surveillance-based updates in subsequent influenza seasons will expand collaborative efforts to enhance influenza pandemic preparedness (10).

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**Editorial Note:** An earlier, more severe, peak of influenza activity was observed in the United States during 2003-2004 compared to the previous three seasons (7). The data generated from these surveillance systems suggest that Connecticut also experienced an early and intense phase of influenza cases lasting less than two months. While morbidity was concentrated in time, overall, the season did not appear to be accompanied by excess mortality.

The four influenza surveillance systems were limited in their individual capacity to track influenza morbidity and mortality. Despite these limitations, monitoring of all four systems can

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provide useful information to assess the impact of influenza on Connecticut residents. The reports generated from these surveillance data proved valuable in monitoring the 2003-2004 influenza season, assessing the impact of influenza on Connecticut residents, and determining the need to alter vaccination recommendations.

Use of additional surveillance will contribute to understanding of subsequent influenza seasons upon both the young and older members of our society. For example, a closer review of influenza outbreaks in long-term care facilities could prove useful in tracking the impact of influenza on residents of these facilities. Implementation of a requirement for national reporting of pediatric influenza-associated deaths, proposed by the Council of State and Territorial Epidemiologists (CSTE), will greatly support efforts to document these cases (7,8,9).

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