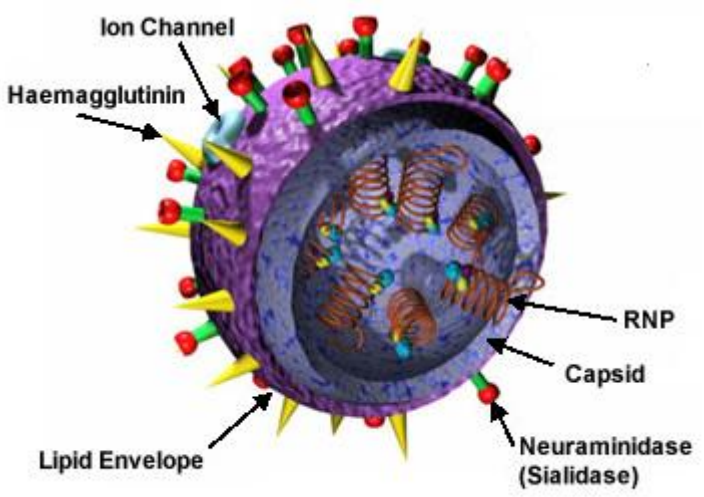
The California Influenza Surveillance Project

Viral and Rickettsial Disease Laboratory

- California Influenza Surveillance 2007-08 Week 9 **(PDF, New Window)** **UPDATED 03/07/08!**
- California Sentinel Provider Homepage **(PDF, New Window)**
- Immunization Branch - Influenza Vaccine Updates
- Enhanced Surveillance for Avian Influenza A (H5N1) **(PDF, New Window)** **UPDATED 01/11/08!**

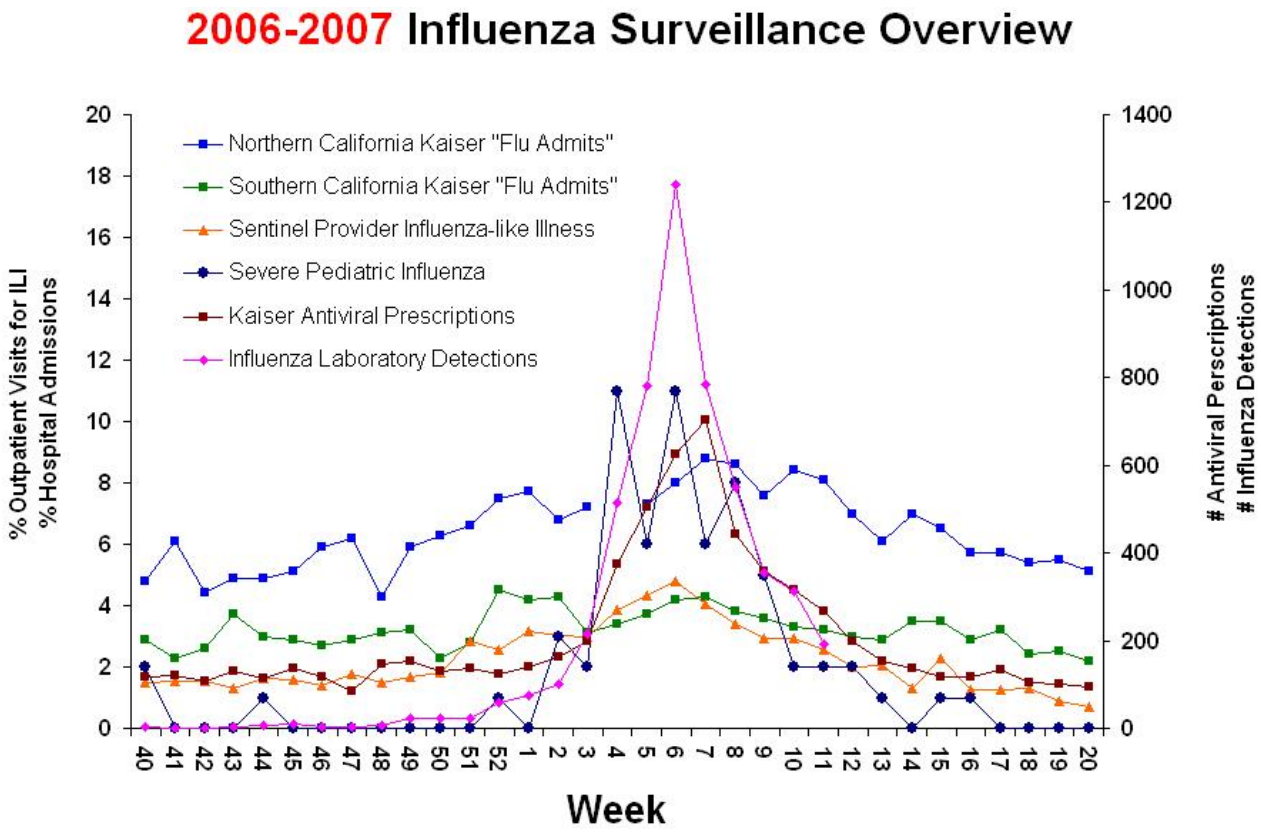
Influenza Virus:



The California Influenza Surveillance Project (CISP), a collaborative effort between the California Department of Public Health (CDPH) Division of Communicable Disease Control (DCDC), the Centers for Disease Control and Prevention (CDC) and Kaiser Permanente, was initiated in 1998 to augment existing influenza surveillance efforts. Influenza surveillance in California is particularly important due to its coastal location with several ports of entry for flights and shipping from Asia. Annual influenza epidemics follow a winter seasonal pattern in the United States with typical activity peaking during late December to early February. CISP obtains and analyzes hospital, pharmacy and laboratory data year-round in an effort to determine the timing and impact of influenza activity and to determine how well circulating strains of the virus match those used in the current influenza vaccines.

Active surveillance during the influenza season includes data on Kaiser inpatient admission diagnoses, Kaiser outpatient pharmacy prescriptions for antivirals, outpatient influenza-like illnesses from sentinel physicians, and respiratory virus isolations and detections. These methods for monitoring influenza trends correlated well with influenza activity in the 2005-2006 influenza season (Figure 1). Each surveillance method is described more fully below.

Figure 1



Kaiser Inpatient Data:

The Kaiser healthcare system provides medical care throughout the state to over one sixth of California residents. Thus, it is reasonable to assume that influenza activity among Kaiser patients reflects the influenza activity for the entire state. Inpatient discharge diagnoses of "pneumonia" and "influenza" (ICD-9 480-487) have been used to examine influenza trends in California; however, these data cannot be obtained in real time. In contrast, inpatient admission diagnoses are entered daily by text string and can be accessed the following day. For the purposes of this project, the admission diagnoses of flu, pneumonia, and influenza ("flu admits") serve as surrogate markers for the more accurate discharge diagnoses. Influenza activity is tracked by dividing the number of flu admits by the total number of hospital admissions for the same day, thereby obtaining a percentage of influenza admissions. Admissions for pregnancy, labor and delivery, birth, and outpatient procedures are excluded from the denominator.

Kaiser Pharmacy Data:

The number of prescriptions for drugs active against influenza, such as amantadine, rimantadine, zanamivir and oseltamivir, also serve as indicators of influenza activity. This component of the project assesses the number of influenza antiviral prescriptions filled weekly by all Kaiser outpatient pharmacies in California.

Sentinel Physicians:

Sentinel providers (physicians, nurse practitioners, and physician assistants) situated throughout California report the number of outpatient visits for influenza-like illness and the total number of visits per week. This data is reported weekly as a percentage of total visits. California, through an intensive recruitment campaign, has increased the sentinel provider enrollment dramatically over the past few years, but has still not attained the CDC goal of 1 sentinel provider per 250,000 population.

Virus Isolation Data and Characterization:

This component of the project involves use of data from hospital, academic, private and public health laboratories located throughout California. These laboratories report the number of laboratory-confirmed influenza and other respiratory virus detections and isolations on a weekly basis. A fraction of the influenza viruses isolated at participating laboratories are forwarded to VRDL for further antigenic and genetic characterization. Complete antigenic characterization enables detection of new strain variants and provides a method for monitoring how well circulating influenza strains match those used in the current influenza vaccines. In addition, sentinel physicians located throughout California submit specimens from patients with influenza-like illnesses for respiratory virus isolation at VRDL.

Seventy-six influenza-confirmed specimens were tested for antiviral resistance. 76% (26/34) of influenza A/H3 specimens and 2% (1/41) of influenza A/H1 specimens had the S31N mutation consistent with adamantane resistance. One specimen with a mixed influenza A/H1 and H3 infection also had adamantane resistance. No mutations consistent with resistance to the neuraminidase inhibitors were found.

Links for more facts about influenza:

- CDC Influenza Homepage
- Immunization Branch - Influenza Vaccine Updates
- CDC National Respiratory & Enteric Virus Surveillance System Home Page
- NIH/NIAID Influenza and Colds
- WHO Influenza

Links for California Influenza Surveillance data from 1999 through 2007: