



U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet)

Overview of Influenza Surveillance

The Influenza Division of the Centers for Disease Control and Prevention (CDC) conducts and coordinates influenza surveillance in the United States. Through voluntary reporting of influenza data by health care providers, laboratories, vital statistics offices, and state and local health departments, CDC develops a national picture of influenza virus activity, the geographic distribution of influenza viruses, and the clinical impact of the circulating viruses. The FluView surveillance report summarizing influenza activity is published each week from October through May, the traditional influenza surveillance season.

CDC's influenza surveillance system is comprised of the following eight components:

- *Laboratory Surveillance:* Influenza laboratory surveillance is comprised of 2 networks of laboratories that report influenza data: U.S. World Health Organization (WHO) Collaborating Laboratories and National Respiratory and Enteric Virus Surveillance System (NREVSS) Collaborating Laboratories. Approximately 150 laboratories across the U.S. participate in these two systems, including state and local public health labs, hospital labs and commercial labs. Specimens are received for testing from clinicians, ILINet providers, targeted surveillance, and outbreak investigations. These labs report weekly to CDC the total number of respiratory specimens tested and the number positive by age group for influenza by type and subtype. From these data the percent of specimens testing positive for influenza is calculated each week. In addition to reporting data to CDC, these laboratories also send a subset of influenza isolates to CDC for antigenic characterization to assess to match to the current influenza vaccine and influenza antiviral resistance testing.
- *Mortality Surveillance:* Pneumonia and influenza related mortality data are reported through the 122 Cities Mortality Reporting System. Each week, the vital statistics offices of 122 cities report the total number of death certificates received and the number of those for which pneumonia or influenza was listed as the underlying or as a contributing cause of death by age group. The percentage of all deaths due to pneumonia and influenza are compared with a seasonal baseline and epidemic threshold value calculated for each week.
- *Influenza-associated pediatric mortality:* Influenza-associated pediatric mortality is a nationally notifiable condition. Laboratory-confirmed influenza-associated deaths in children less than 18 years old are reported through the Nationally Notifiable Disease Surveillance System.
- *Outpatient influenza-like illness (ILI) surveillance:* Outpatient ILI data are collected through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), a collaborative effort between CDC, state and local health departments, and health care providers. During the 2009-10 season, approximately 3,400 providers in all 50 states, Chicago, New York City, and the U.S. Virgin Islands were enrolled and these sites report the total number of patients seen and the number of those patients with ILI by age group on a weekly basis. From these data, the percent of patient visits for ILI are calculated. Efforts are focused on increasing the number of regularly reporting providers and collecting data year-round.
- *State and Territorial Epidemiologists Report:* State health departments report the estimated level of influenza activity in their state each week during the typical influenza season, October to May.

When activity occurs, it is reported as *sporadic* (isolated lab-confirmed influenza cases or a lab-confirmed outbreak in one institution with no increase in activity), *local* (increased ILI, or at least two institutional outbreaks (ILI or lab-confirmed influenza) in one region with recent lab evidence of influenza in that region; virus activity no greater than sporadic in other regions), *regional* (increased ILI activity or institutional outbreaks (ILI or lab-confirmed influenza) in at least two but less than half of the regions in the state with recent lab evidence of influenza in those regions), or *widespread* (increased ILI activity or institutional outbreaks (ILI or lab-confirmed influenza) in at least half the regions in the state with recent laboratory evidence of influenza in the state).

- *Human Infections with Novel Influenza A Viruses*: Human infections with novel influenza A viruses is a nationally notifiable condition reportable through the Nationally Notifiable Disease Surveillance System (NNDSS). Novel influenza A viruses are defined as those isolated from a human but subtyped as non-human, or those that cannot be subtyped by standard methods. Rapid reporting of human infections with novel influenza A viruses will facilitate prompt detection and characterization of influenza A viruses with pandemic potential and accelerate the implementation of effective public health responses.
- *Emerging Infections Program (EIP)*: The EIP Influenza Project conducts surveillance for laboratory-confirmed influenza related hospitalizations in 60 counties covering 12 metropolitan areas of 10 states (San Francisco CA, Denver CO, New Haven CT, Atlanta GA, Baltimore MD, Minneapolis/St. Paul MN, Albuquerque NM, Las Cruces, NM, Albany NY, Rochester NY, Portland OR, and Nashville TN). Cases are identified by reviewing hospital laboratory and admission databases and infection control logs for children with a documented positive influenza test (viral culture, direct/indirect fluorescent antibody assay (DFA/IFA), reverse transcription-polymerase chain reaction (RT-PCR), or a commercial rapid antigen test) conducted as a part of routine patient care. EIP estimated hospitalization rates are reported every two weeks during the influenza season.

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Time period for Conducting ILI Surveillance: The traditional time period of operation for the sentinel provider surveillance system is from October to mid-May of each year; however, we continue to encourage year round operation.

Enrollment, Number, and Distribution of ILINet Providers: The state or local health department is responsible for identifying interested providers and communicating that information to CDC for enrollment into the network. Jurisdictions should enroll a sufficient number of sites to provide an accurate picture of influenza activity within the jurisdiction and the providers should be distributed within the state in a pattern similar to the state's population, both geographically and demographically. Ideally, there should be at least one regularly reporting sentinel provider for every 250,000 residents, or for states with smaller populations, the goal is a minimum of 10 regularly reporting ILINet providers. States that have met reporting goals attribute their success to (1) working closely with local health departments, (2) providing consistent data feedback to providers, (3) emphasizing the impact of annual and pandemic influenza, (4) explaining the importance of influenza surveillance annually and in the case of a pandemic, and (5) not limiting enrollment to private providers (see below).

ILINet Provider Eligibility Criteria: The purpose of the ILINet system is to monitor influenza activity in the general population. Therefore, surveillance coordinators should enroll providers who will, in aggregate, see a broad mix of patients (particularly with regards to age). Any specialty is eligible, including emergency medicine, family practice, infectious disease, internal medicine, OB/GYN, and pediatrics. In

addition to private provider's offices, surveillance can be conducted in a variety of sites such as emergency rooms, urgent care centers, college/university student health centers, and health maintenance organizations. Practice settings that are **not eligible** are elementary, middle, or high school health centers, and any type of institutional setting such as nursing homes or prisons.

Case Definition of Influenza-like Illness: The outcome of interest monitored in this surveillance system is the number of clinical illness cases consistent with influenza (i.e. influenza-like illness or ILI) occurring in the general population. The ILI case definition used by CDC for national surveillance is **fever $\geq 100^{\circ}\text{F}$ ($\geq 37.8^{\circ}\text{C}$), oral or equivalent, AND cough and/or sore throat (in the absence of a known cause other than influenza)**. ILI cases must be identified based on the criteria outlined in the case definition.

Data Collection: Providers submit the following summary data each week:

- Total number of patient visits each week for any reason
- Number of patient visits for ILI, in the following age-groups, each week:
 - 0-4 years
 - 5-24 years
 - 25-49 years
 - 50-64 years
 - ≥ 65 years

Data Reporting: Providers transmit their data to a central data repository at CDC on a weekly basis. Data can be reported via the Internet (preferred method) or by fax. Detailed reporting instructions are mailed to each enrolled provider in mid-September. According to a survey of ILINet participants, most reported that it takes them less than 30 minutes to compile and report their weekly data (50% report 15 minutes or less and 39% report between 15-30 minutes).

Data Feedback: There is a dedicated website (<http://www2a.cdc.gov/ilinet/>) for the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) program. ILINet providers and state influenza surveillance coordinators are assigned an ID and a password for this site that allow different levels of data entry and viewing. When a provider logs on, he/she can enter their data and/or view their own data.

When a state coordinator logs on, he/she can enter data for any of their providers, delete duplicate records, and view a line list of weekly influenza data reported to CDC by ILINet sites and laboratories in their state. These line lists can be sorted in various ways in order to facilitate data cleaning and follow-up with providers. Queries can be run to immediately identify providers with multiple reports for a given week or with possibly incorrect reports (e.g. 100% ILI). Summary state-specific, regional, and national sentinel provider and laboratory data are also available in chart and table format. Data entered on the Internet will be immediately available and reflected in all charts and tables on the website. Data transmitted via fax will be updated once a day Monday through Friday.

Because data viewing and entry occur on the same website, **do not distribute your ID and password to others** in an effort to share data, as they will then be able to enter data for any provider in your state.

Collection of Clinical Specimens: CDC recommends that ILINet providers have the option of submitting a throat or nasopharyngeal swab specimen from a subset of ILI cases for virologic testing at the state laboratory at no charge to the provider. Due to the time lag in obtaining results, this information usually will not be useful to the provider for confirming individual cases of influenza but does provide information for all local providers that influenza has entered the community. Providers should limit specimen collection to the guidelines of the state, but typically specimen collection is limited to a regular number of specimens per week or month, plus:

- X Unusual clinical cases or unusually severe cases
- X Outbreak-related cases

- X From persons receiving an antiviral agent who become ill or from their contacts who become ill
- X From persons who become ill and were immunized against influenza with the current vaccine
- X From cases of suspected animal-to-human transmission of influenza virus

Testing of Clinical Specimens: Each state is strongly encouraged to arrange its own procedures for transporting clinical specimens and for culturing and subtyping them at the state public health laboratory at no cost to the sentinel provider.

Compensation: Participation in the sentinel provider surveillance network is voluntary. As a token of our appreciation, each can register for a subscription to CDC's *Morbidity and Mortality Weekly Report* and the *Emerging Infectious Diseases* journal and a certificate of appreciation at the end of the season. Other benefits of participating in the network include data feedback from CDC (and in many cases the state health department), testing of a limited number of specimens for influenza free of charge, and providing data that are critical to protecting the public's health. In addition, family practice residents are eligible to fulfill their residency research requirement by participating in this surveillance system (contact your state's AAFP chapter for details).