Influenza Surveillance in the United States

The CDC collects, compiles, and analyzes information on influenza activity year round in the United States and produces a weekly report from October through mid-May. The U.S. influenza surveillance system is a collaborative effort between CDC and its many partners. Information is collected that allows the CDC to:

- Find out when and where influenza activity is occurring
- Determine what type of influenza viruses are circulating
- Detect changes in the influenza viruses
- Track influenza-related illness
- Measure the impact influenza is having on deaths in the United States

There are seven components of influenza surveillance:

1. World Health Organization (WHO) And National Respiratory and Enteric Virus Surveillance System (NREVSS) Collaborating Laboratories
2. U.S. Influenza Sentinel Providers Surveillance Network
3. 122 Cities Mortality Reporting System
4. State and Territorial Epidemiologists Reports
5. Influenza-associated pediatric mortality
6. Emerging Infections Program (EIP)
7. New Vaccine Surveillance Network (NVSN)

Influenza Surveillance in Kentucky

In Kentucky, Health Care Providers and Local Health Departments assist with influenza surveillance through the U.S. Influenza Sentinel Providers Surveillance Network. Each week, participating Health Care Providers and Local Health Departments report on influenza-like illness (ILI) activity. "ILI" is defined as "fever (temperature of ≥100°F [37.8°C]) and a cough and/or a sore throat in the absence of a KNOWN cause other than influenza." Health Care Providers report directly to the CDC (by internet) the total number of patients seen each week as well as the total number of patients with ILI categorized by age groups. Local Health Departments report ILI data (collected from medical practices, hospitals, long term care centers, and absenteeism in schools) to the Kentucky Department for Public Health. The ILI data collected helps to determine the level of influenza activity in the state each week.
States report influenza activity to the CDC weekly using the following guidelines:

**No Activity:** No laboratory-confirmed cases of influenza and no reported increase in the number of cases of ILI.

**Sporadic:** Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

**Local:** Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the state.

**Regional:** Outbreaks of influenza or increases in ILI and recent laboratory-confirmed influenza in at least two but less than half the regions of the state with recent laboratory evidence of influenza in those regions.

**Widespread:** Outbreaks of influenza or increases in ILI and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

**Surveillance Sites**

Kentucky currently has thirty-three Influenza Surveillance Sites. Twenty private providers across the state act as Sentinel Surveillance Sites by reporting Influenza-Like Illness directly to the CDC. Thirteen Local Health Departments across the state assist with influenza surveillance by collecting data and reporting to the Kentucky Department for Public Health. The following counties currently have at least one influenza surveillance site: Allen, Boone, Christian, Daviess, Estill, Fayette, Floyd, Franklin, Graves, Green, Hopkins, Jefferson, Jessamine, Johnson, Knott, Knox, Lee, Madison, Marion, Mason, McCracken, Perry, Pulaski, Rowan, and Warren.

The Kentucky Immunization Program is always recruiting additional practices to be influenza sentinel surveillance sites. The information on weekly ILI activity contributes to the ongoing assessment of influenza activity in Kentucky. To participate in the important work of influenza surveillance as a CDC approved influenza sentinel surveillance site, please contact Emily Adkins, RN by phone at (502) 564-4478 ex. 3516 or by email at Emily.Adkins@ky.gov

**Influenza Virus Vaccine 2009-2010 Season**

FDA's Vaccines and Related Biological Products Advisory Committee (VRBPAC) met in Silver Spring, Maryland, on February 18, 2009, to select the influenza virus strains for the composition of the influenza vaccine for use in the 2009-2010 U.S. influenza season. During this meeting, the advisory panel reviewed and evaluated the surveillance data related to epidemiology and antigenic characteristics, serological responses to 2008/2009 vaccines, and the availability of candidate strains and reagents. The panel recommended that vaccines to be used in the 2009-2010 influenza season in the U.S. contain the following:

- an A/Brisbane/59/2007 (H1N1)-like virus; *
- an A/Brisbane/10/2007 (H3N2)-like virus; **
- a B/Brisbane/60/2008-like virus.

*A/Brisbane/59/2007 is a current vaccine virus; A/South Dakota/6/2007 (an A/Brisbane/59/2007-like virus) is a current vaccine virus used in live attenuated vaccines.


The influenza vaccine composition to be used in the 2009-2010 influenza season in the U.S. is identical to that recommended by the World Health Organization on February 12, 2009, for the Northern Hemisphere's 2009-2010 influenza season.
Team Finds Secret That Could Stem Flu Viruses
Boston Globe (02/23/09) Smith, Stephen
Researchers, led by a team from the Dana-Farber Cancer Institute, have found a part of the influenza virus that stays the same in different strains, and this information could be used to make a universal vaccine and develop new drugs to combat the virus. Using antibodies from the blood of 57 donors, the scientists discovered a way of stopping the bird flu and the Spanish flu strain responsible for the 1918 epidemic. Given that a vaccine will take several years to produce, the researchers have started testing a new medication to treat patients infected with the flu. Human testing could be possible as early as the 2011-2012 flu season. The study was published in the journal Nature Structural & Molecular Biology.

WHO to Give Poor Countries Flu Vaccine Technology
Associated Press (02/24/09) Jordans, Frank
The World Health Organization (WHO) has made a deal with drug maker Schering-Plough to provide poor countries with improved vaccine-making technology in preparation for a possible flu pandemic. Technology will be licensed free of charge to manufacturers in countries that participate in a U.N. strategy to prevent global outbreak of the H5N1 flu strain. Schering-Plough said the new technology allows vaccines to be delivered with a single-dose intranasal spray.

Study Tallies Flu Shot Benefits at Colleges
Pioneer Press (12/02/08) Olson, Jeremy
Researchers from the University of Minnesota and the Minneapolis VA Medical Center surveyed 12,975 students on two college campuses and found that college students who receive influenza vaccines are less likely to miss school or work each flu season. For every 11 students vaccinated, one day of missed class is prevented, and vaccinating six students prevents one student from spending a sick day in bed. Of the students surveyed, approximately 30 percent were vaccinated, and 24.1 percent had flu-related illnesses between 2002 and 2006. The study is published in the Archives of Pediatrics & Adolescent Medicine.

New Jersey Becoming First U.S. State to Require Flu
Mandatory Medicine
Cleveland Plain Dealer (OH) (02/10/09) Zeltner, Brie; Spector, Harlan
With New Jersey becoming the first U.S. state to require flu vaccination for children, the debate over mandatory flu vaccinations for the nation's healthcare workers has increased. Studies show that high vaccination rates among hospital and nursing-home workers can reduce the incidence of flu and flu-related deaths among patients, but voluntary programs have not been very successful, with only about 40 percent participation. Starting in 2010, Ohio hospitals will be required to issue consumer reports that include the rate of flu vaccinations among all employees, including those not in direct-care jobs. It is expected that the reporting rule, from the Hospital Measures Advisory Council, will boost vaccination rates, as hospitals will want to have higher vaccination rates.
In Adults, Shots Are Best for Flu

New York Times (03/03/09) Rabin, Roni Caryn

Researchers led by Dr. Zhong Wang of the Armed Forces Health Surveillance Center examined the medical records of over 1 million soldiers over three flu seasons and determined that intramuscular flu shots are more effective in adults than the intranasal vaccine, lowering doctor visits by 53 percent versus 21 percent. For members of the military who received the flu shot during the 2004-2005 flu season, doctor visits in comparison to unvaccinated individuals were 54.8 percent less that season, 30.7 percent less during the 2005-2006 flu season, and 28.4 percent less during the 2006-2007 flu season. Military personnel who received the inhaled vaccine during the 2004-2005 flu season had 20.8 percent fewer visits that season, 12 percent fewer during the 2005-2006 season, and 10.7 percent fewer during the 2006-2007 season. The study, published March 2 online in The Journal of the American Medical Association, found that adults receiving their very first flu vaccine saw better results with the nasal vaccine, reporting 33 percent fewer doctor visits than unvaccinated individuals.

HHS Awards Contract to Build First U.S. Manufacturing Facility for Cell-Based Influenza Vaccine

FOR IMMEDIATE RELEASE
Thursday, January 15, 2009
Contact: HHS Press Office
(202) 690-6343

HHS Awards $487 Million Contract to Build First U.S. Manufacturing Facility for Cell-Based Influenza Vaccine

U.S. Department of Health and Human Services (HHS) today announced a $487 million multiple year contract with Novartis Vaccines and Diagnostics, Inc., to build the first U.S. facility to manufacture cell-based vaccine for seasonal and pandemic flu. Because cell-based influenza vaccine can be made faster and in greater quantities than traditional vaccine, the new facility is expected to increase the U.S. capacity to make pandemic influenza vaccine by at least 25 percent.

Cell-based vaccine production could more easily meet surge capacity needs because cells could be frozen and stored in advance of an epidemic or developed rapidly in response to an epidemic. Cell-based vaccine production also dramatically reduces the possibility for contamination and promises to be more reliable, flexible, and expandable than egg-based methods.

Currently, influenza vaccines licensed by the U.S. Food and Drug Administration (FDA) are made in specialized chicken eggs using a process that has changed little in over 50 years. In place of eggs, cell-based vaccine production uses laboratory-grown cells that are capable of hosting a growing virus. The virus is injected into the cells where it multiplies. The cells' outer walls are removed, harvested, purified, and inactivated. Using this technology, a vaccine can be produced in a matter of weeks.

“Today we are taking an important step in our ongoing commitment to pandemic preparedness,” said Dr. Robin Robinson, director of the HHS Biomedical Advanced Research and Development Authority (BARDA), which will oversee the contract. “In a pandemic we would need vaccine ready within six months. That’s why the National Strategy for Pandemic Influenza set domestic surge capacity as a goal in preparing the nation for a pandemic. That goal could not be accomplished using the traditional egg-based method of producing flu vaccine.”

New cell-based influenza vaccines provide an option for people who are allergic to eggs and, therefore, unable to receive current flu vaccines. Cell-based production avoids other problems that egg-based production has, such as a potential shortage of eggs due to poultry-based diseases.

The cell-based vaccine technology can also be used to make vaccines for seasonal influenza and other major emerging infectious diseases.

Under the contract, Novartis and HHS share the cost of the new cell-based influenza vaccine manufacturing facility in Holly Springs, N.C., with the HHS contract covering 40 percent of the cost and Novartis bearing 60 percent.

Also under the contract, Novartis will provide two new flu vaccines for seasonal flu or for pre-pandemic use. The contract builds on progress made through a previous HHS contract award to Novartis to accelerate the development of cell-based influenza vaccine. The new contract also will fund scientific studies, called clinical bridging studies, to compare existing Novartis vaccines to new ones, including those developed in the new facility, to show that these new ones are also safe and effective. By comparing new and existing vaccines, the company can provide information quickly to the FDA to request licenses for the new vaccines.

If licensed by the FDA, the new cell-based vaccines made in the United States could be purchased for by the federal government for vaccine stockpiles.

Information on medical countermeasures, including this contract, can be found at https://www.medicalcountermeasures.gov.
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