VIROLOGIC AND DISEASE SURVEILLANCE FOR INFLUENZA

Overview

Influenza surveillance is designed to determine when and where influenza viruses are circulating, identify circulating strains, detect changes in the virus, monitor influenza-related illness, and measure the impact of influenza on deaths.

Surveillance systems will be expanded as the likelihood of an influenza pandemic becomes more imminent. In the early phases, surveillance systems will be expected to be sufficiently sensitive to detect initial cases of a novel pandemic strain. Once the pandemic has arrived, surveillance and laboratory resources will need to focus on the data most essential to public health decision-making (e.g., morbidity/mortality rates, age-specific attack rates, impact on the healthcare system, anti-viral resistance and vaccine efficacy).

Given the potential for extremely large numbers of cases and possible decrease in public health workforce during the peak of the pandemic, surveillance efforts will focus on monitoring disease trends, ideally using existing electronic data, as opposed to attempting to capture detailed information on every suspected or confirmed case. Rather, staff resources will be used to collect more detailed clinical and epidemiologic information on a subset of cases to inform public health decision-making and provide information to the medical community.

Objectives

- Monitor influenza-like illness (ILI) trends in New Jersey (NJ)
- Detect outbreaks in schools and institutional settings so that public health consultation can be provided on effective control measures
- Detect the first human case of a novel influenza virus strain with pandemic potential in NJ
- Monitor subtypes of influenza to ensure rapid detection of novel strains
- Characterize morbidity and mortality and identify populations at increased risk for severe disease, complications, or death
- Inform the public health response by tracking the progression of the pandemic in NJ
- Assess transmissibility factors which reduce or promote spread of influenza to others in order to guide community containments strategies
- Assess the sensitivity and specificity of laboratory diagnosis in detecting the pandemic strain
- Conduct epidemiologic analysis to determine clinical, epidemiologic and/or treatment criteria associated with survival and improved outcomes
- Monitor for emergence of the second pandemic wave and/or shifts in the pandemic strain

Influenza surveillance coordinator

New Jersey Department of Health and Senior Services' (NJDHSS) Communicable Disease Service (CDS) Infectious and Zoonotic Disease Program (IZDP) are responsible for the influenza surveillance program. IZDP employs a full-time influenza surveillance coordinator (Job action sheet located in **Surveillance Appendix 1 - Attachment A**). The role of the coordinator is to:

- Maintain CDC initiated influenza surveillance
- Maintain state initiated influenza surveillance
- Promote year round influenza surveillance
- Remain in close contact with the CDC Influenza Branch
- Maintain working relationship with stakeholders including laboratories, hospitals, physicians and local health department staff

VIROLOGIC SURVEILLANCE DURING INTERPANDEMIC INFLUENZA PERIOD

Laboratory Surveillance for influenza

There are five laboratories in NJ that have viral isolation capability. These are the NJDHSS' Division of Public Health and Environmental Laboratories (PHEL), Hackensack University Medical Center (HUMC), UMDNJ-Robert Wood Johnson University Hospital, JFK Hospital in Edison and Shore Memorial Hospital. Of these laboratories, HUMC and PHEL report weekly the number of respiratory specimens tested and the number of isolates positive for influenza to NJDHSS, Infectious and Zoonotic Disease Program (IZDP). Additionally ten facilities (Burdette Tomlin Memorial Hospital, Chilton Memorial Hospital, Community Medical Center, Hackensack University Medical Center, Newton Memorial Hospital, Overlook Hospital, Saint Peter's University Hospital, University Hospital, Valley Hospital and Virtua Memorial Hospital of Burlington) participate in the National Respiratory and Enteric Virus Surveillance System. These laboratories report the total number of respiratory specimens tested and the number positive for several respiratory conditions (e.g., Respiratory Syncytial Virus [RSV], adenovirus, parainfluenza) each week to CDC. Additionally, representative or unusual influenza viral isolates received by PHEL during the season are submitted to CDC for strain typing and/or antigenic analysis.

Objectives of Laboratory Surveillance for Influenza:

- To monitor the percent positivity and type of influenza viruses identified on a weekly basis in NJ laboratories
- To assist federal agencies in characterizing influenza virus strains to inform annual vaccine formulation and to identify potential pandemic strains
- Identify other viral pathogens circulating in NJ

Description of methods

IZDP actively solicits data from select laboratories on influenza test results on a weekly basis. Total number of samples tested, the number positive for influenza type A or B, the number confirmed by culture, and geographic location of positives are recorded. This information is used in conjunction with other surveillance systems to describe the weekly influenza activity statewide. Information collected by this surveillance system is included in the ILI weekly report as described below. Additional information on laboratory diagnostics can be found in the laboratory technical section.

DISEASE SURVEILLANCE DURING INTERPANDEMIC INFLUENZA SEASONS

Overview

During the yearly influenza season, IZDP maintains several surveillance systems to monitor influenza activity in NJ. Weekly summary reports are distributed via the Local Information Network and Communications System (LINCS) system and posted to NJDHSS website. Current systems are detailed below.

Outpatient surveillance

Influenza Sentinel Providers Surveillance Network (SPSN)

NJ participates in passive influenza surveillance through the U.S. Influenza Sentinel Providers Surveillance Network, which is coordinated nationally by the CDC (http://www.cdc.gov/flu/weekly/fluactivity.htm). This system monitors nationwide ILI morbidity and includes a virologic surveillance component to assess circulating strains.

Objectives of the Influenza Sentinel Providers Surveillance Network:

- Estimate the impact of influenza on outpatient morbidity
- Provide epidemiologic information during the annual influenza season (e.g., disease rates by age category)
- Monitor antigenic changes in circulating viruses in order to provide information to CDC to guide decisions regarding the formulation of the next year's vaccine

Description of Methods

IZDP in collaboration with LINCS/regional epidemiologists recruits health care providers to participate in the SPSN. CDC recommends each state enroll a minimum of one per 250,000 population which calculates to a minimum of 33 enrolled providers in NJ. To assist in recruitment, IZDP creates surveillance memos and guidance documents. A sample of these documents can be found in **Surveillance Appendix 1 - Attachments B1 - B4**. In the 2006-2007 influenza season, NJ has 47 health care providers enrolled as participants in the CDC

Influenza Sentinel Providers Surveillance Network. This is more than the recommended ratio of one per 250,000 population or 33 providers. Participation in the program is voluntary and not population based. While every attempt is made to enroll providers from every county to achieve even geographic distribution and a wide variety of practice specialties, some areas and specialties are disproportionately represented. Information collected by this surveillance system is included in the ILI weekly report as described below. Sentinel physicians are asked to participate in two areas.

Morbidity Reporting

CDC maintains an internet-based web reporting system to which each state's influenza surveillance coordinator is given access. The sentinel sites can submit report influenza morbidity reports in one of two ways. Providers can report information directly to the CDC (via internet or fax) on a weekly basis or they can report to their respective LINCS/regional epidemiologist who will file the report with the CDC. Providers are asked to report from Morbidity and Mortality Weekly Report (MMWR) week 40 to week 20 (approximately October to May), however, year round reporting is encouraged. The weekly transmission consists of the number of patients seen for ILI (fever and cough and/or sore throat) during a given week in each of four age categories: 0-4 years; 5-24 years; 25-64 years; and > 65 years; and the total number of patients seen for any reason at the sentinel site during that week.

Laboratory Component

All sentinel sites are asked to submit specimens to PHEL. IZDP recommends, at a minimum, each site submits samples from the first case of influenza identified by the sentinel provider, any individual who has received the influenza vaccine but becomes infected with influenza, and then representative samples throughout the season. Collection kits are provided to sentinel providers as needed. Specimens are delivered to the PHEL with assistance from local health departments where rapid influenza antigen testing, Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR) and viral isolation are performed. A subset of positive samples is sent to CDC for additional testing and subtyping. In the 2006-2007 influenza season, IZDP provided free rapid antigen test kits and free shipping of influenza samples to PHEL. This project will be continued as funding permits.

Influenza-like Illness (ILI) Surveillance

It would be impossible to count every case of influenza. Using influenza-like illness reports coupled with more reliable surveillance data (i.e., laboratory results and outpatient visit data) can assist in tracking influenza. With the assistance and cooperation of local health officers and the coordinating efforts of the LINCS/regional epidemiologist, NJDHSS receives weekly reports from schools,

emergency departments (ED) and long term care facilities (LTCF) statewide regarding influenza like illness. Participation in the program is voluntary.

Objective of NJDHSS ILI Surveillance

- To monitor trends of influenza-like illness activity in NJ
- Detect outbreaks in institutional settings in order to provide public health consultation on effective control measures.

Description of Methods

- The number of schools to be enrolled per county are selected based upon population (1 per 100,000 population), with a minimum of four schools per county. Many counties elected to include more than the requested number. The selection of a school does not indicate that influenza or respiratory illness is more likely to occur there compared to other schools in the area. IZDP encourages all LTCFs and EDs to participate. A surveillance memo describing this surveillance is located in **Surveillance Appendix 1 - Attachment C**.
- Schools are being asked to provide the rate of absenteeism, as well as the predominant reason for absenteeism (respiratory illness, fever, gastrointestinal illness, etc.) occurring on Tuesday of every week.
- LTCFs are being asked to provide the number of residents ill with respiratory or ILI on Tuesday of every week.
- EDs provide the number of emergency department visits during a 24 hour period on the Tuesday of each week and the number of illnesses seen that were due to ILI (excluding asthma or other chronic lung conditions).
- An ILI module within the Communicable Disease Reporting and Surveillance System (CDRSS) has been set up to capture all data collected. All entities are asked to report this information to the NJDHSS by Friday of each week. The information is tabulated and incorporated in the ILI weekly report.

122 Cities Mortality Reporting System

Each week, CDC collects information from vital statistics offices in 122 cities. Each site reports the total number of death certificates filed and the number deaths categorized as either influenza or pneumonia related. NJ cities participating in this system include Camden, Elizabeth, Jersey City, Newark, Paterson and Trenton. The majority of Pneumonia & Influenza deaths are due to pneumonia, not influenza, as noted on the death certificate.

Objective of Influenza-Related Mortality Surveillance

- Assess trends in deaths that may be influenza-related

Description of Methods

Each week, vital statistics divisions of participating cities prepare a weekly report that includes the total number of death certificates filed that week and the number of deaths for which pneumonia or influenza was mentioned anywhere on the death certificate. Data is compiled and placed on CDC's website (http://www.cdc.gov/mmwr/distrnds.html).
IZDP downloads the data form CDC and a NJ specific rate is calculated for pneumonia and influenza related deaths. Information regarding influenza morbidity and mortality are included in the ILI weekly report as described below.

Pediatric Influenza Surveillance

Subsequent to an unexpectedly high number of pediatric deaths due to influenza during the 2003-4 season, NJDHSS implemented passive surveillance for mortality and severe complications due to influenza in pediatric patients. Pediatric influenza-related death was added to the national reportable disease list.

Objectives of Pediatric Influenza Mortality Surveillance

- To increase awareness among providers to report deaths and severe illness among children < 18 years that may be due to influenza illness
- To identify clinical and epidemiologic characteristics of fatal or severely ill cases of influenza among children
- To identify missed opportunities for vaccination and to guide national influenza vaccine policy

Description of Methods

At the start of each annual influenza season, IZDP reminds infection control professionals to report any cases of children < 18 years of age with severe illness or death suspected to be due to influenza. Memo describing this surveillance can be found in **Surveillance Appendix 1- Attachment D**. Surveillance criteria are as follows:

Pediatric patients (i.e., less than 18 years of age) with laboratory confirmed influenza (e.g., rapid Enzyme Immunoassay [EIA], viral culture, Direct Fluorescent Assay [DFA], PCR, Immunohistochemistry [IHC], or hemagglutinin inhibition [HI]) meeting one of the following criteria.

- Influenza-related deaths (in which no period of complete recovery between the illness and death); OR
- Influenza encephalopathy (defined as altered mental status, or personality changes in patients lasting >24 hours and occurring within 5 days of the onset of an acute febrile respiratory illness; OR
- Severe illness defined as admission to an intensive care unit for influenza-related illness (in previously healthy children)

Outreach to providers informing them of surveillance criteria is done via LINCS messages targeted to health officers, epidemiologists and infection control practitioners at the beginning of the influenza season. An online survey form has been set up to collect data on reported cases. Text files created from the online survey are sent via email to the influenza surveillance coordinator and are imported into an Access database for tracking and analysis. Information regarding pediatric morbidity and mortality are included in the ILI weekly report as described below.

Nosocomial Respiratory Outbreaks

Any outbreak of infectious illness, including suspected influenza, in a healthcare facility is reportable to the NJDHSS under NJAC 8:57. The NJDHSS works with local health departments (LHDs) to provide consultation to long term care and acute care facilities experiencing influenza or respiratory outbreaks.

Objectives of Nosocomial Respiratory Outbreaks

- Provide consultation to facilities regarding antiviral prophylaxis and treatment, and reinforce infection control measures to minimize morbidity and mortality at affected institutions
- Obtain epidemiologic information regarding morbidity, mortality and effectiveness of vaccine and antivirals in long-term care facilities during the annual influenza season
- Characterize circulating strains of influenza virus

Description of Methods

IZDP along with LHDs investigate reports of one or more laboratory-confirmed case of influenza or a cluster (two or more residents on one unit) of ILI at long-term care facilities as well as other residential living facilities. Medical consultation is provided to the facilities, regarding appropriate infection control measures, antiviral treatment and prophylaxis options. Information regarding these outbreaks is entered into an Access database which allows for tracking and analysis. Information regarding nosocomial outbreaks is included in the ILI weekly report as described below.

State-level assessments

Council of State and Territorial Epidemiologists (CSTE) Report

State health departments report the estimated level of influenza activity in their state each week to the CDC. The criteria used are as follows:

Objectives of State and Territorial Epidemiologists Report

- To classify, using a standard definition, the influenza activity in the NJ
- To compare influenza activity in NJ with influenza activity in other states

Description of Methods

Virologic and disease surveillance activities as described in the above sections are used to classify the influenza activity in NJ using standardized definitions. These definitions are as follows:

No Activity- At least 2 of 3 parameters* at or below state baseline** **AND** no lab confirmed cases
Sporadic – At least 2 of 3 parameters above state baseline **AND** confirmed laboratory cases anywhere in the state **OR** at least one laboratory confirmed outbreak in an institution anywhere in the state
Local – At least 2 or 3 parameters above state baseline in a single county **AND** confirmed laboratory cases from that same county within the previous 3 weeks (other counties may be above baseline without lab confirmed cases) **OR** confirmed outbreaks in 2 or more institutions in a single county
Regional – At least 2 of 3 parameters above state baseline in $\geq$ 2 but $\leq$ 10 counties **AND** laboratory confirmed cases from these same counties in past 3 weeks **OR** confirmed outbreaks institutions in $\geq$ 2 but $\leq$ 10 counties
Widespread – At least 2 of 3 parameters above state baseline in > 10 counties **OR** institutional outbreaks in > 10 counties **AND** lab confirmed influenza cases in previous 3 weeks.

*Parameter = School, emergency department, or long term care weekly surveillance data
**Baseline is calculated by taking the average of statewide percentages of ILI for a 3 year (2004, 2005, and 2006) period during months when influenza is less likely to be circulating (May-August). Weeks in which less than 4 counties reported were not included in the calculation.

Information regarding State and Territorial Epidemiologists Reports are included in the ILI weekly report as described below and also sent weekly to CDC for inclusion in the national influenza activity report.

Weekly ILI Report

During the influenza season, IZDP staff prepares a weekly, statewide, comprehensive report of ILI activity in the state.

Objective of Weekly ILI Report

- To provide a weekly report to stakeholders regarding current influenza activity in the state

Description of Methods

The above influenza surveillance systems are used to prepare a comprehensive report describing the influenza activity for the state. Two reports are prepared each one: one detailed report and one single page report. These reports are posted on the NJDHSS website, distributed electronically via LINCS to all public health and health care partners, and provided to the CDC. A copy of this report is located in **Surveillance Appendix 1 – Attachment E**. An annual summary report of the influenza season will also be created at the end of each influenza season.

Other New Jersey Surveillance systems

In addition to surveillance systems set up to monitor influenza like illness specifically, NJ has many other surveillance systems which can be used to verify or provide additional information to influenza surveillance systems. These systems are described below.

a) Respiratory Syncytial Virus (RSV) Surveillance

RSV is a common cause of bronchiolitis and pneumonia and has similar clinical features to influenza. During the 2003-2004 influenza season, laboratory surveillance for RSV was implemented. A minimum of one acute care hospital in each LINCS jurisdiction reported weekly on both the number of RSV tests performed and the number that were positive. Weekly statewide reports were prepared and included in the ILI weekly report. Additionally ten acute care facilities in NJ provide data on RSV to the CDC's National Respiratory and Enteric Virus Surveillance System (NREVSS).

b) NJDHSS Communicable Disease Reporting and Surveillance System (CDRSS)

CDRSS is a web-enabled system that is used to enter, update and track NJ's reportable communicable disease information. A patient-centric system, CDRSS has been designed to have multiple levels of security in order to maintain patient privacy and safeguard against unauthorized access. Along with the ability to enter cases in a real-time environment,

CDRSS users (e.g., Led's, hospitals, health care providers, laboratories, health-related institutions) can run two types of reports on cases:

- Patient-specific Data - for individual cases that are within the county (jurisdiction) of the user; and

- Aggregate Data - statistical data that is compiled from individual cases and is used to show both statewide and county specific disease trends.

CDRSS has been introduced in all 21 counties, including over 560 users from Lads, hospitals, and laboratories. Data from CDRSS can be used to determine what other types of reportable respiratory illness having similar clinical symptoms to influenza might be occurring throughout the state.

c) NJDHSS Pharmacy Data Surveillance

The NJDHSS utilizes data from the Real-time Outbreak and Disease Surveillance (RODS) project, a national effort to monitor sales of over-the-counter (OTC) healthcare products and analyze them for aberrations suggestive of a disease outbreak. When people get sick, they often purchase OTC products prior to visiting a health care provider. In some cases, it is possible to identify an outbreak up to two weeks earlier with OTC sales than by monitoring clinical data. Based at the University of Pittsburgh, this collaboration involves the food and drug retail industry, state and local health departments, and the CDC.

Currently, NJDHSS CDS staff receives NJ specific RODS data pertaining to OTC pharmacy sales of cold, cough, anti-diarrhea and antipyretic medications. These data are monitored daily for surges in OTC sales that might suggest increased illness activity; and sales data for the current five-day reporting period are compared to baseline sales from previous reporting periods. NJDHSS and LHD staff then investigates to determine possible causes of any surges. Approximately 50% of in-state pharmacy sales are captured in these data that are reported daily.

d) Emergency Department Volume Data

NJDHSS receives daily submissions from acute care general hospitals regarding emergency department visits/admissions. If the recent volume is higher than expected, email follow-up is made with the LINCS Epidemiologist who contacts hospital's Infection Control Practioner to determine the reasons for the aberration. This surveillance system is useful for the detection of aberrations in emergency department volume that might indicate unusual disease activity.

e) Biosense

This is a secure online surveillance site managed by CDC. The system includes pre-diagnostic or syndromic data from veteran affairs clinics, the Department of Defense and LabCorp test orders. The website has several elements including mapping and trend graphing/comparisons (national vs. regional) at the zip code level. CDC performs analysis using CUSUM and SMART score results. NJDHSS staff reviews this website every business day. BioSense also provides "Sentinel Infection Alerts" for all category A, B and C agents (bioterrorism potential classification per CDC). Sentinel Infection Alerts allow for additional record-level information to be accessed. This information includes patient zip code, treating facility, and disposition allowing for follow up and investigation.

f) Unexplained Death and Critical Illnesses Project (UNEX)

UNEX was initiated in 1995 as part of the CDC Emerging Infections Program (EIP). The purpose of this system is to conduct population based surveillance for possibly infectious deaths identified by health departments, medical examiners/coroners, pathologists, infectious control practitioners and clinicians. Criteria and forms for this project are located in **Surveillance Appendix 1 – Attachment F**.

Avian Surveillance

United States

- Animal surveillance for avian influenza, including wild birds and domestic poultry, is conducted by states, the poultry industry, and the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS).
- Diagnostic testing is performed by state and industry laboratories, with confirmatory testing by USDA/APHIS Veterinary Services at the National Veterinary Services Laboratories in Ames, Iowa.

New Jersey

- New Jersey has a small to moderate size poultry industry. The New Jersey Department of Agriculture (NJDA) is responsible for the health of the state's livestock animals, including poultry, and works with the APHIS' regional office to perform avian influenza testing in live bird markets and other poultry venues in the state. Avian influenza in domestic poultry is required to be reported to the NJDA (NJAC 2:9).
- NJDHSS has established a working relationship with the NJDA to assure timely notification of Avian Influenza (AI) outbreaks, particularly high-pathogenic AI, in the state. Notification will enable the NJDHSS to investigate potential human exposures and implement prevention and control measures, as well as respond to inquiries from the media and the general public, as such an outbreak would likely be considered newsworthy and possibly alarming.
- The NJ Department of Environmental Protection (NJDEP) in conjunction with the USDA's regional Wildlife Services Office, conducts surveillance for avian influenza in

wild birds, including Canadian geese, specific migratory species, and large or unusual wild bird die-offs. These agencies will immediately notify NJDHSS in the event of a bird testing positive for high pathogenic avian influenza.

- Diagnostic testing for avian influenza is performed by the New Jersey Department of Agriculture's Veterinary Diagnostic Services laboratory with confirmatory testing performed at the National Veterinary Services Laboratories (NVSL) in Ames, Iowa.

Additional information regarding the role of NJDHSS in animal surveillance can be found in Surveillance Appendices 3, 4 and 5.

SURVEILLANCE DURING THE PANDEMIC ALERT PERIOD (PHASE 3 AND 4)

Overview

The surveillance goals for the pandemic alert period is to rapidly detect and characterize circulating novel influenza viruses, track influenza cases and their contacts as they occur in New Jersey, contain the virus and limit the number of clusters, aid in the development of containment strategies and determine the effectiveness of containment strategies which have been implemented.

Monitoring for novel strains of influenza

Enhanced Passive Surveillance for Novel Strains of Influenza

Once a novel influenza virus with documented human cases are detected anywhere in the world (e.g., H5N1 outbreaks in Asia in 1997, and 2004-present), enhanced surveillance to ensure rapid recognition of the first cases and their contacts will be implemented. Specific recommendations regarding identification, treatment and public health control measures will depend on the epidemiology of the virus, clinical characteristics and location of cases (inside US, outside US, in NJ). Surveillance will focus mainly on severely ill, hospitalized or ambulatory patients who meet certain epidemiologic and clinical criteria. Additional information on enhanced passive surveillance is located in **Surveillance Appendix 9.**

Contact Tracing

The capacity to do more detailed case and/or contact investigations will depend on staff resources, taking into account the potential impact on other agency priorities given the likelihood of an extended pandemic response. At the start of the pandemic in NJ, NJDHSS will conduct case-based surveillance and obtain more detailed clinical and epidemiologic data on the initial cases.

Limited contact tracing and monitoring would only be considered for the initial cases at the start of the pandemic. Given the epidemiologic characteristics of influenza viruses (e.g., contagiousness before illness onset and potential for asymptomatic cases to shed virus), however, such tracking and use of NJDHSS and local health department staff resources will not be an effective way to control the outbreak once there is evidence of

sustained community transmission in the state. Therefore, contact investigations will not be conducted once resources become limited or when contact tracing becomes ineffective. Additional information on contact tracing methods can be found in **Surveillance Appendix 10**.

Evaluation of Seasonal Influenza Surveillance

Once a novel influenza virus is identified in NJ, current surveillance systems used for seasonal influenza will be used to monitor the progression on the novel virus. Depending on characteristics of the novel influenza virus that is circulating and the time of year that the novel influenza virus presents, the case definition and parameters used for routine seasonal influenza surveillance will be altered to ensure accurate reporting of cases associated with the novel influenza virus. ISP and clinical staff will evaluate case definitions based on current World Health Organization (WHO)/CDC guidance and revise the case definition as appropriate. Revisions to the case definition and/or surveillance systems will be communicated to local health authorities via LINCS.

Tracking Case Counts/Community Containment

As cases infected with the novel influenza virus increases, staff resources available to conduct investigations will become limited. Local health authorities will no longer be able follow up on individual cases of illness. When the public health system reaches this capacity, methodologies to track case counts rather than individual cases will be more realistic. In addition to tracking the number of cases, NJDHSS will collect information on community containment measures being used by local health departments. Based on the information being provided, NJDHSS can make recommendation on which community containment measures are most effective. During phase 4, mechanisms for implementation of a case counting procedures and collection of community containment measures will be developed. Once local health authorities reach capacity, this process will be implemented. Additional information on tracking case counts and community containment measures can be found in **Surveillance Appendix 11.**

PREPAREDNESS PLANNING FOR VIROLOGIC AND DISEASE SURVEILLANCE DURING A PANDEMIC (HEIGHTENED PANDEMIC ALERT PERIOD WHO PHASE 5)

Eliminate Surveillance

As the pandemic progresses, some surveillance systems may provide more valuable information than others. Additionally, some surveillance systems can be labor intensive while others are simplistic. Surveillance systems like the sentinel provider surveillance system will likely not be sustainable during a pandemic as providers become overwhelmed caring for ill patients. Surveillance systems will be evaluated throughout the pandemic to determine which systems can no longer function in their intended manner. The evaluation process for surveillance systems will look at resources available to conduct the surveillance and the usefulness of the data being collected by that surveillance system to evaluate spread and effectiveness of community containment measures. It is impossible to prioritize surveillance systems prior to a pandemic.

During Phase 4, surveillance systems being utilized will be evaluated, a prioritization of systems will be made and as resources decrease surveillance systems will be suspended.

SCALED-BACK SURVEILLANCE (WHO PHASE 6)

Once a novel influenza pandemic outbreak reaches Phase 6, health care providers will be overwhelmed dealing with ill patients. Health care providers will need to perform quick clinical assessments regarding patient conditions. While it would be ideal to collect and test each and every person meeting clinical criteria, it would not be practical as hospital and laboratory resources would quickly dwindle. Once a novel influenza virus has been identified, every person meeting clinical criteria will be considered to be infected with the virus. Laboratory testing of a portion of these patients will need to occur to monitor the novel virus for mutations or drug resistance. (See Laboratory Diagnostics section). Basic data variables such as the number of cases seen in acute care facilities, the number hospitalized and the number who died will likely be the only data collected to track cases. Clinical and epidemiologic data will be collected from acute care facilities and medical chart review. For additional information see **Surveillance Appendix 8**.

EPI-JOB ACTION SHEET

POSITION TITLE: Influenza Surveillance Coordinator

Mission: Coordinate all activities related to influenza surveillance.

Daily Activities:

- Provide consultation and technical assistance to surveillance partners (i.e., regional epidemiologist, sentinel providers, schools, emergency departments, long term care facilities) regarding enrollment, data submission, and other general influenza questions
- Provide consultation and technical assistance to the public regarding influenza
- Provide consultation and technical assistance to reporters (i.e., health care providers, laboratories) regarding reporting responsibilities related to influenza and other general influenza questions
- Monitor cases of reported pediatric cases, enter reported case into excel spreadsheet and follow up on cases meeting the case definition or those with unusual clinical presentation
- Manage and monitor all surveillance systems (e.g., data cleaning, updating, trend analysis)
- Respond to requests for additions (i.e., users, surveillance entities) to Communicable Disease Reporting and Surveillance System (CDRSS) Influenza-Like Illness (ILI) module and assist CDRSS help desk staff with questions related to the CDRSS ILI module.
- Other activities as deemed appropriate by Infectious and Zoonotic Disease Program (IZDP) management

Weekly Activities:

CDRSS- ILI Module

- Run NJ Statistics Report and View Report in CDRSS ILI module
- Review data contained in report for possible data entry errors, contact reporters to verify spurious data
- Evaluate data to determine if parameters are above baseline
- Enter pertinent data to ILI weekly spreadsheet
- Evaluate data for identification of trend/pattern
- Prepare data for inclusion in the weekly report

Sentinel Provider Surveillance Network (SPSN)

- Download data from Centers for Disease Control and Prevention (CDC) SPSN website
- Input data into ILI weekly spreadsheet
- Notify regional epidemiologist regarding non-reporters
- Prepare data for inclusion in the weekly report

Pediatric Surveillance

- Check daily email reports of pediatric cases from web-base intake form
- Import case data into excel spreadsheet
- Review cases reported to determine if the cases meet case definition
- Ensure all pertinent information is collected and entered into spreadsheet
- Follow up on cases with unusual presentation or missing information
- Prepare tally for inclusion in the weekly report
- Prepare end of season summary for distribution to stakeholders

Laboratory Surveillance

- Contact Public Health and Environmental Laboratories (PHEL) and Hackensack University Medical Center (HUMC) to determine number of tests performed, the number of tests positive and subtypes if available
- Conduct follow up on reported cases to obtain necessary demographic information (i.e., age, gender, county of residence, outcome)
- Prepare data for inclusion in the weekly report

121 City Mortality Report

- Download data from CDC - 121 City Morality Report for 6 New Jersey cities
- Record pertinent data in excel spreadsheet
- Evaluate data for identification of trend
- Prepare data for inclusion in the weekly report

Weekly Influenza Report

- Determine influenza activity level based on Council of State and Territorial Epidemiologists (CSTE) defined criteria
- Create weekly graphs for influenza weekly report
- Prepare weekly influenza report
- Send report via Local Information Network and Communications System (LINCS) to stakeholders

Seasonal Activities:

- Prepare seasonal surveillance memos that instruct stakeholders on the process for data submission
- Recruit sentinel providers for inclusion in the SPSN
- Work with regional epidemiologist to recruit ILI reporting entities
- Provide training to surveillance entities on use of the CDRSS ILI module
- Prepare seasonal influenza report and seasonal pediatric influenza report
- Identify CDRSS enhancements and report to CDRSS Steering Committee
- Prepare annual Respiratory Syncytial Virus (RSV) alert report
- Ensure pediatric influenza web-based reporting form has all pertinent information and is working properly
- Send of certificates of participation to sentinel providers

Ongoing Activities:

- Prepare guidance documents pertaining to the influenza surveillance (e.g., specimen collection, infection control)
- Assist health educators with the preparation of influenza education messages
- Collaborate with federal, regional, and state health agencies on influenza surveillance issues
- Provide training and education to stakeholders
- Keep up to date on information pertaining to novel influenza viruses
- Assist in preparation and update of pandemic influenza plans

CDC Provider ID

Sentinel Provider Surveillance Form

Does the patient meet the influenza-like illness (ILI) criteria? □ Yes □ No

If yes, complete the following:

□ 0-4 years □ 5-24 years Date evaluated: ____/_____/_____
□ 25-64 years □ >64 years

Influenza-like illness (ILI) is defined as:

Patient experiencing Fever (≥100ºF, oral or equivalent) AND cough and/or sore throat (in absence of known cause).

NOTE:

- The presence or absence of other symptoms, such as body aches, fatigue, or vomiting, should be disregarded when classifying a patient as having an ILI. Although this clinical definition by itself is very general, when combined with other information on circulating viruses, the information on influenza-like illness activity provides an excellent picture of influenza activity in the United States.
- Fever is often difficult to measure in elderly individuals. Therefore, the definition of fever to be used for ILI surveillance in elderly residents of long-term care facilities is a temperature ≥100º F OR 2 degrees above established baseline for that resident.

Influenza Sentinel Surveillance Program

New Jersey Department of Health and Senior Services
Be Part of the Influenza Sentinel Surveillance Program

Your help is needed!

Sentinel providers are essential to influenza surveillance. They provide information which allows us to track the progression of seasonal influenza and can assist in the detection of novel influenza viruses. The need for surveillance is even greater in light of increasing signs of a possible pandemic. Please consider having your clinic/practice represented in this vital public health program.

Most sentinel providers report that it takes them **between 20 and 40 minutes a week** to compile and report their surveillance data.

What is an influenza sentinel provider?

- An influenza sentinel provider conducts surveillance for influenza-like illness (ILI) in collaboration with the New Jersey Department of Health and Senior Services (NJDHSS), local health departments and the Centers for Disease Control and Prevention (CDC).
- Data reported by sentinel providers, in combination with other influenza surveillance data, provide a national picture of influenza virus and ILI activity in the United States.
- New Jersey had 14 active participants during the 2005-2006 influenza season and is looking to enroll 38 providers throughout New Jersey.
- Since a novel influenza virus could show up at any time of the year, surveillance is now performed year-round in order to monitor for novel influenza viruses that could signal a possible pandemic.

Who can be an influenza sentinel provider?

- Providers of any specialty (e.g., family practice, internal medicine, pediatrics, infectious disease) are eligible to be sentinel providers.
- Providers in any type of practice (e.g., private practice, public health clinic, urgent care center, emergency room, university student health center) are eligible to be sentinel providers.

What data do sentinel providers collect and how is this information reported?

- Sentinel providers report the total number of patient visits each week and number of patient visits for ILI by age group (0-4 years, 5-24 years, 25-64 years, ≥65 years).
- ILI is defined as fever (≥100°F, oral or equivalent) AND cough and/or sore throat in the absence of a known cause.
- These data are transmitted weekly on Tuesday via the internet or fax to a central data repository at CDC, which NJDHSS and local public health agencies can access and use to track influenza activity.

Why volunteer?

- Health care providers represent the first line of defense in the recognition of an unusual case or clusters of influenza. This system helps to integrate physicians into public health functions.
- Data from sentinel providers are critical for monitoring the impact of influenza, because influenza viruses are constantly evolving and cause substantial morbidity and mortality (approximately 36,000 deaths) every winter.
- In combination with other influenza surveillance data, sentinel data can be used to guide prevention and control activities, vaccine strain selection, and patient care. This information is critical for protecting the public's health.
- Sentinel providers will be offered specimen collection kits and commercial rapid antigen detection kits for influenza – **FREE OF CHARGE**.
- NJDHSS can assist with the delivery of select influenza specimens to NJDHSS Public Health and Environmental Laboratories for viral isolation and subtyping.
- All participating providers who report information during the year will receive a participation certificate from the CDC along with optional subscriptions to Morbidity and Mortality Weekly (MMWR) and the Emerging Infectious Disease Journal.

For more information, contact the NJDHSS Infectious and Zoonotic Disease Program, Influenza Surveillance Program at **(609) 588-7500**.

NEW JERSEY DEPARTMENT of HEALTH and SENIOR SERVICES

State of New Jersey

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JON S. CORZINE
Governor

FRED M. JACOBS, M.D., J.D.
Commissioner

Surveillance - Appendix 1 - Attachment B3

Recruitment Letter

September 1, 2006

Dear Provider:

The Influenza Sentinel Provider Surveillance Network is a collaborative effort between New Jersey Department of Health and Senior Services (NJDHSS) Influenza Surveillance Program (ISP), New Jersey local health departments, New Jersey healthcare providers, and the Centers for Disease Control and Prevention (CDC). The purpose of this surveillance system is to monitor when influenza activity is occurring, what influenza viruses are circulating, and where the influenza activity is taking place. Through this reporting system, we are able to track New Jersey's influenza activity and compare information to other states around the country.

This summer the NJDHSS conducted a survey of sentinel providers participating in the influenza sentinel provider program. We would like to thank those providers who responded to this survey and provided feedback on how this surveillance system could be improved. We have summarized some of the concerns raised by providers and offer suggestions on how to capture surveillance data in a more timely and efficient manner.

NJDHSS has created a form which contains all the data that needs to be captured on an individual patient (i.e., influenza-like illness [ILI] case definition, age category, evaluation date). This form can be kept in a central location or an exam room and completed for each patient who meets the ILI case definition. Forms can be consolidated at the end of the week, and the number of forms tallied and reported. NJDHSS does not require use of this form but merely provides it as a way to assist in data collection. This form should **not** be used to fax information to CDC. Information provided in the CDC workbook will guide providers on how to properly submit information to CDC.

Another mechanism used by participating physicians to capture requested data involves placing a sticky note on the patient record if a patient meets the ILI case definition. Records can be placed aside and tallied at the end of each workday or tallied at the end of the week. The form provided might be helpful to tally daily numbers if this option is determined to work best in your clinic/practice.

Another issue raised by physicians was the weekly reporting deadline. Physicians should be aware that CDC requests that data be entered or faxed by Tuesday at noon. If a provider is working with a local health department on data submission, the local health department should be contacted to determine if reporting deadlines can be altered to meet everyone's needs.

Surveillance - Appendix 1 - Attachment B3

Lastly, physicians reported using medical records databases to capture patients with ILI. One problem with this method is the difficulty in determining which ICD codes to use to select patients who should be reported. While the CDC does not formally recommend ICD codes that should be used for this purpose, a list of ICD-9 and ICD-10 codes for influenza and influenza-like illness are listed below. Each clinic/practice should evaluate the case definition for ILI and try to identify the most commonly used codes to describe these types of patients. NJDHSS would be glad to assist any practice/clinic who has additional questions regarding use of ICD codes.

ICD-9 code	Description
487 (all subcodes)	Influenza
462 (all subcodes)	Acute pharyngitis
780.6	Fever
786.2	Cough
780.7	Malaise and fatigue

ICD-10 code	Description
J10 (all subcodes)	Influenza
J11 (all subcodes)	Influenza virus not identified
J02.9, J02.9	Acute pharyngitis
R50, R50.9	Fever, Fever unspecified
R05	Cough
R53	Malaise and fatigue

Thank you for your cooperation and dedication to this valuable surveillance effort. If you have any questions or concerns please contact your regional representative or contact NJDHSS at 609-588-7500.

Sincerely,

Lisa McHugh, MPH
New Jersey Department of Health and Senior Services
Influenza Surveillance Program

State of New Jersey

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Commissioner

Surveillance - Appendix 1 – Attachment B4
Sentinel Provider Surveillance Program Recruitment – County Memo

TO: Regional Epidemiologists/County ILI Coordinators

FROM: Lisa McHugh, Coordinator, Influenza Surveillance Program
Antonia Farrell, Public Health Representative, Influenza Surveillance Program

SUBJECT: Recruiting 2006-07 ILI Sentinel Providers

DATE: September 1, 2006

The Influenza Sentinel Provider Surveillance Program is a collaborative effort between New Jersey Department of Health and Senior Services (NJDHSS) Influenza Surveillance Program (ISP), New Jersey local health departments, New Jersey healthcare providers, and the Centers for Disease Control and Prevention (CDC). The purpose of this surveillance system is to monitor when influenza activity is occurring, what influenza viruses are circulating, and where the influenza activity is taking place. Through this reporting system, we are able to track New Jersey's influenza activity and compare information to other states around the country.

New Jersey did not meet their goal for participation in the national 2005-06 Influenza-Like Illness (ILI) Sentinel Provider Surveillance Program. This coming season we hope to meet our goal of thirty-six sentinel providers for New Jersey as required by the CDC. A Sentinel Surveillance Program appreciation certificate was issued by the CDC and sent out in August 2006 to all providers that actively participated in last year's program. NJDHSS would like to take this opportunity to thank everyone for their commitment and efforts in the last influenza season.

As we approach the 2006-07 influenza season, it is again time to think about provider site enrollment. Your efforts in encouraging the providers in your county that participated last season to continue in this program would be greatly appreciated. For those counties that did not have any participating providers in the past, regional epidemiologists are encouraged to try to recruit at least one or two new sites. This is very important since participation of providers from all of the counties will better reflect the influenza activity of the state.

In order to improve this surveillance, ISP staff conducted a survey of providers in July 2006 to assess problems and concerns with this surveillance. The following are a few issues that were identified as possible problems.

- There were many of complaints about a Monday reporting deadline since offices tend to be busy on this day.
- Physicians requested a form to complete on patients meeting the ILI case definition which would facilitate data collection.

- Physicians stated that the case definitions for ILI were too vague, similar to responses from some of our other reporting entities, especially in the geriatric patients in which fever is often difficult to classify.

In order to assist in the process of recruitment and addressing some of the issues identified, several documents have been prepared and are attached. The first two documents being provided are an Excel spreadsheet and instructions for enrolling current and new providers. Please complete the spreadsheet according to the instructions provided by September 15, 2006 and send to InfluenzaAdvisoryGroup@doh.state.nj.us. The second is a flyer on frequently asked questions which can be used to provide information to physicians interested in enrolling in the program. Finally, a provider letter and form are also attached and should be given to all providers who agree to enroll in the program.

Please call (609)588-7500 with any questions or concerns you might have at any time. Thank you once again for all the time and energy you have dedicated to this task.

Attachments
(1) Sentinel_provider_06_07
(2) Instructions_for_Enrollment_06_07
(3) Sentinel_Provider_FAQ_06_07
(4) Sentinel_Provider_form_06_07
(5) ILI_Data_form_06_07

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Surveillance - Appendix 1 – Attachment C

ILI Surveillance – County Memo

To: Regional Epidemiologist
LINCS Health Officers/County ILI Coordinators

From: Lisa McHugh, MPH
Influenza Surveillance Coordinator
Infectious and Zoonotic Disease Program

Date: September 1, 2006

Subject: 2006/2007 Influenza-Like Illness (ILI) Surveillance

The New Jersey Department of Health and Senior Services (NJDHSS), along with LINCS agencies and regional epidemiologists, have been collecting information on influenza via an Active Influenza Surveillance System for several years. Many entities involved in this surveillance report information year round. This system incorporates information from long-term care facilities, hospital emergency departments, and schools and is one of the components used to determine statewide influenza activity.

Beginning with the 2006-2007 influenza season, information on case identification and data collection has been modified. This memo describes the modifications and serves as a reminder to assess all enrolled entities to determine if they will continue to participate and to begin enrolling new entities to meet required goals.

Enrollment

NJDHSS requests each county to enroll the following number of reporting entities.

- One school per 100,000 population, with a minimum of four schools per county.
- All hospital emergency departments and all long term care facilities in each county.
- Respiratory syncytial virus (RSV) reports from at least one hospital per county.

The following considerations/recommendations should be used when enrolling new entities.

- The LINCS Health Officer, municipal health officers, regional epidemiologist and ILI coordinator should work together to identify entities which will participate in the upcoming season. Entities should be well distributed throughout the county and not all located in one municipality or one geographic area.

- A contact person responsible for providing the necessary information should be established within each reporting entity.
- Each LINCS agency should designate a contact person and backup for ILI reporting. This person should be responsible for collecting and transmitting data to NJDHSS. Contact information from this person should also be given to all reporting entities.

Data Collection

Data collection will be similar to previous years. Some modification to case definitions have been made and therefore it is imperative that this information be communicated to all reporting entities.

Schools – Enrolled schools should report the total student population and the number of students absent on Tuesday of each week. Schools are encouraged to report if absences fall into one of the following categories: respiratory, gastrointestinal, fever or other. If a school does not collect this type of information, a report of "unknown category" should be indicated on its report.

Long term care facilities- Enrolled facilities should report number of residents in the facility and the number ill with ILI on Tuesday of each week. The case definition that should be used to determine ILI is below.

- Residents experiencing an illness that is characterized by fever and symptoms compatible with influenza (headache, change in mental status, lethargy, productive or non-productive cough, sore throat, runny or stuffy nose, or muscle aches). Please note that fever is often difficult to measure in elderly resident, therefore, the definition of fever to be used for ILI surveillance is a resident experiencing a temperature $\geq$100º F **OR** 2 degrees above established baseline for that resident.

Hospital Emergency Departments – Enrolled entities should report the total number of emergency department visits and the total number of visits due to ILI on Tuesday of each week. A suitable 24 hour period which includes Tuesday should be used as the time frame (e.g., Monday 11pm to Tuesday 11pm). The following case definition should be used to determine if a patient has ILI.

- Patients with fever ($\geq$100°F, oral or equivalent) AND cough and/or sore throat (in the absence of a known cause).
- The presence or absence of other symptoms, such as body aches, fatigue, or vomiting should be disregarded when classifying patients as having ILI. Although the case definition by itself is very general, when combined with information on circulating virus, the information gathered can produce a picture of influenza activity.

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Surveillance - Appendix 1 - Attachment D • Pediatric Influenza Surveillance Memo

To: Health Officers, Regional Epidemiologists, Hospital Infection Control Practitioners

From: Lisa McHugh, MPH
Influenza Surveillance Coordinator

Date: September 1, 2006

Subject: NJDHSS Pediatric Influenza Surveillance

Surveillance for pediatric cases of influenza was initiated during the 2003-2004 influenza season when several reports of influenza deaths were reported in children. These reports generated concern that children were disproportionately affected by influenza during that season. In response, CDC requested that states increase their efforts to collect and report information on pediatric influenza cases, and influenza-associated pediatric mortality was added to the national reportable disease list. To further assess the burden of influenza-associated severe illness and death in the pediatric population and to gather data that might influence influenza-related policy, the New Jersey Department of Health and Senior Services (NJDHSS) is requesting reports of cases of severe or fatal influenza in hospitalized pediatric patients. Health care providers and facilities should report cases of:

- Pediatric patients (i.e., less than 18 years of age) with laboratory confirmed influenza*

AND

- Influenza-related deaths (in which there is no period of complete recovery between illness and death);

OR

- Influenza encephalopathy (defined as altered mental status or personality changes in patients lasting more than 24 hours and occurring within 5 days of the onset of an acute febrile respiratory illness);

OR

- Severe illness defined as admission to an intensive care unit for influenza-related illness (in previously health children)

NJDHSS requests that health care providers who identify patients meeting the above criteria complete a case report form available at http://www.state.nj.us/health/flu/CaseReportForm.shtml, within 24 hours of the case-patients discharge or death. Instructions for completing this form are attached and are also available at http://newjersey.gov/health/flu/professionals.shtml. Please note that the link to this form will no longer be available from the NJDHSS website. In order to reach this form, you will need to type in the web address listed above. Reporting may be postponed until the next business day if discharge or death occurs during a weekend. NJDHSS appreciates your cooperation in this surveillance activity. If you have any additional questions about reporting cases, please contact Lisa McHugh or Antonia Farrell at 609-588-7500. Thank you for your assistance.

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*Laboratory testing for influenza virus infection may be done on pre- or post-mortem clinical specimens, and include identification of influenza A or B virus infections by a positive result by at least one of the following methods:

- Influenza virus isolation in tissue cell culture from respiratory specimens
- Reverse-transcriptase polymerase chain reaction (RT-PCR) testing of respiratory specimens
- Immunofluorescent antibody staining (direct or indirect) of respiratory specimens
- Rapid influenza diagnostic testing of respiratory specimens
- Immunohistochemical (IHC) staining for influenza viral antigens in respiratory tract tissue from autopsy specimens
- Four-fold rise in influenza hemagglutination inhibition (HI) antibody titer in paired acute and convalescent sera (single serum samples are not interpretable)

Surveillance - Appendix 1 - Attachment E
Weekly Influenza Report

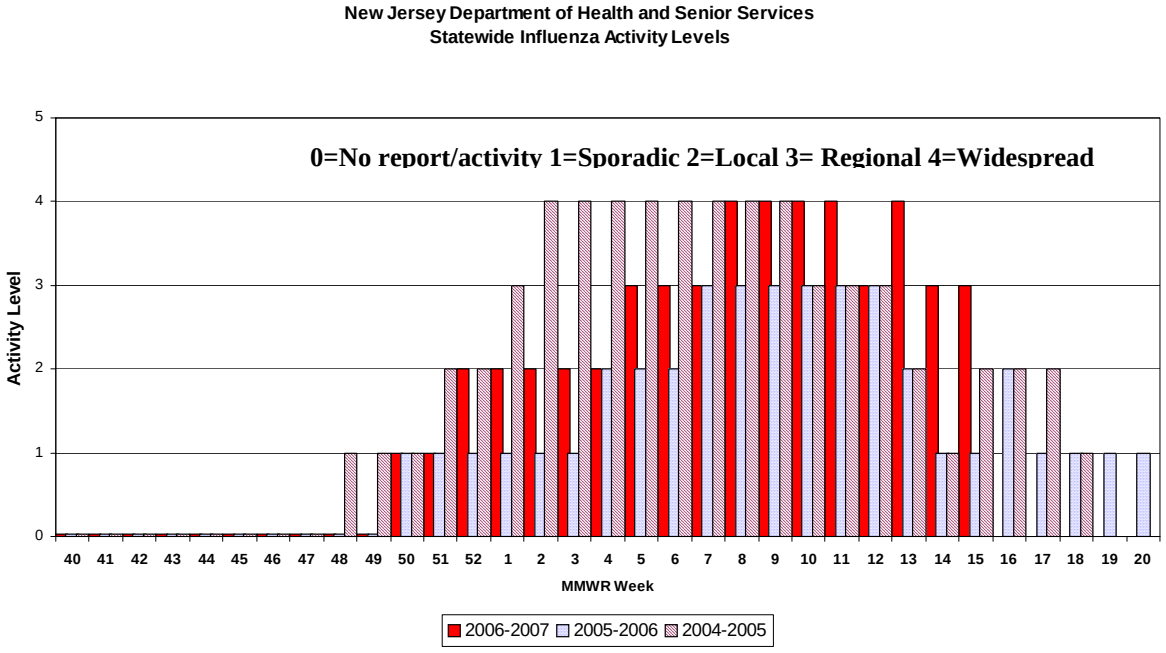
New Jersey Department of Health and Senior Services
Communicable Disease Service
Influenza Activity Summary
Week Ending April 14, 2007 (MMWR Week 15)

Influenza activity level: REGIONAL

No Activity- At least 2 of 3 parameters at or below state baseline **AND** no lab confirmed cases
Sporadic – At least 2 of 3 parameters above state baseline **AND** confirmed laboratory cases anywhere in the state within previous 3 weeks **OR** at least one laboratory confirmed outbreak in an institution anywhere in the state
Local – At least 2 or 3 parameters above state baseline in a single county **AND** confirmed laboratory cases from that same county within the previous 3 weeks (other counties may be above baseline without lab confirmed cases) **OR** confirmed outbreaks in 2 or more institutions in a single county
Regional – At least 2 of 3 parameters above state baseline in ≥ 2 but ≤ 10 counties **AND** laboratory confirmed cases from these same counties in past 3 weeks **OR** confirmed outbreaks institutions in ≥ 2 but ≤ 10 counties
Widespread – At least 2 of 3 parameters above state baseline in > 10 counties **OR** institutional outbreaks in > 10 counties **AND** lab confirmed influenza cases in previous 3 weeks.

Parameter = School, emergency department, or long term care weekly surveillance data

Baseline is calculated by taking the average of statewide percentages of ILI for a 3 year (2004, 2005, 2006) period during months when influenza is less likely to be circulating (May-August). Weeks in which less than 4 counties reported were not included in the calculation.



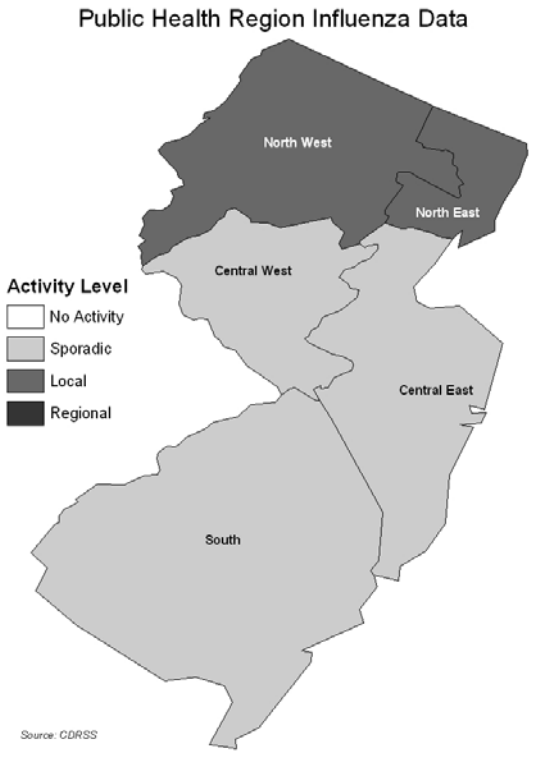
Regional Data

LOCAL ACTIVITY – NW and NE
SPORADIC ACTIVITY – CW, CE and South

NOTE: Only one county in the NE and NW public health regions were above state baseline and had laboratories confirmed influenza by viral isolation in the previous three weeks. In the CW, CE and South public health region no single county had positive laboratories and parameters above state baseline, however, positive laboratory reports were received in these 3 regions.

Public Health Regions
NW Region (Morris, Passaic, Sussex, Warren)
NE Region (Bergen, Essex, Hudson)
CW Region (Hunterdon, Mercer, Somerset)
CE Region (Middlesex, Monmouth, Ocean, Union)
South Region (Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Salem)

No Activity- At least 2 of 3 parameters at or below state baseline **AND** no lab confirmed cases in the public health region
Sporadic – At least 2 of 3 parameters above state baseline **AND** confirmed laboratory cases anywhere in the public health region **OR** at least one laboratory confirmed outbreak in an institution anywhere in the public health region
Local – At least 2 or 3 parameters above state baseline in a single county of a public health region **AND** confirmed laboratory cases from that same county within the previous 3 weeks (other counties may be above baseline without lab confirmed cases) **OR** confirmed outbreaks in 2 or more institutions in a single county of a public health region
Regional – At least 2 of 3 parameters above state baseline in at least half of counties of public health region **AND** laboratory confirmed cases from these same counties in past 3 weeks **OR** confirmed outbreaks institutions in at least half of counties of public health region counties
Widespread – Not used for public health region data



Surveillance - Appendix 1 - Attachment E
Weekly Influenza Report

Laboratory Surveillance

To date, 379 influenza specimens were found to be positive by viral culture. The below chart describes the number and type of influenza by MMWR week and county.

Influenza Type	Number positive	County Data		
		County	# positive	MMWR Week
Influenza A H1	107	Camden	1	50
		Bergen	1	51
		Morris	1	2
		Union	1	2
		Camden	1	4
		Essex	2	4
		Middlesex	2	4
		Mercer	1	5
		Monmouth	1	5
		Cape May	1	5
		Camden	1	5
		Monmouth	4	6
		Union	2	6
		Camden	1	6
		Middlesex	1	6
		Essex	3	7
		Middlesex	4	7
		Monmouth	2	7
		Morris	1	7
		Somerset	3	7
		Union	4	7
		Warren	1	7
		Essex	4	8
		Hudson	1	8
		Middlesex	3	8
		Mercer	1	8
		Monmouth	5	8
		Morris	1	8
		Somerset	3	8
		Union	3	8
		Warren	1	8
		Essex	2	9
		Gloucester	1	9
		Mercer	3	9
		Middlesex	4	9
		Monmouth	3	9
		Morris	1	9
		Passaic	1	9
		Somerset	3	9
		Warren	1	9
		Cape May	1	10
		Essex	1	10
		Gloucester	2	10
		Hunterdon	2	10
		Middlesex	7	10
		Monmouth	2	10
		Ocean	1	10
		Union	2	10
		Unknown	1	10
		Hunterdon	1	11
		Middlesex	2	11
		Monmouth	1	11
		Passaic	1	11
		Union	1	11
		Unknown	1	11

Influenza Type	Number positive	County Data		
		County	# positive	MMWR Week
Influenza A H3	117	Middlesex	1	1
		Essex	1	3
		Hunterdon	1	3
		Monmouth	1	3
		Monmouth	1	4
		Passaic	1	4
		Unknown	1	4
		Mercer	1	5
		Sussex	1	5
		Passaic	1	5
		Middlesex	1	6
		Monmouth	1	6
		Mercer	1	6
		Passaic	2	6
		Hudson	1	7
		Mercer	4	7
		Middlesex	6	7
		Monmouth	1	7
		Morris	1	7
		Ocean	1	7
		Passaic	2	7
		Somerset	3	7
		Camden	1	8
		Essex	1	8
		Gloucester	2	8
		Mercer	1	8
		Middlesex	6	8
		Monmouth	1	8
		Morris	2	8
		Passaic	1	8
		Somerset	1	8
		Union	2	8
		Out of state	1	8
		Bergen	2	9
		Essex	2	9
		Gloucester	8	9
		Hunterdon	2	9
		Hudson	1	9
		Mercer	2	9
		Middlesex	5	9
		Monmouth	1	9
		Morris	1	9
		Somerset	1	9
		Out of state	2	9
		Essex	3	10
		Gloucester	5	10
		Hudson	2	10
		Hunterdon	4	10
		Middlesex	3	10
		Monmouth	4	10
		Morris	1	10
		Passaic	3	10
		Somerset	7	10
		Union	2	10
		Unknown	2	10
		Out of state	1	10
		Hunterdon	1	11
		Passaic	1	11

Surveillance - Appendix 1 - Attachment E
Weekly Influenza Report

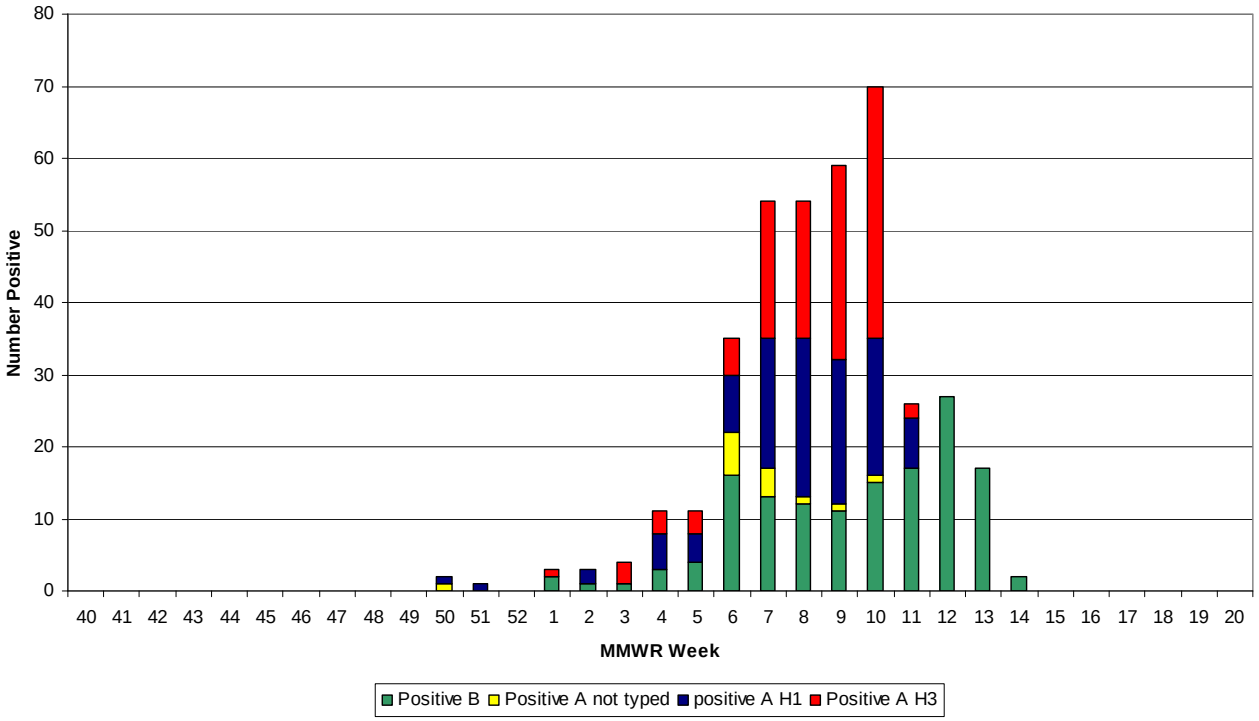
Influenza Type	Number positive	County Data		
		County	# positive	MMWR Week
Influenza B	141	Somerset	1	1
		Warren	1	1
		Passaic	1	2
		Somerset	1	3
		Essex	1	4
		Monmouth	1	4
		Morris	1	4
		Monmouth	3	5
		Sussex	1	5
		Bergen	1	6
		Essex	1	6
		Gloucester	1	6
		Mercer	1	6
		Middlesex	1	6
		Ocean	2	6
		Monmouth	7	6
		Morris	1	6
		Warren	1	6
		Burlington	1	7
		Essex	1	7
		Hudson	1	7
		Middlesex	1	7
		Monmouth	4	7
		Morris	1	7
		Somerset	1	7
		Union	3	7
		Essex	2	8
		Mercer	1	8
		Middlesex	1	8
		Monmouth	4	8
		Morris	2	8
		Passaic	2	8
		Gloucester	1	9
		Middlesex	4	9
		Monmouth	3	9
		Passaic	1	9
		Somerset	1	9
		Union	1	9
		Atlantic	1	10
		Essex	2	10
		Gloucester	1	10
		Hunterdon	1	10
		Middlesex	3	10
		Monmouth	2	10
		Morris	1	10
		Ocean	1	10
		Somerset	1	10
		Union	2	10
		Bergen	1	11
Influenza B Continued		Essex	1	11
		Hudson	1	11
		Hunterdon	1	11
		Mercer	1	11
		Middlesex	1	11
		Monmouth	1	11
		Morris	1	11
		Passaic	1	11
		Somerset	1	11
		Union	6	11
		Unknown	1	11
		Bergen	1	12
		Essex	2	12
		Hunterdon	1	12
		Mercer	1	12
		Middlesex	4	12
		Monmouth	1	12
		Morris	4	12
		Ocean	1	12
		Passaic	2	12
		Somerset	1	12
		Union	7	12
		Unknown	1	12
		Out of state	1	12
		Essex	3	13
		Gloucester	1	13
		Hunterdon	2	13
		Middlesex	3	13
		Morris	1	13
		Passaic	1	13
		Union	4	13
		Unknown	2	13
		Gloucester	1	14
		Passaic	1	14

Influenza Type	Number positive	County Data		
		County	# positive	MMWR Week
Influenza A – Not typed	14	Camden	1	50
		Bergen	3	6
		Passaic	2	6
		Sussex	1	6
		Bergen	2	7
		Hudson	1	7
		Union	1	7
		Bergen	1	8
		Unknown	1	9
		Bergen	1	10

NOTE: Information on county of residence may be obtained after original laboratory report. The county of residence is updated each week to account the correct information on each case.

Surveillance - Appendix 1 - Attachment E
Weekly Influenza Report

New Jersey Department of Health and Senior Services
Influenza Laboratory Report
Viral Culture Positive Specimens by MMWR Week

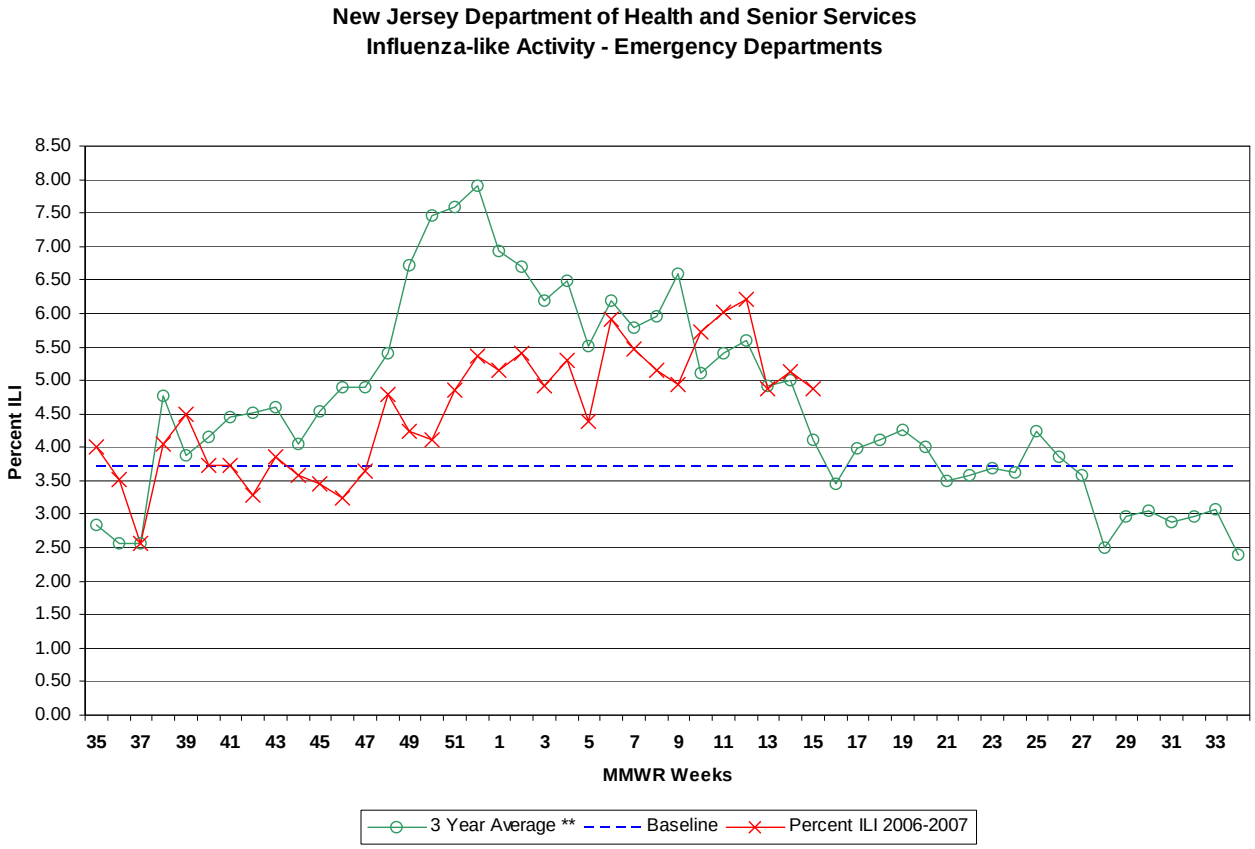


Surveillance - Appendix 1 - Attachment E
Weekly Influenza Report

Influenza-like Illness (ILI) Surveillance*

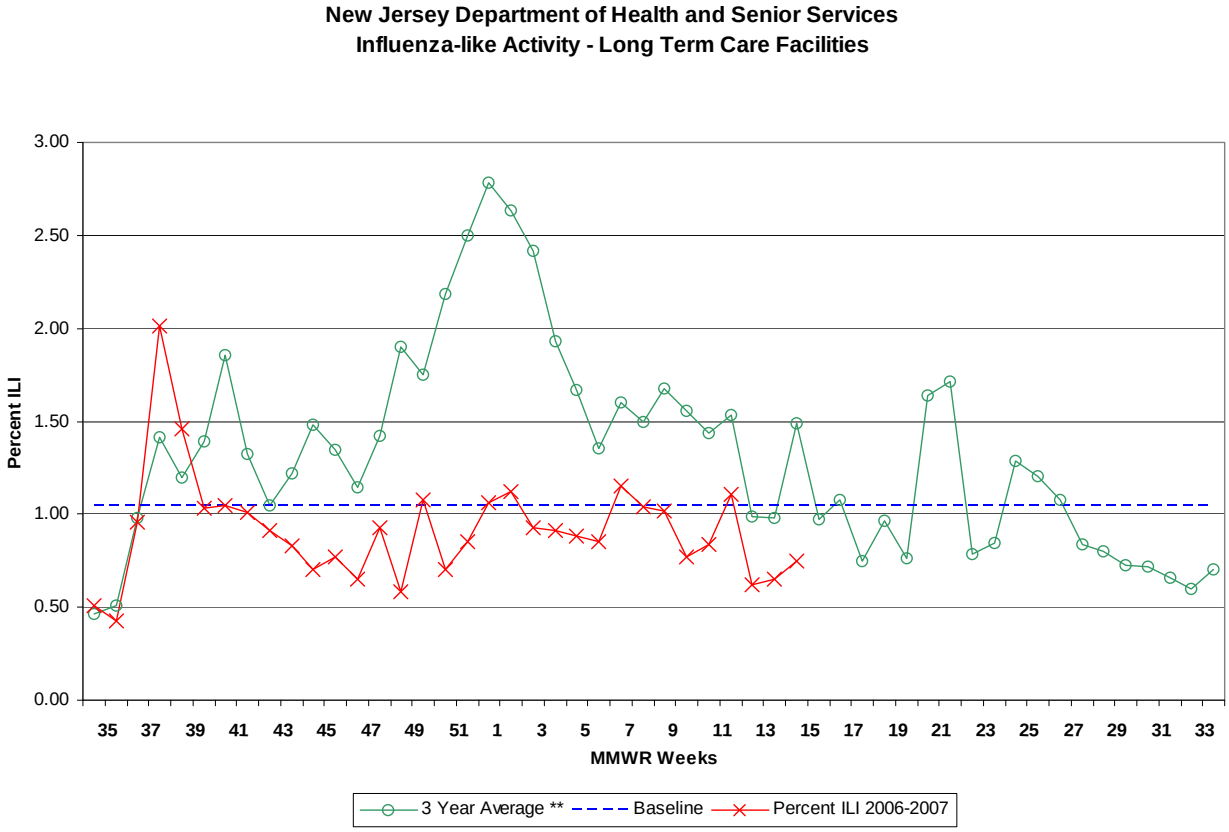
Emergency Departments

During week 15, 4.88% ILI was reported statewide from emergency departments. This is a decrease over the previous week (5.14%). The percent ILI for each county ranged from 0.00 to 22.38%. The percent ILI for this same week last year was 3.89% in emergency departments. The percent ILI for the northwest (3.73%), northeast (3.88%), central west (7.06%), and central east (7.77%) public health regions were above state baseline (3.71%).



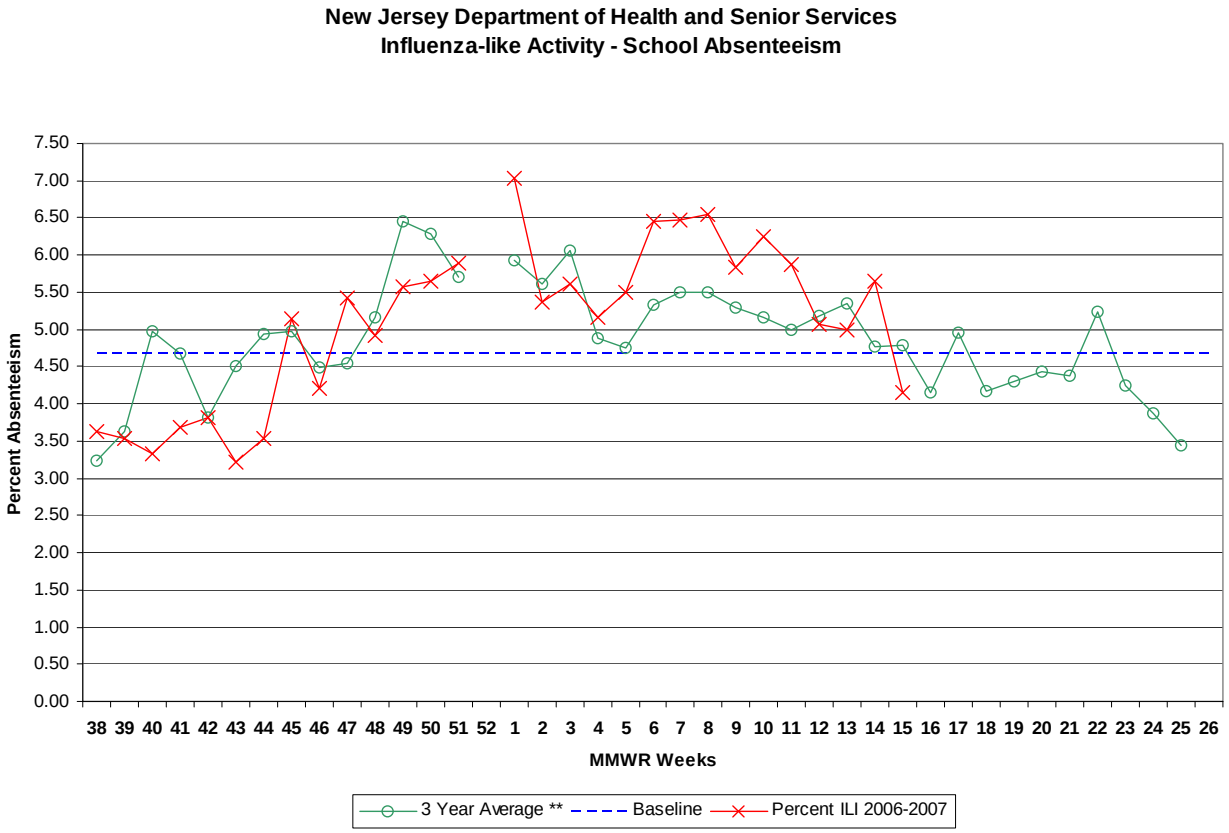
Long-term Care Facilities

During week 15, 0.75% ILI was reported statewide from long term care facilities. This is an increase over the previous week (0.65%). The percent ILI for each county ranged from 0.00% to 2.36%. The percent ILI for this same week last year was 1.61% in long-term care facilities. The percent ILI for the northeast (2.22%) public health region was above baseline (1.05%).



School Absenteeism

During week 15, schools reported 4.16% absenteeism. This is a decrease over the previous week (5.64%). The percent ILI for each county ranged from 1.43 – 10.09%. The percent absent for this same week last year was 5.18%. The percent ILI for the south (7.58%) public health region was above state baseline (4.68%). The number of school reports received was low due to many school closures.



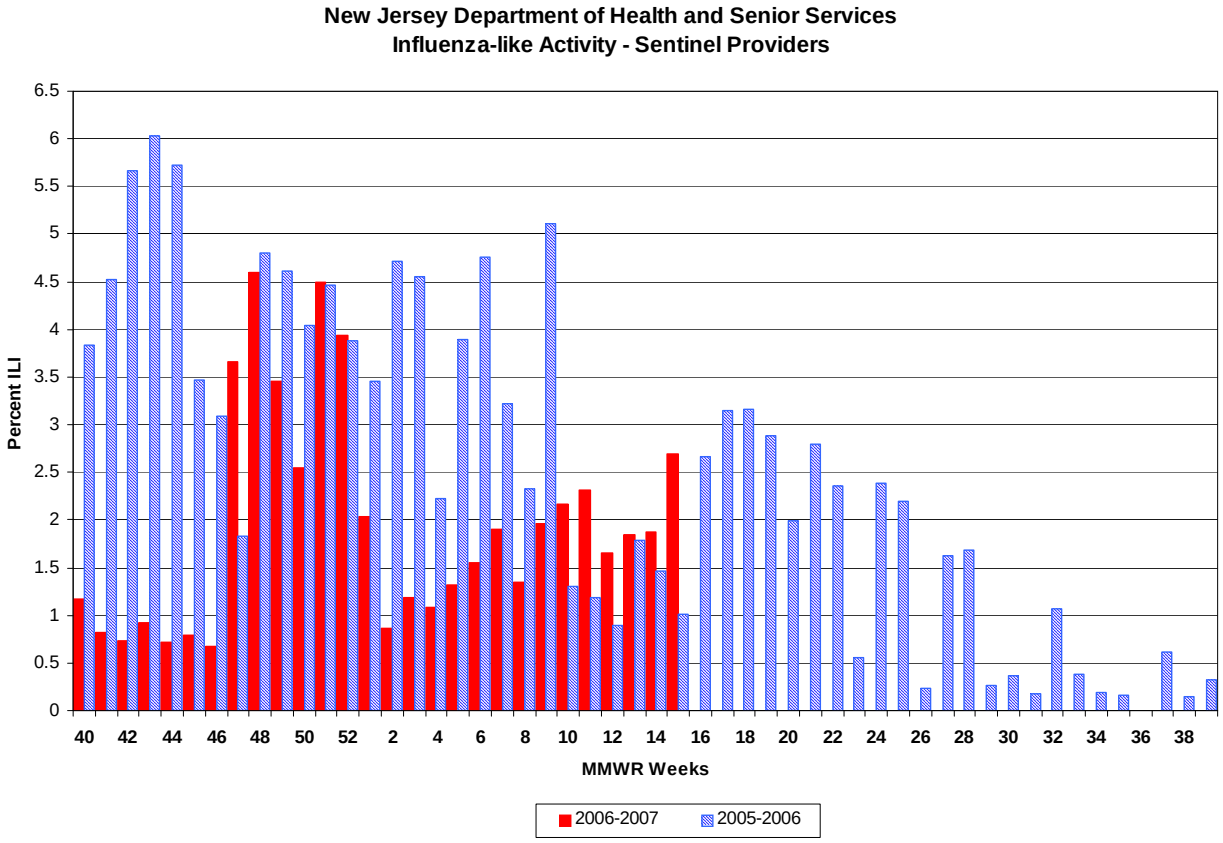
Sentinel Provider Surveillance

During week 15, 2.70% of sentinel provider patient visits were due to ILI. These data reflect reports from four (9%) of the enrolled sentinel providers.

UPDATE

During week 14, 1.88% of sentinel provider patient visits were due to ILI. These data reflect reports from fifteen (32%) of the enrolled sentinel providers.

During week 13, 1.84% of sentinel provider patient visits were due to ILI. These data reflect reports from fifteen (32%) of the enrolled sentinel providers.



Pediatric Influenza Surveillance

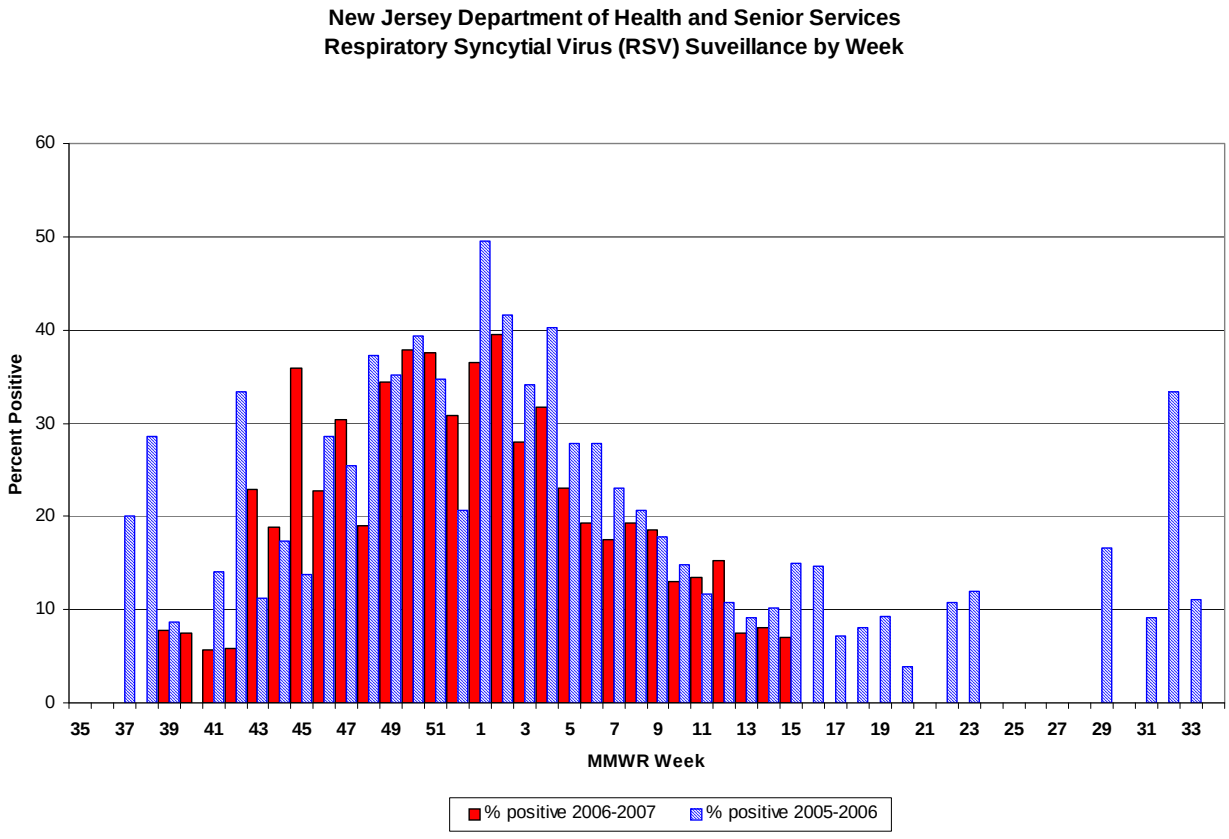
To date, NJDHSS has received 94 reports of pediatric illness. To date, 11 cases have met the case definition for pediatric illness or death associated with influenza.

122 City Mortality Report

During week 14, 6.35% of all deaths reported by the vital statistics offices in 6 New Jersey cities (i.e., Camden, Jersey City, Elizabeth, Newark, Paterson, Trenton) were due to pneumonia or influenza. This was an increase over the previous week (6.15%). The percentage of death due to pneumonia or influenza for this same week last year was 6.21%.

RSV Reports

During week 15, 6.96% of all RSV samples tested were positive. This was an increase over the previous week 8.07%. The percent of samples positive RSV for this same week last year was 14.91%.



Additional Information

For additional information regarding influenza surveillance please visit the following websites.

http://nj.gov/health/flu/surveillance.shtml
http://www.cdc.gov/flu/

***** Baseline is calculated by taking the average of statewide percentages of ILI for a 3 year (2004, 2005, 2006) period during months when influenza is less likely to be circulating (May-August). Weeks in which less than 4 counties reported were not included in the calculation.
**Three year average is an average of the 2003-2004, 2004-2005, and 2005-2006 influenza seasons.

Unexplained Deaths Project

Unexplained Deaths and Critical Illnesses Project (UNEX)
Surveillance for Unexplained Deaths (SUDS)
Project Overview and Case Submission Instructions

UNEX

PROJECT SUMMARY

The Unexplained Deaths Project and Critical Illnesses Project (UNEX) was initiated in 1995 as part of the CDC Emerging Infections Program (EIP). The EIP is a surveillance network that includes participants from state health departments, academic institutions and CDC. Surveillance for Unexplained Deaths (SUDS) is a component of UNEX which identifies and evaluates potentially infectious deaths by the following mechanisms:

1) Active, prospective, population-based surveillance for possibly infectious deaths in participating medical examiner/coroner jurisdictions within EIP UNEX surveillance sites.

2) Passive, sentinel surveillance for possibly infectious deaths identified by health departments, medical examiners/coroners, pathologists, infection control practitioners and clinicians throughout the US.

PROJECT OBJECTIVES

1) Monitor the trends and epidemiologic features of fatal infections,

2) Enhance medical examiner/coroner-based surveillance for infectious disease,

3) Develop and assess novel diagnostic approaches to identify infectious etiologies, and

4) Improve the public health capacity to identify and evaluate cases / clusters of infectious or unexplained deaths

CASE FINDING

For the purposes of surveillance, a case is defined as a previously healthy person who died with hallmarks of a community-acquired infectious disease. Hallmarks of infectious disease include the following:

1) Gross or histopathologic findings consistent with infection, e.g. evidence of inflammation, purulence, hemorrhage, necrosis or edema in autopsy tissues.

2) Laboratory or imaging findings consistent with infection, e.g. leukocytosis or leukopenia, inflammation of a normally sterile fluid (e.g. cerebrospinal fluid, pleural fluid), or imaging studies consistent with an acute infection or inflammation

3) Clinical syndrome consistent with infection, e.g., fever, encephalopathy, rash, new onset jaundice, diarrhea.

DATA COLLECTION

Prior to evaluation of clinical or pathologic specimens, a completed copy of the SUDS Case Report Form (CRF) (**Attachment 1**), an autopsy report and key portions of the patient's medical chart should be provided to CDC.

The SUDS CRF collects: demographic information; primary clinical syndrome; exposure, past medical and symptom history; and physical exam, imaging, laboratory and autopsy findings. Data can be collected through physician interview, medical record and autopsy report review and contact with the patient's family.

Important portions of the patient's medical chart include the emergency room or admit note, initial subspecialty consult notes, initial imaging study reports, laboratory results, and discharge/postmortem summary.

CDC

Unexplained Deaths and Critical Illnesses Project (UNEX)
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SUGGESTED LOCAL CASE EVALUATION

Local case evaluation should include but not be limited to the following:

- Routine histopathology
- Bacterial culture of percutaneous femoral blood
- Viral culture of nasopharyngeal swab
- Toxicologic evaluation on femoral blood (preferred), urine or vitreous fluid
- (If collected) Bacterial culture of deep lung swab, cerebrospinal fluid, tissue swab or stool

SPECIMEN SUBMISSION AND CDC LABORATORY EVALUATION

Evaluation of specimens at CDC is primarily focused on pathology-based evaluation of fixed autopsy tissues, including routine histopathologic evaluation (H&E, special stains) and immunohistochemical assays (IHC). PCR and serologic assays are also available. Testing is directed by histopathologic findings at autopsy and/or significant clinical and exposure data.

Formalin-fixed paraffin-embedded tissues from all major organs, with particular importance placed on organs showing significant histopathology, should be made available for submission. Frozen tissues collected from primarily involved organs may also be submitted.

Clinical specimens collected during hospitalization or at autopsy should also be submitted. Important clinical specimens include: cerebrospinal fluid, pleural fluid, tracheal aspirate, nasopharyngeal or oropharyngeal swabs, whole blood, paired serum.

Specimen submission instructions are detailed in **Attachment 2**.

Do not send specimens prior to contacting the CDC Project Coordinator to discuss case enrollment.

REPORTING A CASE

To discuss submitting a case or for additional project information, contact:

Sarah Reagan, MPH
CDC UNEX Project Coordinator
Phone: (404) 639-3158
Email: SReagan@cdc.gov