Yes We Can! Use of Multiple Syndromic Surveillance Systems for Detection of Post Inauguration and Late Season Influenza Events

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Presentation Objectives:

1. To outline the types of traditional and syndromic surveillance systems used for detecting possible bioterrorism events, tracking seasonal influenza, and preparing for pandemic flu outbreaks,
2. To describe the use of these systems in: a) detecting possible disease outbreaks associated with attendance at the 2009 Presidential Inauguration, and b) evaluating influenza activity in Connecticut during the first wave of the 2009 influenza A (H1N1) pandemic;
3. To discuss recommendations for additional evaluations of these surveillance systems.

Background Information:

1. The Connecticut Department of Public Health (DPH) developed several syndromic surveillance systems used for detecting possible bioterrorism events and emerging infections and has been evaluation their use in preparing for pandemic flu outbreaks,
2. In consultation with city, state, and, federal agencies, the DPH decided to utilize these systems as part of an enhanced surveillance effort to detect possible disease outbreaks associated with attendance at the 2009 US Presidential Inauguration;
3. These systems were also used to evaluate the first wave of the 2009 influenza A (H1N1) pandemic.

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Objectives for Public Health Preparedness & Influenza Surveillance: *Why Should Health Departments Conduct Ongoing Surveillance for BT Events, Influenza, & Emerging Infections?*

1. Situational Awareness (To detect emerging infections and understand both the current level and distribution of influenza activity in your state or other jurisdiction);

Objectives for Health Department PHP, Seasonal and Pandemic Influenza Surveillance, continued:

2. Health Professional Awareness and Asset Management (To provide information on critical health events to local health departments, hospitals and other health providers to promote optimal use of state supplies of antibiotics, antivirals, vaccines, hospital beds, and other assets);

Objectives for Health Department PHP, Seasonal and Pandemic Influenza Surveillance, continued:

3. Public Education & Risk Communication (To provide information to members of the public to enable them to make informed choices regarding use of social distancing, antibiotics, vaccines and other appropriate risk reduction behaviors).

Surveillance Systems in Connecticut:

1.) **Laboratory Surveillance:** Influenza is a laboratory reportable finding in CT, the state lab reports to the WHO Collaborating Center for Influenza Surveillance;

2.) **Outpatient & Institutional Surveillance:** CT participates in the CDC Influenza Sentinel Provider Network for influenza-like illness (ILI) syndromic surveillance reporting (ILINet), institutional outbreaks are reportable in CT, limited school absenteeism surveillance;

Surveillance Systems in Connecticut:

3.) **Special Hospitalization Surveillance:** The Connecticut DPH and Yale Emerging Infections Program (EIP) participate in the CDC EIP Influenza Project (adult hospitalizations) and the New Vaccine Surveillance Network (pediatric influenza related hospitalization) in the evaluation of a Connecticut county; new required reporting of hospitalizations of patients due to any type of influenza starting October 1, 2009;

Surveillance Systems in Connecticut:

4.) Syndromic Surveillance: Hospital Admissions Syndromic Surveillance (HASS) System since September 11, 2001, the Hospital Emergency Department Syndromic Surveillance (HEDSS) System since 2004, BioSense and other systems;

5.) Mortality Surveillance: Four CT cities participate in the CDC 122 Cities Mortality Reporting System, influenza-associated pediatric mortality has been reportable to the CT DPH since January 2005, deaths of hospitalized flu patients since October 1.

Enhanced Surveillance Techniques Used for Detecting Post Inauguration Disease Outbreaks in Connecticut:

1.) Ensure Daily Syndromic Surveillance Reporting: Hospital and provider staff were contacted to ensure that daily reporting of the Hospital Admissions Syndromic Surveillance (HASS), the Hospital Emergency Department Syndromic Surveillance (HEDSS), and the Influenza-Like Illness (ILINet) Systems were absolutely maintained for at least ten days following the January 20, 2009 US Presidential Inauguration;

Post Inauguration Enhanced Surveillance Techniques, continued:

2.) Screen patients for Attendance at the Presidential Inauguration: Hospital and provider staff were contacted and requested to conduct enhanced patient screening for at least ten days following the January 20, 2009 US Presidential Inauguration. This enhanced screening consisted of asking all patients presenting with influenza-like illness (ILI) or other ID symptoms if they had attended the inauguration. Clinical specimens will be collected and submitted to the DPH Laboratory for influenza and other testing, indicating their attendance on the submittal form.

Syndromic Categories Used in the HASS:

1. Pneumonia

1b. Pneumonia in health care worker with clinical responsibilities - ? SARS

2. Hemoptysis

3. Acute respiratory distress syndrome (ARDS)/resp failure of unknown origin

3b. ARDS / resp. failure in HCW with clinical responsibilities - ? SARS

4. Meningitis / encephalitis / unexplained acute encephalopathy

Syndromic Categories Used in the HASS:

5. Nontraumatic paralysis / Guillain-Barré / descending paralysis

6. Sepsis / non-traumatic shock

7. Fever and rash

8. Fever of unknown origin

9. Gastrointestinal; vomiting / diarrhea / dehydration

10. Skin infection, rule out cutaneous anthrax

11. Clusters of illness (Type, if present)

Results:

1. Connecticut outpatient sentinel physicians (CT ILINet) and Connecticut emergency room staff agreed to screen patients presenting with influenza-like illness (ILI) and other unexplained illness during the last two weeks of January to determine if they had attended the 2009 US Presidential Inauguration,
2. Nasopharyngeal swabs were obtained on these patients and forwarded to the DPH Laboratory for r-RT PCR influenza testing, along with information on their recent travel to Washington, DC;

Results, continued:

3. Reports of influenza-like illness (ILI) among inauguration attendees were received from both Connecticut ILINet providers and ED staff;
4. ILI clusters were reported in two Connecticut universities and one private secondary school following return of inauguration attendees;
5. Several influenza subtypes were identified;
6. No evidence of exposure to bioterrorism agents was identified among inauguration attendees.

Figure 1. Influenza-like Illness (ILI) Cases Reported to the CT ILINet System During Winter 2009

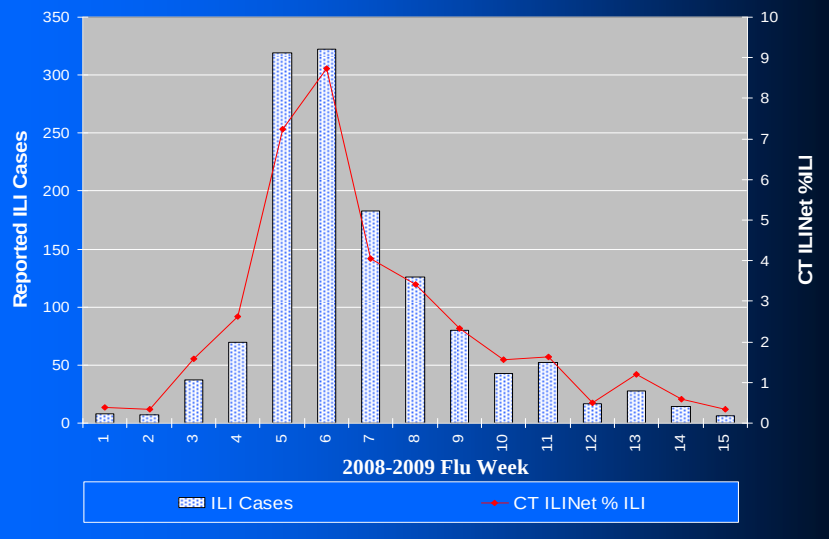


Figure 2. Hospital Admissions Syndromic Surveillance (HASS) System Reported Pneumonia Admissions vs. Reported Influenza-like Illness (ILINet), Spring 2009

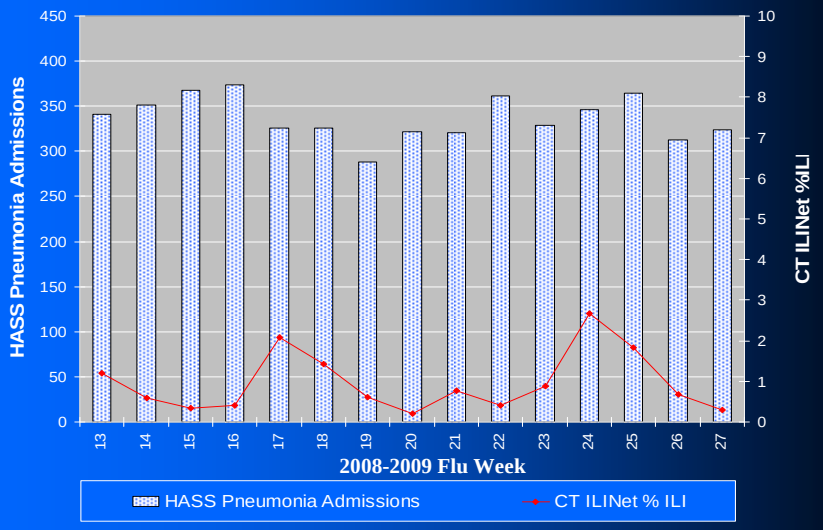
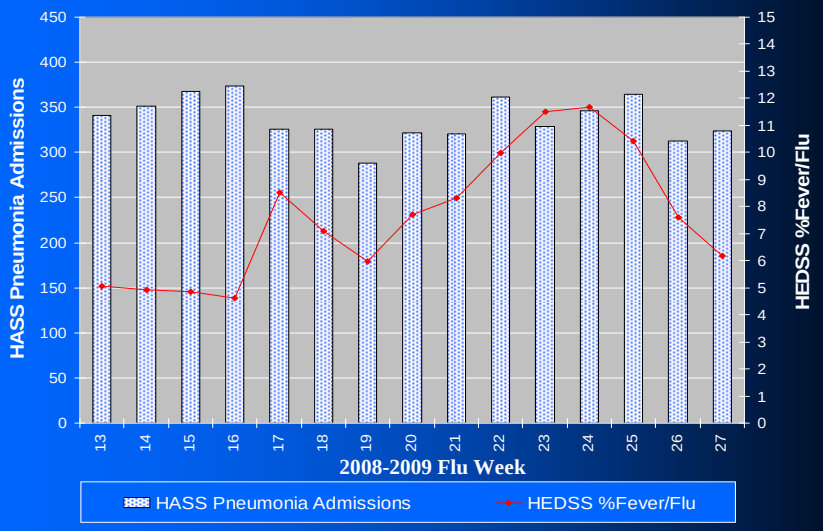


Figure 3. HASS System Reported Pneumonia Admissions vs. Hospital Emergency Department Syndromic Surveillance (HEDSS) System Reported % Fever/Flu Visits, Spring 2009



Can we increase our ability to detect adverse health events using multiple-system enhanced disease surveillance?

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Conclusions & Recommendations:

1) The enhanced surveillance exercise proved useful for bioterrorism event screening and in detecting influence cases possibly associated with attendance at the 2009 US Presidential Inauguration in Washington, DC;
2) Use of multiple surveillance systems enhanced our ability to detect and track the first wave of the 2009 influenza A (H1N1) pandemic;
3) Ongoing efforts to evaluate and expand use of CT syndromic surveillance systems and automate aspects of these systems and will assure their operation during BT and pandemic flu events.

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