Council of State and Territorial Epidemiologists
Draft Position Statement

Submission Date: 3/30/2005

Committee: Infectious Disease
05-ID-03

Title: Influenza-Associated Hospitalizations

Statement of the Problem:
Influenza-associated hospitalization is a vaccine preventable condition. The elderly, young children and persons of any age with certain underlying medical conditions are at greatest risk for complications, hospitalization, and death from influenza. Despite the significant number of hospitalizations that result from influenza infection, there is no national surveillance system to monitor this condition and annual population-based numbers of laboratory-confirmed hospitalizations are unknown. All previous efforts to monitor influenza-associated hospitalizations have been based on statistical modeling methods. The widespread availability and use of rapid influenza testing during recent years now makes it feasible to apply the same surveillance methods to monitor influenza-associated hospitalizations as for other nationally reportable diseases under NNDSS. Including influenza-associated hospitalizations in the national reporting system would provide population-based epidemiologic data, such as incidence, age and geographic distribution, that will help define the burden of severe influenza in all age groups and help develop more effective immunization strategies for prevention of influenza-associated hospitalizations.

Statement of the desired action(s) to be taken:
Influenza-associated hospitalizations should be added to the national reportable disease list and placed under surveillance through the National Notifiable Diseases Surveillance System (NNDSS). This surveillance approach shall be reviewed by CSTE in three years to determine the need for its continuation. Additionally, CSTE requests that CDC provide financial assistance to states and territories for the development of influenza-associated hospitalization surveillance systems.

Goals of Surveillance:
1. Monitor and describe the incidence, distribution, and basic epidemiologic characteristics of hospitalizations related to influenza virus infection at the local, state, and national levels.

2. Provide data to guide future influenza immunization policy.

3. Rapidly recognize influenza seasons in which the impact of influenza on hospitalizations appears to be unusually severe.

Methods for Surveillance:
Hospitalizations associated with laboratory-confirmed influenza reported by infection control practitioners, clinicians, and laboratories will be collected by state health departments and reported each week throughout the year to CDC through the National Notifiable Diseases Surveillance System (NNDSS). Basic descriptive data will be published in the NNDSS MMWR provisional tables and the MMWR Annual Summary of Notifiable Diseases United States, while additional clinical, epidemiologic, and virologic data will be presented in separate reports. Reporting will occur through the usual NNDSS compliant mechanisms.

Case Definition:
An influenza-associated hospitalization is defined for surveillance purposes as a hospital admission accompanied by laboratory evidence of influenza in clinical or autopsy specimens. Influenza-associated hospitalizations in persons of all ages should be reported.

A hospitalization should not be reported if:
1. There is no laboratory confirmation of influenza virus infection.

2. The positive influenza test is from a specimen obtained more than 3 days after hospital admission (to minimize the reporting of nosocomial rather than a community acquired infection).

Period of Surveillance:
Three years initially, with subsequent review by CSTE to determine the need for continuation. Reporting is anticipated to begin the week ending October 8, 2005, and continue throughout the year. States may begin participating as soon as this condition is made notifiable in their state.

Background and Justification:
Epidemics of influenza typically occur each winter in the U.S. and are responsible for an average of approximately 36,000 deaths each year. Uncomplicated influenza illness is characterized by the abrupt onset of fever, myalgia, headache, malaise, non-productive cough, sore throat, and rhinitis. In some persons, influenza can exacerbate underlying medical conditions or lead to secondary bacterial or primary viral pneumonia. Influenza infection has also been associated with encephalopathy, transverse myelitis, Reye syndrome, myosistis, myocarditis, and pericarditis. Influenza viruses cause disease among all age groups with the highest rates of infection occurring in children and the highest rates of serious influenza related complications and death among the elderly, very young children, and persons of all ages with certain underlying medical conditions.

Influenza seasons vary in timing and severity. CDC maintains and coordinates a national influenza surveillance system that allows public health officials to know 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, and measure the impact influenza is having on deaths in the United States. However, none of these components are population-based. Approximately 2200 health care providers and 130 laboratories across the country report influenza-like illness and influenza test results, respectively. Vital statistics offices in 122 US cities report influenza and pneumonia related mortality data and, beginning in the 2004-05 influenza season, state health departments report all pediatric influenza-associated deaths. In addition, state health departments report the overall level of influenza activity in their state each week, although, there are ongoing challenges to implementing this assessment in a standardized manner among states.

Despite the significant number of influenza associated hospitalizations that typically occur each season, there is no national surveillance system to monitor influenza-related hospitalizations in all age groups in a timely manner. Beginning during the 2004-05 season, influenza associated pediatric hospitalizations are being monitored in 12 local communities and these data are reported to CDC on a bi-weekly basis. However, more complete (i.e., persons of all ages across the country) and timely influenza-associated hospitalization data from local, state, and national levels are needed.

The widespread availability and use of rapid influenza testing during recent years now makes it feasible to apply the same surveillance methods as for other nationally reportable diseases under NNDSS. In Colorado (population 4.58 million), influenza-associated hospitalization was made a reportable condition effective September 30, 2004. Through April 16 , 2005, a total of 964 cases (21.0 per 100,000) have been reported with highest rates in persons $\geq$ 80 years of age (207.3 per 100,000) and children under 6 months of age (183.0 per 100,000) Persons $\geq$ 60 years of age comprise 51.4% of reported cases. Infection control practitioners reported 74% of cases directly into the state's web-based disease reporting system; whereas, state and local health department staff entered 26 % of cases. Implementation of surveillance for this newly reportable condition resulted in little additional workload and was easily incorporated by state health department staff including the 0.5 FTE influenza surveillance coordinator.

Including influenza-associated hospitalizations in the national reporting system would provide basic population-based epidemiologic data, such as incidence, age and geographic distribution that will help define the burden of severe influenza in all age groups and develop more effective immunization strategies for prevention of influenza-associated hospitalizations. These data will also contribute to state and national pandemic preparedness efforts and will provide essential information during a pandemic.

Coordination:

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References:

Thompson WW, et al. Influenza-associated hospitalizations in the United States. JAMA 2004;292:1333-1340.

Clinical Description:

Clinical illness must result in hospitalization . The case definition for surveillance requires laboratory confirmation of influenza infection.

Laboratory criteria for diagnosis:

For purposes of this surveillance, laboratory testing for influenza virus infection can be performed up to 14 days prior to and within 3 days after hospital admission, and include identification of influenza A or B virus infections by a positive result by at least one of the following:

1. Influenza virus isolation in tissue cell culture from respiratory specimens
2. Reverse-transcriptase polymerase chain reaction (RT-PCR) testing of respiratory specimens
3. Immunofluorescent antibody staining (direct or indirect) of respiratory specimens
4. Rapid influenza diagnostic testing of respiratory specimens
5. Four-fold rise in influenza hemagglutination inhibition (HI) antibody titer in paired acute and convalescent sera. Serologic testing for influenza is available in a limited number of laboratories, and should only be considered as evidence of recent infection if a four-fold rise in influenza (HI) antibody titer is demonstrated in paired sera. Single serum samples are not interpretable.
6. Immunohistochemical staining

Case Classification:

Confirmed: A hospitalization that was confirmed to be influenza-related by an appropriate laboratory or rapid diagnostic test.

Laboratory or rapid test confirmation is required as part of the case definition; therefore, all reported hospitalizations will be classified as confirmed.