Hospital-Centered, Population-Based Surveillance for Pneumonia in New Haven, Connecticut April 2004-March 2005

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BACKGROUND

RESULTS

- Pneumonia/Influenza ranks as the 7th leading cause of death in the U.S.
- Population-based surveillance for severe pneumonia is rare, if present, in the U.S.
- Population-based surveillance can provide baseline rates and trends in pneumonia incidence over time.
- However, challenges to population-based surveillance for severe pneumonia include: high burden of disease, uncharacterized etiology, and non-specific clinical case definitions, capturing a broad range of infections.
- We established hospital-centered, population-based surveillance of hospitalized pneumonia (HPn) to determine rates and further describe its epidemiology.

CONCLUSIONS

- The overall percentage of hospitalizations due to pneumonia is 5%.
- Highest rates were observed in fall and winter months, and among those ≥65 years of age.
- Similar rates were observed among males and females, and among Whites and Blacks.
- Hispanics and Asians had lower rates of HPn.
- Risk of hospital admission for pneumonia among non-ECF residents varied by season while risk for ECF residents was similar regardless of season.
- ECF residents and those ≥65 years of age were significantly more likely to die of their HPn than non-ECF residents.
- A potential pathogen was identified in only 28% of HPn cases. Bacterial organisms were more commonly identified among older (≥65 years) HPn cases while viruses were more common among younger cases.
- Continued surveillance is warranted to document trends over time.
- Efforts to improve pneumonia detection among HPn cases are needed to better understand HPn epidemiology.

METHODS

- Due to the high burden of disease, we limited surveillance to a 7-town catchment area (295,750) in New Haven County where >90% of persons hospitalized for respiratory conditions were admitted to one of the surveillance hospitals.

- Hospital admission data were screened to identify potential HPn between April 2004 and March 2005.
- Epidemiologic and clinical data were abstracted from medical charts of cases.
- Crude and specific rates of HPn were calculated.
- Severity, outcome, and etiology of HPn were examined.

CASE DEFINITION

A case of hospitalized severe pneumonia was defined as:

- A resident of the 7-town catchment area (Branford, East Haven, Guilford, Hamden, New Haven, North Branford, North Haven).
- Admitted to Yale New Haven Hospital (YNHH) or Hospital of Saint Raphael (HSR) with radiographic evidence of pneumonia (i.e. lobar infiltrate, interstitial infiltrate, pleural effusion);
- Having two or more of the following signs/symptoms within 48 hours of hospital admission: (1) fever >38.0°C (100.4°F), (2) hypothermia <35.5°C (96°F), (3) cough, (4) difficulty breathing, or (5) hypoxia <90% O2 sat on room air

- One year of surveillance data does not allow for examination of trends over time.
- Limited catchment area may not be representative of state or county.

LIMITATIONS

- Numbers may not sum to 1,826 due to missing data, and percentages may not sum to 100% due to rounding.
- Includes homeless shelters and jails

- Fungus
- Other
- Crude and Specific HPn Rates
- Male
- Female
- White
- Black
- Hispanic
- Asian
- Other
- Hospital Admissions and HPn Cases, April 2004-March 2005

- Total Admissions from catchment area
- Potential HPn Cases
- HPn Cases

- Hospital Admissions and HPn Cases, April 2004-March 2005

- Rate of HPn by Age Group (n=1826)

- Rate of HPn by Season and Age Group (n=1826)

- Potential Pathogens Identified from HPn Cases

- Outcome and Severity of HPn Admissions by ECF status and Age Group

- Characteristics
- ECF n (%)
- Age Group n (%)
- Total n (%)

- Rate of HPn by Month (n=1826)

- Frequency of HPn Admissions from Extended Care Facilities (ECF) and Non-ECF by Month (n=1781)