Age Specific Correlations between Influenza Laboratory Data and Influenza-like Syndrome Definitions in Boston and New York City

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OBJECTIVE

To compare age-group-specific correlation of influenza-like syndrome (ILS) emergency department (ED) visits with influenza laboratory data in Boston and NYC using locally defined ILS definitions.

BACKGROUND

Evaluation of Influenza can cause illness among school-age children first, followed by younger children, working-age adults and seniors [1]. Defining national consensus syndrome definitions may facilitate geographic comparison and improve sensitivity and specificity to detect influenza consistently [2]; however, limited information is available on the impact of regional and age-specific variation within current syndrome definitions.

METHODS

The BPHC and NYCDOHMH both use broad (more sensitive) and narrow (more specific) ILS definitions to track age-specific ED morbidity patterns. Also, BPHC receives reports of all influenza isolates in Boston identified by any laboratory test. In NYC, influenza isolate data are reported by WHO collaborating laboratories. Weekly proportions of broad and narrow ED visits from Oct 2, 2005 – May 17, 2008 were calculated for all ages, and for 6 age groups (<1, 1-4, 5-24, 25-44, 45-64, 65+). The broad and narrow ILS definitions used in Boston and NYC were applied to each jurisdiction's ED data and compared to age-specific influenza laboratory data from both jurisdictions using Pearson's correlation coefficients.

RESULTS

Correlations between influenza laboratory data and proportion of ED visits in both NYC and Boston's datasets were highly variable by age (range: -0.04 to 0.88), both within a definition (across ages) and between narrow and broad definitions. The highest correlations for both datasets were for narrow ILS definitions in the 25-44 age group. Both jurisdictions' narrow definition gave the highest correlation within their own site-specific data. The overall correlation for the <1 and 1-4 age groups was below 0.43 for all syndrome definitions. No significant correlation was observed in the NYC data between the <1 age group for either jurisdiction-specific broad syndrome definition. In addition, there was no significant correlation between the Boston broad syndrome for the 1-4 age group in either data set.
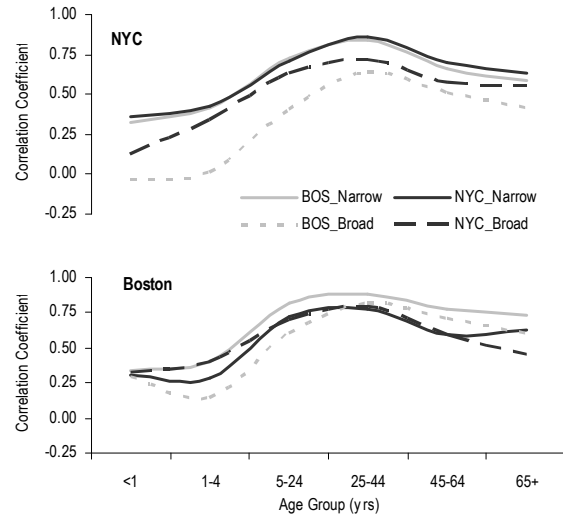

Figure 1 – Correlation coefficients for Boston and NYC narrow and broad influenza-like syndrome definitions with influenza isolates applied to data from Boston and NYC.

CONCLUSIONS

The wide variability in correlation of age-specific ED visits with influenza isolate data might be due to differences in presentation, chief complaint, impact of influenza by age, or other regional and seasonal age-specific causes. Narrow syndrome definitions generally demonstrated better correlation. Limitations of the study included variation in ED utilization, testing and reporting of influenza isolates, and absence of final diagnosis. Collaborative evaluation of ILS definitions used in other jurisdictions is needed to compare age-specific variation in local syndrome definitions used by ISDS DiSTRIBuTE network participants [3].

REFERENCES

[1] Olson, Heffernan, Paladini, et al. *PLoS Med* 2007;4(8):e247. http://dx.doi.org/10.1371/journal.pmed.0040247

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