ISDS

Emerging Health Threats Journal 2011, **4**:s88. **doi:** 10.3134/ehtj.10.088

www.eht-journal.org

ABSTRACT

The utility of inpatient data obtained from regional health information organizations for pneumonia and influenza surveillance

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Objective
The objective of this paper is to assess the potential utility of inpatient minimum biosurveillance data set data obtained from Regional Health Information Organizations (RHIOs) for pneumonia and influenza (P and I) surveillance.

Introduction
Hospital discharge data received by public health agencies has a reporting lag time of greater than six months. This data is often used retrospectively to conduct surveillance to assess severity of illness and outcome, and for evaluating performance of public health surveillance systems.

With the emergence of Health Information Exchanges and RHIOs, inpatient data can be available to public health in near real-time. However, there currently are no established public health practices or information systems for conducting routine surveillance in the inpatient setting.

Through a contract with the Centers for Disease Control and Prevention, New York State Department of Health initiated the development of a statewide public–health Health Information Exchanges with New York RHIOs. Daily minimum biosurveillance data set data-exchange implementation, and evaluation efforts were focused on one RHIO (RHIO A) and one participating hospital system composed of five acute-care facilities.

Methods
Inpatient data for visit dates between 1 June and 29 October 2009 were selected for analysis. The lag times between the availability of patient diagnosis data at RHIO A and the corresponding admission and discharge dates were calculated. Data obtained from RHIO A were compared with electronic hospital discharge data Statewide Planning and Research Cooperative System (SPARCS) admission diagnosis, primary discharge diagnosis, and 14 secondary diagnoses to assess the completeness and concordance of RHIO A data. Patients were matched by facility, date of visit, gender, month and year of birth, and zip code of residence. To evaluate the utility of daily RHIO A data for inpatient P and I surveillance, text and International Classification of Diseases, Ninth Revision (ICD-9) code filters for P and I were applied to RHIO A diagnosis and reason-for-admission fields and compared with an ICD-9 code filter applied to the SPARCS diagnoses.

Results
Reason for visit was 12% complete within one day, 68% within seven days, and 98% within 30 days of admission. Diagnosis was 15% complete within one day, 73% within seven days, and 96% within 30 days of discharge.

There were 26,514 matched patients, who accounted for 99% of the SPARCS patients and 94% of RHIO A patients. Diagnosis code was present for 24,897 (94%) RHIO A patients. Of the remaining 1617 patients, 1536 had at least one RHIO A free-text diagnosis and 81 had no RHIO A diagnosis. Unfiltered RHIO A–ICD-9 diagnosis was an exact match to one or more SPARCS diagnoses for 23,380 (94%) patients.

When the P and I filters were applied to the diagnoses fields, a total of 1685 (6.4%) patients met the criteria. Of those, 1601 (95%) had a RHIO A diagnosis code that matched at least one SPARCS–ICD-9 code, 29 (1.7%) had an uncoded RHIO A diagnosis that met the text filter criteria and at least one SPARCS diagnosis that met the ICD-9 filter criteria, 55 (3.4%) had non-matching RHIO A and SPARCS diagnoses.

When the P and I filters were applied to RHIO A reason-for-admission, 214 (0.8%) met the criteria. A total of 200 (93.5%) patients matched at least one SPARCS–ICD-9 filtered diagnosis. Fourteen (6.5%) patients did not have a matching ICD-9 filtered SPARCS diagnosis.

Conclusions

Data for almost all patients reported through SPARCS was available through RHIO A and in a much more timely fashion. Both P and I filtered and unfiltered coded RHIO A diagnosis and SPARCS–ICD-9 diagnosis data matched relatively well. Adding P and I text filters to RHIO A diagnosis did not significantly improve pneumonia or influenza case ascertainment. It was not possible to assess the validity of the non-matching diagnoses in any data set. The number of patients meeting the filter criteria in was significantly lower when using RHIO A reason-for-admission compared with using RHIO A diagnosis data. Additional analysis is underway to assess the timeliness and concordance of P and I outcome. Inpatient data received through RHIOs could be a valuable resource to conduct P and I surveillance in the inpatient setting.

Acknowledgements

This paper was presented as an oral presentation at the 2010 International Society for Disease Surveillance Conference, held in Park City, UT, USA, on 1–2 December 2010.