ISDS

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ABSTRACT

The evaluation of influenza surveillance data elements for the health information exchange minimum data set

H-G Chang, J-H Chen, S Jin, and PF Smith

New York State Department of Health, Albany, NY, USA
E-mail: hgc04@health.state.ny.us

Objectives

Evaluate the availability, timeliness, and accuracy of MDS data elements received from one RHIO for emergency department (ED), in-patient, and outpatient visits. Compare the characteristics of patients meeting the HIE influenza-like illness definition who were admitted to the hospital or expired versus those discharged home.

Introduction

The American Health Information Community Harmonized Use Case for the Biosurveillance minimum data set (MDS) was implemented to establish data exchange between regional health information organizations (RHIOs) and the New York State Department of Health (NYSDOH) for accelerating situational awareness through the Health Information Exchange (HIE) Project. However, the completeness, timeliness of the reporting and quality of data elements in the MDS through RHIOs are still unknown and need further validation before we can utilize them for NYSDOH public health surveillance.

Methods

In-patient, outpatient, and ED visit data from one hospital in RHIO A between June and December 2009 were extracted. MDS data elements were evaluated for their availability and timeliness. Patients who had discharge disposition coded as admitted to the hospital or expired were selected as cases, and a random sample of age and patient-class matched patients with disposition coded as discharge home were selected as controls. Using chart review as gold standard, MDS data elements were evaluated for accuracy and completeness. Characteristics of patients with influenza, influenza-like illness, and pneumonia were compared for those admitted or expired versus non-admitted.

Results

There were 10,808, 15,429, and 17,901 patients seen from in-patient, outpatient, and ED, respectively, during the study period. In all, 74 patients from ED visits were admitted to hospitals, 38 died while in the ED, and 15,547 patients were discharged home. There were 11,623 outpatients discharged home, 58 were admitted to hospitals, and one patient died. In all, 301 of the 10,718 in-patients died while hospitalized. The availability of MDS data elements is listed in Table 1. The median days from patient visit date to NYSDOH received date is 1 day for ED, and 2 days for in-patients and outpatients; the mean number of days were 5, 7, and 6

Table 1 Percentage of availability and accuracy of MDS data elements

MDS data elements availability	*In-patient (%)*	*Outpatient (%)*	*ED (%)*
Age	100	100	100
Gender	100	100	100
Zip code	100	100	100
Symptoms onset date	0	0	0
Chief complaint: free text	100	94	100
Diagnosis: free text	100	90	95
Diagnosis: ICD9	97	76	95
Discharge disposition	94	77	96
Temperature	0	0	0
Pulse oximetry	0	0	0
MDS accuracy			
Age	100	100	100
Gender	100	100	100
Zipcode	96	96	87
Diagnosis:ICD9	34	91	93
Discharge disposition	76	94	94

Abbreviations: ED, emergency department; MDS, minimum data set.

Table 2 Influenza patient characteristics by admitted or expired versus discharge home

Characteristics	*Admitted or expired* N *(%)*	*Discharge home* N *(%)*	P-*value*
Mean age	64	54	0.16
Temperature $\geqslant$100°F	7 (35)	13 (41)	0.69
Sore throat	2 (11)	4 (12)	0.86
Cough	8 (42)	15 (45)	0.81
Shortness of breath	12 (60)	11 (33)	0.05
Myalgia	0 (0)	6 (18)	0.05
Sepsis	3 (17)	0 (0)	0.04
Pneumonia/ARD	11 (58)	9 (27)	0.03

days for ED, outpatient, and in-patient, respectively. After excluding duplicate records, a total of 189 patients admitted to hospitals or expired were selected as cases; 195 patients matched by 5-year age groups and patient class were selected as controls. The accuracy of MDS data elements is listed in Table 1. There were 24 cases and 33 controls had influenza-like illness, 13 cases were admitted to ICU. Characteristics of cases and controls were shown in Table 2.

Conclusion

Most of the MDS data elements were available and complete except onset date, temperature, and pulse oximetry. HIE data (50%) were received within 2 days of visit date. The discrepancy of zip code, diagnosis code, and discharge disposition were due to multiple messages in the HIE data. Influenza patients died or admitted were more likely to be admitted to ICU and to have complications.

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