

Comparison of Physician's Choice of Charting Template to ICD9 Codes for Biosurveillance Using an ED Electronic Medical Records Database

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Introduction

Syndromic biosurveillance is often performed by tracking patterns of ICD9 code utilization, but ICD9 codes are frequently not available in real time.

The ED physician's choice of electronic charting template is available for analysis before the patient leaves the ED.

Previously, we demonstrated that templates and ICD9 codes generated similar seasonal patterns, but we did not determine to what extent these two techniques identified the same patients.

Objective

To quantify the level of agreement between these two techniques.

Methods

Design: Retrospective analysis of a computerized database of Emergency Department (ED) visits.

Setting: 15 New Jersey EDs located in urban and suburban areas with annual ED volumes from 20,000 to 65,000.

Participants: Consecutive patients seen by ED physicians, Jan 1999 - Oct 2002.

Protocol: Two of the authors reviewed all ICD-9 codes and all templates used during this period and chose by consensus those related to each of nine syndromes.

For each of the syndromes, we generated counts of patient visits selected by ICD9 code and by physician's choice of template.

We used the kappa statistic to characterize the level of agreement between the two techniques. We also calculated sensitivity and specificity using ICD9 as the criterion standard.

Results

There were 1,729,866 patient visits in the database.

	Kappa	Interpretation of Kappa	Sensitivity*	Specificity*
Headache	0.82	"near perfect"	0.80	1.00
Asthma	0.82	"near perfect"	0.81	1.00
chest pain	0.81	"near perfect"	0.83	0.99
Any GI	0.74	"excellent"	0.79	0.97
Diarrhea	0.69	"excellent"	0.81	0.99
Skin	0.60	"excellent"	0.60	0.99
Respiratory	0.52	"moderate"	0.47	0.97
Fever	0.49	"moderate"	0.44	0.98
Weak	0.34	"fair"	0.40	0.98

*ICD9 taken as criterion standard

Conclusion

There was moderate to near perfect agreement between ICD9 code and physician's choice of charting template for 8 of the 9 syndromes examined.

This data further validates the use of physician's choice of electronic charting template for biosurveillance.