

The Feasibility of Using Consultation Diagnosis at Emergency Departments for Syndromic Surveillance

Terence Lam¹, Ph.D., Vera Chow¹, M.S., CC Lau², F.H.K.A.M. (Emergency Medicine),
Beatrice Cheng², F.H.K.A.M. (Community Medicine), Teresa Choi¹,
F.H.K.A.M. (Community Medicine)

¹*Communicable Disease Division, Surveillance and Epidemiology Branch, Centre for Health Protection, Department of Health,*

Hong Kong Special Administrative Region Government, Hong Kong

²*Central Coordination Committee, Accident and Emergency Services, Hospital Authority Head Office, Hong Kong*

OBJECTIVE

We conducted a study to examine the suitability of the data collected at the local emergency departments for use in syndromic surveillance.

BACKGROUND

In Hong Kong, communicable disease surveillance and control is a responsibility of the Government's Department of Health at the Centre for Health Protection. Accident and emergency services are provided at the public hospitals under the Hospital Authority (HA). An exploratory study was conducted to determine whether the data captured in the local emergency departments can be used for surveillance purpose.

METHODS

Since 2003, the HA introduced a new practice requiring clinicians at emergency departments to enter the provisional diagnosis in electronic format using the ICD-9-CM (International Classification of Diseases, 9th Revision, Clinical Modification) codes (1).

For this study, we used a set of de-identified emergency department data collected from January 2003 to December 2005. For each emergency department attendance, provisional diagnosis in ICD-9-CM code, demographic data and triage category are stored in a fixed width text file. Analysis was conducted using Microsoft Access 2003 and Stata 7.

RESULTS

The coding proportion has increased progressively from 10.2% in 2003, to 23.9% in 2004, and 32.8% in 2005. As the highest coding proportion was achieved in 2005, we used the 2005 data, consisting of some 1,960,000 attendance records, for the subsequent analysis.

In 2005, a total of 3268 ICD-9-CM codes were used. The most commonly coded diagnosis is acute upper respiratory infections (ICD-9-CM Code 465.9). The 10 most frequently used codes contributed to 38.3% of all coded records.

When grouped under specific disease groups using the ICD-9-CM classification, it is shown that the

most commonly coded groups are: "Symptoms, signs and ill-defined conditions", "Injury and poisoning", "Diseases of the respiratory system", "Diseases of the digestive system", "Diseases of the musculoskeletal system and connective tissue". Among these groups, the consultation diagnoses coded under the groups of "Symptoms, signs and ill-defined conditions", "Diseases of the respiratory system", and "Diseases of the digestive system" are of special relevance for communicable disease surveillance.

In order to better understand whether there was preferential coding, logistic regression was conducted. After adjusting for sex, age, admission time, day of week, and temporal trend over the year, two factors were identified to have significant effect on odds of being coded. These include triage category and whether the patients have been admitted.

Compared to the triage category of critical (the most severe) level, the odds of being coded were higher for patients in triage categories of emergent, urgent, and semi-urgent (OR = 2.38, 1.84, and 1.25, respectively), and lower for those who were classified as non-urgent cases (OR = 0.943). Patients admitted to ward after consultation at emergency departments were less likely to be coded when compared to those who were discharged directly from emergency departments (OR = 0.37).

CONCLUSIONS

This exploratory study indicates that the consultation diagnostic data at emergency departments is of great potential for surveillance purpose. A collaborative partnership is being established to explore the possibility of setting up a long term system.

REFERENCES

[1] International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)
<http://www.cdc.gov/nchs/about/otheract/icd9/abticd9.htm>

Further Information:
Teresa Choi, tchoi@dh.gov.hk