ISDS 2012 Conference Abstracts

Selecting Targeted Symptoms/Syndromes for Syndromic Surveillance in Rural China

Li Tan[1], Jie Zhang[1], Liwei Cheng[1], Weirong Yan[1, 2], Vinod K. Diwan[2], Lu Long[1] and Shaofa Nie*[1]

[1]Tongji Medical College, Wuhan City, China; [2]Karolinska Institutet, Stockholm, Sweden

Objective

To select the potential targeted symptoms/syndromes as early warning indicators for epidemics or outbreaks detection in rural China.

Introduction

Patients' chief complaints (CCs) as a common data source, has been widely used in syndromic surveillance due to its timeliness, accuracy and availability (1). For automated syndromic surveillance, CCs always classified into predefined syndromic categories to facilitate subsequent data aggregation and analysis. However, in rural China, most outpatient doctors recorded the information of patients (e.g. CCs) into clinic logs manually rather than computers. Thus, more convenient surveillance method is needed in the syndromic surveillance project (ISSC). And the first and important thing is to select the targeted symptoms/syndromes.

Methods

Epidemiological analysis was conducted on data from case report system in Jingmen City (one study site in ISSC) from 2004 to 2009. Initial symptoms/syndromes were selected by literature reviews. And finally expert consultation meetings, workshops and field investigation were held to confirm the targeted symptoms/syndromes.

Results

10 kinds of infectious diseases, 6 categories of emergencies, and 4 bioterrorism events (i.e. plague, anthrax, botulism and hemorrhagic fever) were chose as specific diseases/events for monitoring (Table 1). Two surveillance schemes were developed by reviewing on 565 literatures about clinical conditions of specific diseases/events and 14 literatures about CCs based syndromic surveillance. The former one was to monitor symptoms (19 initial symptoms), and then aggregation or analysis on single or combined symptom(s); and the other one was to monitor syndromes (9 initial syndromes) directly (Table 2). The consultation meeting and field investigation identified three issues which should be considered: 1) the abilities of doctors especially village doctors to understand the definitions of symptoms/syndromes; 2) the workload of data collection; 3) the sensitive and specific of each symptom/syndrome. Finally, Scheme 1 was used and 10 targeted symptoms were determined (Table 2).

Conclusions

We should take the simple, stability and feasibility of operation, and also the local conditions into account before establishing a surveillance system. Symptoms were more suitable for monitoring compared to syndromes in resource-poor settings. Further evaluated and validated would be conducted during implementation. Our study might provide methods and evidences for other developing countries with limited conditions in using automated syndromic surveillance system, to construct similar early warning system.

Table 1. Epidemiological analysis on cases and emergencies data

Respiratory cases		Gastrointestinal cases		Emergencies	
Name	%	Name	%	Name	Events (No.)
*Pulmonary tuberculosis	82.38	†Hand-foot-mouth diseases	41.73	†A(H1N1)	10
†Mumps	9.14	†Bacillary dysentery	28.56	†Mumps	5
†Measles	3.35	†Hepatitis A	15.36	†Hand-foot-mouth diseases	1
†Varicella	2.00	†Infectious diarrhea	6.58	†Bacillary dysentery	1
†Influenza/A(H1N1)	1.79	†Hepatitis E	4.30	†Food poisoning	2
†Rubella	0.72	Typhoid	3.03	†Unknown reason dermatitis	1
Scarlet fever	0.44	Paratyphoid	0.22		
Pertussis	0.15	Amebic dysentery	0.22		
Meningococcal meningitis	0.03				
Total	100.00	Total	100.00	Total	20

* Chronic infectious diseases (excluded).
† Selected specific diseases (top 5) or events (non-infectious excluded).

Table 2 List of symptoms/syndromes

*Scheme 1				**Scheme 2	
No.	Symptoms	No.	Symptoms	No.	Syndromes
1	Abdominal pain	11	†Headache	1	Coma/sudden death
2	Bone/muscle/joint Pain	12	Hematochezia	2	Fever
3	Chills	13	Jaundice	3	Gastrointestinal
4	Conjunctival hyperemia	14	†Mucocutaneous hemorrhage	4	Hemorrhagic
5	†Convulsion	15	Nasal congestion/Rhinorrhea	5	Influenza like illness
6	†Cough	16	†Nausea/Vomitting	6	Neurological
7	†Diarrhea	17	†Rach	7	Rash
8	†Disturbance of consciousness	18	†Sore throat	8	Respiratory
9	Fatigue	19	Tenesmus		
10	†Fever				

* The incidence of symptom was >= 20% of specific disease(s)/event(s).
** The number of times of syndromes monitored was >= 4 times. Asthma (4 times) and diarrhea (5 times) were excluded due to study objectives.
† Final targeted symptoms.

Keywords

Syndromic surveillance; Chief complaint; Early warning

Acknowledgments

This study was funded by [European Union's] [European Atomic Energy Community's] Seventh Framework Programme ([FP7/2007-2013] [FP7/2007-2011]) under grant agreement no. [241900].

References

1.Chapman WW, Dowling JN, Wagner MM. Generating a reliable reference standard set for syndromic case classification. J Am Med Inform Assoc. 2005;12:618-29.

*Shaofa Nie
E-mail: sf_nie@mails.tjmu.edu.cn