Author’s response to reviews

Title: Establishing a Nationwide Emergency Department-based Syndromic Surveillance System for Better Public Health Responses in Taiwan

Authors:

Tsung-Shu Joseph Wu (wcsg@msn.com)
Fuh-Yuan Frank Shih (fystone@mail2000.com.tw)
Muh-Yong Yen (mmyen1121@gmail.com)
Jiunn-Shyan Julian Wu (julianwu77@hotmail.com)
Shiou-Wen Lu (lsw@cdc.gov.tw)
Chao Hsiung (hsiung@nhri.org.tw)
Kevin Chi-Ming Chang (kevin@cdc.gov.tw)
Jr-How Chou (jchou@cdc.gov.tw)
Yu-Tseng Chu (litlepppiiigg@yahoo.com.tw)
Hang Chang (emergency@ms.skh.org.tw)
Chan-Hsien Chiu (zschou@cdc.gov.tw)
Fu-Chiang Richard Tsui (tsui@cbmi.pitt.edu)
Michael M. Wagner (mmw@cbmi.pitt.edu)
Ih-Jen Su (suihnjen@nhri.org.tw)
Chwan-Chuen King (cc_king99@hotmail.com)

Version: 7 Date: 3 August 2007

Author’s response to reviews: see over
Answers to reviewers

Reviewer: Kenneth Mandl

Major Compulsory Revision:

1. **Is the paper a system implementation description, a system description, or a system evaluation, or a report of findings from the system?**
   
   A: The paper is a system description. We aimed to describe the history and progress on developing ED-SSS in Taiwan. Especially the establish experience we had from the system setting up. For the further system evaluation, we will follow the CDC’s public health surveillance system evaluation process in the coming article. We’ve changed some describing sentences which may be confused the focus of this paper.

2. **What surveillance technology was, in fact, used?**
   
   A: For the surveillance technology, we collaborated with RODS team and establish our local system. Since RODS group suggested using HL7 standard and long period historical data to do syndromic surveillance but we don’t have widely use of HL7 in most hospitals and also lack enough historical data. Therefore we collaborated with them on the data transmission method and database structure. We’re still researching on the aberration detection method which may suitable to Taiwan’s ED visits data.

3. **What was composition of Taiwanese team?**
   
   A: There are 3 major expertises in our team:
   
   1. Medical doctors who’re in charge of syndrome definitions and input the clinical experience to assist other team members to understand the patient’s habits of using medical services.
   
   2. Epidemiologist and biostaticians are in charge of system flow design, communicating with hospitals and researching aberration detection methods.
   
   3. Computer technicians are focus on database maintain, data real-time transmission and related programming.

   Team members came from government (Taiwan CDC), National Taiwan University and National Health Research Institute.

4. **What were the issues around technology transfer to non-English speaking country?**

   A: The main issue we had to consider was the multilingual chief complaint. Since chief complaint may contain more information than ICD9 codes, our next step is to build up multilingual processing algorithm and to use nature language method to categorize different syndromes. Another issue needs to be concerned is the culture different on medical resource using. Patients may have special habits on using ED
medical resource in non-English countries, especially in Asia, so while analyzing ED visits data in these countries need to know their social habit.

5. **Are the multiple patterns of utilization described novel findings, or rather confirmatory?**

A: The weekend and holiday pattern were kind of confirmatory to the previous hypotheses from medical doctors. In the clinician’s aspect, they only had “feel” about holiday and weekend increase of patient volume. ED-SSS provides the evident to show the significant increasing of patient volume.

6. **The discussion section contains results and many claims in the discussion are not supported by the results.**

A: We’ve rearranged the discussion and result paragraph to make the paper more structure. Thanks for the advice.

7. **The ED-SSS can play an important role in detecting an outbreak involving possible human-to-human transmission even if the cluster size is small. It is not clear to me that this claim is supported.**

A: Since we didn’t put the comparison between current reporting system and ED-SSS, therefore we remove these sentence.

**Minor Essential Revisions:**

1. p3: added other references.
2. p4: changed the words.
3. p4: changed the words.
4. p7: changed the words.
5. Result section: We’ve moved that section to discussion.

**Reviewer: Julie A Pavlin**

**Major Compulsory Revision:**

1. ILI, RESP, asthma correlation and new figure: we added the new analysis results and figure.

2. EVI syndrome group: We’ve put the ICD9 code of EVI syndrome group in Table. We did have some lab result from sentinel physician surveillance and laboratory surveillance system. But we didn’t put in this paper. The preliminary results showed us that syndromic surveillance may have one to two weeks earlier to see the increasing of EVI visits than other surveillance systems. We’ll do the integrative analysis with syndromic surveillance and laboratory surveillance on this issue in future.
3. The reason of the sharp increase over first month was the increasing of participant hospitals. Since the system was not got on-line at the same date to all hospitals, so we could see the sharp increase.

**Minor Essential Revision:**
1. Missing data cleaning process: Only those data with both CC and ICD empty will be deleted.
2. Low transmission rate of CC: Electronic triage system was new to some hospitals and they only had paper system to record triage information. Therefore, the CC had low transmission rate in those hospitals.
3. Figure 1 isn’t mentioned: revised this mistake.
4. Figure 4 and 5: Corrected the mistake.
5. Table 1 ICD9 code tag: modified table 1. We reserve 4 ICD9 field to adapt different hospital’s system.
6. figure 2: the percentage means the coverage rate of ED-SSS hospitals in 4 different regions in Taiwan.
7. Explanation of the spike of severe syndrome: It was a system error. One hospital send huge volume of data and missed by our check algorithm.

**Discretionary Revisions:**
1. We don’t have HIPPA in Taiwan. According to the consent, hospitals only transfer data without patient’s identity information.
2. We added age and gender specific proportion of total population in Taiwan.
3. No, we don’t have such data yet. But we are trying to make our system to be integrated with lab surveillance and specimen taken.
4. Chinese New Year spike is an interesting phenomenon in most east-Asia area (China, Taiwan, Hong Kong, Singapore etc.) Since the clinics will off during that period, so patient’s only choice is ED service. Also during this period people will eat more and play all night. It may be another reason to see increasing of GI, severe syndrome cases.
5. In Taiwan, medical centers are more like central hospitals. They could provide more tests and cares to patient. And also more department than district hospitals and regional hospitals.

**Reviewer: Richard Heffernan**

**Major Compulsory Revision:**
1. We modified some wording to make the paper more focusing on the early establishment of syndromic surveillance. Since syndromic surveillance system
was very new to us, we will provide more experience on using syndromic surveillance integrated with other surveillance methods (i.e. lab surveillance, sentinel physicians surveillance) in the future.

2. Striking day-of-week and holiday effect: We focused on the system development and built-up experience in this paper. We will have another specific research on the detail epidemiological analysis with different methods of ED-SSS data.

3. The completeness was focus on medical information, so we modified the sentence to fit the aim.

4. ILI peak: we modified the sentence to make it more clear.

5. Delete table 2: We’ve deleted table 2.

6. Table 3: We added the age specific proportion of total population in Taiwan to give reader the comparison of ED visit’s age/gender composites. Detail analysis of different syndromes will be launched in next paper.

7. EVI syndrome group: We’ve put the ICD9 code of EVI syndrome group in Table 2. The EVI syndrome seasonal pattern was very consist with previous epidemic pattern. We’ll do the integrative analysis with syndromic surveillance and laboratory surveillance on this issue in future.

Minor Essential Revision:
1. We’ve modified those sentences.
2. We’ve added the detail of sending data quality program.
3. We’ve modified the sentence and deleted the reference.
4. We’ve moved it to discussion.

Discretionary Revisions:
1. Chinese chief complaints are very complex to separate them into simple concept. Also we have CC with Chinese and English in one field which is most difficult to deal with. We have to know how to use multilingual method to do this kind of nature language processing which is a new field to information technology.
2. The percentage of figure 2 was the coverage rate of ED-SSS in 4 different region in Taiwan.