Reviewer’s report

Title: Modeling Emergency Department Visit Patterns for Infectious Disease Complaints: Results and Application to Disease Surveillance.

Version: 1 Date: 6 December 2004

Reviewer: William Lober

Reviewer’s report:

General

----------------------------------------------------------------------------------------

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Methods

1. The key word coding strategy should be clarified. Is negation correctly handled? The correspondence of the syndrome groups (following your expert review revisions) with those of ESSENCE or RODS could be made clear (optional).

Results

2. Surveillance - Figure 5 is great, but the text in the first paragraph following surveillance is confusing. Figure 5a does not appear to be daily counts, but instead the predicted counts. It would be nice to superimpose actual with predicted counts. The “note the patterns…” sentence is unclear. Likewise, please make clear whether your comments about March, Jan, and Feb refer to the Forecast Error or Page’s Statistic, and the implication of these to observable events.

Discussion

3. The authors describe early detection of a respiratory outbreak (influenza) in advance of traditional mechanisms, but don’t present any data from the statewide sentinel surveillance system or from the stat lab. A detailed discussion is beyond scope, as the authors state, but some further characterization of the data to support this finding would be valuable.

----------------------------------------------------------------------------------------

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Background

1. P1 last sentence – “might include” instead of “might be”

Results

2. Surveillance – second sentence – you mean “we focused…” or “we will focus…”? Not clear if you mean the work you did, or the results you are about to describe.
Discussion

3. “sophisticated software codes” should be “sophisticated software”, or perhaps “sophisticated software code”?

4. Free text c/c paragraph “settings” instead of “setting”

Background

1. P1 - Consider using “traditional” instead of “existing” public health surveillance, as some real time and near real-time systems have been deployed.

2. P2 – Variability may be due to more than requirement that ED’s see all patients presenting for care.

3. P4 – It’s interesting to consider if syndromic surveillance is better described at active or passive. One random set of definitions here http://www.emro.who.int/Publications/EMHJ/0201/06.htm

Methods

4. Data Stream – why is the menu option for C/C rarely used?

5. First Order Model – could explain more about why started log scale useful in this setting (you did a fine job with what the scale is).

Results

6. Long term trends – specify the % population increase corresponding to the 4% visit increase, if you want to tie one to the other.

7. Long term trends – are you saying that the model requires a new term in place of the C8, C9, term to accommodate non-linearity, or that adjusting C8, C9 would compensate?

8. Use of Free Text chief complaints – this argument of c/c vs ICD-9 is reasonable, but the key word “grouping scheme” and its performance are not discussed in any detail. (see #1 above). Comparison of the categories with other groups’ work, at a minimum, would facilitate discussion here as to how the approach may be generalized. The argument could be strengthened by reference to other efforts to code and cluster c/c’s, and by a discussion of why coding is not used at UH (end of second paragraph).

9. The day of week section notes a striking difference between the 25% Mon increase at UH and a 3.4% increase in NYC, without commenting on possible explanations. Perhaps they are environmental? Behavioral/cultural? Statistical or other artifact?

10. Surveillance - You make the comment that visual overlay of the data streams on the baseline plot is useful operationally. This is a significant generalizable claim, and could be supported with a figure. This is not compulsory, but would greatly strengthen the paper.

11. Surveillance P2 – Why was the 2.5% false alarm rate chosen? There was no prior mention of
selection of a false alarm rate or discussion of the tradeoffs (ROC for this detection algorithm? Empiric?).

12 – Surveillance – P2 – There was mention that demographic information would aid outbreak investigation. Are you suggesting that this information be collected as part of routine surveillance, or are you suggesting that these elements would be obtained from the ED log as part of an investigation?

Discussion

13. The language in the second paragraph is unclear, and obscures the conclusions. It is not clear why “other” and “average” are quoted, for example. “Other” refers to the c/c category of that name, but most of the text in this paragraph appears to be presentation of the results for modeling that category, rather than a discussion of significance of the results for all categories. How would the “average” year be constructed – average of all previous years? Last year only? Last n years?

Conclusion

14. The data presented only supports the day of week effects “by infectious disease in various body systems” and I think actually only supports the day of week effects in grouped chief complaint categories.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No

Declaration of competing interests:

no competing interests