

Authors: Hao-Yuan Cheng, Wan-Ting Huang, Yi-Chun Lo

Name of FETP: Taiwan FETP

Title: Timeliness of Detection and Notification of Infectious Disease Outbreaks — Taiwan, 2006–2013

Abstract text:

Backgrounds:

Rapid detection and early intervention of outbreaks are important advantages of event-based surveillance systems. However, no standard method exists to measure changes of the elapsed time from outbreak start to detection and intervention and to compare the effects of public health events and responses on timeliness. We aimed to use a statistical model to evaluate the timeliness of outbreak detection over time.

Methods:

We analyzed nationwide outbreak reports archived in the Epidemic Investigation Report Files Management System during 2006–2013. We extracted dates when the index patient had onset of symptoms (outbreak start) and when an outbreak was reported to health authorities (outbreak detection). Cox proportional hazards regression analyses were conducted to identify the temporal trend of timeliness and to assess the impact of major events.

Results:

We enrolled 1874 confirmed outbreak reports; 751 (40%) were respiratory, 616 (33%) were diarrheal, and 507 (27%) were other diseases. Median days from outbreak start to detection were 6 (range 1–96). This interval shortened by 4.3% (hazards ratio [HR] 1.043, 95% CI 1.006–1.081) and 4.4% (HR 1.044, 95% CI 1.001–1.090) per year for diarrhea diseases and diseases other than respiratory and diarrheal diseases, respectively. We identified 33% shortening (HR 1.334, 95% CI 1.137–1.566) for respiratory diseases in 2009, the year of pandemic influenza A (H1N1), but not during the overall 2006–2013 period (HR 1.002, 95% CI 0.967–1.038).

Conclusions:

We demonstrated improved timeliness of detection for certain infectious disease outbreaks in Taiwan. Effects of major events (e.g., H1N1) on timeliness could also be measured using this model. It is useful in quantifying changes in timeliness of outbreak detection and further application is promising.

Key words: event-based surveillance, timeliness, outbreaks, outbreak detection