Authors: Hsueh-Ju Chen, WC Chen, WT Huang, CS Chiou, YS Liao
Name of FETP: Taiwan FETP
FETP Graduation: Trainee
Title:
Evaluation of *Salmonella* Cluster Detection of PulseNet Taiwan

Abstract Text:
Background: Taiwan CDC has established national molecular subtyping network, PulseNet Taiwan, to detect foodborne outbreaks since 2006. However, few outbreaks were confirmed and solved in past years. In 2016, PulseNet Taiwan set new criteria of cluster notification and we used these criteria to evaluate *Salmonella* cluster detection of previous PulseNet practices.

Methods: Sentinel clinical laboratories voluntarily submitted *Salmonella* isolates to Taiwan CDC for pulsed-field gel electrophoresis (PFGE) subtyping. Microbiologists and epidemiologists would decide whether unusual subtype patterns needed to be notified and investigated. The 2016 criteria defined a cluster as four *Salmonella* isolates with indistinguishable PFGE patterns subtyped within 14 days, and potential clusters were reviewed and notified weekly. We collected *Salmonella* isolates of PulseNet Taiwan database during April–November 2015 and included isolates with serotypes other than Enteritidis and Typhimurium. For each cluster, we calculated days between dates of subtyping the first isolate and notification. We also used the 2016 criteria to evaluate the sensitivity and predictive value positive (PVP) of previous PulseNet practices.

Results: During April–November 2015, PulseNet Taiwan received 1,112 non-Enteritidis, non-Typhimurium *Salmonella* isolates and notified five clusters. The median days from subtyping the first cluster isolate to notification was 56 (range, 23–155), compared with 14.5 days (range, 2–16 days) using the 2016 criteria ($p = 0.002$). Compared with 20 clusters that could have been identified using the 2016 criteria, the sensitivity of previous PulseNet practices to detect clusters was 20% and PVP was 80%.

Conclusions: Previous PulseNet practices had high PVP but low sensitivity, and took longer time to notify clusters. PulseNet Taiwan could identify more *Salmonella* clusters and detect clusters earlier by using the new cluster notification criteria.

Keywords: *Salmonella*, Pulsed-field gel electrophoresis, Evaluation, Taiwan