

Project Title: Evaluation and application of a laboratory-based molecular subtyping system for surveillance of bacterial diarrheal diseases.

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Executing Institute:Centers for Disease Control

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Abstract:

This project was a pilot practicing on running a molecular subtyping system for surveillance of bacterial foodborne diseases—PulseNet Taiwan. The implementations had been aimed at forming a taskforce team, conducting disease outbreak investigation, strengthening international cooperation. In Taiwan, Salmonella infection has been the primary disease burden via food as vehicle. Therefore, salmonellosis was taken as the primary surveillance target of PulseNet Taiwan. At the same time, diseases caused by *Escherichia coli* O157:H7 and *Shigella sonnei* were also included to be monitored by cooperation with PulseNet International. During the period of execution of this project, a total of 3,648 Salmonella isolates were fingerprinted with pulsed-field gel electrophoresis (PFGE) method and the PFGE fingerprints were deposited in a BioNumerics database, called Salmonella DNA fingerprint database, in the Centers for Disease Control, Taiwan. Four big clusters of infection caused by *S. Typhimurium* and *S. Enteritidis* were detected via routine fingerprint comparison and were investigated by an epidemiological team. More than 60 Salmonella infection events in the United States and 3 international shigellosis outbreaks caused by *S. sonnei* were also investigated by comparison of the fingerprints of the outbreak strains with the databases.

PulseNet Taiwan has been adopted by Department of Health as an early detection tool in the national food safety surveillance system. In this regard, the PulseNet Taiwan Task Force will include partners from food and agriculture sectors in the future, and PulseNet Taiwan will focus on the surveillance of salmonellosis and listeriosis and strengthen international cooperation.

Keyword: Salmonella 、 outbreak 、 PulseNet 、 pulsed-field gel electrophoresis (PFGE) 、  
Disease surveillance 、 PulseNet Taiwan