



## Original Article

# An Estimation of the Probability of Detecting Imported Cases of Ebola Virus Disease at Airports in Taiwan

Yu-Lun Liu<sup>1</sup>, Chi-Ming Chang<sup>1</sup>, Ding-Ping Liu<sup>1</sup>, Hung-Wei Kuo<sup>1</sup>,  
Chen-Wei Tsai<sup>1</sup>, Yi-Wei Ye<sup>1</sup>, Jen-Hsiang Chuang<sup>2</sup>

1. Epidemic Intelligence Center, Centers for Disease Control,  
Ministry of Health and Welfare
2. Deputy Director General's Office, Centers for Disease Control,  
Ministry of Health and Welfare

### Abstract

As of October 17, 2014, a total of 9,191 cases of Ebola virus disease, including 4,546 deaths, have been reported from the 3 most affected countries in West Africa. The World Health Organization has urged countries with widespread and intense transmission to conduct exit screening at airports and seaports. There should be no international travel for Ebola contacts or cases. To evaluate whether entry fever screening on arrival at airport in Taiwan is capable to detect Ebola cases imported from West Africa, a simple mathematical model has been developed using two variables, incubation period and flight duration. Given the estimated flight durations between 29.8 and 41.7 hours, with 12.8% to 16.9% of Ebola infected passengers may be symptomatic on arrival, thus 10.1% to 13.2% of symptomatic Ebola cases may be detected at airport entry by fever screening. Fever screening at airports, which is a part of public health intervention, is to add a safety line to the Ebola control in Taiwan. Nevertheless, fever screening can detect symptomatic cases on arrival only and the limitation will be more for diseases with longer incubation period. Other strategies are also required, including improving the passengers' self-awareness, educating the general public and training of the health care providers, to stop the spread of Ebola virus.

**Keywords:** border quarantine, fever screening, Ebola virus disease, imported cases

## Review and Analysis of Dengue Fever in Penghu County, Taiwan, 2011

Shu-Hua Huang, Hsin-Fan Chien, Min-Nan Hung, Chiou-Yue You,  
Yu-Zhu Wang, Yi-Ying Lin, Chao-Ching Chang

Kaohsiung-Pingtung Regional Center, Centers for Disease Control,  
Ministry of Health and Welfare, Taiwan

### Abstract

In September 19, 2011, the first case of dengue fever, who was a university student in Pingtung and lived in Makung City, was confirmed by laboratory of Taiwan CDC. After 9 days, her mother and young brother were also confirmed by expanded screening, and an epidemic soon followed. The genotype of dengue type 2 virus detected from the family cases was found similar to the first patient in summer 2011 in Kaohsiung City. This report described the case-control study conducted on 153 reported cases (99 confirmed and 54 negative cases) in Penghu County, and the control measures implemented, as well as results from monitoring of vector sources. The results showed that all confirmed cases were: (1) lived or worked in Makung City, especially that residing within or adjacent to Chongcing Li borough were risk for dengue infection; (2) the average duration from the onset of clinical signs to reporting date was longer than the control cases (3.9 days vs 2.6 days;  $p < 0.05$ ); and (3) significantly with skin rash. Overall, 16563 wet containers were inspected, and 776 (4.7 %) were larvae-positive. The storage drums or vats, discs and flower bottles were the most common container type. The residential area had wet containers more than other places. Vegetable garden and vacant lot or houses were most likely to contain larvae. The results were similar to the investigation conducted in Kaohsiung and Pingtung areas. Therefore, we recommend risk management of the garden and vacant lot or houses. This report provides basic information for improving the quality and performance of dengue prevention and control.

**Keywords:** Dengue fever, Dengue type 2 virus, epidemic

## Outbreak Investigation Express

### Investigation of Acute Diarrhea Outbreak among Taiwanese Group Tourists in Korea, December 2013-January 2014

Hoa-Hsin Wu<sup>1</sup>, Ying-Shi Su<sup>1</sup>, Wan-Chin Chen<sup>1</sup>, Yi-Chun Lo<sup>1</sup>,  
Yi-Chun Wu<sup>2</sup>, Pi-Fang Chen<sup>2</sup>, Li-Ly Ho<sup>2</sup>, Fang-Tzy Wu<sup>3</sup>, Jiunn-Shyan Julian Wu<sup>4</sup>,  
Pei-Chen Chen<sup>4</sup>, Mei-Jung Chen<sup>5</sup>, Min-Ping Hsu<sup>5</sup>, Ying-Ying Tsa<sup>6</sup>

1. Office of Preventive Medicine, Centers for Disease Control, Ministry of Health and Welfare, Taiwan
2. Division of Quarantine, Centers for Disease Control, Ministry of Health and Welfare, Taiwan
3. Center for Research, Diagnostics and Vaccine Development, Centers for Disease Control, Ministry of Health and Welfare, Taiwan
4. Taipei Regional Center, Centers for Disease Control, Ministry of Health and Welfare, Taiwan
5. Northern Regional Center, Centers for Disease Control, Ministry of Health and Welfare, Taiwan
6. Kaohsiung-Pingtung Regional Center, Centers for Disease Control, Ministry of Health and Welfare, Taiwan

#### Abstract

From late-December 2013 to mid-January 2014, a cluster of acute gastrointestinal illness occurred in 25 Taiwanese tourist groups traveling to Korea. Among 650 persons, 370 (attack rate 56.9%) experienced nausea or vomiting during the tour. Review of the itineraries demonstrated that 24 groups had patronized to Restaurant X 1–2 days before onset of illness. We conducted a case-control study in five groups through a questionnaire survey to determine the associated food items. A case was defined as onset of diarrhea or vomiting within 72 hours after patronizing Restaurant X, and the rest unmet for case definition were controls. Among 123 surveyed tourists, 71 (57.7%) completed the questionnaires and 55 (77.5%) met the case definition. The median incubation period was 25 hours (range 5–59). No specific food item was significantly associated with illness. Of 44 stool samples from Taiwanese tourists, 18 were positive for norovirus. Environmental investigation implemented by Korea authorities revealed two food handlers at Restaurant X tested positive for norovirus. Based on the epidemiological investigation and laboratory results, norovirus outbreak was confirmed. Taiwan Centers for Disease Control had implemented preventive measures include promoting hand hygiene towards tourists and advising the Traveling Agent Association against patronizing Restaurant X. This investigation highlights the importance of prompt cooperation of travel industries and international collaboration.

**Keywords:** diarrhea, outbreak, norovirus

## The Varicella Cluster on a Cruise Ship, 2014

Yu-Hsuan Lin, Jiun-Shian Kuo, Hwan-Feng Wang

Taipei Regional Center, Centers for Disease Control,  
Ministry of Health and Welfare, Taiwan

### Abstract

A cruise ship reported 4 crew cases of varicella during 23<sup>rd</sup> Apr to 26<sup>th</sup> May, 2014. The attack rate to the crew members was about 0.36%. The Taiwan CDC quarantine officers and ship authorities conducted a series of case and contact investigations on board. The result showed that the virus presumably spread among common living area (crew cabin), and then causing chain infection. Compare to the crew cabin, the transmission risk of the virus through working place (casino) or air conditioner system of crew cabin is relatively low. In addition, there were some biases such as recall bias, cultural or language barriers when ship authorities tried to conduct contact investigation through face-to-face interview and questionnaire. We suggest screening the immunity of crew members by serologic test first, then vaccinate if necessary for whom at high risk, such as newly sign-on crews and crews living in the area with same nationality.

**Keywords:** cruise ship, varicella, quarantine, cluster, vaccine

The Taiwan Epidemiology Bulletin series of publications is published by Centers for Disease Control, Ministry of Health and Welfare, Taiwan (R.O.C.) since Dec 15, 1984.

**Publisher :** Hsu-Sung Kuo

**Editor-in-Chief :** Tsuey-Fong Lee

**Telephone No :** (02) 2395-9825

**Executive Editor :** Chien-Chun Chen, Hsiu-Lan Liu

**Website :** <http://www.cdc.gov.tw/teben>

**Address :** No.6, Linshen S. Road, Taipei, Taiwan 100 (R.O.C.)

**Suggested Citation :**

[Author].[Article title].Taiwan Epidemiol Bull 2013;29:[inclusive page numbers].