

An Outbreak Investigation of Unknown Cause Respiratory or GI Symptoms at a Secondary School Located in Hualien City

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From the period of December 17th 2006 to January 15th 2007, several students from a secondary school in Hualien City developed respiratory symptoms together with gastrointestinal (GI) disturbances. The health authorities launched a joint epidemiological investigation, aiming at estimating extend of the outbreak, possible underlying pathology, routes of transmission, and also assessing the efficiency and effectiveness of the control measures implemented in the event. From analyzing the 734 returned questionnaires designed specifically for this outbreak from both junior and senior school students, the results indicated 299 students experienced respiratory symptoms with or without GI disturbances (141 students had GI symptoms and 158 had not) whereas there were only 94 students who experienced GI disturbances only with no

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respiratory complains. Therefore, a total of 131 students from the first group has fulfilled the criteria and definitions of a *typical influenza case with an infestation* rate of 17.8%, whereas the 94 students in the second group were suspected to be cases of norovirus infection.

In addition, a total of 78 nasopharyngeal swabs were collected from those sick students and the results showed that 8 of them were infected with B Type influenza virus and 1 with A Type influenza virus. The major symptoms suffered by those 131 students diagnosed with influenza were: runny nose 87.8%, nasal congestion 80.2%, cough 71.8%, headache 61.8%, dizziness 60.3%, and sore throat 49.6%. Some of these cases also showed various other symptoms such as abdominal pain 32.8%, diarrhea 32.1%, nausea 28.2%, loss of appetite 25.2%, and vomiting 16.8%. Therefore, it has once again reinforced the fact that amongst these 131 students who suffered from both the respiratory and GI symptoms, the principal pathogen was likely to be B Type influenza virus. Furthermore, looking at the distribution curve for the date of disease onset of these cases, it showed zigzag distribution rather than a single peak, indicating that the transmission route of this clustering influenza infection event was more likely a pattern of chain infections. On the other hand, from the 71 anal swabs and 10 fecal specimens collected, only one specimen was found by the laboratory to be positive for norovirus. Nevertheless, with the prevalence of norovirus in Taiwan region lately, symptoms from students and the distribution curve for the dates of onset, norovirus was suspected to be the pathogen responsible via chain infection for those 94 students who had no respiratory symptoms but only GI disturbances.

To respond to this outbreak, the school authority took the following measures immediately: inviting physicians from nearby Buddhist Tzu Chi General Hospital to examine the sick students, isolating students with respiratory or GI symptoms

into quarantine rooms on the first floor of each dormitory, providing continuous surveillance on students' health in general, requiring all students to wear masks, launching a wash-hands-often campaign, and carrying out a thorough cleaning up and disinfections process in and around school areas such as classrooms, dormitories, co-op store, and dining halls on the premises. After implantation of these measures, no more new cases of influenza infections and GI diseases were found in school from January 12th 2007, and hence the outbreak surveillance and associated follow-ups were then officially ended on January 19th.