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CONTENTS

From the Editor in Chief

Thank you for your long term support for "Taiwan Epidemiology Bulletin". In order for readers to capture major epidemic events more promptly and to improve the timeliness of journal contents, starting January 2010, Taiwan Epidemiology Bulletin will change from monthly to biweekly publication. New issues will be published every other Tuesday and can be accessed at http://teb.cdc.gov.tw/main/main.aspx, the official website of Taiwan Epidemiologic Bulletin. All contents are available for online reading and downloading. Information on the statistics of notifiable communicable diseases in Taiwan will also be available from the Centers for Disease Control, Taiwan web site for your reference.

This issue features one abstract of outbreak investigation express on "An Outbreak of Shigellosis in a Psychiatric Hospital in Taichung City" which described the results of the epidemiologic investigation. Three special reports include the "Investigation of the First Two Cases of Oseltamivir-Resistant Pandemic (H1N1) 2009 Virus in Taiwan" which described the detailed epidemiological investigation of the first two cases that suggested no evidence of clustering or secondary community transmission; "The Reasons for Blood Donation of HIV-infected Patients Detected from Blood Center, January - June 2009" investigated the increased positive rate of HIV screening from blood donation centers in 2009; analysis of "Factors Affecting Primary Caregivers' Attitude toward Administration of Influenza Vaccine to Young Children in the Pingtung Area" provided information useful for improving influenza vaccination rate.

We thank all readers again for the support and comments you provided in the past, which have facilitated the growth and improvement of the journal. We sincerely hope that in 2010, the new form of publication will bring to readers timely access to pertinent information and greater convenience in reading. We thank you for your continued support and your comments are always welcome.

Wish you happy New Year, good health, and peace.

Editor in Chief

Min-Ho Lai

An Outbreak of Shigellosis in a Psychiatric Hospital in Taichung City

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Abstract

On November 6, 2009, a hospital in Taichung City reported two cases of suspected shigellosis to the Third branch of Taiwan Centers for Disease Control. Both patients were transferred from a psychiatric hospital because of diarrhea from a suspected foodborne outbreak. An outbreak investigation was commenced. The psychiatric hospital has 340 patients. During November 2-20, 2009, there were a total of 63 patients with diarrhea and fever. Of these, 18 patients had Shigella flexneri 4a isolated from their rectal swab or stool cultures. In addition, Bacillus cereus was isolated from some leftover food. Disease incidence was increased among patients on soft diet (odds ratio: 9.0, 95% confidence interval 4.3-19.4). Pulsed-field gel electrophoresis of 5 of the Shigella flexneri isolates showed that the outbreak was of the same lineage, however, genetic differentiation had already occurred, indicating that the bacteria has been circulating in the hospital for some time.

Keywords: *Shigella*, shigellosis, cluster, psychiatry, *Bacillus cereus*

Investigation of the First Two Cases of Oseltamivir-Resistant Pandemic (H1N1) 2009 Virus in Taiwan

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Abstract

The outbreak of pandemic (H1N1) 2009 occurring in the Mexico-United States border in April 2009 resulted in worldwide spreading within six weeks. As of November 15, 2009, there are over 6,770 confirmed deaths in the world. Fortunately, the current circulating strains of the virus are shown to be sensitive to the influenza virus neuraminidase inhibitors oseltamivir and zanamivir. However, since July 2009, the World Health Organization (WHO) has started to receive reports of oseltamivir-resistant pandemic (H1N1) 2009 viruses. All of the cases have a mutation in the neuraminidase gene resulting

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in an amino acid change from histidine to tyrosine at amino acid 275 (referred to as H275Y). The viruses have been shown to be resistant to oseltamivir, but they remain sensitive to zanamivir. After analyzing the 32 oseltamivir-resistant cases, the WHO determined that these cases are sporadic and not circulating at a community level. As of November 12, there are five cases of oseltamivir-resistant pandemic (H1N1) 2009 viruses detected in Taiwan. All of the isolates were taken from the severe complicated cases, which have finally reached full recovery. Extensive investigation of the five cases suggests that such viruses are sporadic and not spreading in the community. This study is aimed to report the findings of the investigation of the first two cases of oseltamivir-resistant pandemic (H1N1) 2009 in Taiwan; another main objective is to remind clinicians to be aware of oseltamivir-resistant pandemic (H1N1) 2009 viruses, especially when patients have had >5 days of antiviral treatment and still have unresolved or complicated illnesses.

Keywords: resistance; pandemic (H1N1) 2009 virus; antiviral medications

Introduction

The outbreak of pandemic (H1N1) 2009 occurred in Mexico, United States, Canada, and United Kingdom in April, 2009 [1] and resulted in record-breaking worldwide spread within six weeks [2]. Early in this pandemic, viruses from 13 patients have been tested for resistance to antiviral medications by the Centers for Disease Control and Prevention of the United States (US CDC). All tested viruses are resistant to amantadine and rimantadine, but are susceptible to neuraminidase inhibitors, such as oseltamivir (Tamiflu®) and zanamivir (Relenza®) [3]. However, sporadic cases of oseltamivir-resistant infection had been detected in Japan, Denmark, and Hong Kong since early July, 2009 [4]. By November 20,

viruses from 57 patients in Denmark, Japan, Canada, the United States, the United Kingdom, Australia, China, Hong Kong, Singapore, Vietnam, and Taiwan have been confirmed with oseltamivir-resistance and reported to the World Health Organization (WHO) [5,6]. The Centers for Disease Control, Taiwan (Taiwan CDC) have started to analyze and monitor antiviral-resistance in viruses isolated since July 1. The Epidemic Intelligence Center (EIC) of the Taiwan CDC had announced 5 cases of oseltamivir resistance on October 20, October 27, and November 17, respectively [7-9].

The purpose of this report is to introduce the monitoring system of drug-resistance in Taiwan, to provide detailed information on the first two cases with oseltamivir resistance, and to discuss the impacts of these findings.

Global antiviral resistance surveillance

Since July 2009, the WHO has started to receive the reports of oseltamivir-resistant pandemic (H1N1) 2009 viruses. By November 20, resistant viruses from 57 patients have been detected worldwide [6]. According to the investigation of 32 cases, developments of drug resistance were associated with oseltamivir treatment in 16 cases, including 7 immuno-compromised patients; thirteen of them were associated with the use of oseltamivir for post-exposure prophylaxis and most of them were close contacts of confirmed patients. The remaining 3 resistant viruses were isolated from patients who were not taking oseltamivir for either treatment or prophylaxis. Generally speaking, cases of oseltamivir-resistant viruses continue to be sporadic and infrequent, with no evidence that resistant viruses are circulating within communities.

Based on current available information, the WHO encourages clinicians

to be alert to two situations that carry a high risk for the emergence of viruses resistant to oseltamivir [10]:

1. The risk of resistance is considered higher in patients with compromised or suppressed immunity who have prolonged illness, have received oseltamivir (especially for an extended duration), but still have evidence of persistent viral replication.
2. The risk of resistance is also considered higher in people who receive oseltamivir for post-exposure prophylaxis, who then develop illness, despite taking oseltamivir.

In both of these clinical situations, health care staff should respond with a high level of suspicion that oseltamivir resistance has developed. Laboratory investigations should be undertaken to determine whether the resistant virus is present and appropriate infection control measures should be implemented or re-enforced to prevent spread of the resistant virus.

When a drug-resistant virus is detected, the WHO further recommends that an epidemiological investigation be undertaken to determine whether onward transmission of the resistant virus has occurred. In addition, community surveillance for oseltamivir-resistant pandemic H1N1 virus strains should be enhanced.

In general, the WHO does not recommend the use of antiviral drugs for prophylactic purposes. For people who have had exposure to an infected person and are at a higher risk of developing severe or complicated illness, an alternative option is close monitoring for symptoms, followed closely by prompt early antiviral treatment should symptoms develop.

Antiviral resistance surveillance in Taiwan

Antiviral resistance surveillance conducted in Taiwan tests antiviral

resistance by detecting the mutations of gene sequences of neuraminidase, and by examining the susceptibility of neuraminidase to oseltamivir carboxylate. Virus isolates from hospitalized patients, outpatients in communities, and clustering patients are collected and submitted to Taiwan CDC. All virus isolates from hospitalized patients and clusters should be submitted; one fifth of virus isolates from patients in community viral surveillance system are selected for submission according to temporal and spatial distribution. Of the 562 viruses isolated before November 12, 279 were from hospitalized patients, 134 were from outpatients in communities, and 149 were from clusters. Five virus isolates were resistant to oseltamivir, but were sensitive to zanamivir. All 5 viruses were obtained from hospitalized patients and were mutant viruses confirmed by both sequence analysis of the neuraminidase gene, with the presence of H275Y mutation, and the neuraminidase inhibition enzyme assay, with a significant increase in 50% inhibitory concentration value. Epidemiological investigations of these cases did not reveal onward transmissions of the resistant viruses.

The first case of oseltamivir-resistant pandemic (H1N1) 2009 virus infection in Taiwan

Patient A is an unemployed 20-year-old man living in southern Taiwan. Except for moderate mental retardation, he used to be healthy and had never received any vaccinations for influenza before this illness. Being victims of Typhoon Morakot, patient A and his family had stayed in one of the shelters since August 16. Only wide beds were provided for lodging during this occasion and an outbreak of upper respiratory infection occurred. The outbreak had been confirmed by epidemiologic investigations and laboratory examinations as a cluster of pandemic (H1N1) 2009 virus infection; many

victims with influenza-like illness had been treated with oseltamivir. Patient A and his family had moved to an encampment on August 25, since the former shelter had been demolished. Despite the offer of unshared housing, all residents of the encampment gathered during mealtimes and another cluster of pandemic (H1N1) 2009 virus infection had occurred in late August.

After attending the barbeque party in the encampment in the evening of August 30, patient A experienced fever and cough on September 1. Patient A, accompanied by his family, went to the hospital emergency room for medical consultation. The doctor noticed some evidences of pneumonia, including respiratory symptoms, leukocytosis (leukocyte count 14,010/mm^3), and increased infiltration on bilateral lung fields on his chest radiograph. Combined with the result of the influenza rapid antigen test which was positive for influenza A and the impression of complicated pneumonia, treatment with oseltamivir was initiated soon after taking a nasopharyngeal swab specimen and the patient was admitted to the isolation room.

Antibiotics were also administrated by the attending physician due to suspected pulmonary bacterial infection during the first week of hospitalization. The case was reported to the Taiwan CDC on September 4, under the impression of severe complicated influenza infection and another nasopharyngeal swab specimen was sent for viral culture. On September 6 despite completion of the 5-day treatment of oseltamivir, patient A was still febrile accompanied with progressive dyspnea; he was intubated and transferred to the ICU for monitoring afterwards. Antibiotics were also adjusted due to clinical deterioration. His fever subsided after September 11, and patient A was discharged on September 21. He recovered uneventfully and received regular follow-up consultations in the outpatient clinics.

During hospitalization, two nasopharyngeal swab specimens were sent for viral culture. Influenza A virus was isolated from the first specimen obtained in the emergency room before taking oseltamivir. The contracted laboratory then confirmed the presence of pandemic (H1N1) 2009 virus by real-time RT-PCR in the second specimen obtained on September 4, when the patient was reported to the Taiwan CDC.

An oseltamivir-resistant mutation H275Y was detected in the second specimen obtained under treatment of oseltamivir, which was not detected in the first specimen obtained before treatment of oseltamivir. Emergence of resistance should have occurred within the four days of treatment.

Before onset, patient A mainly stayed in the shelter and encampment where several clusters of pandemic (H1N1) 2009 virus infection had occurred; he did not have influenza-like illness or take oseltamivir. To clarify why and how the resistance developed, analysis of drug-resistant mutations of 9 viral isolates obtained from patients concurrently staying with patient A in the same shelter or encampment was performed by the Taiwan CDC. While viral loads of the 3 isolates were too low to be examined, 6 viral isolates were found to be sensitive to oseltamivir, so the clusters of upper respiratory infections could not be contributed to the oseltamivir-resistant pandemic (H1N1) 2009 virus infection.

Contact investigations for patient A were listed as below:

1. Four family members of patient A, including his father, mother, elder sister, and his nephew, stayed with patient A before and after his illness. None of them experienced influenza-like illness and were all healthy.
2. During hospitalization, patient A was either isolated in a specific ward or cared for in the ICU; few visits were allowed. Only his parents and four

sisters had visited and none of them experienced influenza-like illness to date.

3. From September 1 to 21, care workers who had been involved in taking care of patient A included doctors, nurses, and non-medical personnel in the emergency room, isolation ward, ICU, and infection ward, with 82, 16, 19, and 27 staff members in each section, respectively. Forty-five of them had looked after patient A directly, but none of them experienced influenza-like illness. Three of the remaining 99 staff members once had symptoms of upper respiratory tract infection; while one worked in the emergency room and had received influenza rapid antigen test which turned out to be negative, none of the three had febrile illness. Besides, no clusters of upper respiratory tract infection had been reported from this hospital in the same period.
4. To date, only sporadic cases of upper respiratory tract infection were found in residents of the shelter and encampment. No clusters have been reported.

The second case of oseltamivir-resistant pandemic (H1N1) 2009 virus infection in Taiwan

Patient B is a 44-year-old married man, a warehouse dispatcher with a son and a daughter working in northern Taiwan. He has had mitral valve regurgitation resulting from rheumatic heart disease and had received mitral valve replacement in medical center C 15 years ago. He had long-term use of alprazolam and some cardiovascular medication, including amiodarone, furosemide, and digoxin. He has had regular follow-ups initially in medical center C and in medical center D since early 2009. He had never received vaccinations for seasonal influenza.

Patient B experienced neck stiffness, back pain, myalgia, and general malaise since 11 pm on August 27, 3 hours after he was on duty. He asked for leave on 1 am on August 28, and presented to a local clinic with fever up to 39℃, with symptoms of chills and rhinorrhea later in the afternoon. Because the result of influenza rapid antigen test was positive, oseltamivir was given for 5 days. Patient B was in good compliance with the prescription and his symptoms improved on the next day. From August 29 to September 1, he isolated himself at home, wearing a surgical mask while staying alone in his room. He went back to the clinic for follow up on September 2, after taking the last dose of oseltamivir. The attending physician gave patient B some anti-tussive medications and anti-histamine, because he was afebrile for three days and only had minor symptoms compatible with post-nasal drip. However, he started to suffer from fever, severe cough with blood-tinged sputum, and dizziness at night, which could not be relieved by rest or medications. Patient B visited the emergency room of medical center C for medical consultation on September 3.

In the emergency room, the doctor found some wheezes and crackles on physical examination, the chest radiograph of patient B revealed increased infiltration over bilateral lower lung fields and cardiomegaly; the patient's hemogram was abnormal, with leukocytosis up to 14,720/uL and left shift (82% was neutrophil). The tentative diagnosis was influenza A infection status post-oseltamivir treatment and community-acquired pneumonia. Because of the history of cardiovascular disease and the suspicion of bacterial infection, patient B was admitted to the isolation ward and moxifloxacin was prescribed. The smear of sputum obtained on September 4 revealed numerous leukocytes, some gram-positive cocci, and some

gram-negative bacilli, but the culture result was negative. Patient B was reported to the Taiwan CDC as a case of severe complicated influenza infection and his nasopharyngeal swab specimen was sent to the contract lab, which confirmed to be positive in RT-PCR of pandemic (H1N1) 2009 virus. During hospitalization, the patient was hemodynamically stable and only presented with minimal hemoptysis under the treatment of daily infusion of moxifloxacin. He did not use antipyretics because he has become afebrile gradually. Patient B was free of symptoms and discharged on September 7 after five days of antibiotics usage. He visited the cardiovascular surgical outpatient clinic of medical center D on September 10 uneventfully, and went back to work on September 13. The viral isolate of pandemic (H1N1) 2009 virus obtained during hospitalization was sent for genetic analysis of the neuraminidase gene and an oseltamivir-resistant mutation H275Y was detected.

Patient B lived with 3 family members, including his 5-year-old son who had fever and vomiting on August 25 after school. The boy was brought to local clinic E for medical consultation on August 26 and some symptomatic medications were given. On August 28, patient B's wife went to local clinic E because of dizziness and sore throat, accompanied by her husband and their child. She recovered soon after taking the symptom-relieving agents prescribed by the doctor. Both patient B's wife and his son did not receive the influenza rapid antigen test. When patient B was hospitalized in medical center C, his friends and family members did not visit him because of the limited visiting hours, with the exception of his wife who brought clean clothes for him to change.

Contact investigations were listed as below:

1.Contacts of patient B:

(1)Workplace: The number of faculty members in his company was 300, including 7 members working in shifts in his office. From August 1 to October 21, there were no absentees due to influenza-like illness in the records from the Health and Safety Section of his company. To avoid transmissions in workplace, all faculty members were asked to wear surgical masks and body temperature checked. All 7 close contacts were found to be free from symptoms in the field investigation on October 23. The director of Health and Safety Section said that the prevention and control measures were continuously implanted. Medical officers from the Taiwan CDC sampled a specimen from one faculty member presented with flu-like illness, and the result was negative. The workplace where patient B worked was an open-space environment and posed minor risk of influenza clusters.

(2)Medical institutions: Two doctors and five nurses in clinic E were free from flu-like symptoms to date; one of the 30 members in medical center C, including 14 people in the emergency room and 16 people in the ward, had influenza-like illnesses. Medical officers from the Taiwan CDC also sampled a specimen from that faculty member, and the result was negative.

2.Contacts of patient B's wife: Because patient B's wife was symptomatic, field investigation and sampling were completed in her workplace on October 23. The total numbers of faculty members were 177. According to the company's prevention and control measures, a personal investigation form must be completed and body temperatures must be checked at the entrance and exit, daily. Two members, including patient B's wife, still

had flu-like symptoms in this week. Medical officers from the Taiwan CDC sampled specimens from them, and the results were negative.

3. Contacts of patient B's son: There were 62 students and 8 faculty members, including the principal, teachers and school bus drivers in the kindergarten where patient B's son studied. The school term began on August 1. According to absenteeism records, none of the children or teachers were absent in August; five children and one teacher were absent because of influenza-like illness in September; and 2 children were absent because of influenza-like illness in early October. Based on information from the kindergarten and the respective parents, we found that there were five children with influenza-like illness attending school while taking antiviral medications within this week. Two of them went back home and the remaining three children received nasopharyngeal sampling after check-up by medical officers from the Taiwan CDC. The other child experiencing influenza-like illness in late September, with a positive result of influenza rapid test, also had a nasopharyngeal swab sampling. The results of viral isolation in these four children were all negative.
4. Community investigation: From June 19 to October 19, there were total six confirmed cases of severe complicated pandemic (H1N1) 2009 virus infection, including patient B, reported from clinic E, medical center C and medical institutions located in his communities; oseltamivir-resistant viruses were not isolated from the other five cases.

Conclusion

Despite the detection of five isolates of oseltamivir-resistant pandemic

(H1N1) 2009 virus, after thorough epidemiologic investigation, these were considered to be sporadic cases, not resulting in transmission in communities. We still have to pay close heed to the emergence of drug-resistant virus. Based on statements of the WHO and the EIC of the Taiwan CDC, chemoprophylaxis with oseltamivir in close contacts of confirmed cases was not encouraged. In patients who experienced a longer clinical course, especially those taking immune- suppressants or with diseases that may compromise immunity, repeated nasopharyngeal swab specimen could still be positive for pandemic (H1N1) 2009 virus after a full or even prolonged course of antiviral treatment. Because viruses isolated from these patients are prone to developing drug-resistance, clinicians should be particularly vigilant and should repeat sampling from patients for analysis of drug resistance. If a viral isolate is proved to be resistant to antiviral drugs, epidemiologic investigations, including tracing of contacts and viral examinations, should be undertaken and viral surveillance for pandemic (H1N1) 2009 virus in the community should also be reconsolidated to see if transmission does occur.

References

1. CDC. Swine influenza A (H1N1) infection in two children--Southern California, March-April 2009. MMWR 2009; 58:400-2.
2. WHO. Pandemic (H1N1) 2009 briefing note 3: Changes in reporting requirements for pandemic (H1N1) 2009 virus infection. Available at: http://www.who.int/csr/disease/swineflu/notes/h1n1_surveillance_20090710/en/index.html.
3. CDC. Update: drug susceptibility of swine-origin influenza A (H1N1) viruses, April 2009. MMWR 2009; 58:433-5.
4. WHO. Pandemic (H1N1) 2009 briefing note 1: Viruses resistant to oseltamivir

(Tamiflu) identified. Wkly Epidemiol Rec 2009; 84:299-399.
5. WHO. Oseltamivir-resistant pandemic (H1N1) 2009 influenza virus. Wkly Epidemiol Rec 2009; 84:453-9.
6. WHO. Pandemic (H1N1) 2009 - update 75: Weekly update (Virological surveillance data) Available at: http://www.who.int/csr/disease/swineflu/laboratory20_11_2009/en/index.html.
7. Taiwan CDC. Three new tamiflu-resistant pandemic influenza A (H1N1) virus strains discovered in Taiwan; Central Epidemic Command Center urges H1N1 vaccination. Available at: http://www.cdc.gov.tw/ct.asp?xItem=26436&ctNode=960&mp=5.
8. Chuang JH. Influenza pandemic (H1N1) 2009 (77): Taiwan oseltamivir resistance. Available at: http://www.promedmail.org, archive number: 20091027.3725.
9. Chuang JH, Huang SE. Influenza pandemic (H1N1) 2009 (73): Taiwan oseltamivir resistance. Available at: http://www.promedmail.org, archive number: 20091021.3626.
10. WHO. Pandemic (H1N1) 2009 briefing note 12: Antiviral use and the risk of drug resistance. Available at: http://www.who.int/csr/disease/swineflu/notes/h1n1_antiviral_use_20090925/en/index.html.

The Reasons for Blood Donation of HIV-infected Patients Detected from Blood Center, January - June 2009

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Abstract

According to the AIDS surveillance system in Taiwan CDC, from January to June 2009, the HIV infecton incidence in Blood Center samples was 4.88/100,000, which was higher than last year's 2.52/100,000. This dramatically increased the risk of HIV transmission through blood transfusions. An investigation was necessary to ensure blood transfusion safety and to prevent HIV transmission through blood transfusions. The investigation revealed that 48% of the people in high-risk groups had insufficient self-awareness of the risk, and most had homosexual behavior. Some of these homosexual men believed that using condoms or having regular sex partner would be safe, and donated their blood to save other people's lives. In addition, 26% of those who knew they are at high risk donated their blood because of peer pressure when the blood donation van visited. A few people considered insufficient accessibility for HIV screening and anonymous screening, or did not know about screening resources.

Keywords: AIDS, blood donation, high-risk group

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Introduction

To prevent HIV transmission through blood transfusion, the government has stipulated that all blood products should be tested for HIV antibody since 1988. At the same time, blood donation facilities should educate blood donor of correct blood donating concepts, establish blood donation procedure, and interview potential donors before blood donation to ascertain the health status and possible high risk behavior of donors. However, many new HIV-infected cases were reported by the Blood Center; from January to June 2009, the HIV infection incidence in Blood Center samples was 4.88/100,000, which was higher than last year's 2.52/100,000 [1] and severely affects the safety and quality of the blood products.

According to Rule 4 of the "Criteria for Donor Selection", persons with the following conditions should defer blood donation: 1. self-suspected HIV infection or having sexual intercourse with persons suspected to be infected with HIV within 2 years; 2. had high-risk sexual behavior (having sex with strangers, prostitution, or one-night stands) within 1 year or had sexually transmitted diseases (syphilis, gonorrhea, chlamydiosis, herpesvirus infection, chancroid or genital warts). According to Rule 5, persons with the following conditions should never donate blood: 1. intravenous drug users, men who have sex with men (MSM), and persons on long-term blood product use; 2. persons with history of drug or alcohol abuse; 3. persons who are HIV-I /HIV-II antibody positive; 4. AIDS patients; 5. commercial sex workers.

The American Red Cross recommends people with suspected HIV/AIDS conditions refrain from donating their blood. These include: 1. unexpected weight loss (10 pounds or more lost within 2 months); 2. night sweat; 3. blue or purple spots in the mouth or on the skin; 4. white spots or unusual sores

in the mouth; 5. lumps in the neck, armpits, or groin for over one month; 6. continued diarrhea; 7. continued cough or shortness of breath; 8. fever over 38°C for more than 10 days [3].

There was still contention on prohibiting MSM from blood donation in England. A simulated test in England indicated that not restricting MSM from donating blood for 12 months since the last sexual contact or completely revoke restricting MSM may increase the risk of contaminating blood products with HIV by 60% [4].

Therefore, according to the standard operating procedure for blood donation, a pre-donation interview and consultation should be given to donors by blood-collecting staff to ascertain the health status and risk behavior of donors. However, most of the HIV-positive patients discovered through screening of donated blood belonged to high-risk groups who should have been prohibited from blood donation. This indicates that further investigation is necessary to understand the reason for their blood donation and to evaluate the problem of pre-donation interviews.

Materials and Methods

1. Target for the investigation: HIV-positive person reported by the Blood Center during January to June 2009 (46 patients).
2. Method: semi-structured questionnaire was used for this investigation to understand the reason of blood donation for those people. Questions, included: HIV infection risk factors of the patient, procedure of blood donation, reason for blood donation. Demographic data of the cases in the notifiable disease surveillance system was analyzed. Health authorities conducted interviews in-person or by telephone.

3. Statistic analysis: data was entered and analyzed using Microsoft Excel.

Result and Discussion

The 46 reported cases were located in 6 counties/cities (Taipei City, Taichung City, Tainan City, Kaohsiung City, Hsinchu County and Hualien County); 4 were lost to follow up despite several follow-up visits by public health authorities. Information was collected by local public health authorities by in-person or telephone interviews.

1. Demographics of the cases: 67.4% (31 cases) were aged 21-29 years (Table 1). The most common risk factor for HIV infection was homosexual behavior (21 cases, 45.7%) (Table 2). In the past 2 years, data in the Blood Center showed that about 30% of the HIV infected cases worked the service industry (commercial sex workers not included). However, in the first half of 2009, for the first time, there were more students (21.7%) than persons in the service industry (17.4%) (commercial sex workers not included) (Table 3). This phenomenon needed additional investigation.

Table 1. Age groups of HIV-infected cases detected from Blood Center - January to June 2009, Taiwan

Age group	Number	%
10-19	2	4.4%
20-29	31	67.4%
30-39	7	15.2%
40-49	3	6.5%
50-59	2	4.4%
60-69	1	2.2%
Total	46	100.0%

Table 2. Risk factors of HIV-infected cases detected from Blood Center - January to June 2009, Taiwan

Risk factors	Number	%
Unknown	5	10.9%
Homosexual	21	45.7%
Heterosexual	15	32.6%
Bi-sexual	5	10.9%
Total	46	100.0%

Table 3. Occupation of HIV-infected cases detected from Blood Center - January to June 2009, Taiwan

Occupation group	Number	%
Students	10	21.7%
service industry (commercial sex workers not included)	8	17.4%
Armed forces	7	15.2%
Technical specialists	5	10.9%
Laborers	4	8.7%
Unemployed	4	8.7%
Business	3	6.5%
Unknown	2	4.4%
Public servants	2	4.4%
Others	1	2.2%
Total	46	100.0%

2. Reasons for blood donation

(1) Facility aspect: 11 of the 42 cases indicated that the blood donation facilities did not provide pre-donation interview and HIV consultation. These cases were located in Kaohsiung City, Taichung City, Tainan City, Taipei City and Hsinchu County. However, considering that this might be the patients' excuse or the consultation was simplified to filling the blood donation registration by donors, this result should be verified. There were 15 patients who were aware of their high-risk behavior (homosexual, bi-sexual, or unsafe heterosexual behavior) but still donated their blood. Three of those indicated that the accessibility of screening of health authorities and anonymous

screening sites were insufficient. These 3 patients resided in Hualien County and Yilan County. An additional patient who lived in Taipei County mentioned that he was not aware of using anonymous screening resources.

(2) Personal aspect: 27 of the 42 patients did not consider themselves at high-risk for HIV infection and simply wanted to help other people. After pointing out high risk behaviors to 13 persons with homosexual and bi-sexual behavior, they still did not considered themselves at high-risk group of acquiring HIV (11 homosexual and 2 bi-sexual) (Table 4). Of the 13, 11 had pre-donation interview, and half of them still donated the blood for believing that they were not at risk of acquiring HIV because they only had a single sex partner or took proper protective measures. In addition, 5 of the 42 patients mentioned that they donate blood regularly.

Of the 15 patients who were aware of their high-risk behavior but still donated blood, 10 patients had pre-donation interview. Three patients had never considered themselves at risk of acquiring HIV. There were 4 patients who donated blood by invitation from their colleagues or friends. Only 3 patients used blood donation to screen for HIV infection.

Table 4. The self-awareness of high-risk behavior

Group \ No.	No. of all cases(%)	Self-considered as non high-risk group(%)	(%)
Homosexual	23	11	(47.8)
Bi-sexual	4	2	(50.0)
Heterosexual	15	14	(93.3)
Total	42	27	(64.3)

Conclusions and Recommendations

1. Through this investigation, we found that some HIV infected patients detected through screening of donated blood had homosexual or bi-sexual behavior. These patients did not consider themselves in the high-risk group. In other words, they considered using condom or having only a single sex partner as safe and had no risk of acquiring HIV. However, using condoms incorrectly or having multiple sex partners in the past and present are important risk factors for transmitting HIV between homosexual and bi-sexual patients.

   According to a survey on AIDS prevention and condom use conducted in 2008, by Taiwan CDC, 53.8% reported their most recent sexual intercourse with their regular sex partner without using a condom and 29.3% with a non-regular sex partner without using a condom (5). This result indicated that proper protection was easily ignored while having a regular sex partner. In 2006, Taiwan CDC commissioned the project, “evaluate the effect of HIV/STDs structural-level intervention on reducing risky behaviors in gay bathhouses”, to Medical College of National Cheng Kung University. The result revealed regular condom use for anal sex and oral sex was 69.7% and 17.7%, respectively (6). Condom use during oral sex was low, indicating the necessity for further education for condom use.

   Thus, it is important to enhance public health education for high-risk groups and to improve screening interview skills of blood donation staff. It is also necessary to increase awareness of high-risk sexual behavior and self protection to prevent HIV infection among homosexual people. Using condom is essential while having sex with regular sex partners, during anal sex and oral sex. Taiwan CDC and public health

authorities should also actively provide HIV screening resources.

2. Some blood donors indicated that no pre-donation interview and consultation was provided. This might be the patients' excuse or the consultation was simplified to filling the blood donation registration by donors, this result should be verified. Taiwan CDC will request the Taiwan Blood Services Foundation to review the procedures of interviews, to enhance correct blood donation concepts and to improve the quality of interviews. As for blood donation vans at recruitment activities (such as in military bases, schools or workplaces), staff should provide "conscience telephone number" for people, who donated blood under peer pressure, to retract their donation.
3. For areas with insufficient HIV screening sites (e.g. Eastern Taiwan), it is necessary to increase HIV screening sites. Furthermore, blood donation facilities should provide anonymous HIV screening or post information on screening to decrease the possibility of blood donor using blood donation to screen for HIV infection.
4. It is also important to enhance education on the legal responsibility of blood donors. Unqualified blood donors might commit forgery in accordance to Criminal Codes. If HIV was transmitted, donors might be prosecuted through criminal or civil suits. During 1984 to September 2009, 20 people had been infected with HIV through blood transfusion. It is said: a bag of blood to save a life. However, if people donate the blood during the HIV "window period", the recipient may be infected through blood transfusion. Thus, person in high-risk groups should think twice before donating blood, so blood donation might not cause irreversible harm.

References

1. Taiwan CDC. Statistics of HIV/AIDS Monthly Report. Available at: http://www.cdc.gov.tw/sp.asp?xdurl=disease/disease_content.asp&id=2215&mp=1&ctnode=1498#7
2. Criteria for Donor Selection. Available at: http://gazette.nat.gov.tw/EG_FileManager/eguploadpub/eg011173/ch08/type3/gov70/num1/Eg.htm
3. American Red Cross. Blood Eligibility Guidelines. Available at: http://www.redcross.org/en/eligibility#hiv.
4. Soldan K, Sinka K. Evaluation of the de-selection of men who have had sex with men from blood donation in England. Vox Sanguinis 2003; 84: 265-73.
5. Taiwan CDC. 2008 HIV prevention and condom use survey.
6. Ko NY. Evaluate the effect of HIV/STDs structural-level intervention on reducing risky behaviors in gay bathhouses. DOH95-DC-1017.

Factors Affecting Primary Caregivers' Attitude toward Administration of Influenza Vaccine to Young Children in the Pingtung Area

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Abstract

According to data from CDC, Taiwan, most severe cases of influenza were between 0 and 9 years old, and majority of these cases did not receive influenza vaccination. The primary method of flu prevention in young children is vaccination. However, the coverage rate in young children is not adequate. Hence, identifying factors affecting flu vaccine administration in young children to help develop effective strategies to increase vaccine coverage is important. In this study, we used purposive sampling to recruit cases from 33 health stations and 40 contract hospitals in Pingtung County. Two thousand seven hundred and seventy-eight (2,778) valid questionnaires were collected and analyzed. The results showed that the most common

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reasons for flu vaccine administration in young children are heath education by the health bureau or station, suggestions from doctors, fear of infection, and effective vaccines. Among those cases, 7.0 percent experienced side effect. The most common factors for not receiving flu vaccines were fear of side effect, illness, negative news report of flu vaccines, and inadequate knowledge of vaccination. This study suggests five strategies to increase flu vaccine coverage in young children: proper guidance from healthcare professionals, completeness and easy access of health education, proper dissemination of critical messages, effective use of free vaccines, and effective strategy against negative reports of flu vaccine. This study may serve as a reference for forming influenza vaccination policy.

Keywords: influenza, young children, flu vaccine

Introduction

Influenza has been a worldwide issue, especially for young children. In Australia, 2,100 people are admitted annually because of influenza, and most of them are younger than 5 years old (64.7 per 100,000 people) [1]. In the United States, more than 50% of admitted cases of influenza were children in 2003, which costs 765 million US dollars [2]. In Taiwan, according to data in 2003/2004 season, most severe complications of influenza occurred in people older than 65 or younger than 2, and each group accounted for 23.5% of total cases [3]. In the 34 cases of influenza with severe complications in 2006/2007 season, most were between 0 and 9 years old (38.2%) [4]. Symptoms of influenza in young children include fever, malaise, running nose, sore throat, and cough. In severe cases, pneumonia [5] or even death may happen, showing the importance of vaccination in young children.

The primary method of flu prevention in young children is vaccination

[6]. The American Academy of Pediatrics suggests that children of 6-59 months old should be included in the annual flu vaccine administration [7]. In Taiwan, admission rate of flu cases younger than 2 years old were similar to that of cases older than 65 years old or other high risk groups in 2004. Hence, children between 6 months and 2 years old are included for vaccination [8]. However, according to data from CDC in 2008, vaccination rate for young children was poor, especially in southern part of Taiwan, where the average administration rate was 50-60%. This rate was much lower than those observed in other vaccines (over 90%) such as hepatitis B, Diphtheria, Pertussis and Tetanus, and Japanese encephalitis. The administration rate was also lower than that in other groups such as medical personnel and elementary school students. Therefore, it is worthwhile to investigate factors affecting flu vaccine administration in young children [9]. Previous studies about flu vaccination mainly focused on vaccine effectiveness, or factors affecting vaccine administration in the elderly [10-11] and medical personnel [12]. However, studies on factors affecting administration vaccination in young children were fewer. This study focused on investigating factors affecting primary caregivers' decision regarding vaccination for young children. Our study might be used as a reference to generate intervention measures in order to increase flu vaccination rate and achieve maximal benefit in flu prevention.

Materials and Methods

In this study, we used purposive sampling to recruit cases in 33 health stations and 40 contract hospitals in Pingtung County. Structured questionnaire was used to interview parents of young children. The questionnaire was

designed according to the literature [10-11]. The structure of the questionnaire includes profiles of the main caregivers and the young children, vaccination before and in 2008, questions regarding vaccination (reasons for vaccination, reasons for missing second dose, side effect), and questions for not receiving vaccination. More than one entry were allowed for questions regarding reasons for receiving vaccination, reasons for not receiving the second dose, reasons for not receiving vaccination, and side effect. The questionnaires were reviewed and modified by five experts. Parents of children born between Oct. 1, 2005 and Apr. 30, 2008 who were eligible for free vaccination were included. The number of questionnaires collected was set according to the numbers of young children in the 33 villages in Pingtung County in the National Immunization Information System. For health stations having more than 1,000 cases, 100 questionnaires were gathered, between 500 and 1,000 cases, 60 questionnaires, and fewer than 500, 30 questionnaires. Twenty questionnaires were gathered from 2 of the contract hospitals because of low case number. Fifty questionnaires were gathered from other contract hospitals. We planned to recruit 3,300 cases. The questionnaires were anonymous. Data were entered in EXCEL 2003 format and analyzed using EXCEL 2003 and SPSS 13.0.

Results

Analysis of profiles of the primary caregivers and children

Three thousand three hundred and thirteen (3,313) questionnaires were collected. Excluding 160 questionnaires with incomplete information, and 375 not completed by the primary caregivers, 2,778 valid questionnaires were included in the analysis. They consist of 1,100 cases that did not

receiving vaccination and 1,678 cases that received vaccination. Among the cases who received vaccination, 991 cases received all the doses required in that year and 687 cases received only 1 dose (those who did not receive vaccination prior to 2007 required 2 doses) (Table1).

Table 1. Profiles of the primary caregivers of young children (N=2,778)

Characteristic		Total	%
Primary caregiver	Father	340	12.2
	Mother	2218	79.8
	Grandparents	144	5.2
	Aunt	44	1.6
	Babysitter	32	1.2
Marital status	Cohabitated	69	2.5
	Married	2659	95.7
	Divorced	35	1.3
	Widowed	15	0.5
Education	Illiterate	58	2.1
	Elementary school	142	5.1
	Junior high school	217	7.8
	High school	1083	39.0
	Junior college	722	26.0
	College or higher	556	20.0
Religion	None	162	5.8
	Buddhism	880	31.7
	Taoism	1187	42.7
	Christian	321	11.6
	Catholic	97	3.5
	Others (Yit Kuan Tao, Islam)	131	4.7
Employment	No	1416	51.0
	Yes	1342	48.3
	Retired	20	0.7
Ethnic background	Fukienese	1930	69.5
	Hakka	318	11.4
	Mainlander	99	3.6
	Aboriginal	372	13.4
	Foreign bride	59	2.1
Medical history of children	None	2529	91.0
	Asthma	57	2.1
	Atopic dermatitis	81	2.9
	Congenital heart disease	14	0.5
	Allergic rhinitis	83	3.0
	More than 2 chronic illnesses	14	0.5
Admission history	No	2000	72.0
	Yes	778	28.0
Ever diagnosed with flu	No	2039	73.4
	Yes	471	17.0
	Unknown	268	9.6

Vaccine administration

1. Factors affecting primary caregivers' decision regarding vaccine administration to their young children

The four most common reasons for vaccine administration to young children were health education by the Health Bureau/Stations, doctors' recommendation, susceptible children, and effective vaccines (Table 2).

Table 2. Reasons for primary caregivers' decision regarding vaccine administration to their young children (n = 1,678)

Rank	Reasons for vaccine administration	Total cases
1	Health education by the Health Bureau/Stations	875
2	Doctors' recommendation	645
3	Susceptible children	522
4	Effective vaccines	481
5	Flu epidemic	451
6	Free vaccines, including registration fees	357
7	Ads on TV or newspapers	202
8	Ads by government officials	47

2. Reasons for young children not completing the second dose of influenza vaccination

In 2008, two doses of vaccination were required for children not receiving influenza vaccination prior to 2007. Six hundred eighty-seven (687) cases had only one dose. The four most common reasons were: not knowing 2 doses were required or when to have the second dose, belief that one dose is effective, forgetfulness, and no free vaccine (Table 3).

Table 3. Reasons for not completing the second dose of influenza vaccination (n=687)

Rank	Reasons	Total cases
1	Not knowing two doses were required or when to have the second dose	210
2	Belief that one dose is effective	196
3	Forgetfulness	150
4	No free vaccine	63
5	Side effect after the first dose	48
6	Illness	20
7	No time for vaccination	10
8	Received other vaccines	5

3. Side effect

One thousand six hundred and seventy-eight (1,678) cases received flu vaccines in 2008. One hundred eighteen (118) cases (7.0%) had some kind of side effect, 1,272 cases had no side effect (75.8%), and 288 cases (17.2%) did not respond. Myalgia is the most common side effect (27.5%) (Table 4).

Table 4. Statistics of cases having side effects (n=1,678)

Side effects	Total cases (%)
Yes or no	
No	1272(75.8%)
Did not answer	288(17.2%)
Yes	118(7.0%)
Categories	
Myalgia	38(27.5%)
Fever	32(23.2%)
Redness/swelling at injection site	30(21.7%)
Malaise	26(18.8%)
Headache	6(4.4%)
Rhinorrhea	5(3.6%)
Fussy	1(0.7%)
Severity of side effect	
One kind of side effect	101(85.6%)
Two kinds of side effect	15(12.7%)
Three or more kinds of side effect	2(1.7%)

Cases who did not receive vaccination

The four most common reasons for the primary caregivers who did not bring their young children for flu vaccination in 2008 were fear of side effect, illness, negative reports of flu vaccines, and not knowing vaccine is needed (Table 5).

Table 5. Reasons for the primary caregivers who did not bring their young children for flu vaccination (n=1,100)

Rank	Reasons for not receiving the vaccine	Total cases (n)
1	Fear of side effect	495
2	Illness	285
3	Negative reports of flu vaccines	198
4	Not knowing vaccine is needed	168
5	Feeling vaccine is ineffective	130
6	No time for vaccination	117
7	Believing children will not get the flu	53
8	Fear of pain	43
9	Registration fee is required	23
10	Allergy	3
11	Just received other vaccines	1

Discussion and Suggestions

1. Proper guidance from public health and medical professionals

In our study, the two most common reasons for young children to receive flu vaccination were health education by the health bureau or stations and recommendation from doctors. Hence, primary caregivers trust public health professionals and doctors. Hence, public health workers in the Health Bureau/stations and doctors are the best personnel to promote flu vaccine. Nowalk et al. (2006) also suggest that vaccine coverage rate is positively correlated with recommendation from doctors. Cases are more likely to receive vaccination after recommendation from doctors [13]. A study by the Kaohsiung City Health Bureau also showed that 85.6% of the general public agree with ads by professionals [14]. Hence, we suggest that contract hospitals should be responsible for not just providing vaccine, but taking the responsibility to actively recommend vaccine administration to primary caregivers for their young children.

2. Completeness and availability of health education

One of the reasons for young children not receiving flu vaccine and not receiving the second vaccine was not knowing that second dose of vaccination was required or the timing of vaccination. This demonstrates the importance of health education. Complete health education should include timing, places, subjects, doses, and effectiveness of vaccination, reminders after vaccination, and treatment for side effect. Efforts should be made to ensure the availability of health education. For example, during hospital visits or regular vaccination, time and dose of flu vaccine can be written in the vaccination schedule and record in the Children Health Handbook to remind primary caregivers. On the homepage of the CDC, there is a topic for vaccination, which includes information on current vaccination schedule, interval between each vaccination, a review of vaccination, and vaccination contract hospitals. Videos, handouts, flyers, posters and stickers for flu are also included in the "Flu Prevention Network" for downloading by professionals and the general public. Banners could also be used by hospitals to remind the general public of flu vaccination [9,15].

Effective vaccination was one of the main reasons for young children to receive vaccination, and ineffective vaccine was one reason not to receive flu vaccination. Hence, advertising effectiveness of flu vaccine is very important. According to the literature, flu vaccine has an effectiveness of 60-90% in preventing flu and decreases complications in children, such as respiratory tract diseases, pneumonia, and death [16-17]. Due to the protective effect of vaccination in children, in 2009, free influenza vaccination is expanded to children of 3-6 years old. Hence, children between 6 months old and 4th grade are eligible. WHO suggests that since most population are more likely to be exposed to influenza virus and acquire partial immunity,

one dose of vaccine should be adequate. However, for children younger than 8 years old, 2 doses are required for cases who have never received flu vaccination to ensure adequate protection. In this study we found that the number three reason for not receiving the second dose was belief that one dose should be effective. Professionals should clarify the misunderstanding of primary caregivers toward flu vaccine. Besides, in the surveillance for side effect in 2008, 288 cases did not respond. The major reason was that the primary caregivers did not recognize the side effect of flu vaccine. Because of their young age, young children can not tell clearly their symptoms to their primary caregivers. To comfort the primary caregivers, hospitals should explain clearly to primary caregivers precautions and management after vaccine administration to avoid confusion and negative impression.

3. Disseminating important information

(1) Releasing information regarding flu epidemics

Ten to fifty percent of the population may be infected during the influenza epidemic [15]. Our study shows that the number five reason for young children to receive flu vaccine was flu epidemics. Hence, releasing information regarding flu epidemics at the beginning of vaccine administration period is an effective strategy to increase vaccination rate. Besides, Nowalk et al. in 2006 suggested that people who believe that they are more likely to contract influenza if they do not receive flu vaccination tend to get flu vaccination [13]. In the flu season this year, broadcasting “the best way to prevent flu is vaccination” should increase vaccination rate.

(2) Disseminating information regarding susceptibility of young children

to flu and disease severity in young children

In this study we found that the number three reason for young children to receive flu vaccination was susceptibility to diseases. Young children who had history of admission or flu infection tend to receive the vaccine. Hence, disseminating the susceptibility and severity of contracting influenza in young children would increase vaccination rate. In Taiwan, Huang et al. suggested that for people older than 65, the main reason to receive flu vaccination was fear of infection. Hence, the strategy was to disseminate information regarding susceptibility of the elders to flu infection and severe complications [10], which is consistent with our study. Besides, the number two reason for young children not to receive flu vaccine was illness. Workers at the Health Bureau or stations should remind parents of vaccination after illness subsides to increase immunity against flu.

4. Effective use of free vaccines

The number four reason for not receiving the second dose of vaccination was no free vaccine available. Hence, proper planning is needed in allocating free vaccines. The Health Bureau could allocate vaccines according to numbers of young children in each area and rates of vaccination. The NIIS could be used to monitor vaccine administration in each area and available vaccine stocks in order to distribute vaccines in time to avoid shortage.

5. Effective response to negative reports of flu vaccines

The number four reason for young children not to receive flu vaccination was negative news report. We have to understand negative news report in order to respond effectively. Reviewing news from the past, negative reports

include two categories: side effect of flu vaccines and the concern of mercury.

Side effect

Inactivated flu vaccines were first developed in the 1940's and have been proven safe since 1976 [16]. To ensure safety and efficacy, WHO announces every year the recommended composition of influenza vaccine based on the predicted global epidemic strains [18]. The main composition of flu vaccines is killed inactivated virus, and therefore will not cause infection. Local reactions, such as pain, redness, swelling, might happen after inoculation. Systemic reactions, including fever, are rare, and usually recover in 1-2 days after inoculation [19-20]. In our study, 7.0% of cases reported side effect, most of which was muscle soreness that recovered later, consistent with the literature. We also found that in 2008, the major reason for primary caregivers not to bring their young children for flu vaccination was fear of side effect. Like other routine vaccination, professionals should explain to the primary caregivers the side effect and precautions of flu vaccine to reduce negative impression. Although side effect of flu vaccine is rare, to avoid anaphylactic shock, medical personnel should observe children for 30 minutes after inoculation and educate the parents that doctors should be consulted in case of prolonged fever or other severe discomfort. Physicians should be made aware of vaccination history to facilitate proper clinical management.

Mercury

Influenza vaccines contain negligible amount of Thimerosal as preservative to prevent microbial contamination. All vaccines have been examined and reviewed by authorities. Thimerosal can be metabolized and will not accumulate in the body. McMahon et al. have studied side effect

of mercury-containing and non-mercury flu vaccines in children under 2 years old. Their results showed that there is no significant difference in side effect such as rash, local reactions, or infections, showing that mercury do not correlate with side effect [21]. Thompson et al. also suggested that there is no relationship between mercury-containing vaccines and neurological and psychological function of children [22]. To monitor vaccine safety, WHO in 1999 established the Global Advisory Committee on Vaccine Safety (GACVS). This committee also suggested that limited mercury exposure from flu vaccination should be safe [23]. In Taiwan, since the beginning of administration of mercury-containing vaccine in infants and young children, no adverse effect due to mercury has been reported [24]. The information can be disseminated to primary caregivers for reassurance.

Some severe adverse effect of vaccination was caused by incomplete assessment before inoculation. Others may be merely coincidence. Negative reports on these issues may affect the willingness of general public to receive flu vaccination and interfere with prevention. The following strategies have been suggested. First, doctors should carefully evaluate each case before inoculation to avoid side effects. Shao et al. showed that cases having allergy or illness before inoculation tend to have more side effects after inoculation. Hence, careful evaluation before vaccination is necessary [12]. Second, establish good relationship with the media so that they could take the responsibility to report correct information and avoid unnecessary exaggeration. Ho et al showed that positive reports in the media could increase fame, agreement with policies, and vaccination rates [14]. Finally, the governments must have strategies to respond to negative

news report, including: (1) Establish emergency response and announcement procedure. The spokespersons must be fully authorized and know well about the latest information to avoid inappropriate announcement. They also need to have complete understanding of the topic, good communication skills, resistance to high pressure., (2) Be honest to the media and the general public. (3) Maintain active communication. For incorrect information, the authorities should inform the media for correction. Item nine of the Communicable Diseases Prevention and Control Law states that if announcements concerning communicable diseases from medical, academic, or research institute, or news reports concerning disease outbreaks from the media were incorrect or fake, correction should be made after being informed by the authorities. Item 63 of the Communicable Diseases Prevention and Control Law also states that a fine less than five hundred thousand new Taiwan dollars will be applied to those who spread incorrect information concerning disease outbreaks that could negatively affect the general public or other people [25-27].

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References

1. Brotherton J, Wang H, Schaffer A. Vaccine preventable disease and vaccination coverage in Australia 2003 to 2005. Commun Dis Intell 2007; 31: 1-50.
2. Hassan F, Lewis TC, Davis MM, et al. Hospital utilization and costs among children with influenza. 2003. Am Prev Med 2009; 36:292-6.
3. Chang CW, Wu KB, Huang TM, et al. Influenza activity in Taiwan: 2005/2006 season. Taiwan Epidemiol Bull 2006; 23: 489-504.
4. Chang CW, Chuang JH, Wu KB, et al. Epidemiological analysis of seasonal influenza epidemic in Taiwan in 2006/2007. Taiwan Epidemiol Bull 2008; 24: 895-907.
5. WHO. Influenza 2009. Available at: http://www.who. int/vaccine_research/diseases/ari/en/index1.html
6. Harper SA, Bradley JS, Englund JA, et al. Seasonal influenza in adults and children-diagnosis, treatment, chemoprophylaxis, and institutional outbreak management: clinical practice guidelines of the infectious diseases society of America. Clin Infect Dis 2009; 48: 1003-32.
7. Committee on Infectious Diseases Pediatrics. Prevention of influenza: recommendations for influenza immunization of children, 2007-2008. Am Acad of Pediatr 2009; 121: 1016-31.
8. Taiwan CDC. Influenza vaccine plan 2008.
9. Taiwan CDC. Vaccination 2009. Available at: http://www.cdc.gov.tw/np.asp?ctNode=38&mp=1
10. Huang HP, Tzau WS, Ho LL, et al. Taiwan elderly people's willingness to receive government promoted and funded flu shots - results of a 2007 telephone survey. Taiwan Epidemiol Bull 2007; 23: 683-92.
11. Tabbarah M, Zimmerman RK, Nowalk, MP, et al. What predicts influenza vaccination status in older Americans over several years? J Am Geriatr Soc 2005; 53: 1354-9.
12. Hsiao HH, Suen HJ, Yan JJ. Adverse reactions of influenza vaccination among healthcare professionals. Taiwan Epidemiol Bull 2005; 23:618-31.
13. Nowalk MP, Zimmerman RK, Tabbarah M, et al. Determinants of adult vaccination at inner-city health center: a descriptive study. BMC Fam Pract 2006; 7:2.
14. Ho CG, Li YJ, Lin YJ, et al. Research reports of Kaohsiung City in 2007. Available at: http://w4.kcg.gov.tw/~cadc01/web/file.php?file=../programs/files/file_10399556009.pdf

15. Taiwan CDC. Plans forInfluenza vaccines: Q & A in 2007. Available at : http://www.cdc.gov.tw/public/data/811418165471.pdf
16. Palache B. New vaccine approaches for seasonal and pandemic influenza. Vaccine 2008; 26: 6232-6.
17. Couch RB. Seasonal inactivated influenza virus vaccines. Vaccine 2008; 26: 5-9.
18. WHO. Recommendations for influenza vaccines 2009. Available at: http://www.who.int/csr/disease/influenza/vaccinerecommendations/en/
19. WHO. Vaccine-preventable diseases and vaccines (chap 6). In: International travel and health 2009. Available at http://www.who.int/ith/ITH2009Chapter6.pdf
20. Vajo Z, Kosa L, Szilvasy I, et al. Yearly licensing studies from 1997 to 2007 of the inactivated whole virus seasonal influenza vaccine fluval - a useful approach to pandemic vaccine development even in less well developed countries? Influenza Other Respi Viruses 2008; 2: 221-8
21. McMahon A W, Iskander J K, Haber P, et al. Inactivated influenza vaccine(IIV) in children<2 years of age: examination of selected adverse events reported to the vaccine adverse event reporting system(VAERS) after thimerosal-free or thimerosal-containing vaccine. Vaccine 2008; 26: 427-9.
22. Thompson WW, Price C, Goodson B. Early thimerosal exposure and neuropsychological outcomes at 7 to 10 Years. The NEJM 2007; 357: 1281-92.
23. WHO. Global advisory committee on vaccine safety, 20–21 June 2002. Available at: http://www.who.int/vaccine_safety/reports/june_2002/en/.
24. Taiwan CDC. Influenza vaccine plan 2009.
25. Guo MC. How to cope with mass media 2007. Available at: http://media.people.comcn/BIG5/40628/6521576.html
26. Wu YC. Standardized operation process for communication with mass media during disease outbreaks: based on experiences from SARS. Taiwan J Public Health 2007. 26:3:241-69.
27. Taiwan DOH. Communicable disease prevention act 2009. Available at: http://dohlaw.doh.gov.tw/Chi/FLAW/FLAWDAT0201.asp

Number of Confirmed Cases of Category One Notifiable Diseases in Taiwan-by County with Historical Data

Data Period: 2009/11/01-2009/11/28 (weeks 45-48)

Area	Smallpox			Plague			SARS			Rabies			Anthrax			H5N1 Influenza		
	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008
Taipei M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kaohsiung M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taipei Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yilan Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taoyuan Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hsinchu Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miaoli Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taichung Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Changhwa Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nantou Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yunlin Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chiayi Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tainan Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kaohsiung Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pingtung Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taitung Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hualien Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Penghu Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Keelung C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hsinchu C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taichung C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chiayi C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tainan C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kinmen Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lienchiang Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note1: Based on the "Communicable Disease Control Act" amended and promulgated under Hua-Tsun-I No.9600091011 on July 18, 2007, the "Category 4 and Category 5 Communicable Diseases Preventive and control measures" announced under Sue-So-Ji No.096000892 on October 9, 2007 and Shu-Shou-Chi No.0980000829 on June 19, 2009.

Note2: The statistics of augmented notifiable infectious diseases would be included after the Communicable Diseases Control Act were promulgated for enforcement.

Number of Confirmed Cases of Category Two Notifiable Diseases in Taiwan-by County with Historical Data (I)

Data Period: 2009/11/01-2009/11/28 (weeks 45-48)

Area	Diphtheria			Typhoid※ Fever			Dengue※ Fever			Dengue Hemorrhagic Fever/Dengue Shock Syndrome			Meningococcal Meningitis			Paratyphoid Fever			Poliomyelitis			Acute Flaccid Paralysis		
	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008
Taipei M.	0	0	0	0	18	5	0	28	62	0	0	1	0	0	4	0	1	2	0	0	0	0	0	3
Kaohsiung M.	0	0	0	0	1	0	249	470	330	5	7	2	0	0	0	0	0	0	0	0	0	0	5	18
Taipei Co.	0	0	0	1	15	4	3	28	58	0	0	0	0	0	5	0	0	3	0	0	0	0	6	9
Yilan Co.	0	0	0	0	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Taoyuan Co.	0	0	0	0	9	7	4	31	28	0	0	0	0	2	3	0	0	1	0	0	0	0	4	7
Hsinchu Co.	0	0	0	0	2	3	0	7	9	0	0	0	0	0	2	0	0	2	0	0	0	0	1	3
Miaoli Co.	0	0	0	0	2	1	0	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
Taichung Co.	0	0	0	0	2	0	2	11	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Changhwa Co.	0	0	0	1	3	1	2	22	6	0	0	0	0	0	2	0	0	0	0	0	0	0	1	3
Nantou Co.	0	0	0	0	0	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yunlin Co.	0	0	0	0	4	1	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2
Chiayi Co.	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Tainan Co.	0	0	0	0	2	1	0	2	13	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2
Kaohsiung Co.	0	0	0	0	1	0	49	86	94	0	1	1	0	0	0	0	0	1	0	0	0	0	4	10
Pingtung Co.	0	0	0	0	1	0	37	67	10	1	1	0	0	0	2	0	0	1	0	0	0	0	3	5
Taitung Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hualien Co.	0	0	0	0	1	0	0	3	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Penghu Co.	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Keelung C.	0	0	0	0	4	1	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Hsinchu C.	0	0	0	0	0	2	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Taichung C.	0	0	0	0	3	2	0	12	4	0	0	0	0	0	0	0	1	0	0	0	0	0	3	2
Chiayi C.	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tainan C.	0	0	0	0	1	1	3	12	28	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Kinmen Co.	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lienchiang Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	71	30	349	803	679	6	9	4	0	2	19	0	3	11	0	0	0	0	40	70

Note1: Based on the "Communicable Disease Control Act" amended and promulgated under Hua-Tsun-I No.9600091011 on July 18, 2007 and the "Category 4 and Category 5 Communicable Diseases Preventive and control measures" announced under Sue-So-Ji No.096000892 on October 9, 2007.

Note2: The statistics of augmented notifiable infectious diseases would be included after the Communicable Diseases Control Act were promulgated for enforcement.

※The case amount of these diseases contained imported ones, including one Typhoid Fever and 15 Dengue Fever cases confirmed in this month.

Number of Confirmed Cases of Category Two Notifiable Diseases in Taiwan-by County with Historical Data (II)

Data Period: 2009/11/01-2009/11/28 (weeks 45-48)

Area	Shigellosis※			Amoebiasis※			Malaria*※						Measles			Acute※ Hepatitis A			Enterohemorrhagic E. coli Infection		
							This No.		Cum 2009		Cum 2008										
	This Mo.	Cum 2009	Cum 2008	This Mo.※	Cum 2009	Cum 2008	indigenous	imported	indigenous	imported	indigenous	imported	This Mo.	Cum 2009	Cum 2008	This Mo.※	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008
Taipei M.	2	10	12	0	25	25	0	2	0	3	0	1	0	0	1	5	41	39	0	0	0
Kaohsiung M.	1	4	1	0	3	10	0	0	0	0	0	1	0	6	4	1	10	11	0	0	0
Taipei Co.	0	15	22	5	23	28	0	0	0	1	0	1	0	13	1	7	53	54	0	0	0
Yilan Co.	0	0	0	0	1	5	0	0	0	0	0	0	0	0	0	1	6	5	0	0	0
Taoyuan Co.	0	2	21	1	10	9	0	0	0	0	0	0	0	4	2	1	18	26	0	0	0
Hsinchu Co.	0	2	1	0	1	3	0	0	0	0	0	1	0	0	0	1	2	6	0	0	0
Miaoli Co.	0	5	10	0	5	1	0	0	0	0	0	2	0	1	0	1	7	3	0	0	0
Taichung Co.	0	7	5	0	8	8	0	0	0	1	0	1	0	2	0	1	13	12	0	0	0
Changhwa Co.	0	4	0	1	7	2	0	0	0	2	0	1	0	0	0	0	2	8	0	0	0
Nantou Co.	0	1	3	0	2	2	0	0	0	3	0	0	0	4	0	0	2	2	0	0	0
Yunlin Co.	0	2	1	1	5	1	0	0	0	0	0	1	0	0	0	0	1	2	0	0	0
Chiayi Co.	0	0	0	0	3	1	0	0	0	0	0	0	0	0	2	0	6	1	0	0	0
Tainan Co.	0	2	2	0	5	8	0	0	0	0	0	2	0	7	0	0	4	4	0	0	0
Kaohsiung Co.	0	1	1	0	3	7	0	0	0	0	0	1	0	1	0	2	7	7	0	0	0
Pingtung Co.	0	0	0	0	1	4	0	0	0	0	0	1	0	1	0	1	4	3	0	0	0
Taitung Co.	0	0	1	0	4	4	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Hualien Co.	0	0	1	3	15	64	0	0	0	0	0	1	0	0	0	0	1	3	0	0	0
Penghu Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Keelung C.	0	0	0	0	6	0	0	0	0	0	0	1	0	1	2	0	0	8	0	0	0
Hsinchu C.	1	4	1	0	3	5	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0
Taichung C.	18	20	4	1	23	14	0	0	0	0	0	0	0	4	0	1	9	9	0	0	0
Chiayi C.	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
Tainan C.	0	2	1	1	4	5	0	0	0	0	0	0	0	4	0	0	3	10	0	0	0
Kinmen Co.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5	2	0	0	0
Lienchiang Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	22	81	87	13	159	208	0	2	0	10	0	16	0	48	12	22	201	223	0	0	0

Note1: Based on the "Communicable Disease Control Act" amended and promulgated under Hua-Tsun-I No.9600091011 on July 18, 2007 and the "Category 4 and Category 5 Communicable Diseases Preventive and control measures" announced under Sue-So-Ji No.096000892 on October 9, 2007.

Note2: The statistics of augmented notifiable infectious diseases would be included after the Communicable Diseases Control Act were promulgated for enforcement.

*WHO has declared Taiwan as malaria eradicated region in December, 1965, therefore all confirmed cases were imported ones.

※The case amount of these diseases contained imported ones, including two Shigellosis, four Amoebiasis, two Malaria and one Acute Hepatitis A cases confirmed in this month.

Number of Confirmed Cases of Category Two Notifiable Diseases in Taiwan-by County with Historical Data (III)

Data Period: 2009/11/01-2009/11/28 (weeks 45-48)

Area	Hantavirus syndrome						Cholera			Rubella			MDR-TB※			Chikungunya# Fever			West Nile Fever			Epidemic Typhus Fever		
	Hemorrhagic Fever with Renal Syndrome			Hantavirus Pulmonary Syndrome																				
	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008
Taipei M.	0	0	0	0	0	0	0	0	0	0	6	3	2	10	9	0	0	2	0	0	0	0	0	0
Kaohsiung M.	0	0	1	0	0	0	0	0	0	0	0	1	0	5	9	1	2	0	0	0	0	0	0	0
Taipei Co.	0	0	0	0	0	0	0	1	0	0	3	8	2	26	31	0	1	1	0	0	0	0	0	0
Yilan Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0
Taoyuan Co.	0	0	0	0	0	0	0	0	0	0	3	6	0	10	6	0	1	2	0	0	0	0	0	0
Hsinchu Co.	0	0	0	0	0	0	0	0	0	0	1	1	1	5	2	0	0	0	0	0	0	0	0	0
Miaoli Co.	0	0	0	0	0	0	0	0	0	0	1	0	0	2	2	0	1	1	0	0	0	0	0	0
Taichung Co.	0	0	0	0	0	0	0	0	0	0	0	1	0	8	9	0	0	0	0	0	0	0	0	0
Changhwa Co.	0	0	0	0	0	0	0	0	0	0	0	10	2	13	19	0	0	0	0	0	0	0	0	0
Nantou Co.	0	0	0	0	0	0	0	0	0	0	0	0	1	4	6	0	0	0	0	0	0	0	0	0
Yunlin Co.	0	0	0	0	0	0	0	1	0	0	0	0	1	6	4	0	0	0	0	0	0	0	0	0
Chiayi Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	4	9	0	0	0	0	0	0	0	0	0
Tainan Co.	0	0	0	0	0	0	0	1	0	0	0	1	0	5	3	0	1	0	0	0	0	0	0	0
Kaohsiung Co.	0	0	0	0	0	0	0	0	1	0	5	0	0	6	16	0	0	0	0	0	0	0	0	0
Pingtung Co.	0	0	0	0	0	0	0	0	0	0	1	1	0	7	3	0	0	0	0	0	0	0	0	0
Taitung Co.	0	0	0	0	0	0	0	0	0	0	0	1	0	3	2	0	0	0	0	0	0	0	0	0
Hualien Co.	0	0	0	0	0	0	0	0	0	0	1	0	1	4	18	0	0	0	0	0	0	0	0	0
Penghu Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Keelung C.	0	0	0	0	0	0	0	0	0	0	0	0	1	2	8	0	0	0	0	0	0	0	0	0
Hsinchu C.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0
Taichung C.	0	0	0	0	0	0	0	0	0	0	0	0	3	5	9	0	0	0	0	0	0	0	0	0
Chiayi C.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Tainan C.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	1	0	0	0	0	0	0	0
Kinmen Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lienchiang Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	0	0	3	1	0	21	33	14	132	174	1	7	6	0	0	0	0	0	0

Note1: Based on the "Communicable Disease Control Act" amended and promulgated under Hua-Tsun-I No.9600091011 on July 18, 2007 and the "Category 4 and Category 5 Communicable Diseases Preventive and control measures" announced under Sue-So-Ji No.096000892 on October 9, 2007.

Note2: The statistics of augmented notifiable infectious diseases would be included after the Communicable Diseases Control Act were promulgated for enforcement.

※The confirmed MDR-TB cases were included as statistical figure based on the date of registered by CDC.

One confirmed case of Chikungunya Fever was imported in this month.

Number of Confirmed Cases of Category Three Notifiable Diseases in Taiwan-by County with Historical Data (I)

Data Period: 2009/11/01-2009/11/28 (weeks 45-48)

Area	Pertussis			Tetanus※			Japanese Encephalitis			Tuberculosis*						Congenital Rubella Syndrome			Acute Hepatitis B			Acute Hepatitis C		
										Smear-positive			Other											
	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008
Taipei M.	0	12	8	0	0	0	0	0	0	42	397	409	35	619	691	0	0	0	1	22	30	0	16	14
Kaohsiung M.	0	0	0	0	0	0	0	2	2	36	353	400	27	451	539	0	0	0	1	4	17	0	9	9
Taipei Co.	0	21	20	1	1	0	0	2	0	65	772	764	59	1124	1200	0	0	1	2	41	49	0	23	21
Yilan Co.	0	4	0	1	1	0	0	1	0	13	98	114	5	162	224	0	0	0	1	3	5	0	2	3
Taoyuan Co.	2	9	6	0	0	3	0	0	1	27	331	366	43	504	558	0	0	0	0	14	28	1	7	9
Hsinchu Co.	0	1	0	0	0	0	0	1	0	9	83	63	12	140	114	0	0	0	0	2	9	0	5	0
Miaoli Co.	0	3	0	0	1	1	0	1	0	5	84	76	11	132	154	0	0	0	0	4	3	0	5	6
Taichung Co.	0	1	0	0	2	1	0	1	0	16	236	234	23	474	539	0	0	0	0	4	7	0	8	9
Changhwa Co.	0	1	3	0	1	1	0	1	2	35	412	388	27	452	510	0	0	0	1	5	5	1	6	4
Nantou Co.	0	0	0	0	0	0	0	0	2	24	169	135	13	200	220	0	0	0	0	3	1	0	1	2
Yunlin Co.	0	25	0	0	0	3	0	0	2	18	214	223	16	315	307	0	0	0	0	2	3	0	4	8
Chiayi Co.	0	0	0	0	0	1	0	0	1	10	115	133	12	200	196	0	0	0	0	0	6	0	2	5
Tainan Co.	0	0	0	0	1	2	0	0	2	25	247	274	18	339	432	0	0	0	0	8	4	0	5	2
Kaohsiung Co.	0	0	2	0	0	1	0	0	1	41	419	383	27	496	574	0	0	0	0	6	10	2	6	6
Pingtung Co.	0	0	0	0	1	3	0	1	1	26	316	333	23	390	471	0	0	0	0	3	4	0	3	4
Taitung Co.	0	0	2	0	0	0	0	1	1	19	109	90	5	127	121	0	0	0	0	2	1	0	2	0
Hualien Co.	0	2	0	1	1	1	0	6	1	9	149	167	13	187	163	0	0	0	0	5	3	1	2	2
Penghu Co.	0	0	0	0	0	0	0	0	0	0	6	9	2	15	22	0	0	0	0	0	0	0	0	0
Keelung C.	0	2	0	0	0	0	0	0	1	7	98	118	9	108	135	0	0	0	0	3	6	0	3	4
Hsinchu C.	0	0	0	0	0	0	0	0	0	6	48	41	10	86	86	0	0	0	0	0	7	0	2	1
Taichung C.	0	8	0	0	0	0	0	0	0	14	145	174	15	311	361	0	0	0	0	2	6	0	3	6
Chiayi C.	0	0	0	0	0	0	0	0	0	10	55	47	7	71	80	0	0	0	0	0	0	0	2	1
Tainan C.	0	0	0	0	2	0	0	0	0	7	171	171	19	210	267	0	0	0	0	6	6	0	3	1
Kinmen Co.	0	0	0	0	1	0	0	0	0	2	9	10	3	12	13	0	0	0	0	0	0	0	2	1
Lienchiang Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	89	41	3	12	17	0	17	17	466	5036	5122	434	7128	7978	0	0	1	6	139	210	5	121	118

Note1: Based on the "Communicable Disease Control Act" amended and promulgated under Hua-Tsun-I No.9600091011 on July 18, 2007 and the "Category 4 and Category 5 Communicable Diseases Preventive and control measures" announced under Sue-So-Ji No.096000892 on October 9, 2007.

Note2: The statistics of augmented notifiable infectious diseases would be included after the Communicable Diseases Control Act were promulgated for enforcement.

※Only reported cases were included in the statistics of Tetanus.

＊The Tuberculosis confirmed cases were included as statistical figure based on the date of report.

Number of Confirmed Cases of Category Three Notifiable Diseases in Taiwan-by County with Historical Data (II)

Data Period: 2009/11/01-2009/11/28 (weeks 45-48)

Area	Acute Hepatitis D			Acute Hepatitis E			Acute Hepatitis Unspecified			Mumps※			Legionellosis			Haemophilus Influenza type b Infection			Syphilis*		
	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008
Taipei M.	0	0	0	0	1	3	0	2	2	13	177	203	1	13	12	0	0	0	68	838	787
Kaohsiung M.	0	0	0	0	0	0	0	1	4	2	84	73	0	1	4	0	0	0	25	359	388
Taipei Co.	0	0	0	0	2	6	0	2	2	13	185	197	2	15	13	0	0	1	114	1320	1222
Yilan Co.	0	0	0	0	0	0	0	0	0	2	31	24	0	0	1	0	0	0	9	205	164
Taoyuan Co.	0	0	0	0	0	0	0	0	0	9	90	84	1	4	2	0	0	1	42	597	562
Hsinchu Co.	0	0	0	0	0	0	0	0	0	3	23	32	0	2	1	0	1	0	15	83	105
Miaoli Co.	0	0	0	0	0	0	0	0	0	0	22	30	0	0	0	0	0	0	5	85	86
Taichung Co.	0	0	0	0	0	0	0	0	1	3	57	54	0	4	2	0	1	0	23	290	318
Changhwa Co.	0	0	0	0	0	0	0	0	0	3	41	38	0	9	2	0	5	0	24	269	221
Nantou Co.	0	0	0	0	1	0	0	0	0	1	29	33	0	1	4	0	0	0	9	104	74
Yunlin Co.	0	0	1	0	2	0	0	0	1	0	16	25	0	0	1	0	1	1	12	143	150
Chiayi Co.	0	0	0	0	0	0	0	0	0	0	7	13	0	0	1	0	0	0	12	96	109
Tainan Co.	0	0	2	0	0	1	0	2	2	0	13	15	0	5	5	0	0	1	15	198	171
Kaohsiung Co.	0	0	0	0	1	0	0	1	1	4	53	63	0	2	3	0	0	0	22	340	390
Pingtung Co.	0	0	0	0	0	0	0	0	1	4	43	40	0	2	2	0	0	0	16	241	238
Taitung Co.	0	0	0	0	0	0	0	0	0	2	24	21	0	0	0	0	0	2	2	55	62
Hualien Co.	0	0	0	0	0	0	0	0	0	1	14	25	0	2	3	0	1	0	13	91	108
Penghu Co.	0	0	0	0	0	0	0	0	0	1	6	6	0	0	1	0	0	0	1	14	11
Keelung C.	0	0	0	0	0	1	0	0	2	1	27	20	0	0	0	0	1	1	11	122	110
Hsinchu C.	0	0	0	0	1	1	0	0	0	0	8	17	0	1	1	0	0	0	9	95	109
Taichung C.	0	0	0	0	1	1	0	0	1	2	36	43	0	3	1	0	1	0	16	347	395
Chiayi C.	0	0	0	0	0	1	0	1	0	0	1	3	0	0	0	0	0	0	3	44	58
Tainan C.	0	0	1	0	0	0	0	6	3	1	14	11	0	7	1	0	0	1	14	119	99
Kinmen Co.	0	0	0	0	0	0	0	0	0	0	4	3	0	0	0	0	0	0	2	7	8
Lienchiang Co.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	4	0	9	14	0	15	20	65	1005	1074	4	71	60	0	11	8	482	6062	5948

Note1: Based on the "Communicable Disease Control Act" amended and promulgated under Hua-Tsun-I No.9600091011 on July 18, 2007 and the "Category 4 and Category 5 Communicable Diseases Preventive and control measures" announced under Sue-So-Ji No.096000892 on October 9, 2007.

Note2: The statistics of augmented notifiable infectious diseases would be included after the Communicable Diseases Control Act were promulgated for enforcement.

※Only reported cases were included in the statistics of Mumps.

＊Syphilis cases were based on the date of diagnosis.

Number of Confirmed Cases of Category Three Notifiable Diseases in Taiwan-by County with Historical Data (III)

Data Period: 2009/11/01-2009/11/28 (weeks 45-48)

Area	Gonorrhea※			Neonatal Tetanus			Enteroviruses Infection with Severe Complications			HIV infection※			AIDS※			Hansen's Disease※		
	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008
Taipei M.	43	434	295	0	0	0	0	2	5	24	231	262	6	110	144	0	1	0
Kaohsiung M.	10	74	41	0	0	0	0	2	22	17	123	134	5	53	71	0	0	2
Taipei Co.	57	572	468	0	0	0	0	6	18	26	371	364	11	174	155	0	0	0
Yilan Co.	5	14	6	0	0	0	0	1	1	2	10	17	1	3	8	0	0	0
Taoyuan Co.	21	217	178	0	0	0	0	3	18	8	128	128	7	103	69	0	1	2
Hsinchu Co.	7	61	42	0	0	0	0	0	6	2	13	22	1	11	13	0	0	1
Miaoli Co.	6	40	22	0	0	0	0	0	7	1	18	13	0	6	6	0	0	1
Taichung Co.	6	88	50	0	0	0	0	1	23	6	89	76	4	47	56	0	0	0
Changhwa Co.	2	24	18	0	0	0	0	2	50	4	53	58	6	34	28	0	2	0
Nantou Co.	2	13	12	0	0	0	0	0	8	1	26	26	0	10	17	0	0	0
Yunlin Co.	1	43	30	0	0	0	0	1	19	4	44	53	7	36	16	0	0	0
Chiayi Co.	3	19	27	0	0	0	0	1	13	0	18	16	0	16	7	0	0	0
Tainan Co.	2	41	32	0	0	0	0	1	50	3	39	39	1	57	28	0	0	1
Kaohsiung Co.	5	40	44	0	0	0	0	1	39	10	96	136	5	42	34	0	0	0
Pingtung Co.	4	47	26	0	0	0	0	1	24	6	55	39	0	30	31	0	0	0
Taitung Co.	1	7	1	0	0	0	0	0	3	1	5	9	0	10	5	0	0	0
Hualien Co.	1	19	21	0	0	0	0	0	4	1	9	9	0	5	8	0	0	0
Penghu Co.	0	3	0	0	0	0	0	0	5	1	3	3	1	3	0	0	0	0
Keelung C.	1	34	44	0	0	0	0	0	1	3	32	71	2	12	6	0	0	0
Hsinchu C.	4	36	25	0	0	0	0	1	2	1	34	27	1	18	16	0	0	1
Taichung C.	8	57	35	0	0	0	0	1	19	6	97	93	3	53	51	0	0	0
Chiayi C.	1	14	11	0	0	0	0	5	2	1	9	8	0	5	2	0	0	0
Tainan C.	7	40	20	0	0	0	0	0	27	7	35	31	2	25	13	0	1	0
Kinmen Co.	0	1	0	0	0	0	0	0	0	1	4	0	0	1	0	0	0	0
Lienchiang Co.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Total	197	1938	1448	0	0	0	0	29	366	136	1542	1638	63	864	784	0	5	8

Note1: Based on the "Communicable Disease Control Act" amended and promulgated under Hua-Tsun-I No.9600091011 on July 18 Since Nov. 1, it is belong to the 3rd category of notifiable disease. 2007 and the "Category 4 and Category 5 Communicable Diseases Preventive and control measures" announced under Sue-So-Ji No.096000892 on October 9, 2007.

Note2: The statistics of augmented notifiable infectious diseases would be included after the Communicable Diseases Control Act were promulgated for enforcement.

Note3: Leprosy were renamed as “Hansen's disease” and HIV infection were belong to category 3 of communicable disease Since Nov. 1, 2008. announced under Sue-So-Ji No.0970001187.

※Gonorrhea, HIV infection, AIDS and Hansen's disease were based on the date of diagnosis.

Number of Confirmed Cases of Category Four Notifiable Diseases in Taiwan-by County with Historical Data (I)

Data Period: 2009/11/01-2009/11/28 (weeks 45-48)

Area	Herpesvirus B Infection			Leptospirosis※			Melioidosis			Botulism			Invasive Pneumococcal Disease			Q fever			Endemic Typhus Fever		
	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008
Taipei M.	0	0	0	0	3	4	0	0	0	0	0	0	2	38	49	0	1	0	0	1	2
Kaohsiung M.	0	0	0	0	6	3	1	14	13	0	0	0	2	28	37	0	10	7	0	6	4
Taipei Co.	0	0	0	2	14	11	0	0	3	0	1	0	8	88	103	0	1	0	1	2	2
Yilan Co.	0	0	0	1	2	1	0	0	0	0	0	0	0	20	20	0	0	0	0	0	0
Taoyuan Co.	0	0	0	0	2	5	0	1	0	0	0	0	2	43	49	0	1	2	0	2	1
Hsinchu Co.	0	0	0	0	2	0	0	0	1	0	0	0	1	18	10	0	0	0	0	0	0
Miaoli Co.	0	0	0	0	3	0	0	0	0	0	0	1	1	8	13	0	2	3	0	0	1
Taichung Co.	0	0	0	0	5	1	0	0	1	0	0	0	6	58	48	0	3	1	0	4	4
Changhwa Co.	0	0	0	0	9	1	0	0	0	0	0	0	2	34	44	0	5	7	0	10	1
Nantou Co.	0	0	0	0	3	4	0	0	0	0	0	0	1	16	20	0	0	4	0	1	0
Yunlin Co.	0	0	0	0	2	2	0	0	0	0	0	0	2	25	17	0	3	1	0	1	3
Chiayi Co.	0	0	0	0	0	0	0	0	0	0	0	0	3	21	15	0	0	1	0	0	0
Tainan Co.	0	0	0	0	0	0	0	1	4	0	0	0	3	28	32	0	10	15	0	2	1
Kaohsiung Co.	0	0	0	0	15	2	0	9	13	0	0	4	1	40	38	0	24	22	0	5	4
Pingtung Co.	0	0	0	0	127	6	0	4	3	0	0	0	6	39	42	0	16	17	0	4	6
Taitung Co.	0	0	0	0	1	1	0	0	0	0	0	0	1	8	13	0	0	0	0	0	0
Hualien Co.	0	0	0	0	0	0	0	1	0	0	0	0	0	17	22	0	0	0	0	0	0
Penghu Co.	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
Keelung C.	0	0	0	0	1	0	0	0	0	0	0	0	0	7	19	0	0	0	0	0	0
Hsinchu C.	0	0	0	0	1	0	0	0	0	0	0	3	1	18	14	0	0	0	0	0	0
Taichung C.	0	0	0	0	1	0	0	1	2	0	0	3	4	29	29	0	0	1	0	0	0
Chiayi C.	0	0	0	0	0	0	0	1	0	0	0	0	0	12	9	0	0	1	0	0	0
Tainan C.	0	0	0	0	1	2	0	8	1	0	0	0	1	23	31	0	4	5	0	0	0
Kinmen Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lienchiang Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	3	198	43	1	41	41	0	1	11	47	618	674	0	80	88	1	38	30

Note1: Based on the "Communicable Disease Control Act" amended and promulgated under Hua-Tsun-I No.9600091011 on July 18, 2007 and the "Category 4 and Category 5 Communicable Diseases Preventive and control measures" announced under Sue-So-Ji No.096000892 on October 9, 2007.

Note2: The statistics of augmented notifiable infectious diseases would be included after the Communicable Diseases Control Act were promulgated for enforcement.

One confirmed case of Leptospirosis was imported in this month.

Number of Confirmed Cases of Category Four Notifiable Diseases in Taiwan-by County with Historical Data (II)

Data Period: 2009/11/01-2009/11/28 (weeks 45-48)

Area	Lyme disease			Tularemia			Scrub Typhus			Varicella※			Cat-scratch fever			Toxoplasmosis			Severe Complicated Influenza Case			Creutzfeldt-Jakob disease*		
	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008
Taipei M.	0	0	1	0	0	0	0	17	22	124	2375	2074	0	2	4	0	0	2	25	162	2	0	0	0
Kaohsiung M.	0	0	1	0	0	0	0	11	12	29	449	663	0	0	1	0	0	0	6	36	2	0	0	0
Taipei Co.	0	0	0	0	0	0	0	13	18	121	2480	2428	0	3	5	0	1	0	51	254	5	0	0	0
Yilan Co.	0	0	0	0	0	0	0	9	9	10	164	302	0	1	0	0	2	1	3	12	0	0	0	0
Taoyuan Co.	0	0	0	0	0	0	0	8	9	32	887	1011	0	3	2	0	0	0	12	59	1	0	0	0
Hsinchu Co.	0	0	0	0	0	0	0	1	3	19	287	268	0	3	1	0	0	0	11	25	0	0	0	0
Miaoli Co.	0	0	0	0	0	0	0	4	12	12	311	363	0	0	0	0	0	0	15	57	2	0	0	0
Taichung Co.	0	0	0	0	0	0	0	2	7	13	389	467	0	0	1	0	0	0	11	37	1	0	0	0
Changhwa Co.	0	0	0	0	0	0	0	5	9	21	441	426	0	2	3	0	2	0	10	34	0	0	0	0
Nantou Co.	0	0	0	0	0	0	0	19	24	9	149	174	0	0	1	0	0	0	3	9	0	0	0	0
Yunlin Co.	0	0	0	0	0	0	0	1	3	3	112	177	0	0	1	0	0	0	13	28	0	0	0	0
Chiayi Co.	0	0	0	0	0	0	0	0	4	6	108	109	0	1	1	0	0	0	3	13	0	0	0	0
Tainan Co.	0	0	0	0	0	0	0	3	10	5	181	208	0	1	2	0	0	0	9	18	0	0	0	0
Kaohsiung Co.	0	0	0	0	0	0	1	19	24	8	342	430	0	1	1	0	0	0	3	37	0	0	0	0
Pingtung Co.	0	0	0	0	0	0	0	9	15	15	193	259	0	1	0	0	0	0	6	38	1	0	0	0
Taitung Co.	0	0	0	0	0	0	4	47	29	7	143	115	0	1	2	0	0	0	0	6	0	0	0	0
Hualien Co.	0	0	0	0	0	0	2	40	35	6	250	220	0	1	0	0	0	0	25	88	0	0	0	0
Penghu Co.	0	0	0	0	0	0	0	29	92	1	66	51	0	0	0	0	0	0	1	5	0	0	0	0
Keelung C.	0	0	0	0	0	0	1	2	4	8	165	173	0	2	0	0	0	0	2	18	0	0	0	0
Hsinchu C.	0	0	0	0	0	0	0	1	4	12	200	320	0	0	2	0	0	0	4	9	0	0	0	0
Taichung C.	0	0	0	0	0	0	0	4	5	11	300	377	0	1	1	0	0	0	4	22	0	0	0	0
Chiayi C.	0	0	0	0	0	0	0	0	1	0	70	41	0	0	0	0	0	0	2	13	0	0	0	0
Tainan C.	0	0	0	0	0	0	0	1	9	17	144	154	0	0	0	0	0	0	10	20	1	0	0	0
Kinmen Co.	0	0	0	0	0	0	0	47	66	0	85	18	0	0	0	0	0	0	0	0	0	0	0	0
Lienchiang Co.	0	0	0	0	0	0	0	8	17	0	3	21	0	0	0	0	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	2	0	0	0	8	300	443	489	10294	10850	0	23	28	0	5	3	229	1000	15	0	0	0

Note1: Based on the "Communicable Disease Control Act" amended and promulgated under Hua-Tsun-I No.9600091011 on July 18, 2007 and the "Category 4 and Category 5 Communicable Diseases Preventive and control measures" announced under Sue-So-Ji No.096000892 on October 9, 2007.

Note2: The statistics of augmented notifiable infectious diseases would be included after the Communicable Diseases Cntrol Act were promulgated for enforcement.

※Only reported cases were included in the statistics of Varicella.

＊Creutzfeldt-Jakob disease was based on the date of diagnosis.

Number of Confirmed Cases of Category Five Notifiable Diseases in Taiwan-by County with Historical Data

Data Period: 2009/11/01-2009/11/28 (weeks 45-48)

Area	Rift Valley Fever			Ebola-Marburg Hemorrhagic Fever			Yellow Fever			Ebola Hemorrhagic Fever			Lassa Fever		
	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008	This Mo.	Cum 2009	Cum 2008
Taipei M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kaohsiung M.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taipei Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yilan Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taoyuan Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hsinchu Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miaoli Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taichung Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Changhwa Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nantou Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yunlin Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chiayi Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tainan Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kaohsiung Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pingtung Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taitung Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hualien Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Penghu Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Keelung C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hsinchu C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taichung C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chiayi C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tainan C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kinmen Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lienchiang Co.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note1: Based on the "Communicable Disease Control Act" amended and promulgated under Hua-Tsun-I No.9600091011 on July 18, 2007 and the "Category 4 and Category 5 Communicable Diseases Preventive and control measures" announced under Sue-So-Ji No.096000892 on October 9, 2007.

Note2: The statistics of augmented notifiable infectious diseases would be included after the Communicable Diseases Control Act were promulgated for enforcement.

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