

### The Quarantine Measures in Response to Zika Virus Epidemic, Taiwan, 2016

Szu-Tsai Liao\*, Yu-Hui Tsai, Li-Li Ho, Yi-Chun Wu

#### Abstract

The Zika virus epidemic spreaded to South America and Asia in 2016. Taiwan detected the first imported Zika virus case at the fever screening station in Taoyuan International Airport on January 10, 2016. The Taiwan Centers for Disease Control (TCDC) promptly carried out response measures to prevent the epidemic from spreading across the country. Since the establishment of the National Health Command Center, hygiene education in the target groups was also strengthened through various channels. To enhance border quarantine measures, hygiene at port areas, aircraft and vessels, the TCDC carried out timely review and optimization by referring to measures taken by European countries, neighboring Asian countries, the European Union, and the World Health Organization. In 2016, fever screening stations at the Taiwan point of entry (PoE) detected 25,286 inbound travelers with fever. After evaluation, 3,735 travelers were tested, out of which 5 were confirmed to be infected with the Zika virus (accounting for 38% of total 13 imported Zika virus cases), and it was further discovered that 1 contact had also contracted the virus. Through effective quarantine and prevention measures, the virus did not spread throughout the community. The quarantine experience gained can be used as the basis for assessing the target group, and as reference for establishing and optimizing quarantine policies when faced with emerging infectious disease in the future.

**Keywords:** Zika virus, quarantine measures, high risk groups

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Corresponding author: Szu-Tsai Liao\*  
E-mail: tsai@cdc.gov.tw  
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## Investigation of the Confirmed Imported Case of H7N9 Influenza, Taiwan, 2017

Ching-Hui Huang\*, Yen-Chang Tuan, Hui-Chen Lin, Hsin-Chun Lee,  
Chiou-Yueh You, Chao-Ching Chang

### Abstract

On February 4, 2017, Taiwan Centers for Disease Control confirmed an imported case of H7N9 influenza. The patient presented fever and chills on January 23, 2017 in Guangdong, China, and was detected at the quarantine station of Kaohsiung International Airport on January 25 for high body temperature. The patient did not have pneumonia on January 26, so oseltamivir was prescribed as a treatment for his influenza-like illness. Initial throat swab and sputum were tested negative for novel influenza A viruses. The patient returned to the hospital within one week because of aggravating symptoms and was reported for novel influenza A infection and pneumonia of unknown causes. Testing of sputum and throat swab were positive for H7N9 influenza. The patient died on February 27 because of septic shock and multiple organ failure. A total of 141 contacts were identified, which included aircraft passengers and crew, family members, infection control personnel and medical professionals. None of the 141 contacts contracted the infection. This case highlighted that a close collaboration between the border quarantine, medical and public health sectors is important for early detection and containment of imported emerging infectious diseases.

**Keywords:** Novel influenza A virus, H7N9, neuraminidase inhibitor resistance, contact tracing

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Kaohsiung-Pingtung Regional Center,  
Centers for Disease Control, Ministry  
of Health and Welfare, Taiwan  
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Corresponding author: Ching-Hui Huang\*  
E-mail: littleto@cdc.gov.tw  
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Weekly Data of Notifiable Infectious Diseases (by week of diagnosis)

Case diagnosis year		Week 22★		Week 1-22			
Classification	Disease Diagnosed	2018	2017	2018		2017	
				Total cases★	Imported cases	Total cases★	Imported cases
Category I	Plague	0	0	0	0	0	0
	Rabies	0	0	0	0	0	0
	SARS	0	0	0	0	0	0
	Smallpox	0	0	0	0	0	0
Category II	Acute Flaccid Paralysis	0	1	41	0	16	0
	Acute Viral Hepatitis type A	3	9	42	18	263	26
	Amoebiasis	4	5	130	52	149	87
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	1	1	5	5
	Cholera	0	0	0	0	0	0
	Dengue Fever	5	1	64	64	92	92
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	0	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	1	0	1	0
	Malaria	0	0	0	0	1	1
	Measles	0	0	27	9	5	5
	Meningococcal Meningitis	0	0	5	1	6	0
	Paratyphoid Fever	1	0	2	1	3	3
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	4	3	0	0
Shigellosis	5	2	66	20	87	33	
Typhoid fever	0	1	7	5	11	10	
West Nile Fever	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	4	0	57	3	64	3
	Acute Viral Hepatitis type C	11	6	200	2	100	1
	Acute Viral Hepatitis type D	0	0	0	0	1	0
	Acute Viral Hepatitis type E	0	2	4	0	9	3
	Acute Viral Hepatitis untype	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	1	0	14	0	2	0
	Haemophilus Influenza type b Infection	1	0	3	0	2	0
	Japanese Encephalitis	1	0	3	0	1	0
	Legionellosis	2	3	63	1	58	8
	Mumps	10	14	247	3	293	4
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	1	10	0	12	0
	Tetanus	0	1	4	0	4	0
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Influenza	0	0	21	0	9	1
	Complicated Varicella	0	2	6	0	12	1
	Endemic Typhus Fever	0	0	0	0	0	0
	Herpesvirus B Infection	9	8	245	0	233	2
	Invasive Pneumococcal Disease	0	1	17	0	27	0
	Leptospirosis	4	0	59	0	0	0
	Lyme Disease	0	0	0	0	0	0
	Melioidosis	0	0	6	0	8	0
	Q Fever	2	4	6	1	8	0
	Scrub Typhus	9	4	120	0	122	0
	Toxoplasmosis	7	29	674	5	314	4
Tularremia	0	0	7	0	6	0	
Category V	Ebola Virus Disease	0	0	0	0	0	0
	Marburg Hemorrhagic Fever	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	0	0	0	0
	Lassa Fever	0	0	0	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus	0	0	0	0	1	1
	Yellow Fever	0	0	0	0	0	0
	Zika Virus Infection	0	0	0	0	0	0

- ★ The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
- The following chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.
- Numbers of mumps, neonatal tetanus and tetanus cases are summed up by the week of report.
- Since 2016/1/22, "Zika Virus Infection" was listed as a Notifiable Infectious Disease.
- Since 2018/1/1, "Listeriosis" was listed as a Notifiable Infectious Disease.

## Suspected Clusters

- Twenty-seven clusters were reported, including 8 tuberculosis clusters, 6 diarrhea clusters, 4 upper respiratory tract infection clusters, 4 influenza-like illness clusters, and 5 varicella clusters.

## Imported Infectious Diseases

Disease \ Country	Indonesia	Maldives	Philippines	Japan	China	Thailand	Total
DF		2	2			1	5
Amoebiasis	4						4
Shigellosis	3						3
Severe Complicated Influenza				1			1
Q Fever					1		1
Acute Hepatitis A				1			1
Total	7	2	2	2	1	1	15

Note: The table summarized the number of imported cases that were either **confirmed** or **updated** in the given week.

- There were 15 confirmed imported cases from 6 countries during week 22 of 2018.
- There are 186 confirmed imported cases from 20 different countries in 2018. The top 3 countries are Indonesia (64), Philippines (22), and Thailand (17).
- Top 3 imported diseases are Dengue Fever (64), Amoebiasis (52), and Shigellosis (20).

## Summary of Epidemic

- **Japanese Encephalitis:** The Japanese encephalitis epidemic season has begun, therefore, the number of confirmed cases are expected to increase.
- **Scrub Typhus :** The scrub typhus epidemic season has begun. The current affected areas include Hualien County and Taitung County.
- **Enterovirus:** The number of mild cases due to enterovirus infection continuous to increase and it is likely to exceed the national baseline. In addition, cases of enterovirus infection with severe complications are likely to occur. As of now, EV71 is still circulating in the community.

### Weekly Data of Notifiable Infectious Diseases ( by week of diagnosis )

Case diagnosis year		Week 23★		Week 1-23			
Classification	Disease Diagnosed	2018	2017	2018		2017	
				Total cases★	Imported cases	Total cases★	Imported cases
<b>Category I</b>	Plague	0	0	0	0	0	0
	Rabies	0	0	0	0	0	0
	SARS	0	0	0	0	0	0
	Smallpox	0	0	0	0	0	0
<b>Category II</b>	Acute Flaccid Paralysis	2	1	43	0	17	0
	Acute Viral Hepatitis type A	0	8	42	20	271	27
	Amoebiasis	8	3	138	53	152	88
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	1	1	5	5
	Cholera	0	0	0	0	0	0
	Dengue Fever	8	5	72	72	97	97
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	0	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	1	0	1	0
	Malaria	0	1	0	0	2	2
	Measles	0	0	27	9	5	5
	Meningococcal Meningitis	0	0	5	1	6	0
	Paratyphoid Fever	0	0	2	1	3	3
	Poliomyelitis	0	0	0	0	0	0
	Rubella	1	1	5	4	1	1
	Shigellosis	6	1	72	21	88	33
	Typhoid fever	0	0	7	5	11	10
West Nile Fever	0	0	0	0	0	0	
<b>Category III</b>	Acute Viral Hepatitis type B	1	5	57	3	69	3
	Acute Viral Hepatitis type C	4	11	204	2	111	1
	Acute Viral Hepatitis type D	0	0	0	0	1	0
	Acute Viral Hepatitis type E	0	0	4	0	9	3
	Acute Viral Hepatitis untype	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	14	0	2	0
	Haemophilus Influenza type b Infection	0	0	3	0	2	0
	Japanese Encephalitis	6	1	9	0	2	0
	Legionellosis	4	4	67	1	62	8
	Mumps	14	8	261	3	301	4
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	1	2	11	0	14	0
	Tetanus	0	1	4	0	5	0
	<b>Category IV</b>	Botulism	0	0	0	0	0
Brucellosis		0	0	0	0	0	0
Complicated Influenza		2	0	23	0	9	1
Complicated Varicella		1	3	7	0	15	1
Endemic Typhus Fever		0	0	0	0	0	0
Herpesvirus B Infection		7	10	252	0	243	2
Invasive Pneumococcal Disease		1	1	18	0	28	0
Leptospirosis		10	0	69	0	0	0
Lyme Disease		0	0	0	0	0	0
Melioidosis		0	1	6	0	9	0
Q Fever		0	0	6	1	8	0
Scrub Typhus		3	13	123	0	135	0
Toxoplasmosis		15	53	689	5	367	5
Tularremia		0	1	7	0	7	0
<b>Category V</b>	Ebola Virus Disease	0	0	0	0	0	0
	Marburg Hemorrhagic Fever	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	0	0	0	0
	Lassa Fever	0	0	0	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus	0	0	0	0	1	1
	Yellow Fever	0	0	0	0	0	0
	Zika Virus Infection	0	0	0	0	0	0

1. ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.  
2. The following chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhoea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.  
3. Numbers of mumps, neonatal tetanus and tetanus cases are summed up by the week of report.  
4. Since 2016/1/22, "Zika Virus Infection" was listed as a Notifiable Infectious Disease.  
5. Since 2018/1/1, "Listeriosis" was listed as a Notifiable Infectious Disease.

## Suspected Clusters

- Twenty-five clusters were reported, including 4 tuberculosis clusters, 8 diarrhea clusters, 6 upper respiratory tract infection clusters, 4 influenza-like illness clusters, 2 varicella clusters, and 1 enterovirus cluster.

## Imported Infectious Diseases

Disease \ Country	Philippines	China	Thailand	Indonesia	Nepal	Belgium	Vietnam	Cambodia	Total
DF	3		2	1			1	1	8
Acute Hepatitis A					1	1			2
Amoebiasis				1					1
Complicated Varicella		1							1
Rubella		1							1
Total	3	2	2	2	1	1	1	1	13

Note: The table summarized the number of imported cases that were either **confirmed** or **updated** in the given week.

- There were 13 confirmed imported cases from 8 countries during week 23 of 2018.
- There are 198 confirmed imported cases from 22 different countries in 2018. The top 3 countries are Indonesia (66), Philippines (25), and Thailand (19).
- Top 3 imported diseases are Dengue Fever (72), Amoebiasis (53), and Shigellosis (20).

## Summary of Epidemic

- **Japanese Encephalitis:** The Japanese encephalitis epidemic season has begun. New cases are primarily in central and southern Taiwan. However, cases are also likely to occur in other counties.
- **Scrub Typhus :** The scrub typhus epidemic season has begun. The current primarily affected areas include Hualien County and Taitung County.
- **Enterovirus:** The epidemic season has begun. Most reported cases experienced mild symptoms. However, cases with severe complications are likely to occur. In addition, Echo11 and EV71 are still circulating in the community.

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