

Restaurant-associated Typhoid Fever Outbreak in Taoyuan, Taiwan, 2015

Chia-Ying Yen^{1*}, Ming-Chu Tai¹, Hao-Hsin Wu¹, Shiu-Yun Liang²,
Ying-Shu Liao², Chien-Shun Chiou², Tzu-Chun Chen¹,
Jhy-Wen Wu¹, Kun-Bin Wu¹

Abstract

In March and November 2015, three indigenous typhoid fever cases emerged in Longtan, Taoyuan, and the obtained isolates, *Salmonella enterica* serovar Typhi, shared a common pulsed-field gel electrophoresis (PFGE) pattern, SIX.001. Epidemiological investigation revealed six restaurants as the suspected sources of infection. Stool cultures from two asymptomatic food handlers at restaurant A yielded *S. Typhi*. Both of them tested negative in March, 2015. Reviewing Taiwan PulseNet for isolates associated with outbreak cases, the PFGE profiles of these two isolates were indistinguishable from the two cases occurred in November 2012, who also resided in Longtan District and visited restaurant A before onset. By multiple-locus variable number tandem repeat analysis (MLVA), isolates associated with this outbreak can be discerned from other SIX.001 isolates which frequently recovered from Indonesian migrant workers in Taiwan. No further cases occurred after the closure of restaurant A. Based on the evidence of molecular epidemiology and case investigation, we successfully controlled the outbreak.

Keywords: Outbreaks, Molecular epidemiology, Typhoid fever, Pulsed-field gel electrophoresis

¹Northern Regional Center, Centers for Disease Control, Ministry of Health and Welfare, Taiwan

²Center for Research, Diagnostics and Vaccine Development, Centers for Disease Control, Ministry of Health and Welfare, Taiwan

Corresponding author: Chia-Ying Yen^{1*}

E-mail: cyyen@cdc.gov.tw

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Investigation of the Cholera Family Cluster in Taiwan, 2016

Chiung-Wen Hsu^{1*}, Zhi-Jie Ding², Du-Lin Ling²,
Ying-Shu Liao³, Chien-Shun Chiou³, Shu-Chun Chiu³,
Wan-Jhen Lin¹, Jong-Nian Xu¹

Abstract

Cholera is an acute intestinal infectious disease caused through oral-fecal route. Clinical symptoms are painless diarrhea with rice-stool, vomiting and rapid dehydration. If not treated in time, the fatality can be more than 50%. We described a family cluster caused by *Vibrio cholerae* O1 serogroup (serotype O1-Ogawa/ Toxigenic). We investigated the source of suspected food and water specimens, shop staff, and food sources of the retailers; the test results were all negative. The cause of the cluster might be food-sharing, contacts of contaminated bathroom equipment, cross contamination from cutting boards for handling raw and cooked food. We suggested that public health interventions should start in the early phase. To prevent similar incidents, we recommended that the competent authorities should implement a three-tier quality control system in the food industry that will help tracing the origin of infections.

Keywords: Cholera, Family cluster

¹ Health Bureau of Taichung City Government

² Central Regional Center, Centers for Disease Control, Ministry of Health and Welfare, Taiwan

³ Center for Research, Diagnostics and Vaccine Development, Centers for Disease Control, Ministry of Health and Welfare, Taiwan

Corresponding author: Chiung-Wen Hsu^{1*}

E-mail: hbtcm00316@taichung.gov.tw

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

Case diagnosis year		Week 25★		Week 1-25				
Classification	Disease Diagnosed	2017	2016	2017		2016		
				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	2	17	0	17	0	
	Acute Viral Hepatitis type A	6	36	283	28	469	44	
	Amoebiasis	11	6	175	95	132	64	
	Anthrax	0	0	0	0	0	0	
	Chikungunya Fever	0	0	5	5	7	7	
	Cholera	0	0	0	0	0	0	
	Dengue Fever	5	4	106	106	570	135	
	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	3	0	
	Malaria	0	1	2	2	6	6	
	Measles	0	1	5	5	5	3	
	Meningococcal Meningitis	0	0	6	0	2	0	
	Paratyphoid Fever	0	0	3	3	1	1	
	Poliomyelitis	0	0	0	0	0	0	
	Rubella	0	0	1	1	4	3	
	Shigellosis	6	5	96	35	105	50	
	Typhoid fever	0	0	11	10	2	1	
West Nile Fever	0	0	0	0	0	0		
Category III	Acute Viral Hepatitis type B	5	0	75	3	44	1	
	Acute Viral Hepatitis type C	11	5	131	1	103	2	
	Acute Viral Hepatitis type D	0	0	1	0	1	0	
	Acute Viral Hepatitis type E	0	1	9	2	10	4	
	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	1	2	0	8	0	
	Haemophilus Influenza type b Infection	0	0	2	0	7	0	
	Japanese Encephalitis	3	1	6	0	4	0	
	Legionellosis	5	3	75	7	52	1	
	Mumps	14	16	327	4	276	4	
	Neonatal Tetanus	0	0	0	0	0	0	
	Pertussis	1	0	17	0	8	0	
	Tetanus	1	0	6	0	5	0	
	Category IV	Botulism	0	0	0	0	3	0
		Brucellosis	0	0	0	0	0	0
Complicated Influenza		81	2	514	4	1837	2	
Complicated Varicella		1	0	11	1	20	0	
Endemic Typhus Fever		4	0	20	1	7	0	
Herpesvirus B Infection		0	0	0	0	0	0	
Invasive Pneumococcal Disease		2	6	252	2	334	0	
Leptospirosis		2	2	32	1	30	2	
Lyme Disease		0	0	0	0	0	0	
Melioidosis		0	0	9	0	6	1	
Q Fever		0	4	9	0	23	3	
Scrub Typhus		20	19	167	0	202	2	
Toxoplasmosis		1	0	8	0	5	0	
Tularremia		0	0	0	0	0	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	1	1	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	0	0	
	Yellow Fever	0	0	0	0	0	0	
Zika Virus Infection	0	0	1	1	3	3		

1. ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
2. The following 8 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 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.

Suspected Clusters

- Sixty-seven clusters were reported, including 7 tuberculosis clusters, 10 diarrhea clusters, 25 upper respiratory tract infection clusters, 23 influenza-like illness clusters, 1 fever of unknown origin cluster and 1 varicella cluster.

Imported Infectious Diseases

- 12 confirmed cases were imported from 6 countries during Week 25 of 2017.

Country \ Disease	Indonesia	Philippines	Myanmar	Marshall Islands	India	Vietnam	Total
Amoebiasis	2	2			1		5
DF		1	2	1		1	5
Shigellosis	2						2
Total	4	3	2	1	1	1	12

Note: The statistics listed in this table include imported cases that were either **confirmed** or **updated** in the previous week.

- A total of 314 confirmed cases were imported from 21 countries in 2017.
- Top 3 imported diseases : Dengue fever (106), Amoebiasis (95), Shigellosis (35).
- Top 3 countries responsible for most imported cases : Indonesia (129), Philippines (35), Malaysia (31), Vietnam (30).

Summary of Epidemic

- **Influenza** : Mild and severe influenza outbreaks in the community continue to persist.
- **Scrub Typhus** : The scrub typhus epidemic season has begun. The affected areas primarily include Hualien County, Taitung County and Kinmen County.
- **Enterovirus** : Currently, mild enterovirus activity has been increasing continuously. The number of severe cases may increase. EV71 is still circulating in the community.
- **Dengue Fever** : Epidemics in Southeast Asia are increasing gradually. As the rain has continued to occur across Taiwan, the risk of imported and indigenous epidemics is elevated.
- **Japanese Encephalitis** : The Japanese encephalitis epidemic season has begun. Although the endemic areas are primarily central and southern Taiwan, sporadic cases are expected to occur in the other cities and counties.

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

Case diagnosis year		Week 26★		Week 1-26			
Classification	Disease Diagnosed	2017	2016	2017		2016	
				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	0	17	0	17	0
	Acute Viral Hepatitis type A	7	34	290	29	503	44
	Amoebiasis	5	12	180	96	144	69
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	1	0	6	6	7	7
	Cholera	0	0	0	0	0	0
	Dengue Fever	8	4	114	114	574	138
	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	3	0
	Malaria	0	0	2	2	6	6
	Measles	0	0	5	5	5	3
	Meningococcal Meningitis	0	0	6	0	2	0
	Paratyphoid Fever	0	2	3	3	3	1
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	1	1	4	3
	Shigellosis	2	2	98	36	107	52
	Typhoid fever	0	0	11	10	2	1
West Nile Fever	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	3	3	78	3	47	1
	Acute Viral Hepatitis type C	10	2	138	1	105	2
	Acute Viral Hepatitis type D	0	0	1	0	1	0
	Acute Viral Hepatitis type E	0	0	9	2	10	4
	Acute Viral Hepatitis untype	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	2	3	4	0	11	0
	Haemophilus Influenza type b Infection	0	0	2	0	7	0
	Japanese Encephalitis	1	2	7	0	6	0
	Legionellosis	3	3	78	7	55	1
	Mumps	12	13	339	4	289	4
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	17	0	8	0
	Tetanus	0	0	6	0	5	0
	Category IV	Botulism	0	0	0	0	3
Brucellosis		0	0	0	0	0	0
Complicated Influenza		101	3	615	4	1840	2
Complicated Varicella		0	0	11	1	20	0
Endemic Typhus Fever		1	2	21	1	9	0
Herpesvirus B Infection		0	0	0	0	0	0
Invasive Pneumococcal Disease		7	4	259	2	338	0
Leptospirosis		3	1	35	1	31	2
Lyme Disease		0	0	0	0	0	0
Melioidosis		0	1	9	0	7	1
Q Fever		0	3	9	0	26	3
Scrub Typhus		14	23	181	0	225	3
Toxoplasmosis		0	0	8	0	5	0
Tularremia		0	0	0	0	0	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	1	1	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	0	0
	Yellow Fever	0	0	0	0	0	0
	Zika Virus Infection	0	0	1	1	3	3

- ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
- The following 8 chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhoea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.
- Numbers of mumps 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.

Suspected Clusters

- Fifty-six clusters were reported, including 5 tuberculosis clusters, 5 diarrhea clusters, 21 upper respiratory tract infection clusters, 22 influenza-like illness clusters, 1 fever of unknown origin cluster and 2 varicella clusters.

Imported Infectious Diseases

- 12 confirmed cases were imported from 6 countries during Week 26 of 2017.

Disease \ Country	Vietnam	Malaysia	Indonesia	Myanmar	Sri Lanka	Philippines	Total
DF	4	2		1	1		8
Shigellosis			1				1
Hepatitis A		1					1
Chikungunya Fever						1	1
Amoebiasis			1				1
Total	4	3	2	1	1	1	12

Note: The statistics listed in this table include imported cases that were either **confirmed** or **updated** in the previous week.

- A total of 326 confirmed cases were imported from 22 countries in 2017.
- Top 3 imported diseases : Dengue fever (114), Amoebiasis (96), Shigellosis (36).
- Top 3 countries responsible for most imported cases : Indonesia (131), Philippines (36), Vietnam (35).

Summary of Epidemic

- **Influenza** : Mild and severe influenza outbreaks in the community continue to persist. The epidemic activity is expected to gradually slow down.
- **Scrub Typhus** : The scrub typhus epidemic season has begun. The affected areas primarily include Hualien County, Taitung County and Kinmen County.
- **Japanese Encephalitis** : The Japanese encephalitis epidemic season has begun. Although the endemic areas are primarily southern Taiwan, sporadic cases are expected to occur in the other cities and counties.
- **Enterovirus** : Currently, mild enterovirus activity has been increasing continuously. The number of severe cases may increase. EV71 is still circulating in the community.

● **Dengue Fever** : Epidemics in Southeast Asia are increasing gradually. As the rain has continued to occur across Taiwan, the risk of imported and indigenous epidemics is elevated.

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Address: No.6, Linsen S. Rd, Jhongjheng District, Taipei City 10050, Taiwan (R.O.C.)

Telephone No: (02) 2395-9825

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

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