

An Investigation on a Food Poisoning Outbreak Linked to a Catering Lunch Served in Three High Schools, New Taipei City, 2019

Donald Dah-Shyong Jiang^{1*}, Yu-Ju Chen², Zi-Yi Chiu², Siang-Ti Yao²

Abstract

On September 11, 2019, a food poisoning outbreak occurred in three high schools in New Taipei City after students consumed a catering lunch supplied by catering company X. Results of the retrospective cohort investigation showed a total of 103 students, who consumed the lunch, met the case definition, indicating an attack rate of 20.4% (103/504). The main symptoms comprised abdominal pain and diarrhea. The median incubation period was 16 hours, with a range of < 1 to 24 hours. An analysis of the lunch dishes determined the KungPao drumsticks as the food item responsible for the food poisoning outbreak (adjusted relative risk: 3.69; 95% confidence interval: 1.41–9.65). Stool samples from four ill students were found positive for the causative pathogen, *Clostridium perfringens*, and its toxin gene *cpa* and enterotoxin *cpe*. To avoid any recurrence of *Clostridium perfringens*-induced food poisoning from the KungPao drumsticks, the catering company should cook the dish at a temperature of 74°C or above and keep the food warm at least at 60°C afterwards. The food should also be consumed as soon as possible within 2–4 hours after cooking.

Keywords: Food poisoning, *Clostridium perfringens*, cohort study, catering lunch

¹Department of Health Promotion and Health Education, National Taiwan Normal University, Taiwan

²Food and Drug Management Division, Department of Health, New Taipei City Government, Taiwan

Corresponding author: Donald Dah-Shyong Jiang^{1*}

E-mail: djiang5804@gmail.com

Received: Oct. 29, 2020

Accepted: Feb. 01, 2021

DOI: 10.6525/TEB.202309_39(17).0001

Staphylococcal Food Poisoning in A Training Institution, Hsinchu County, 2022

Pei-Juan Chao¹, Ting-Yu Cheng², Hsien-Ya Hsiung³, Tsai-Hua Lin³,
Wan-Chin Chen¹, Cha-Shien Yen², Chia-Ping Su^{1*}

Abstract

A training institution in Hsinchu County went to the Taoyuan area for outdoor training from July 26 to 29, 2022. After consuming the breakfast provided by the breakfast shop in Hsinchu County in the morning of July 28, many personnel successively developed symptoms including vomiting and diarrhea. We conducted a cohort study by Google questionnaire to analyze the causative food. Among 332 valid questionnaires, 68 met the case definition, and the attack rate was 20%. The median incubation period was 3 hours (range: 1–7 hours), which was consistent with *Staphylococcus aureus* food poisoning. Analysis showed that the relative risk ratio of the sandwich was 18.28 (95% confidence interval: 5.86–56.98) with statistical significance. *Staphylococcus aureus* and type B enterotoxin were detected in the stool samples of the cases and the sandwich. We concluded that the causative substances were *Staphylococcus aureus* and type B enterotoxin, and the cause food was the sandwich. In this event, due to the large number of servings and multi-process of sandwich preparation, the interval between food preparation and consumption was long. We recommend that when people order many servings and cannot eat immediately after the food is prepared, they should choose a meal that needs a shorter preparation time, not mixing hot and cold products, and eat within 2 hours after food preparation.

Keywords: Food-poisoning, *Staphylococcus aureus*, enterotoxin, cohort study

¹Field Epidemiology Training Program, Centers for Disease Control, Ministry of Health and Welfare, Taiwan

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

³Public Health Bureau of Hsinchu County Government, Taiwan

Corresponding author: Chia-Ping Su^{1*}

E-mail: cpsu@cdc.gov.tw

Received: Dec. 07, 2022

Accepted: Mar. 27, 2023

DOI: 10.6525/TEB.202309_39(17).0002

week 33–week 34, 2023 (Aug. 13, 2023–Aug. 26, 2023)

DOI: 10.6525/TEB.202309_39(17).0003

Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 33★		Week 1-33			
Classification	Disease Diagnosed	2023	2022	2023		2022	
				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	Cholera	0	0	1	0	0	0
	Typhoid fever	1	0	5	5	2	1
	Paratyphoid Fever	0	0	9	1	0	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Shigellosis	0	0	41	12	50	3
	Amoebiasis	5	3	175	72	126	46
	Enterohemorrhagic E.coli Infection	0	0	0	0	0	0
	Anthrax	0	0	0	0	0	0
	Diphtheria	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	3	0	1	0
	Poliomyelitis	0	0	0	0	0	0
	Acute Flaccid Paralysis	1	0	38	0	17	0
	Measles	0	0	2	2	0	0
	Rubella	0	0	0	0	0	0
	Dengue Fever	514	2	2,102	118	22	21
	West Nile Fever	0	0	0	0	0	0
	Acute Viral Hepatitis type A	2	2	57	2	108	1
	Malaria	0	0	1	1	2	2
	Chikungunya Fever	0	0	6	6	0	0
	Hantavirus syndrome	0	0	5	0	3	0
Zika virus infection	0	0	2	2	0	0	
Mpox	13	0	285	12	3	3	
Category III	Acute Viral Hepatitis type B	1	2	84	4	60	0
	Acute Viral Hepatitis type C	3	9	351	1	282	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	9	3	7	0
	Acute Viral Hepatitis, untyped	1	0	6	1	0	0
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	11	0	0	0
	Haemophilus Influenza type b Infection	0	0	0	0	2	0
	Japanese Encephalitis	0	0	21	0	18	0
	Legionnaires' Disease	13	4	221	6	206	1
	Mumps	4	6	174	5	140	0
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	0
Tetanus	0	0	4	0	2	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	1	2	30	0	19	0
	Endemic Typhus Fever	0	0	17	0	10	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	35	0	519	6	0	0
	Invasive Pneumococcal Disease	3	1	188	1	120	0
	Leptospirosis	2	3	33	0	32	0
	Listeriosis	5	2	126	1	93	0
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	1	1	12	0	8	1
	Q Fever	0	0	2	0	2	0
	Scrub Typhus	4	5	108	0	154	0
	Toxoplasmosis	0	0	22	2	16	0
	Tularemia	0	0	0	0	0	0
Severe Fever with Thrombocytopenia Syndrome	0	0	0	0	1	0	
Severe Pneumonia with Novel Pathogens	363	154,470	1,391,187	18,124	5,025,860	22,654	
Category V	Ebola Virus Disease	0	0	0	0	0	0
	Lassa Fever	0	0	0	0	0	0
	Marburg Hemorrhagic Fever	0	0	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus Infections	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	1	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
Yellow Fever	0	0	0	0	0	0	

1. ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
 2. MDR-TB, Tuberculosis, Syphilis, Gonorrhoea, HIV Infection, AIDS, Hansen's Disease and Creutzfeldt-Jakob Disease are excluded from the table.
 3. Numbers of Mumps and Tetanus are based on reported cases and summed up by week of report.
 4. "Mpox" has been listed as a Notifiable Infectious Disease since June 23, 2022.
 5. "Severe Pneumonia with Novel Pathogens": The case definition has been revised to include patients who have both a positive test for SARS-CoV-2 and associated complications since March 20, 2023. Additionally, it has been modified from Category V to Category IV since May 1, 2023.

Suspected Clusters

- Twenty-six clusters related to Upper respiratory tract infection (13), Diarrhea (7), Enterovirus (3), TB (2) and Fever of unknown origin (1) were reported during week 33.

Imported Infectious Diseases

- There were 19 imported cases from at least 7 countries/areas during week 33.
Dengue Fever: 18 cases from Thailand (9), India (3), Vietnam (3), Malaysia (1), Indonesia (1) and the Philippines (1).
Typhoid fever: 1 case from Cambodia.
- During week 1-33, there were 18,387 imported cases of notifiable diseases. The top three were Severe Pneumonia with Novel Pathogens (18,124), Dengue Fever (118) and Amoebiasis (72).
- During week 1-33, imported cases of notifiable diseases were from at least 47 countries/areas. The top three were China (3,168), Japan (720) and Thailand (187).

Summary of Epidemic

- **Japanese Encephalitis:** In the midst of the epidemic season, the risk of new cases is expected to be detected in all counties.
- **Enterovirus:** The epidemic is on the rise. The risk of transmission will increase with the upcoming schools reopening next week.
- **Dengue Fever:** In Southeast and South Asia, the epidemic is either on the rise or currently in an epidemic period. With the upcoming school reopening and the return of individuals from these regions, along with the rainfalls over the past two weeks in several counties that have led to the raising of vector indices, the risk of epidemic transmission increases.

Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 34★		Week 1-34			
Classification	Disease Diagnosed	2023	2022	2023		2022	
				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
	Cholera	0	0	1	0	0	0
Category II	Typhoid fever	1	0	6	5	2	1
	Paratyphoid Fever	0	0	9	1	0	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Shigellosis	2	1	43	12	51	3
	Amoebiasis	4	2	179	73	128	47
	Enterohemorrhagic E.coli Infection	0	1	0	0	1	0
	Anthrax	0	0	0	0	0	0
	Diphtheria	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	3	0	1	0
	Poliomyelitis	0	0	0	0	0	0
	Acute Flaccid Paralysis	2	0	40	0	17	0
	Measles	0	0	2	2	0	0
	Rubella	0	0	0	0	0	0
	Dengue Fever	829	7	2,929	130	29	27
	West Nile Fever	0	0	0	0	0	0
	Acute Viral Hepatitis type A	1	1	58	2	109	1
	Malaria	0	0	1	1	2	2
	Chikungunya Fever	0	0	6	6	0	0
	Hantavirus syndrome	1	0	6	0	3	0
	Zika virus infection	0	0	2	2	0	0
Mpox	10	0	295	12	3	3	
Category III	Acute Viral Hepatitis type B	5	3	89	4	63	0
	Acute Viral Hepatitis type C	10	5	360	1	287	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	1	9	3	8	0
	Acute Viral Hepatitis, untyped	0	0	6	1	0	0
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	11	0	0	0
	Haemophilus Influenza type b Infection	0	0	0	0	2	0
	Japanese Encephalitis	0	1	21	0	19	0
	Legionnaires' Disease	13	6	234	6	212	1
	Mumps	7	1	181	6	141	0
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	0
Tetanus	0	0	4	0	2	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	0	30	0	19	0
	Endemic Typhus Fever	1	0	18	0	10	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	37	0	556	6	0	0
	Invasive Pneumococcal Disease	4	1	192	1	121	0
	Leptospirosis	0	1	33	0	33	0
	Listeriosis	5	5	131	2	98	0
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	1	2	13	1	10	1
	Q Fever	0	0	2	0	2	0
	Scrub Typhus	7	8	115	0	162	0
	Toxoplasmosis	1	1	23	2	17	0
	Tularemia	0	0	0	0	0	0
	Severe Fever with Thrombocytopenia Syndrome	0	0	0	0	1	0
Severe Pneumonia with Novel Pathogens	328	178,368	1,391,515	18,124	5,204,228	24,601	
Category V	Ebola Virus Disease	0	0	0	0	0	0
	Lassa Fever	0	0	0	0	0	0
	Marburg Hemorrhagic Fever	0	0	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus Infections	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	1	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
Yellow Fever	0	0	0	0	0	0	

1. ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
2. MDR-TB, Tuberculosis, Syphilis, Gonorrhoea, HIV Infection, AIDS, Hansen's Disease and Creutzfeldt-Jakob Disease are excluded from the table.
3. Numbers of mumps and tetanus cases are summed up by the week of report.
4. "Mpox" has been listed as a Notifiable Infectious Disease since June 23, 2022.
5. "Severe Pneumonia with Novel Pathogens": The case definition has been revised to include patients who have both a positive test for SARS-CoV-2 and associated complications since March 20, 2023. Additionally, it has been modified from Category V to Category IV since May 1, 2023.

Suspected Clusters

- Twenty-two clusters related to Diarrhea (10), Upper respiratory tract infection (7), TB (3) and Enterovirus (2) were reported during week 34.

Imported Infectious Diseases

- There were 16 imported cases from at least 12 countries/areas during week 34.
 - Dengue Fever:** 12 cases from the Philippines (2), India (1), Singapore (1), China (1), Malaysia (1), Indonesia (1), Thailand (1), Laos (1), Vietnam (1), Maldives (1) and Under investigation (1).
 - Listeriosis:** 1 case from Japan.
 - Mumps:** 1 case from USA.
 - Amoebiasis:** 1 case from Indonesia.
 - Melioidosis:** 1 case from Thailand.
- During week 1-34, there were 18,403 imported cases of notifiable diseases. The top three were Severe Pneumonia with Novel Pathogens (18,124), Dengue Fever (130) and Amoebiasis (73).
- During week 1-34, imported cases of notifiable diseases were from at least 47 countries/areas. The top three were China (3,169), Japan (721) and Thailand (189).

Summary of Epidemic

- **Japanese Encephalitis:** In the midst of the epidemic season, the risk of new cases is expected to be detected in all counties.
- **Enterovirus:** The epidemic is on the rise, and the risk of transmission is expected to increase as schools begin.
- **Dengue Fever:** The risk of transmission is increasing due to several factors. Epidemics in Southeast and South Asia are either rising or currently in an epidemic period, leading to an increase in imported cases. Moreover, recent occurrences of afternoon showers, coupled with the approaching typhoons, are likely to result in rainfalls and escalate the vector indices.

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

Publisher: Jen-Hsiang Chuang

Editor-in-Chief: Yung-Ching Lin

Executive Editor: Hsueh-Ju Chen, Hsin-Lun Lee

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

Telephone No: +886-2-2395-9825

Website: <https://www.cdc.gov.tw/En>

Suggested Citation:

[Author].[Article title].Taiwan Epidemiol Bull 2023;39:[inclusive page numbers]. [DOI]