

Characteristics And Public Health Responses of Monkeypox Outbreak, Taiwan, 2022

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Abstract

Since the first human case of monkeypox was discovered in 1970, it has been identified as a zoonotic infectious disease that is endemic in the tropical rainforests of Central and West Africa, and is transmitted to humans by rodents and primates. However, in May, 2022, two family clusters without travel history or contact history of imported cases were found in the United Kingdom. Subsequently, confirmed cases of monkeypox were reported in many countries around the world. Taiwan Centers for Disease Control (TCDC) declared monkeypox as the second category of notifiable infectious disease on June 23, and the World Health Organization declared monkeypox a “public health emergency of international concern (PHEIC)” on July 23. This article summarizes the epidemiological update of monkeypox, as well as its diagnosis, treatment, vaccines and TCDC’s public health responses as a reference for public health workers and health care workers.

Keywords: Monkeypox, zoonotic infectious diseases, emerging infectious diseases, public health emergency of international concern (PHEIC)

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Clostridium perfringens Outbreak Associated with School Lunch, New Taipei City, 2019

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Abstract

In September 2019, an outbreak of gastroenteritis occurred in three schools in New Taipei City. More than 200 students became ill after eating school lunch provided by the same caterer on September 3. Using a semi-structured questionnaire, food consumption in school lunch was assessed. Of 562 respondents with complete data, 182 met the case definition. Main symptoms included diarrhea and abdominal pain, with median incubation period of 15 hours. In univariate and multivariate analyses, consumption of braised chicken was associated with illness. Bacteria of *cpe*-positive *C. perfringens* were detected in 10 of 16 stool samples among 16 cases. Environmental investigation indicated inadequate cooking and storage procedures might have contributed to food contamination. We recommended that caterers should strengthen the implementation of the Hazard Analysis and Critical Control Points principles and schools should contract caterers complying with food safety standards (e.g. food can be served within two to four hours after cooking).

Keywords: Outbreaks, *Clostridium perfringens*, school lunch, foodborne disease

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Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 33★		Week 1-33			
Classification	Disease Diagnosed	2022	2021	2022		2021	
				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	17	0	20	0
	Acute Viral Hepatitis type A	2	2	108	1	45	0
	Amoebiasis	3	7	126	32	126	47
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	2	1	22	21	6	6
	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 syndrome	0	0	3	0	0	0
	Malaria	0	0	2	2	1	1
	Measles	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	1	0	2	0
	Paratyphoid Fever	0	0	0	0	2	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
	Shigellosis	0	3	50	2	88	0
	Typhoid fever	0	0	2	1	1	0
	West Nile Fever	0	0	0	0	0	0
Zika virus infection	0	0	0	0	0	0	
Monkeypox	0	-	3	3	-	-	
Category III	Acute Viral Hepatitis type B	3	3	61	0	95	2
	Acute Viral Hepatitis type C	9	8	283	1	364	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	7	0	5	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	0	0	1	0
	Haemophilus Influenza type b Infection	0	0	2	0	1	0
	Japanese Encephalitis	0	4	18	0	24	0
	Legionnaires' Disease	4	12	206	1	226	0
	Mumps	6	15	140	0	280	1
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	0
Tetanus	0	0	2	0	3	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	2	0	19	0	33	0
	Endemic Typhus Fever	0	0	10	0	24	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	0	0	0	1	0
	Invasive Pneumococcal Disease	1	2	120	0	155	0
	Leptospirosis	3	1	32	0	30	0
	Listeriosis	2	5	93	0	117	0
	Lyme Disease	0	0	1	1	0	0
	Melioidosis	1	0	8	1	10	0
	Q Fever	0	0	2	0	8	0
	Scrub Typhus	5	6	154	0	167	0
	Toxoplasmosis	0	1	16	0	10	0
Tularemia	0	0	0	0	0	0	
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	0	0	0	0	0	0
	Coronavirus Infections	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	0	0	1	0
	Rift Valley Fever	0	0	0	0	0	0
	Severe Pneumonia with Novel Pathogens	154502	74	5026167	22654	15118	672
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. Since 2022/6/23, " Monkeypox " was listed as a Notifiable Infectious Disease.
 5. Hantavirus syndrome was no longer classify Hemorrhagic Fever with Renal Syndrome(HFRS) and Hantavirus Pulmonary Syndrome(HPS) since 2022.

Suspected Clusters

- Eleven clusters related to diarrhea (5), tuberculosis (6) were reported during week 33.

Imported Infectious Diseases

- There were 1755 imported cases from 40 countries during week 33.
 - Severe Pneumonia with Novel Pathogens:** 1752 cases from Vietnam (141), USA (74), Thailand (52), Canada (41), the Philippines (26), Malaysia (19), Cambodia (17), UK (16), Indonesia (15), Singapore (15), Japan (15), Korea (11), Germany (10), New Zealand (10), and the remaining 26 countries have less than 10 cases, 1209 unknowns.
 - Amoebiasis:** 2 cases from unknowns (2).
 - Dengue Fever:** 1 case from Vietnam (1).
- During week 1-33, there were 22720 imported cases from 123 countries. The top three countries are Vietnam (2920), USA (1964), Indonesia (1128).
- During week 1-33, the notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (22654).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens :** Taiwan is in the stage of widespread transmission of COVID-19. The new cases of the Omicron subvariants BA.5 continue to appear in community. Omicron BA.5 subvariants has been dominant in global and spread in many countries, and the increase of international travel during summer vacation, therefore it is expected that the number of imported cases and the risk for local transmission will raise.
- **Japanese Encephalitis:** Taiwan is in the midst of Japanese Encephalitis season, individuals living in all counties in Taiwan are at risk of infection.

Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 34★		Week 1-34			
Classification	Disease Diagnosed	2022	2021	2022		2021	
				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	22	0
	Acute Viral Hepatitis type A	1	1	109	1	46	0
	Amoebiasis	2	9	128	32	135	52
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	7	1	29	27	7	7
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	1	0	1	0	0	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Hantavirus syndrome	0	0	3	0	0	0
	Malaria	0	0	2	2	1	1
	Measles	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	1	0	2	0
	Paratyphoid Fever	0	0	0	0	2	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
	Shigellosis	1	3	51	2	91	0
	Typhoid fever	0	0	2	1	1	0
	West Nile Fever	0	0	0	0	0	0
Zika virus infection	0	0	0	0	0	0	
Monkeypox	0	-	3	3	-	-	
Category III	Acute Viral Hepatitis type B	3	2	64	0	97	2
	Acute Viral Hepatitis type C	5	11	288	1	375	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	1	0	8	0	5	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	0	0	1	0
	Haemophilus Influenza type b Infection	0	0	2	0	1	0
	Japanese Encephalitis	1	1	19	0	25	0
	Legionnaires' Disease	6	9	212	1	235	0
	Mumps	1	13	141	0	293	1
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	0
Tetanus	0	0	2	0	3	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	1	19	0	34	0
	Endemic Typhus Fever	0	0	10	0	24	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	0	0	0	1	0
	Invasive Pneumococcal Disease	1	4	121	0	159	0
	Leptospirosis	1	4	33	0	34	0
	Listeriosis	5	3	98	0	120	0
	Lyme Disease	0	0	1	1	0	0
	Melioidosis	2	2	10	1	12	0
	Q Fever	0	0	2	0	8	0
	Scrub Typhus	8	8	162	0	175	0
Toxoplasmosis	1	0	17	0	10	0	
Tularemia	0	0	0	0	0	0	
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	0	0	0	0	0	0
	Coronavirus Infections	0	0	0	0	1	0
	Novel Influenza A Virus Infections	0	0	0	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
Severe Pneumonia with Novel Pathogens	178407	57	5204458	24600	15175	710	
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.
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4. Since 2022/6/23, " Monkeypox " was listed as a Notifiable Infectious Disease.
5. Hantavirus syndrome was no longer classify Hemorrhagic Fever with Renal Syndrome (HFRS) and Hantavirus Pulmonary Syndrome (HPS) since 2022.

Suspected Clusters

- Eleven clusters related to diarrhea (7), tuberculosis (4) were reported during week 34.

Imported Infectious Diseases

- There were 1951 imported cases from 39 countries during week 34.
 - Severe Pneumonia with Novel Pathogens:** 1945 cases from Vietnam (216), USA (96), Thailand (48), Malaysia (35), Indonesia (28), Japan (28), the Philippines (27), Singapore (21), Netherlands (20), Canada (17), UK (17), Korea (15), Cambodia (10), and the remaining 26 countries have less than 10 cases, 1297 unknowns.
 - Dengue Fever:** 6 cases from Indonesia (3), Vietnam (2), Myanmar (1).
- During week 1-34, there were 24672 imported cases from 124 countries. The top three countries are Vietnam (3140), USA (2063), Indonesia (1159).
- During week 1-34, the notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (24600).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens :** The cases of COVID-19 raise in Taiwan. The new cases of the Omicron subvariants BA.5 continue to appear in community. As schools start and upcoming national holiday, the COVID-19 epidemic could increase by close contacts between individuals.
- **Japanese Encephalitis:** Taiwan is in the midst of Japanese Encephalitis season, individuals living in all counties in Taiwan are at risk of infection.
- **Dengue Fever:** There have been new indigenous cluster in central Taiwan. The number of breeding sites increase because of rainfall in some counties/cities. The risk of Dengue Fever infection raises.

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