

### COVID-19 Outbreak on a Freighter and Emergency Responses, Taichung Port, 2022

Ming-Siao Kuo\*, Min-Cong Lin, Chih-Wen Wu, Ching-Fen Ko, Kung-Chin Wang, Yi-Syue Li

#### Abstract

In February 2022, two crew members with suspected COVID-19 symptoms on a Hong Kong-registered freighter were reported to Taiwan Centers for Disease Control. The freighter had been departed from the port of Susaki, Japan, and scheduled to unload at Taichung Port. Because the situation of the COVID-19 pandemic was severe and there were also outbreaks of COVID-19 among port staff at other international ports in Taiwan, the Taichung Maritime Port Bureau invited Taichung port competent authorities of customs, immigration, quarantine, and security, as well as other relevant departments to discuss control measures. The control measures were: (1) the freighter should submit interim guidance on managing suspected cases of COVID-19; (2) all crew members should be tested for COVID-19; (3) environmental cleaning and disinfection; (4) isolation of confirmed cases. Twenty-two crew members were tested for COVID-19 using PCR-based tests, and twelve members were positive for COVID-19 with Ct values between 20-36, and the attack rate was 54.5%. Three of the specimens were sequenced and SARS-CoV-2 Omicron BA.2 variant strain was identified. With the collaboration between the stakeholders of Taichung port, further transmission of Omicron BA.2 was prevented. This article describes the control measures and provides a reference for handling the same situation in the future.

**Keywords:** COVID-19, crew cluster, international port, quarantine, cargo ship

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Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 50★		Week 1-50			
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	1	0	31	0	28	0
	Acute Viral Hepatitis type A	1	0	119	1	71	0
	Amoebiasis	9	1	198	66	188	64
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	1	1	1	1
	Cholera	0	0	2	0	0	0
	Dengue Fever	1	0	81	61	12	12
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	2	0	0	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Hantavirus syndrome	0	0	5	0	2	0
	Malaria	0	0	2	2	2	2
	Measles	0	0	1	0	0	0
	Meningococcal Meningitis	0	0	1	0	3	0
	Paratyphoid Fever	0	0	6	0	2	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
	Shigellosis	2	3	82	8	121	0
	Typhoid fever	0	0	4	2	3	1
	West Nile Fever	0	0	0	0	0	0
Zika virus infection	0	0	0	0	0	0	
Monkeypox	0	-	4	4	-	-	
Category III	Acute Viral Hepatitis type B	0	5	100	0	137	2
	Acute Viral Hepatitis type C	3	24	475	1	544	0
	Acute Viral Hepatitis type D	0	0	0	0	1	0
	Acute Viral Hepatitis type E	0	0	11	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	0	19	0	28	0
	Legionnaires' Disease	12	6	349	2	349	1
	Mumps	4	3	289	0	394	1
	Neonatal Tetanus	0	0	0	0	0	0
Pertussis	0	0	1	0	0	0	
Tetanus	1	0	9	0	5	0	
Category IV	Botulism	0	0	0	0	0	0
	Bruellosis	0	0	0	0	0	0
	Complicated Varicella	1	0	32	0	51	0
	Endemic Typhus Fever	0	0	16	0	31	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	2	0	16	1	1	0
	Invasive Pneumococcal Disease	14	1	192	0	185	0
	Leptospirosis	3	0	69	0	80	0
	Listeriosis	4	0	144	0	157	0
	Lyme Disease	0	0	1	1	1	1
	Melioidosis	0	0	23	1	20	0
	Q Fever	0	0	3	0	8	0
	Scrub Typhus	8	5	269	0	296	0
Toxoplasmosis	0	1	27	0	16	0	
Tularemia	0	0	0	0	1	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	1	0	1	0
	Rift Valley Fever	0	0	0	0	0	0
	Severe Pneumonia with Novel Pathogens	107880	68	8560969	36435	15997	1454
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, Gonorrhea, 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

- Thirteen clusters related to diarrhea (8), tuberculosis (4) and upper respiratory tract infection (1) were reported during week 50.

## Imported Infectious Diseases

- There were 579 imported cases from at least 19 countries / areas during week 50.
  - Severe Pneumonia with Novel Pathogens:** 573 cases from Japan (39), Thailand (10), Vietnam (9), China (9), Korea (8), USA (5), Austria (3), Singapore (3), Netherlands (2), Australia (2), New Zealand (2), Turkey (2), France (2), UAE (2), Hong Kong (1), Malaysia (1), the Philippines (1), Germany (1), 471 unknowns.
  - Shigellosis:** 1 case from India(1).
  - Dengue Fever:** 1 case from Vietnam (1).
  - Amoebiasis:** 4 cases from Indonesia (2), Unknown (2).
- During week 1-50, there were 36586 imported cases from at least 130 countries / areas. The top three countries are Vietnam (4115), USA (2482), Indonesia (1345).
- During week 1-50, the notifiable diseases with the highest number of imported cases is Severe Pneumonia with Novel Pathogens (36435).

## Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens :** The new cases of COVID-19 raise in Taiwan., the risk of epidemic spread is rising.

### Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 51★		Week 1-51			
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	2	0	33	0	28	0
	Acute Viral Hepatitis type A	0	0	119	1	71	0
	Amoebiasis	5	1	203	68	189	64
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	1	1	1	1
	Cholera	0	0	2	0	0	0
	Dengue Fever	1	0	82	62	12	12
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	2	0	0	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Hantavirus syndrome	0	0	5	0	2	0
	Malaria	0	0	2	2	2	2
	Measles	0	0	1	0	0	0
	Meningococcal Meningitis	0	0	1	0	3	0
	Paratyphoid Fever	0	0	6	0	2	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
	Shigellosis	4	1	86	8	122	0
	Typhoid fever	0	0	4	2	3	1
	West Nile Fever	0	0	0	0	0	0
Zika virus infection	0	0	0	0	0	0	
Monkeypox	0	-	4	4	-	-	
Category III	Acute Viral Hepatitis type B	2	1	102	0	138	2
	Acute Viral Hepatitis type C	22	11	497	1	555	0
	Acute Viral Hepatitis type D	0	0	0	0	1	0
	Acute Viral Hepatitis type E	0	0	11	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	0	19	0	28	0
	Legionnaires' Disease	13	8	362	2	357	1
	Mumps	7	7	296	0	401	2
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	1	0	2	0	0	0
Tetanus	0	0	9	0	5	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	2	0	34	0	51	0
	Endemic Typhus Fever	1	0	17	0	31	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	3	0	19	1	1	0
	Invasive Pneumococcal Disease	10	1	202	0	186	0
	Leptospirosis	0	1	69	0	81	0
	Listeriosis	1	0	145	0	157	0
	Lyme Disease	0	0	1	1	1	1
	Melioidosis	1	1	24	1	21	0
	Q Fever	0	0	3	0	8	0
	Scrub Typhus	2	3	271	0	299	0
Toxoplasmosis	1	0	28	0	16	0	
Tularemia	0	0	0	0	1	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	1	0	1	0
	Rift Valley Fever	0	0	0	0	0	0
Severe Pneumonia with Novel Pathogens	121355	110	8682316	37024	16107	1563	
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

- Sixteen clusters related to diarrhea (13), tuberculosis (2) and upper respiratory tract infection (1) were reported during week 51.

## Imported Infectious Diseases

- There were 590 imported cases from at least 17 countries / areas during week 51.

**Severe Pneumonia with Novel Pathogens:** 588 cases from China (37), Japan (23), Hong Kong (15), Korea (8), Vietnam (7), Thailand (6), USA (5), Singapore (4), Germany (3), the Philippines (2), Malaysia (2), France (1), UAE (1), Indonesia (1), Turkey (1), UK (1), Austria (1), 470 unknowns.

**Dengue Fever:** 1 case from Vietnam (1),

**Amoebiasis:** 1 case from Indonesia (1),

- During week 1-51, there were 37178 imported cases from at least 130 countries / areas. The top three countries are Vietnam (4123), USA (2487), Indonesia (1349).
- During week 1-51, the notifiable diseases with the highest number of imported cases is Severe Pneumonia with Novel Pathogens (37024).

## Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens :** The new cases of COVID-19 raise in Taiwan., the risk of epidemic spread increase.

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