

Investigation of A COVID-19 Cluster Infection in An Apartment Building, Northern Taiwan, 2021

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Abstract

On July 29, 2021, Taiwan Centers for Disease Control (Taiwan CDC) received a notification that a patient living in an apartment was confirmed to be infected with COVID-19. From August 4–8, three more cases were confirmed from the same building. The Department of Health from New Taipei City government started epidemiological investigation immediately. Furthermore, expanded community screening was implemented. Simultaneously, Taiwan CDC executed environmental risk assessment and collected environmental samples for testing.

As a whole, 283 contacts were subjected to home quarantine, including 8 cohabitant of the confirmed patients, 19 close contacts, 18 workplace contacts and 238 building resident contacts. After the expanded community screening, 2 more cases were confirmed on August 9, while the other 281 contacts showed negative results in the screening.

Totally 6 patients were confirmed with COVID-19 infection, presumably the transmission was aerosol originated either by using same elevators, waiting in a same place, or by sharing a same air conduit since there were 3 families living under the vertically connected airpipes. Improving ventilation was recommended to reduce the risk of disease spreading.

Keywords: COVID-19, ventilation, aerosols

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week 18–19 (May. 1–May. 14, 2022)

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Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 18★		Week 1-18			
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	10	0	11	0
	Acute Viral Hepatitis type A	0	2	88	0	27	0
	Amoebiasis	5	3	71	14	83	38
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	1	0	1	1	5	5
	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	0	0	4	0
	Malaria	0	0	2	2	1	1
	Measles	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	0	0	0	0
	Paratyphoid Fever	0	0	0	0	1	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
Shigellosis	2	2	30	0	69	0	
Typhoid fever	0	0	1	0	1	0	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	0	3	39	0	54	2
	Acute Viral Hepatitis type C	6	10	166	1	219	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	6	0	4	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	1	0	1	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	2	5	112	0	117	0
	Mumps	2	10	75	0	171	1
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	0
Tetanus	0	0	1	0	2	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	1	2	11	0	20	0
	Endemic Typhus Fever	0	1	2	0	10	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	0	0	0	1	0
	Invasive Pneumococcal Disease	0	4	63	0	108	0
	Leptospirosis	0	1	14	0	14	0
	Listeriosis	6	1	47	0	63	0
	Lyme Disease	0	0	1	1	0	0
	Melioidosis	0	0	1	0	6	0
	Q Fever	0	0	2	0	5	0
	Scrub Typhus	3	3	44	0	64	0
Toxoplasmosis	0	0	11	0	6	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	0	0
	Rift Valley Fever	0	0	0	0	0	0
Severe Pneumonia with Novel Pathogens	224287	51	340112	9446	375	335	
Yellow Fever	0	0	0	0	0	0	

- ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
- MDR-TB, Tuberculosis, Syphilis, Gonorrhoea, HIV Infection, AIDS, Hansen's Disease and Creutzfeldt-Jakob Disease are excluded from the table.
- Numbers of mumps and tetanus cases are summed up by the week of report.

Suspected Clusters

- Nine clusters related to diarrhea (5), tuberculosis (4) were reported during week 18.

Imported Infectious Diseases

- There were 496 imported cases from 19 countries during week 18.
Severe Pneumonia with Novel Pathogens: 495 cases from Vietnam 45 and the remaining 18 countries have less than 10 cases, 402 unknown.
Dengue Fever: Vietnam 1.
- During week 1-18, there were 9465 imported cases from 114 countries. The top three countries are Vietnam (2185), USA (1132), Indonesia (1029) and 1710 unknown.
- During week 1-18, the notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (9446).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens :** Taiwan is in the stage of widespread transmission of COVID-19, and it is expected that the number of cases increase rapidly. The epidemic of COVID-19 has decreased globally, but it is still critical. The risk of COVID-19 imported cases in Taiwan is persistence.

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

Case diagnosis year		Week 19★		Week 1-19			
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	0	10	0	11	0
	Acute Viral Hepatitis type A	4	3	92	0	30	0
	Amoebiasis	4	3	75	17	86	38
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	1	0	2	2	5	5
	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	1	0	0	5	0
	Malaria	0	0	2	2	1	1
	Measles	0	0	0	0	0	0
	Meningococcal Meningitis	0	2	0	0	2	0
	Paratyphoid Fever	0	1	0	0	2	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
Shigellosis	2	2	32	0	71	0	
Typhoid fever	0	0	1	0	1	0	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	2	2	41	0	56	2
	Acute Viral Hepatitis type C	9	12	175	1	231	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	6	0	4	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	1	0	1	0
	Japanese Encephalitis	0	1	0	0	1	0
	Legionnaires' Disease	3	6	115	0	123	0
	Mumps	1	12	76	0	183	1
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	0
Tetanus	0	0	1	0	2	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	0	11	0	25	0
	Endemic Typhus Fever	0	1	2	0	11	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	0	0	0	1	0
	Invasive Pneumococcal Disease	3	6	66	0	118	0
	Leptospirosis	0	0	14	0	14	0
	Listeriosis	2	12	49	0	75	0
	Lyme Disease	0	0	1	1	0	0
	Melioidosis	0	0	1	0	6	0
	Q Fever	0	0	2	0	5	0
	Scrub Typhus	2	10	46	0	74	0
Toxoplasmosis	0	1	11	0	7	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	0	0
	Rift Valley Fever	0	0	0	0	0	0
Severe Pneumonia with Novel Pathogens	411393	291	751390	9775	666	379	
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.

Suspected Clusters

- Six clusters related to diarrhea (1), tuberculosis (4) and varicella (1) were reported during week 19.

Imported Infectious Diseases

- There were 331 imported cases from 13 countries during week 19.
Severe Pneumonia with Novel Pathogens: 330 cases from Vietnam 20 and the remaining 12 countries have less than 10 cases, 284 unknown.
Dengue Fever: 1 Indonesia.
- During week 1-19, there were 9798 imported cases from 114 countries. The top three countries are Vietnam (2205), USA (1141), Indonesia (1030) and 1994 unknown.
- During week 1-19, the notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (9775).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens :** Taiwan is in the stage of widespread transmission of COVID-19, and it is expected that the number of cases increase rapidly. The epidemic of COVID-19 has decreased globally, but it is still critical. The risk of COVID-19 imported cases in Taiwan is persistence.

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