

Investigation of The First Community Cluster of SARS-CoV-2 Delta Variant Infection in Taiwan, 2021

Jhen-Yu Ke^{1*}, Shih-Min Hsu¹, Min-Nan Hong¹, Yen-Chang Tuan¹, Ming-Chang Lin¹,
Cheng-Kuei Shih², Hsiu-Chun Chang², Meng-Lun Lu²

Abstract

On June 22, 2021, Taiwan Centers for Disease Control received a notification of an indigenous case of Coronavirus Disease-2019(COVID-19) who is a gypsy cab driver in Pingtung County. After investigating the social network of the driver, a passenger was suspected to be the source of infection. Further investigation revealed that the original source of infection might be a person returning from abroad and in home quarantine. There were 17 confirmed cases in this cluster infection, including 2 imported cases and 15 domestic cases. Genetic sequencing revealed SARS-CoV-2 Delta variants in 15 cases and failed sequencing in two cases. Because the Delta variant was highly transmissible, the central government cooperated with the local government to prevent the spread of the Delta variant by identifying contacts and quarantining the close contacts in quarantine facilities or special wards. Laboratory screening stations were set up in hospitals and the surrounding areas of confirmed cases' residencies. A total of more than 17,000 people were screened and no more cases were found as of July 10, proving that the cluster infection was under control, and the Delta variant was successfully prevented from spreading. Due to this cluster infection, the government revised quarantine strategy that all inbound travelers should stay in group quarantine facilities or quarantine hotels to prevent viruses from entering the community.

Keywords: SARS-CoV-2 Delta variants, COVID-19 cluster infection, Coronavirus disease-2019

¹Kaohsiung-Pingtung Regional Center, Centers for Disease Control, Ministry of Health and Welfare, Taiwan

²Public Health Bureau, Pingtung County Government, Taiwan
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Corresponding author: Jhen-Yu Ke^{1*}

E-mail: jhenyu@cdc.gov.tw

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Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 11★		Week 1–11			
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	5	0	6	0
	Acute Viral Hepatitis type A	10	1	74	0	16	0
	Amoebiasis	3	6	45	10	43	21
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	1	0	0	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	0	0	0	3	3
	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	3	0
	Malaria	1	0	1	1	1	1
	Measles	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	0	0	0	0
	Paratyphoid Fever	0	1	0	0	1	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
Shigellosis	2	9	20	0	41	0	
Typhoid fever	0	0	0	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	6	26	0	23	0
	Acute Viral Hepatitis type C	18	16	92	1	142	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	1	0	3	0	3	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	0	0	0	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	7	7	78	0	75	0
	Mumps	4	6	49	0	103	1
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	0	0
Tetanus	0	0	1	0	1	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	0	6	0	11	0
	Endemic Typhus Fever	0	0	0	0	5	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	0	0	0	0	0
	Invasive Pneumococcal Disease	10	6	38	0	79	0
	Leptospirosis	0	0	7	0	9	0
	Listeriosis	3	0	26	0	31	0
	Lyme Disease	0	0	1	1	0	0
	Melioidosis	0	0	0	0	5	0
	Q Fever	0	0	2	0	0	0
	Scrub Typhus	0	1	32	0	48	0
Toxoplasmosis	2	0	7	0	2	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	610	21	4808	3910	197	176	
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.
- Since 2020/1/15, "Severe Pneumonia with Novel Pathogens" was listed as a Notifiable Infectious Disease.

Suspected Clusters

- Fifty-eight clusters related to diarrhea (45), tuberculosis (6), upper respiratory tract infection (4) and varicella (3) were reported during week 11.

Imported Infectious Diseases

- There were 600 imported cases from 47 countries during week 11.
 - **Severe Pneumonia with Novel Pathogens** : 596 cases from Vietnam 186, Indonesia 86, USA 40, Myanmar 33, Philippines 32, Hong Kong 26, Thailand 21, Malaysia 19, Korea 17, Singapore 11, Cambodia 10, and the remaining 36 countries have less than 10 cases.
 - **Amoebiasis** : 2 cases from Vietnam 1, Indonesia 1.
 - **Malaria** : Uganda 1.
 - **Acute Hepatitis C** : 1 under investigation.
- During week 1–11, there were 3923 imported cases from 109 countries. The top three countries are USA (991), Vietnam (501), and Indonesia (354).
- During week 1–11, the notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (3910).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : Global COVID-19 cases climb for second week in a row, especially in countries of the Western Pacific region. The risk of COVID-19 imported cases in Taiwan is expected to increase. The SARS-COV-2 virus is active in the community, therefore the indigenous cases are expected to occur.

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

Case diagnosis year		Week 12★		Week 1-12			
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	6	0	6	0
	Acute Viral Hepatitis type A	4	1	78	0	17	0
	Amoebiasis	2	6	47	10	49	24
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	1	0	0	4	4
	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	3	0
	Malaria	0	0	1	1	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	4	22	0	45	0	
Typhoid fever	0	0	0	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	5	4	31	0	27	0
	Acute Viral Hepatitis type C	17	16	109	1	158	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	3	0	3	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	0	0	0	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	8	10	86	0	85	0
	Mumps	3	10	52	0	113	1
	Neonatal Tetanus	0	0	0	0	0	0
Pertussis	0	0	0	0	0	0	
Tetanus	0	1	1	0	2	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	1	0	7	0	11	0
	Endemic Typhus Fever	0	0	0	0	5	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	1	0	0	1	0
	Invasive Pneumococcal Disease	3	5	41	0	84	0
	Leptospirosis	1	1	8	0	10	0
	Listeriosis	3	9	29	0	40	0
	Lyme Disease	0	0	1	1	0	0
	Melioidosis	0	0	0	0	5	0
	Q Fever	0	0	2	0	0	0
	Scrub Typhus	3	0	35	0	48	0
Toxoplasmosis	1	1	8	0	3	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	810	15	5618	4629	212	191
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.
- Since 2020/1/15, "Severe Pneumonia with Novel Pathogens" was listed as a Notifiable Infectious Disease.

Suspected Clusters

- Forty clusters related to diarrhea (35), tuberculosis (1), upper respiratory tract infection (4) were reported during week 12.

Imported Infectious Diseases

- There were 722 imported cases from 47 countries during week 12.
Severe Pneumonia with Novel Pathogens: 722 cases from Vietnam 332, Indonesia 128, USA 27, Thailand 26, Malaysia 24, Korea 19, Hong Kong 19, Philippines 18, UK 15, Australia 11, and the remaining 37 countries have less than 10 cases.
- During week 1–12, there were 4642 imported cases from 111 countries. The top three countries are USA (1018), Vietnam (833), and Indonesia (482).
- During week 1–12, the notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (4629).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The global epidemic has decreased slightly, but it is still critical. The risk of COVID-19 imported cases in Taiwan is expected to increase. There have been new clusters without known source of infection are under investigation in many counties. The risk of locally-acquired infection in Taiwan is increasing.

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

Case diagnosis year		Week 13★		Week 1–13			
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	6	0	7	0
	Acute Viral Hepatitis type A	1	0	79	0	17	0
	Amoebiasis	5	5	52	10	54	29
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	0	0	0	4	4
	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	3	0
	Malaria	0	0	1	1	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	0	4	22	0	49	0	
Typhoid fever	1	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	7	5	37	0	32	1
	Acute Viral Hepatitis type C	12	9	121	1	167	0
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	1	1	4	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	1	0	1	0	0	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	6	5	92	0	90	0
	Mumps	5	9	57	0	122	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	7	0	11	0
	Endemic Typhus Fever	0	0	0	0	5	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	0	0	0	1	0
	Invasive Pneumococcal Disease	5	5	46	0	89	0
	Leptospirosis	0	1	8	0	11	0
	Listeriosis	2	3	31	0	43	0
	Lyme Disease	0	0	1	1	0	0
	Melioidosis	0	0	0	0	5	0
	Q Fever	0	0	2	0	0	0
	Scrub Typhus	0	0	35	0	48	0
Toxoplasmosis	2	1	10	0	4	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	1566	25	7184	5504	237	216
Yellow Fever	0	0	0	0	0	0	

5. ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
6. MDR-TB, Tuberculosis, Syphilis, Gonorrhoea, HIV Infection, AIDS, Hansen's Disease and Creutzfeldt-Jakob Disease are excluded from the table.
7. Numbers of mumps and tetanus cases are summed up by the week of report.
8. Since 2020/1/15, "Severe Pneumonia with Novel Pathogens" was listed as a Notifiable Infectious Disease.

Suspected Clusters

- Thirty-four clusters related to diarrhea (25), tuberculosis (6), upper respiratory tract infection (3) were reported during week 13.

Imported Infectious Diseases

- There were 875 imported cases from 42 countries during week 13.
Severe Pneumonia with Novel Pathogens: 875 cases from Vietnam 334, Indonesia 149, Thailand 85, Philippines 63, Malaysia 34, USA 33, Hong Kong 27, Korea 21, Japan 17, Singapore 12, UK 10, Germany 10, and the remaining 30 countries have less than 10 cases.
- During week 1–13, there were 5517 imported cases from 111 countries. The top three countries are Vietnam (1167), USA (1051), and Indonesia (631).
- During week 1–13, the notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (5504).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens:** The number of new COVID-19 cases has decreased globally for a second consecutive week, but it is still critical. The risk of COVID-19 imported cases in Taiwan is expected to increase. There have been new clusters without known source of infection are under investigation in many counties, and the flow of people and gatherings increasing during the national holiday, the risk of locally-acquired infection in Taiwan is raising.

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

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

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