

### A Cluster of Enterovirus Infection in A Nursery Institution, November 2017

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#### Abstract

In November 2017, a hospital reported a case of suspected enterovirus infection with severe complications. The investigation found a total of 11 infants and young children in the case's nursery infected with enterovirus before and after the case, and all recovered after treatment. Specimens were collected from five of them for laboratory tests, and all tested positive for enterovirus A 71. The nursery institution has a shared playground, where the children might contract enterovirus. Moreover, two of the cases of different classes were relatives and had contacted with each other during family gathering. One of them had disease onset prior to the gathering and the other had it several days later, probably being transmitted by the early onset one during the gathering. This article summarized the prevention and control measures of this incident, reminding the nursery to ensure that children with symptom should take rest at home and strengthen environmental disinfection. We recommended closing the playground during the surveillance period. In addition, preschool children are high risk groups for enterovirus infection with severe complications. We recommended strengthening the parental education and strictly implementing case isolation to avoid contact with other children to prevent transmission.

**Keywords:** Enterovirus A 71, enterovirus infection with severe complications, cluster, nursery institutions

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

Case diagnosis year		Week 33★		Week 1-33			
Classification	Disease Diagnosed	2020	2019	2020		2019	
				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	18	0	39	0
	Acute Viral Hepatitis type A	1	5	53	7	62	17
	Amoebiasis	3	5	153	83	211	114
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	7	3	3	35	34
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	24	76	62	398	324
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	1	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	8	0	0	0
	Malaria	0	1	1	1	3	3
	Measles	0	7	2	2	120	48
	Meningococcal Meningitis	0	1	5	0	3	0
	Paratyphoid Fever	0	0	0	0	5	4
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	20	16
Shigellosis	5	2	101	21	91	33	
Typhoid fever	0	0	5	3	18	14	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	1	2	2	3	3	
Category III	Acute Viral Hepatitis type B	2	1	60	2	68	3
	Acute Viral Hepatitis type C	9	12	400	3	383	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	7	0	7	3
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	2	7	0	27	1
	Haemophilus Influenza type b Infection	0	0	3	0	1	0
	Japanese Encephalitis	1	0	21	0	20	2
	Legionnaires' Disease	5	3	169	8	173	13
	Mumps	11	8	306	6	379	5
	Neonatal Tetanus	0	0	0	0	0	0
Pertussis	0	0	8	0	23	0	
Tetanus	0	0	7	0	1	0	
Category IV	Botulism	0	0	1	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	1	30	0	41	1
	Endemic Typhus Fever	1	1	13	0	15	1
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	50	548	6	1400	6
	Invasive Pneumococcal Disease	2	8	167	0	285	2
	Leptospirosis	1	3	33	0	52	0
	Listeriosis	1	0	91	0	121	1
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	0	1	9	1	15	0
	Q Fever	0	1	12	0	15	2
	Scrub Typhus	24	14	254	1	288	3
Toxoplasmosis	0	0	5	0	9	1	
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	3	-	482	427	-	-	
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 2020/1/15, "Severe Pneumonia with Novel Pathogens" was listed as a Notifiable Infectious Disease.

## Suspected Clusters

- Twenty-one clusters related to diarrhea (11), tuberculosis (8), and upper respiratory tract infection (2) were reported during week 33.

## Imported Infectious Diseases

- There were 5 imported cases from 2 countries during week 33.

Diseases	Countries		
	Philippines	Indonesia	Total
Severe Pneumonia with Novel Pathogens	3		3
Amoebiasis	1	1	2
Total	4	1	5

- As of week 33, there were 632 imported cases from 49 different countries. The top 3 countries are Indonesia (123), USA (94), UK (72).
- The three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (427), Amoebiasis (83), Dengue Fever (62).

## Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : Due to the severe international epidemic status, the imported cases keep detection. The risk of acquiring SARS-CoV-2 infection in Taiwan is persistence.
- **Dengue Fever** : Accumulation of water containers after the rainfall increase vector breeding. Therefore, the risk of dengue fever is persistence.
- **Japanese Encephalitis** : Taiwan is in the midst of Japanese Encephalitis season. Every county in Taiwan is at risk of infection.
- **Scrub Typhus** : Taiwan is in the midst of Scrub Typhus season, eastern Taiwan is the highest risk of infectious area.

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

Case diagnosis year		Week 34 ★		Week 1-34			
Classification	Disease Diagnosed	2020	2019	2020		2019	
				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	18	0	39	0
	Acute Viral Hepatitis type A	2	3	55	7	65	18
	Amoebiasis	6	5	159	84	216	119
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	8	3	3	43	42
	Cholera	0	0	0	0	0	0
	Dengue Fever	1	14	77	63	412	337
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	1	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	1	8	0	1	0
	Malaria	0	0	1	1	3	3
	Measles	0	3	2	2	123	48
	Meningococcal Meningitis	0	0	5	0	3	0
	Paratyphoid Fever	0	0	0	0	5	4
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	20	16
Shigellosis	1	4	102	21	95	33	
Typhoid fever	0	0	5	3	18	14	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	0	2	2	3	3	
Category III	Acute Viral Hepatitis type B	2	3	62	2	71	3
	Acute Viral Hepatitis type C	9	14	409	3	397	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	7	0	7	3
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	2	7	0	29	1
	Haemophilus Influenza type b Infection	0	0	3	0	1	0
	Japanese Encephalitis	0	0	21	0	20	2
	Legionnaires' Disease	12	5	181	8	178	13
	Mumps	9	8	315	6	387	6
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	8	0	23	0
Tetanus	0	0	7	0	1	0	
Category IV	Botulism	0	0	1	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	1	30	0	42	1
	Endemic Typhus Fever	0	0	13	0	15	1
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	53	548	6	1453	6
	Invasive Pneumococcal Disease	5	2	172	0	287	2
	Leptospirosis	1	6	34	0	58	0
	Listeriosis	4	4	95	0	125	1
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	0	5	9	1	20	0
	Q Fever	0	1	12	0	16	3
	Scrub Typhus	6	11	260	1	299	3
Toxoplasmosis	0	0	5	0	9	1	
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	5	-	487	432	-	-	
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 2020/1/15, "Severe Pneumonia with Novel Pathogens" was listed as a Notifiable Infectious Disease.

## Suspected Clusters

- Twenty-nine clusters related to tuberculosis (16), diarrhea (10), upper respiratory tract infection (2), and varicella (1) were reported during week 34.

## Imported Infectious Diseases

- There were 7 imported cases from 6 countries during week 34.

Diseases	Countries						Total
	Philippines	Australia	USA	Mexico	Indonesia	Vietnam	
Severe Pneumonia with Novel Pathogens	2	1	1	1			5
Dengue Fever						1	1
Amoebiasis					1		1
Total	2	1	1	1	1	1	7

- As of week 34, there were 639 imported cases from 49 different countries. The top 3 countries are Indonesia (124), USA (95), and UK (72).
- The three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (432), Amoebiasis (84), and Dengue Fever (63).

## Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The COVID-19 pandemic is still critical, and risks of importation and local transmission of COVID-19 in Taiwan persist.
- **Dengue Fever** : Heavy rain in many counties/cities over the past few weeks increased the number of containers holding rain water. Individuals remain at risk of infection in the community.
- **Japanese Encephalitis** : Taiwan is in Japanese Encephalitis season. Individuals remain at risk of infection in every county/city.
- **Scrub Typhus** : Taiwan is in Scrub Typhus season. Taitung County is the highest risk area.

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

Case diagnosis year		Week 35★		Week 1-35			
Classification	Disease Diagnosed	2020	2019	2020		2019	
				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	3	18	0	42	0
	Acute Viral Hepatitis type A	5	0	60	7	65	18
	Amoebiasis	4	5	163	84	221	121
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	11	3	3	54	52
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	24	77	63	436	360
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	1	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	8	0	1	0
	Malaria	0	0	1	1	3	3
	Measles	0	0	2	2	123	48
	Meningococcal Meningitis	0	0	5	0	3	0
	Paratyphoid Fever	0	0	0	0	5	4
	Poliomyelitis	0	0	0	0	0	0
Rubella	0	0	0	0	20	16	
Shigellosis	3	1	105	21	96	34	
Typhoid fever	0	0	5	3	18	14	
West Nile Fever	0	0	0	0	0	0	
Zika virus infection	0	0	2	2	3	3	
Category III	Acute Viral Hepatitis type B	5	2	67	2	73	3
	Acute Viral Hepatitis type C	11	10	420	3	407	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	7	0	7	3
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	5	7	0	34	1
	Haemophilus Influenza type b Infection	0	0	3	0	1	0
	Japanese Encephalitis	0	0	21	0	20	2
	Legionnaires' Disease	9	5	190	8	183	13
	Mumps	12	12	327	6	399	6
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	8	0	23	0
Tetanus	0	0	7	0	1	0	
Category IV	Botulism	0	0	1	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	0	30	0	42	1
	Endemic Typhus Fever	0	0	13	0	15	1
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	76	548	6	1529	6
	Invasive Pneumococcal Disease	3	7	175	0	294	2
	Leptospirosis	3	1	37	0	59	0
	Listeriosis	2	6	97	0	131	1
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	0	4	9	1	24	0
	Q Fever	0	0	12	0	16	3
	Scrub Typhus	7	12	267	1	311	3
Toxoplasmosis	0	3	5	0	12	2	
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	1	-	488	433	-	-
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

- Sixteen clusters related to tuberculosis (8), diarrhea (5), upper respiratory tract infection (2), and varicella (1) were reported during week 35.

## Imported Infectious Diseases

- There was 1 imported case during week 35.

Diseases	Countries	Philippines	Total
	Severe Pneumonia with Novel Pathogens		1
Total		1	1

- As of week 35, there were 640 imported cases from 49 countries. The top 3 countries are Indonesia (124), USA (95), and UK (72).
- The three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (433), Amoebiasis (84), and Dengue Fever (63).

## Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The COVID-19 pandemic is still critical, and risks of importation and local transmission persist.
- **Dengue Fever** : The number of breeding sites increased because of heavy rain in many counties/cities over the past few weeks. The risk of infection in the community remained.
- **Scrub Typhus** : Taiwan is in Scrub Typhus season. Taitung County is the highest risk area.
- **Enterovirus** : As children begin to return to school for the upcoming semester, enterovirus activity may increase.

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