

A Tuberculosis Outbreak in a Psychiatric Institution at Northern Taiwan, 2014–2018

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Abstract

During May 2013 to April 2014, two cases of tuberculosis (TB) were notified in a long-term psychiatric institution in northern Taiwan. By September, three additional cases were confirmed. The outbreak had been confirmed since four cases were infected with the same genotype but one had no culture results. As of October 2017, 12 cases were confirmed (nine with the same genotype, and three had no culture results). Recommendations from expert meetings were implemented, including symptom surveillance and reporting, improving transfer records, improving the environment ventilation, and strengthening contact tracing every six months. A total of 493 contacts were monitored, and the completion rates of four times of contact tracing were 73%, 80%, 65% and 50%, respectively. Overall, of 97.6% contacts who tested for latent tuberculosis infection (LTBI), 17.5% were positive. The proportion of acceptance for treatment was 73.8%. By July 2019, no TB cases of the same genotype had been identified in the institution. Long-term psychiatric institutions must pay attention to the quality of infection control, maintain adequate human resources, systematic monitoring and management, and cooperate with public health authorities in order to lower risks of TB clusters.

Keywords: Tuberculosis outbreak, long-term psychiatric institution, infection control, LTBI treatment

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

Case diagnosis year		Week 7★		Week 1-7			
Classification	Disease Diagnosed	2021	2020	2021		2020	
				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	4	0	2	0
	Acute Viral Hepatitis type A	0	2	11	0	16	3
	Amoebiasis	2	3	23	10	28	15
	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	4	2	2	37	37
	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 Pulmonary Syndrome	0	0	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	1	0	3	0	2	0
	Malaria	0	0	1	1	1	1
	Measles	0	0	0	0	2	2
	Meningococcal Meningitis	0	0	0	0	3	0
	Paratyphoid Fever	0	0	0	0	0	0
	Poliomyelitis	0	0	0	0	0	0
Rubella	0	0	0	0	0	0	
Shigellosis	2	3	22	0	26	10	
Typhoid fever	0	1	0	0	2	1	
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	4	15	0	16	2
	Acute Viral Hepatitis type C	3	17	87	0	85	1
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	1	0	1	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	3	1	0	6	0
	Haemophilus Influenza type b Infection	0	0	0	0	0	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	5	2	57	0	41	5
	Mumps	12	11	67	0	66	2
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	1	0	0	5	0
Tetanus	0	0	1	0	0	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	5	9	0	12	0
	Endemic Typhus Fever	1	0	3	0	0	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	34	0	0	528	6
	Invasive Pneumococcal Disease	6	10	47	0	93	0
	Leptospirosis	0	0	6	0	5	0
	Listeriosis	0	3	15	0	15	0
	Lyme Disease	0	0	0	0	0	0
	Melioidosis	2	0	4	0	1	1
	Q Fever	0	0	0	0	0	0
	Scrub Typhus	3	4	46	0	37	1
Toxoplasmosis	0	0	2	0	0	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	5	1	134	113	18	16	
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-two clusters related to diarrhea (38), tuberculosis (11), upper respiratory tract infection (2), and varicella (1) were reported during week 7.

Imported Infectious Diseases

- There were 7 imported cases from 4 countries during week 7.

Diseases	Countries				Total
	Indonesia	Philippines	USA	Malaysia	
Severe Pneumonia with Novel Pathogens	1	2	1	1	5
Amoebiasis	2				2
Total	3	2	1	1	7

- During week 1-7, there were 126 imported cases from 26 countries. The top three countries are Indonesia (34), USA (26), and Philippines (23).
- During week 1-7, the three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (113), Amoebiasis (10), and Dengue Fever (2).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The number of global COVID-19 new cases reported continues to fall. Nevertheless, the case number is still high, the risk of imported cases continues.
- **Influenza-like illness** : As schools start, the epidemic status might be similar to previous weeks.
- **Diarrhea** : The epidemic status of diarrhea remain high.

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

Case diagnosis year		Week 8★		Week 1-8			
Classification	Disease Diagnosed	2021	2020	2021		2020	
				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	4	0	2	0
	Acute Viral Hepatitis type A	1	1	12	0	17	4
	Amoebiasis	5	6	28	11	34	18
	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	1	3	3	38	38
	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 Pulmonary Syndrome	0	0	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	3	0	2	0
	Malaria	0	0	1	1	1	1
	Measles	0	0	0	0	2	2
	Meningococcal Meningitis	0	0	0	0	3	0
	Paratyphoid Fever	0	0	0	0	0	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
Shigellosis	3	5	25	0	31	12	
Typhoid fever	0	0	0	0	2	1	
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	15	0	19	2
	Acute Viral Hepatitis type C	13	16	98	0	101	1
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	1	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	1	0	6	0
	Haemophilus Influenza type b Infection	0	0	0	0	0	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionnaires' Disease	4	3	61	0	44	5
	Mumps	13	7	80	0	73	3
	Neonatal Tetanus	0	0	0	0	0	0
Pertussis	0	0	0	0	5	0	
Tetanus	0	0	1	0	0	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	1	0	10	0	12	0
	Endemic Typhus Fever	1	0	4	0	0	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	11	0	0	539	6
	Invasive Pneumococcal Disease	9	11	56	0	104	0
	Leptospirosis	2	1	8	0	6	0
	Listeriosis	9	5	24	0	20	0
	Lyme Disease	0	0	0	0	0	0
	Melioidosis	1	1	5	0	2	1
	Q Fever	0	0	0	0	0	0
	Scrub Typhus	0	3	46	0	40	1
Toxoplasmosis	0	0	2	0	0	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	12	8	146	125	26	16	
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-seven clusters related to diarrhea (20), tuberculosis (3), varicella (2), upper respiratory tract infection (1), and enterovirus (1) were reported during week 8.

Imported Infectious Diseases

- There were 14 imported cases from 6 countries during week 8.

Diseases \ Countries	Countries						Total
	Philippines	USA	Vietnam	UK	Indonesia	Malaysia	
Severe Pneumonia with Novel Pathogens	6	3	1	1		1	12
Dengue Fever			1				1
Amoebiasis					1		1
Total	6	3	2	1	1	1	14

- During week 1-8, there were 140 imported cases from 27 countries. The top three countries are Indonesia (35), USA (29), and Philippines (29).
- During week 1-8, the three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (125), Amoebiasis (11), and Dengue Fever (3).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The number of global COVID-19 new cases reported continues to fall. Nevertheless, the case number is still high, the risk of imported cases continues.
- **Diarrhea** : As schools start, diarrhea clusters occurred in schools might increase.

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