

### Outbreak Investigation of Acute Hepatitis C at an Outpatient Clinic, Taoyuan, Taiwan, 2017

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#### Abstract

The Taoyuan City Health Bureau was notified of three cases of acute hepatitis C (AHC) during January to March, 2017. The three AHC cases had received intravenous injections at a clinic in Yangmei District, Taoyuan City within incubation periods. To identify the extent of the suspected outbreak and implement prevention measures, the public health departments conducted a joint on-site investigation at the implicated clinic for four times and kept monitoring for AHC cases by National Notifiable Disease Surveillance System. As of May 12, five confirmed AHC cases and 10 cases of clinic-associated hepatitis C infection were identified. Most of the viral strains were phylogenetically correlated and belonged to genotype 1b. The lapses of infection control practices at the clinic included poor hand hygiene, possible repeated use of single-use vials, and preparation of injection drugs at the contaminated area were suspected to be the causes of this outbreak. This was the first, possibly iatrogenic, outbreak of AHC after screening blood donors for antibody to hepatitis C virus since 1992. In addition,

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Received: Jan. 29, 2018

Accepted: Dec. 18, 2018

DOI: 10.6525/TEB.201902\_35(4).0001

molecular epidemiology was helpful and timely to clarify the relatedness among viral strains from cases in this investigation. To prevent the iatrogenic hepatitis C infection, healthcare personnel should comply with infection control measures and safe injection practices.

**Keywords:** Acute hepatitis C, standard precautions, safe injection practice, phylogenetic analysis

week 7, 2019 (Feb. 10–Feb. 16, 2019)

DOI: 10.6525/TEB.201902\_35(4).0002

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

Case diagnosis year		Week 7★		Week 1–7			
Classification	Disease Diagnosed	2019	2018	2018		2017	
				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	2	8	0	17	0
	Acute Viral Hepatitis type A	0	1	7	1	11	4
	Amoebiasis	4	6	33	15	39	16
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	0	0	1	1
	Cholera	0	0	0	0	0	0
	Dengue Fever	11	4	60	59	12	12
	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	0	0	0	0
	Malaria	0	0	1	1	0	0
	Measles	1	0	13	10	1	0
	Meningococcal Meningitis	0	0	2	0	1	0
	Paratyphoid Fever	0	0	0	0	0	0
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	0	0	0	0
Shigellosis	4	3	15	2	19	4	
Typhoid fever	1	2	4	4	4	2	
West Nile Fever	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	2	2	18	0	14	2
	Acute Viral Hepatitis type C	10	7	71	0	51	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	4	0	2	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	3	1	5	0
	Haemophilus Influenza type b Infection	0	0	0	0	0	0
	Japanese Encephalitis	0	0	0	0	0	0
	Legionellosis	6	2	37	2	26	0
	Mumps	16	6	74	0	63	2
	Neonatal Tetanus	0	0	0	0	0	0
Pertussis	0	0	3	0	1	0	
Tetanus	0	1	0	0	2	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	1	1	10	0	3	0
	Endemic Typhus Fever	1	0	1	0	3	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Invasive Pneumococcal Disease	20	8	97	0	71	0
	Leptospirosis	0	1	10	0	9	0
	Listeriosis	5	0	22	0	10	0
	Lyme Disease	0	0	0	0	0	0
	Melioidosis	0	0	0	0	3	0
	Q Fever	0	0	1	0	1	0
	Scrub Typhus	3	9	52	0	67	0
	Severe Complicated Influenza	76	47	371	1	316	3
Toxoplasmosis	1	0	1	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 Coronavirus	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
	Yellow Fever	0	0	0	0	0	0
Zika virus infection	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 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 2018/1/1, "Listeriosis" was listed as a Notifiable Infectious Disease.

## Suspected Clusters

- Thirty-four clusters were reported, including 3 tuberculosis clusters, 17 diarrhea clusters, 6 upper respiratory tract infection clusters, 4 influenza-like illness clusters, 2 varicella clusters, and 2 fever of unknown origin clusters.

## Imported Infectious Diseases

- There were 15 confirmed imported cases from 6 countries during week 7 of 2019

Diseases \ Countries	Countries						Total
	Vietnam	Indonesia	Thailand	Cambodia	China	Philippines	
DF	5	3	2	1			11
Measles	1					1	2
Typhoid fever				1			1
Amoebiasis					1		1
Total	6	3	2	2	1	1	15

Note: The table summarized the number of imported cases that were either **confirmed** or **updated** in

- There are 96 confirmed imported cases from 11 different countries in 2019. The top 3 countries are Vietnam (25), Indonesia (24), and Philippines (21).
- Top 3 imported diseases are Dengue Fever (59), Amoebiasis (15), and Measles (10).

## Summary of Epidemic

- **Influenza** : Schools started the new semester recently, therefore, the number of outpatient and ER visits for influenza is expected to increase. The most frequently isolated influenza virus in the community is influenza A/H1N1.

The Taiwan Epidemiology Bulletin series of publications is published by Centers for Disease Control, Ministry of Health and Welfare, Taiwan (R.O.C.) since Dec. 15, 1984.

**Publisher:** Jih-Haw Chou

**Editor-in-Chief:** Yung-Ching Lin

**Executive Editor:** Hsueh-Ju Chen, Hsin-Lun Lee

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

**Telephone No:** +886-2-2395-9825

**Website:** <http://www.cdc.gov.tw/rwd/english>

**Suggested Citation:**

[Author].[Article title].Taiwan Epidemiol Bull 2019;35:[inclusive page numbers]. [DOI]