

### Epidemiological Analysis of Acute Hepatitis C in Taipei Region, 2015–2016

Pei-Chen Chen, Mei-Lan Hung\*, Yu-Fang Tsai, Hsiao-Ping Tung, Jer-Jea Yen

#### Abstract

During 2015 and 2016, 251 cases of acute hepatitis C were reported from six counties in Taipei Region, 169 were confirmed, 125 (74%) were male and 61 (36%) were HIV-infected. The median age of confirmed cases was 44 years-old (range: 20 – 90 years-old). Nearly 73% of these cases were residing in Taipei City and New Taipei City. However, the age-adjusted standardized incidence per 100,000 populations in 2015 and 2016 revealed that Yilan County (3.18) and Keelung City (2.66) were the highest. Forty-five percent of infected cases co-infected with HIV were residing in the large metropolitan areas such as Taipei City and New Taipei City. Among them, one-third had unsafe sexual behavior in men having sex with men (MSM). Compared with Keelung and Yilan, the cases in Metropolitan area had a relatively high proportion of unsafe sexual behavior within 3 months, but a relatively low proportion of using intravenous drugs, needle/diluent sharing, or contacting blood through either wound or mucosa by accident. The analysis shows that unsafe MSM sexual behavior among HIV-infected people in large metropolitan areas poses high risk of hepatitis C infections, presumably due to anal mucous membrane damage caused by sexual behavior, which increases the risk of infection. Therefore, the public health department should arrange the appropriate prevention and control strategies as early as possible according to the demographic characteristics of different regions and the risk factors of the cases, in order to enhance the effectiveness of prevention and control.

**Keywords:** Hepatitis C

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

Case diagnosis year		Week 29★		Week 1-29			
Classification	Disease Diagnosed	2018	2017	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	1	0	47	0	20	0
	Acute Viral Hepatitis type A	2	3	52	21	303	30
	Amoebiasis	1	8	161	66	200	115
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	2	2	7	7
	Cholera	1	0	1	0	0	0
	Dengue Fever	5	13	114	111	143	143
	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	1	0	1	0
	Malaria	0	0	1	1	3	3
	Measles	1	0	31	12	5	5
	Meningococcal Meningitis	0	0	5	1	6	0
	Paratyphoid Fever	2	0	4	2	3	3
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	1	5	4	2	2
	Shigellosis	3	4	90	26	105	39
Typhoid fever	0	0	7	5	11	10	
West Nile Fever	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	6	1	70	4	92	3
	Acute Viral Hepatitis type C	13	9	258	3	160	1
	Acute Viral Hepatitis type D	0	0	0	0	1	0
	Acute Viral Hepatitis type E	1	0	5	0	11	3
	Acute Viral Hepatitis untype	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	1	0	24	0	5	0
	Haemophilus Influenza type b Infection	0	0	4	0	2	0
	Japanese Encephalitis	4	4	30	0	18	0
	Legionellosis	5	5	94	2	92	10
	Mumps	6	13	322	3	377	5
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	13	0	18	0
	Tetanus	0	0	4	0	6	0
	Category IV	Botulism	0	0	0	0	0
Brucellosis		0	0	0	0	0	0
Complicated Influenza		2	1	27	0	13	1
Complicated Varicella		1	1	17	0	25	1
Endemic Typhus Fever		0	0	0	0	0	0
Herpesvirus B Infection		6	18	293	0	292	2
Invasive Pneumococcal Disease		4	8	29	0	48	1
Leptospirosis		1	0	93	0	0	0
Lyme Disease		0	0	0	0	0	0
Melioidosis		1	0	9	1	11	0
Q Fever		0	0	8	1	10	0
Scrub Typhus		9	25	170	0	229	0
Toxoplasmosis		24	104	779	5	949	5
Tularremia		0	0	11	1	8	0
Category V	Ebola Virus Disease	0	0	0	0	0	0
	Marburg Hemorrhagic Fever	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	0	0	0	0
	Lassa Fever	0	0	0	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus	0	0	0	0	1	1
	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.
- The following chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.
- Numbers of mumps, neonatal tetanus and tetanus cases are summed up by the week of report.
- Since 2016/1/22, "Zika Virus Infection" was listed as a Notifiable Infectious Disease.
- Since 2018/1/1, "Listeriosis" was listed as a Notifiable Infectious Disease.

## Suspected Clusters

- Thirty-one clusters were reported, including 5 tuberculosis clusters, 9 diarrhea clusters, 4 upper respiratory tract infection clusters, 11 influenza-like illness clusters, and 2 varicella clusters.

## Imported Infectious Diseases

- There were 11 confirmed imported cases from 7 countries during week 29 of 2018.

Country Disease	Indonesia	Thailand	Philippines	Japan	Vietnam	India	Cambodia	Total
DF	1	1			1		1	4
Amoebiasis	1		1					2
Shigellosis	2							2
Paratyphoid Fever						1		1
Acute Hepatitis C		1						1
Legionellosis				1				1
Total	4	2	1	1	1	1	1	11

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

- There are 268 confirmed imported cases from 24 different countries in 2018. The top 3 countries are Indonesia (81), Philippines (34), and Thailand (30).
- Top 3 imported diseases are Dengue Fever (111), Amoebiasis (66), and Shigellosis (26).

## Summary of Epidemic

- **Enterovirus:** Taiwan is in the midst of enterovirus season. Most reported cases experienced mild symptoms. In addition, cases with Echovirus11 and EV71 infection are increasing in the community, we should stay alert against enterovirus infection.
- **Dengue Fever:** The dengue activities in Southeast Asia are increasing and there have been confirmed indigenous dengue cases in Taiwan. As the temperature and rainfall increases, the risk of dengue fever for both imported and indigenous cases is expected to be higher.
- **Japanese Encephalitis:** Taiwan is in the midst of Japanese encephalitis season. New cases are primarily in central and southern Taiwan.
- **Scrub Typhus:** Taiwan is in the midst of scrub typhus season. The current primarily affected areas include Hualien County and Taitung County.

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

Case diagnosis year		Week 30★		Week 1-30			
Classification	Disease Diagnosed	2018	2017	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	0	47	0	20	0
	Acute Viral Hepatitis type A	2	4	54	21	307	31
	Amoebiasis	4	4	165	68	204	118
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	2	2	7	7
	Cholera	1	0	2	0	0	0
	Dengue Fever	13	10	127	122	153	152
	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	1	0	1	0
	Malaria	0	0	1	1	3	3
	Measles	0	0	31	12	5	5
	Meningococcal Meningitis	0	3	5	1	9	0
	Paratyphoid Fever	0	0	4	2	3	3
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	5	4	2	2
	Shigellosis	3	2	93	28	107	41
	Typhoid fever	0	0	7	5	11	10
West Nile Fever	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	6	6	76	6	98	3
	Acute Viral Hepatitis type C	10	8	268	3	168	1
	Acute Viral Hepatitis type D	0	0	0	0	1	0
	Acute Viral Hepatitis type E	0	1	5	0	12	3
	Acute Viral Hepatitis untype	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	1	1	25	0	6	0
	Haemophilus Influenza type b Infection	0	1	4	0	3	0
	Japanese Encephalitis	2	2	32	0	20	0
	Legionellosis	3	5	97	2	97	10
	Mumps	13	10	335	4	387	5
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	1	13	0	19	0
	Tetanus	0	0	4	0	6	0
	Category IV	Botulism	0	0	0	0	0
Brucellosis		0	0	0	0	0	0
Complicated Influenza		0	2	27	0	15	1
Complicated Varicella		1	1	18	0	26	1
Endemic Typhus Fever		0	0	0	0	0	0
Herpesvirus B Infection		8	7	301	0	299	2
Invasive Pneumococcal Disease		2	1	31	0	49	1
Leptospirosis		9	0	102	0	0	0
Lyme Disease		0	0	0	0	0	0
Melioidosis		0	1	9	1	12	0
Q Fever		0	1	8	1	11	0
Scrub Typhus		16	17	186	0	246	0
Toxoplasmosis		24	56	803	5	1005	6
Tularremia		0	0	11	1	8	0
Category V	Ebola Virus Disease	0	0	0	0	0	0
	Marburg Hemorrhagic Fever	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	0	0	0	0
	Lassa Fever	0	0	0	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus	0	0	0	0	1	1
	Yellow Fever	0	0	0	0	0	0
Zika Virus Infection	0	0	0	0	0	0	

1. ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.  
2. The following chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhoea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.  
3. Numbers of mumps, neonatal tetanus and tetanus cases are summed up by the week of report.  
4. Since 2016/1/22, "Zika Virus Infection" was listed as a Notifiable Infectious Disease.  
5. Since 2018/1/1, "Listeriosis" was listed as a Notifiable Infectious Disease.

## Suspected Clusters

- Twenty-five clusters were reported, including 6 tuberculosis clusters, 11 diarrhea clusters, 3 upper respiratory tract infection clusters, 4 influenza-like illness clusters, and 1 varicella cluster.

## Imported Infectious Diseases

- There were 18 confirmed imported cases from 5 countries during week 30 of 2018.

Disease \ Country	Vietnam	Philippines	Indonesia	Cambodia	Thailand	Total
DF	3	4		3	1	11
Acute Hepatitis B	2					2
Amoebiasis			2			2
Shigellosis			2			2
Zika virus infection		1				1
Total	5	5	4	3	1	18

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

- There are 286 confirmed imported cases from 24 different countries in 2018. The top 3 countries are Indonesia (85), Philippines (39), and Thailand (31).
- Top 3 imported diseases are Dengue Fever (122), Amoebiasis (68), and Shigellosis (28).

## Summary of Epidemic

- **Enterovirus:** Taiwan is in the midst of enterovirus season. Most reported cases experienced mild symptoms. In addition, the epidemic of positive cases with Echovirus 11 and EV71 infection in the community have small fluctuations, we should stay alert against enterovirus infection.
- **Dengue Fever:** The dengue activities in Southeast Asia are increasing. In addition, there have been indigenous dengue fever clusters in Taiwan. As the temperature and rainfall increases, the risk of dengue fever for both imported and indigenous cases is expected to be higher.
- **Japanese Encephalitis:** Taiwan is in the midst of Japanese encephalitis season. New cases are primarily in central and southern Taiwan. Most cases of Japanese encephalitis are sporadic.

- **Scrub Typhus:** Taiwan is in the midst of scrub typhus season. The current primarily affected areas include Hualien County and Taitung County.

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