

### **Assessment of Compulsory Examination for Typhoid Fever, Paratyphoid Fever And Bacillary Dysentery in Indonesian Migrant Labors**

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#### **Abstract**

Typhoid fever, paratyphoid fever, and bacillary dysentery are enteric infectious diseases which occur commonly in area under poor sanitary conditions or without tap water supply, and are also endemic in tropical and subtropical region. A typhoid fever outbreak related to Indonesian migrant labors occurred in Taiwan in 2009, so Taiwan government had implemented the health examination of typhoid fever within 3 days of arrival for Indonesian migrant labors since Oct 15, 2009. Many Indonesian migrant labors were found infected with bacillary dysentery through stool examination for typhoid fever. As a result, the examination of paratyphoid fever and bacillary dysentery were also included in Indonesian migrant labors' health examination within 3 days of arrival since Oct 15, 2011. We assessed the epidemiology of the three enteric infectious diseases among foreign labors in Taiwan during 2012 and 2017. Before implementing the examination policy, the majority of Indonesian migrant labors with enteric infections could not be notified until they sought medical treatment for illness, which could lead to disease spread in community. After policy implementation, the infected cases could be identified through health examination, especially for bacillary dysentery. The possibility of community spread could be lowered with immediate preventive measures by public health bureaus. In 2012–2017 the annual average number of confirmed aforementioned enteric infection among Indonesian migrant labors identified by

health examination within 3 days of arrival was 82, which was about 95.5% of all confirmed imported enteric infection among Indonesian migrant labors. This showed that the policy was effective in reducing the risk of domestic epidemics of enteric infection.

**Keywords:** Typhoid fever, paratyphoid fever, bacillary dysentery, Indonesia, migrant workers

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Received: Oct. 6, 2017

Accepted: Sep. 5, 2018

DOI: 10.6525/TEB.201812\_34(24).0001

week 48–49(Nov.25–Dec.8, 2018)

DOI: 10.6525/TEB.201812\_34(24).0002

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

Case diagnosis year		Week 48★		Week 1–48			
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	4	65	0	41	0
	Acute Viral Hepatitis type A	1	5	80	29	367	47
	Amoebiasis	11	18	307	136	334	179
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	6	6	11	11
	Cholera	0	0	7	0	2	1
	Dengue Fever	11	5	481	299	322	312
	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	6	6	7	7
	Measles	0	0	36	9	5	5
	Meningococcal Meningitis	0	0	5	1	11	0
	Paratyphoid Fever	0	0	8	7	5	4
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	10	9	3	2
Shigellosis	0	2	155	48	156	54	
Typhoid fever	1	0	14	10	17	14	
West Nile Fever	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	2	4	132	9	144	9
	Acute Viral Hepatitis type C	9	6	430	4	285	2
	Acute Viral Hepatitis type D	0	0	0	0	1	0
	Acute Viral Hepatitis type E	0	0	7	0	15	3
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	1	1
	Enteroviruses Infection with Severe Complications	0	0	37	0	11	0
	Haemophilus Influenza type b Infection	0	0	5	0	5	0
	Japanese Encephalitis	0	0	36	0	25	0
	Legionellosis	1	11	188	9	164	14
	Mumps	9	9	561	10	604	9
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	30	2	34	0
Tetanus	0	0	5	0	10	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	0	52	0	28	1
	Endemic Typhus Fever	0	0	23	1	35	1
	Herpesvirus B Infection	0	0	0	0	0	0
	Invasive Pneumococcal Disease	8	3	425	0	419	3
	Leptospirosis	2	2	91	1	98	1
	Listeriosis	3	...	155	1	...	...
	Lyme Disease	0	0	2	2	1	1
	Melioidosis	1	1	24	1	25	1
	Q Fever	0	0	19	2	18	0
	Scrub Typhus	5	7	345	2	398	0
	Severe Complicated Influenza	10	8	1108	5	1301	7
Toxoplasmosis	0	0	14	1	19	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	1	1
	Rift Valley Fever	0	0	0	0	0	0
	Yellow Fever	0	0	0	0	0	0
Zika virus infection	0	0	2	2	4	4	

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 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 2018/1/1, "Listeriosis" was listed as a Notifiable Infectious Disease. Symbols "..." means not under surveillance.

### Suspected Clusters

- Thirty-one clusters were reported, including 9 tuberculosis clusters, 8 diarrhea clusters, 3 upper respiratory tract infection clusters, 1 influenza-like illness cluster, 9 varicella clusters, and 1 enterovirus cluster.

### Imported Infectious Diseases

- There were 14 confirmed imported cases from 7 countries during week 48 of 2018.

Country Disease	Indonesia	Cambodia	Malaysia	Vietnam	Philippines	Singapore	Thailand	Total
DF		3	2	2	1	1		9
Amoebiasis	3				1		1	5
Total	3	3	2	2	2	1	1	14

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

- There are 602 confirmed imported cases from 30 different countries in 2018. The top 3 countries are Indonesia (177), Philippines (74), and Vietnam (68).
- Top 3 imported diseases are Dengue Fever (299), Amoebiasis (136), and Shigellosis (48).

### Summary of Epidemic

- **Dengue Fever:** The risk of indigenous dengue epidemics has been slowed down. However, cases are likely to occur sporadically. The dengue epidemics are still at its peak or in the midst in some of the nearby Asian countries, the potential risks of imported cases remain in Taiwan.
- **Influenza:** Influenza activity is expected to gradually increase due to large temperature differences between night and day.
- **Enterovirus:** Most reported cases experienced mild symptoms. However, cases of enterovirus infection with severe complications are likely to occur sporadically.

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

Case diagnosis year		Week 49★		Week 1–49			
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	3	4	68	0	45	0
	Acute Viral Hepatitis type A	3	3	83	30	370	47
	Amoebiasis	9	12	315	140	346	181
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	6	6	11	11
	Cholera	0	0	7	0	2	1
	Dengue Fever	12	6	493	310	328	318
	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	6	6	7	7
	Measles	0	0	36	9	5	5
	Meningococcal Meningitis	0	0	5	1	11	0
	Paratyphoid Fever	0	0	8	7	5	4
	Poliomyelitis	0	0	0	0	0	0
Rubella	0	0	10	9	3	2	
Shigellosis	3	4	158	48	160	56	
Typhoid fever	0	0	14	10	17	14	
West Nile Fever	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	3	4	135	10	148	9
	Acute Viral Hepatitis type C	20	9	450	5	294	2
	Acute Viral Hepatitis type D	0	0	0	0	1	0
	Acute Viral Hepatitis type E	0	0	7	0	15	3
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	1	1
	Enteroviruses Infection with Severe Complications	1	0	38	0	11	0
	Haemophilus Influenza type b Infection	0	1	5	0	6	0
	Japanese Encephalitis	1	0	37	0	25	0
	Legionellosis	11	8	199	10	172	14
	Mumps	10	10	571	10	614	9
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	30	2	34	0
Tetanus	0	0	5	0	10	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	0	52	0	28	1
	Endemic Typhus Fever	0	0	23	1	35	1
	Herpesvirus B Infection	0	0	0	0	0	0
	Invasive Pneumococcal Disease	6	7	431	0	426	3
	Leptospirosis	2	1	93	1	99	1
	Listeriosis	2	...	157	1	...	...
	Lyme Disease	0	0	2	2	1	1
	Melioidosis	0	0	24	1	25	1
	Q Fever	1	0	20	2	18	0
	Scrub Typhus	5	4	350	2	402	0
	Severe Complicated Influenza	10	10	1118	5	1311	7
Toxoplasmosis	0	1	14	1	20	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	1	1
	Rift Valley Fever	0	0	0	0	0	0
	Yellow Fever	0	0	0	0	0	0
Zika virus infection	1	0	3	3	4	4	

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 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 2018/1/1, "Listeriosis" was listed as a Notifiable Infectious Disease. Symbols "..." means not under surveillance.

## Suspected Clusters

- Twenty-three clusters were reported, including 9 tuberculosis clusters, 4 diarrhea clusters, 5 upper respiratory tract infection clusters, 1 influenza-like illness cluster, and 4 varicella clusters.

## Imported Infectious Diseases

- There were 20 confirmed imported cases from 9 countries during week 49 of 2018.

Disease \ Country	Vietnam	Cambodia	Indonesia	China	Thailand	Australia	Cuba	Malaysia	Philippines	Total
DF	4	4			1		1	1		11
Amoebiasis			3						1	4
Legionellosis				1						1
Acute Hepatitis C				1						1
Zika virus infection					1					1
Acute Hepatitis A						1				1
Acute Hepatitis B	1									1
Total	5	4	3	2	2	1	1	1	1	20

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

- There are 622 confirmed imported cases from 31 different countries in 2018. The top 3 countries are Indonesia (180), Philippines (75), and Vietnam (73).
- Top 3 imported diseases are Dengue Fever (310), Amoebiasis (140), and Shigellosis (48).

## Summary of Epidemic

- **Dengue Fever:** The risk of indigenous dengue epidemics has been slowed down. However, cases are likely to occur sporadically. The dengue epidemics are still at its peak or in the midst in some of the nearby Asian countries, the potential risks of imported cases remain in Taiwan.
- **Influenza:** Influenza activity has been increased gradually.
- **Enterovirus:** The epidemic has been increased slowly. Most reported cases experienced mild symptoms. However, cases of enterovirus infection with severe complications are likely to occur sporadically.

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, Zhongzheng 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 2018;34:[inclusive page numbers]. [DOI]