

Knowledge, Attitudes and Practices Survey of Tour Operators Regarding Travel-Related Infectious Diseases, Taiwan, 2016

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Abstract

While international travel is growing, the risk of travel-related infectious diseases is also increasing. Tour operators, such as tour guides and tour leaders, who provide the first line service, play an important role in travel health and disease prevention. Previous studies mainly focused on travelers. The objective of this study is to explore the knowledge, attitudes and practices of tourism industry regarding travel-related infectious diseases and its influencing factors to provide reference for future policy-making.

We enrolled the participants in a symposium for sharing the achievements in health tourism by the industry in 2016. We collected personal information and relevant knowledge, attitudes and practices regarding travel-related infectious diseases using a self-administered structured questionnaire. We applied descriptive statistics and chi-square tests to analyze the influencing factors.

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Analysis of 65 valid questionnaires showed that 62% of respondents had sufficient knowledge of infectious diseases, whereas those with correct knowledge of respiratory diseases (65%) were much fewer than those with correct knowledge of intestinal and vector-borne diseases (91%, 97%). More respondents with education level of university or higher had sufficient knowledge compared with those with lower education level ($p = 0.04$). Overall, 63% of respondents had a positive attitude. Only 33% of the respondents had visited travel health contract hospitals for vaccination, chemoprophylaxis or travel health counseling. Respondents' information of travel epidemics was mainly from Taiwan Centers for Disease Control (66%) and less from travel agencies (35%).

We recommend continuously strengthening travel agencies' risk perceptions of travel-related infectious diseases in order to enhance the knowledge and establish a positive attitude among the tourism industry. With assistance from the competent authorities, in-service workshops and training courses should be conducted regularly for tourism industry to reinforce the concept of epidemic prevention. In addition, we recommend promoting travel medicine in multifaceted ways, making tour operators utilize travel health contract hospital services and undertake essential pre- and post-travel health risk assessment.

Keywords: Travel, Infectious diseases, Knowledge, Attitude and Practice

Feasibility of Applying Travel Safety Short Message Service (SMS) for Risk Assessment on Infectious Disease Exposure, Taiwan, 2015

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Abstract

The frequent tourism, economic, and trade exchange activities have increased travelers' probability of exposure to infectious disease during trip. Convenient transportation tools facilitate the spread of various infectious diseases, even result in outbreaks in communities. To develop approaches to assess and manage the risks of infectious disease exposure of outbound Taiwanese travelers is important for providing a reference for infectious disease surveillance, blockade of disease importation, and prevention and control policies. At present, the statistics on number of outbound travelers from Tourism Bureau reflect the status of overseas travel. However, with limited information on countries without direct flights, such statistics were biased in risk assessment on travel-related infectious disease exposure. This study analyzed the secondary data of travel safety Short Message Service (SMS) sent by the Ministry of Foreign Affairs in order to assess the feasibility of applying the SMS in risk assessment on infectious disease exposure of outbound travelers.

The results showed that the data of SMS, reflecting numbers of travelers to certain countries, can be used as an important reference for assessing the risk of infectious disease exposure of travelers and their compliance with suggestions on tourism epidemic condition. However, due to the limitation of non-mandatory reception, individual's cell phone usage habit, non-transferrable of text messages to China, Hong Kong, and Macau, and not all of the telecom operators participated in this policy, the data were still incomplete. We recommended combining travel safety SMS with statistics on number of outbound travelers from Tourism Bureau to complete the data.

Keywords: Risk of infectious disease exposure, Border entry, Travel safety SMS, Risk assessment

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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	2017	2016	2017		2016	
				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	20	0	20	0
	Acute Viral Hepatitis type A	3	38	303	31	613	52
	Amoebiasis	8	9	200	109	164	77
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	7	7	7	7
	Cholera	0	3	0	0	3	0
	Dengue Fever	13	6	143	143	594	156
	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	3	0
	Malaria	0	0	3	3	6	6
	Measles	0	0	5	5	6	4
	Meningococcal Meningitis	0	0	6	0	2	0
	Paratyphoid Fever	0	0	3	3	4	1
	Poliomyelitis	0	0	0	0	0	0
	Rubella	1	0	2	2	4	3
	Shigellosis	4	2	105	37	117	54
	Typhoid fever	0	1	11	10	3	2
West Nile Fever	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	1	2	92	3	55	1
	Acute Viral Hepatitis type C	9	2	160	1	120	2
	Acute Viral Hepatitis type D	0	0	1	0	1	0
	Acute Viral Hepatitis type E	0	0	11	3	10	4
	Acute Viral Hepatitis untype	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	1	5	0	14	0
	Haemophilus Influenza type b Infection	0	3	2	0	10	0
	Japanese Encephalitis	4	3	18	0	13	0
	Legionellosis	5	1	92	9	60	1
	Mumps	13	12	377	5	327	4
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	1	18	0	9	0
	Tetanus	0	1	6	0	7	0
	Category IV	Botulism	0	1	0	0	4
Brucellosis		0	0	0	0	0	0
Complicated Influenza		104	2	949	4	1846	2
Complicated Varicella		1	0	13	1	24	0
Endemic Typhus Fever		1	1	25	1	11	0
Herpesvirus B Infection		0	0	0	0	0	0
Invasive Pneumococcal Disease		18	8	292	2	362	0
Leptospirosis		8	3	48	1	38	2
Lyme Disease		0	0	0	0	0	0
Melioidosis		0	1	11	0	9	1
Q Fever		0	2	10	0	28	3
Scrub Typhus		26	13	230	1	267	2
Toxoplasmosis		0	0	8	0	7	0
Tularremia		0	0	0	0	0	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	1	1	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	0	0
	Yellow Fever	0	0	0	0	0	0
Zika Virus Infection	0	0	2	2	3	3	

1. ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
2. The following 8 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 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.

Suspected Clusters

- Forty-one clusters were reported, including 11 tuberculosis clusters, 4 diarrhea clusters, 14 upper respiratory tract infection clusters, 10 influenza-like illness clusters and 2 fever of unknown origin clusters.

Imported Infectious Diseases

- 20 confirmed cases were imported from 8 countries during Week 29 of 2017.

Country \ Disease	Vietnam	Indonesia	Cambodia	China	Myanmar	Philippines	Malaysia	Thailand	Total
DF	5		2	1	2	1	1	1	13
Amoebiasis		3	1			1			5
Rubella				1					1
Shigellosis		1							1
Total	5	4	3	2	2	2	1	1	20

Note: The statistics listed in this table include imported cases that were either **confirmed** or **updated** in the previous week.

- A total of 384 confirmed cases were imported from 25 countries in 2017.
- Top 3 imported diseases : Dengue fever (143), Amoebiasis (109), Shigellosis (37).
- Top 3 countries responsible for most imported cases : Indonesia (142), Vietnam (46), Philippines (42).

Summary of Epidemic

- **Influenza** : Influenza activity has reached its peak and may decrease gradually. The occurrence of severe cases is expected to decline following the decrease of ILI.
- **Enterovirus** : The enterovirus epidemic season has begun. The number of severe cases may increase. EV71 is still circulating in the community.
- **Scrub Typhus** : The scrub typhus epidemic season has begun. The newly reported cases are primarily from Hualien County, Taitung County, Kinmen County and Penghu County.
- **Japanese Encephalitis** : The Japanese encephalitis epidemic season has begun. Although the endemic areas are primarily central and southern Taiwan, sporadic cases are expected to occur in the other cities and counties.
- **Dengue Fever** : Epidemics in Southeast Asia are increasing gradually. As the rain has continued to occur across Taiwan, the risk of imported and indigenous epidemics is elevated.

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

Case diagnosis year		Week 30★		Week 1-30			
Classification	Disease Diagnosed	2017	2016	2017		2016	
				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	1	20	0	21	0
	Acute Viral Hepatitis type A	4	33	307	32	646	53
	Amoebiasis	4	6	204	115	170	80
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	0	7	7	7	7
	Cholera	0	0	0	0	3	0
	Dengue Fever	10	11	153	152	605	167
	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	3	0
	Malaria	0	0	3	3	6	6
	Measles	0	0	5	5	6	4
	Meningococcal Meningitis	3	0	9	0	2	0
	Paratyphoid Fever	0	0	3	3	4	1
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	2	2	4	3
	Shigellosis	2	4	107	39	121	56
	Typhoid fever	0	0	11	10	3	2
West Nile Fever	0	0	0	0	0	0	
Category III	Acute Viral Hepatitis type B	6	0	98	3	55	1
	Acute Viral Hepatitis type C	8	3	168	1	123	2
	Acute Viral Hepatitis type D	0	0	1	0	1	0
	Acute Viral Hepatitis type E	1	0	12	3	10	4
	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	6	0	15	0
	Haemophilus Influenza type b Infection	1	0	3	0	10	0
	Japanese Encephalitis	2	2	20	0	15	0
	Legionellosis	5	3	97	9	63	1
	Mumps	10	10	387	5	337	4
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	1	1	19	0	10	0
	Tetanus	0	0	6	0	7	0
Category IV	Botulism	0	0	0	0	4	0
	Brucellosis	0	0	0	0	0	0
	Complicated Influenza	56	3	1005	5	1849	2
	Complicated Varicella	2	1	15	1	25	0
	Endemic Typhus Fever	1	0	26	1	11	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Invasive Pneumococcal Disease	7	8	299	2	370	0
	Leptospirosis	1	1	49	1	39	2
	Lyme Disease	0	0	0	0	0	0
	Melioidosis	1	4	12	0	13	1
	Q Fever	1	0	11	0	28	3
	Scrub Typhus	17	14	247	0	281	3
	Toxoplasmosis	0	0	8	0	7	0
	Tularremia	0	0	0	0	0	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	1	1	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	0	0
	Yellow Fever	0	0	0	0	0	0
	Zika Virus Infection	1	0	3	3	3	3

- ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
- The following 8 chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.
- Numbers of mumps 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.

Suspected Clusters

- Thirty-eight clusters were reported, including 12 tuberculosis clusters, 8 diarrhea clusters, 8 upper respiratory tract infection clusters, 8 influenza-like illness clusters, 1 fever of unknown origin cluster and 1 enterovirus cluster.

Imported Infectious Diseases

- 20 confirmed cases were imported from 7 countries during Week 30 of 2017.

Country \ Disease	Indonesia	Vietnam	Myanmar	China	Thailand	Philippines	Singapore	Total
DF	1	5	1		1		1	9
Amoebiasis	6							6
Shigellosis	2							2
FluSC				1				1
Zika		1						1
Hepatitis A						1		1
Total	9	6	1	1	1	1	1	20

Note: The statistics listed in this table include imported cases that were either **confirmed** or **updated** in the previous week.

- A total of 398 confirmed cases were imported from 25 countries in 2017.
- Top 3 imported diseases : Dengue fever (152), Amoebiasis (115), Shigellosis (39).
- Top 3 countries responsible for most imported cases : Indonesia (150), Vietnam (51), Philippines (43).

Summary of Epidemic

- **Enterovirus** : The enterovirus epidemic season has begun, most cases are mild cases. The number of severe cases may increase. EV71 is still circulating in the community.
- **Influenza** : The overall influenza epidemic has gradually slowed down. Although, influenza activity is still at its peak, it is expected to decrease in mid-August.
- **Japanese Encephalitis** : The Japanese encephalitis epidemic season has begun. Although the endemic areas are primarily central and southern Taiwan, sporadic cases are expected to occur in the other cities and counties.
- **Scrub Typhus** : The scrub typhus epidemic season has begun. Although the newly reported cases are primarily from Hualien County, Taitung County, Kinmen County and Penghu County, sporadic cases are expected to occur in the other cities and counties.

- **Dengue Fever** : Epidemics in Southeast Asia are slowly on the rise and Taiwan confirms this year's first indigenous dengue case, the risk of imported and indigenous epidemics is elevated.

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