

### **A Survey of Knowledge, Attitudes, and Practices Relating to Adverse Events Following Seasonal Influenza Vaccination among Healthcare Providers in Taiwan, 2015**

Meng-Yu Chen<sup>1</sup>, Wei-I Huang<sup>2</sup>, Yi-Hsuan Chen<sup>2</sup>, Wan-Ting Huang<sup>1\*</sup>

#### **Abstract**

Reporting adverse event following immunization (AEFI) is important to assure the safety of seasonal influenza vaccines. In Taiwan, most AEFI are reported by healthcare providers (HCP), but the knowledge, attitudes and practices relating to AEFI reporting among HCP have not been well studied. We conducted a cross-sectional survey among HCP who have involved in national influenza immunization programs to assess their knowledge, attitudes and practices regarding AEFI after influenza vaccination. Responses were obtained from 5,732 participants, an overall response rate of 73%. A majority of HCP (70%) showed good awareness of AEFI and event reporting, but only 0.4% obtained full marks on the knowledge survey. Most HCP showed a positive attitude to AEFI reporting with a mean score 35 out of full marks of 50. About 90% of HCP always informed vaccinees about possible AEFI. Among all participants, 19% indicated that they had ever identified an AEFI after influenza vaccination. Of those who had ever identified an AEFI, 34% had ever reported an AEFI. Male, physicians and pharmacists had higher scores in knowledge and attitudes. Pediatric HCP had higher knowledge scores but lower attitude scores and were less likely to report an AEFI compared to non-pediatrics. “Not sure if influenza vaccines cause the event” and “the event is commonly expected” were the two main reasons HCP keep from reporting AEFI. More education on identifying AEFI and process of reporting is needed to

<sup>1</sup>Office of Preventive Medicine, Centers for Disease Control, Ministry of Health and Welfare, Taiwan

<sup>2</sup>Taiwan National Adverse Drug Reaction Reporting Center, Taiwan Drug Relief Foundation

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Corresponding author: Wan-Ting Huang<sup>1\*</sup>

E-mail: muagi@cdc.gov.tw

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improve the knowledge of AEFI among HCP. In-depth interviews or direct observation of practice would be helpful for better understanding of the barriers to AEFI reporting among different HCP groups.

**Keywords:** Influenza vaccine, Adverse event following immunization, Healthcare provider

## Performance Evaluation of the Alere i Influenza A&B Rapid Diagnostic Test, 2016

Ji-Rong Yang<sup>\*</sup>, Shu-Zhen Hsu, Chuan-Yi Kuo, Ming-Tsan Liu

### Abstract

Influenza is an annually occurred infectious disease, causing severe infections and death among human cases. The use of rapid influenza diagnostic tests (RIDTs) facilitates antiviral prescription for influenza treatment, reduces the need for unnecessary antibacterial agents and allows the implementation of infection control measures. In this study, we evaluated a new RIDT, the Alere i Influenza A&B, for its detection ability against both influenza A and B viruses and compared to real-time RT-PCR assay. A total of 112 throat swab specimens were tested. Compared with the results of real-time RT-PCR assay, the Alere i assay exhibited a detection rate of 43.8% for influenza A viruses with cycle of crossing point (Cp) value ranged from 28–35, and 38.5% for B viruses at Cp value of 26–33, respectively. Detailed analysis showed that the assay had better detection ability of 88% toward influenza A viruses when Cp value was in the range of 28–29. In contrast, no significant difference was observed for the detection ability toward influenza B viruses when the Cp value was lower than 33. The evaluated specificity of Alere i Influenza A&B was 100%. These data indicate that this new RIDT provides fairly accurate results against influenza A viruses, highlighting the future applications for clinical diagnosis of influenza infections.

**Keywords:** Influenza virus, Rapid influenza diagnostic test, Alere i Influenza A&B

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Center for Research, Diagnostics and Vaccine Development, Centers for Disease Control, Ministry of Health and Welfare, Taiwan  
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Corresponding author: Ji-Rong Yang<sup>\*</sup>  
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## Weekly Data of Notifiable Infectious Diseases ( by week of diagnosis )

Case diagnosis year		Week 33★		Week 1-33				
Classification	Disease Diagnosed	2017	2016	2017		2016		
				Total cases★	Imported cases	Total cases★	Imported cases	
<b>Category I</b>	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	
<b>Category II</b>	Acute Flaccid Paralysis	0	3	22	0	25	0	
	Acute Viral Hepatitis type A	5	20	318	34	721	59	
	Amoebiasis	9	4	225	122	191	90	
	Anthrax	0	0	0	0	0	0	
	Chikungunya Fever	1	0	9	9	7	7	
	Cholera	0	1	0	0	4	0	
	Dengue Fever	15	17	194	191	654	215	
	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	4	4	6	6	
	Measles	0	0	5	5	12	7	
	Meningococcal Meningitis	0	0	10	0	2	0	
	Paratyphoid Fever	0	1	3	3	5	2	
	Poliomyelitis	0	0	0	0	0	0	
	Rubella	0	0	2	2	4	3	
	Shigellosis	2	6	112	40	136	66	
	Typhoid fever	2	0	13	12	3	2	
West Nile Fever	0	0	0	0	0	0		
<b>Category III</b>	Acute Viral Hepatitis type B	1	3	105	4	63	1	
	Acute Viral Hepatitis type C	6	1	191	1	132	2	
	Acute Viral Hepatitis type D	0	0	1	0	1	0	
	Acute Viral Hepatitis type E	0	0	13	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	2	7	0	17	0	
	Haemophilus Influenza type b Infection	0	2	3	0	12	0	
	Japanese Encephalitis	0	0	22	0	16	0	
	Legionellosis	4	3	107	11	68	1	
	Mumps	16	10	425	7	372	6	
	Neonatal Tetanus	0	0	0	0	0	0	
	Pertussis	2	1	22	0	11	0	
	Tetanus	0	0	6	0	8	0	
	<b>Category IV</b>	Botulism	0	0	0	0	4	0
		Brucellosis	0	0	0	0	0	0
Complicated Influenza		45	1	1148	5	1856	2	
Complicated Varicella		0	0	18	1	25	0	
Endemic Typhus Fever		0	0	28	1	11	0	
Herpesvirus B Infection		0	0	0	0	0	0	
Invasive Pneumococcal Disease		10	6	322	2	391	0	
Leptospirosis		2	1	56	1	52	2	
Lyme Disease		0	0	0	0	0	0	
Melioidosis		1	1	14	0	14	1	
Q Fever		0	2	11	0	33	3	
Scrub Typhus		9	8	283	0	304	3	
Toxoplasmosis		1	0	9	0	7	0	
Tularremia		0	0	0	0	0	0	
<b>Category V</b>	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	1	3	3	6	6		

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

- Twenty-five clusters were reported, including 4 tuberculosis clusters, 8 diarrhea clusters, 6 upper respiratory tract infection clusters and 7 influenza-like illness clusters.

### Imported Infectious Diseases

- 26 confirmed cases were imported from 10 countries during Week 33 of 2017.

Country \ Disease	Philippines	Vietnam	Myanmar	India	Indonesia	Thailand	China	Malaysia	Cambodia	Japan	Total
DF	2	4	3			3		2	1		15
Amoebiasis	1				2		1				4
Hepatitis A				1						1	2
Legionellosis	1						1				2
Typhoid fever				1	1						2
Chikungunya Fever	1										1
Total	5	4	3	2	3	3	2	2	1	1	26

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

- A total of 455 confirmed cases were imported from 28 countries in 2017.
- Top 3 imported diseases : Dengue fever (191), Amoebiasis (122), Shigellosis (40).
- Top 3 countries responsible for most imported cases : Indonesia (159), Vietnam (65), Philippines (55).

### Summary of Epidemic

- **Enterovirus** : The enterovirus epidemic season has begun. Most reported cases experience mild symptoms. EV71 virus is still circulating in the community.
- **Japanese Encephalitis** : The Japanese encephalitis epidemic season has begun and the high risk areas are mainly in central and southern Taiwan.
- **Scrub Typhus** : The scrub typhus epidemic season has begun. The high risk areas include Hualien County, Taitung County, Kinmen County and Penghu County.
- **Dengue Fever** : Epidemics in Southeast Asian countries are slowly on the rise, which have resulted in an increase in the number of imported cases and clusters recently. Meanwhile, indigenous dengue fever cases have been confirmed in Taiwan. Therefore, the risk of imported and indigenous epidemic is elevated.

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

Case diagnosis year		Week 34★		Week 1-34			
Classification	Disease Diagnosed	2017	2016	2017		2016	
				Total cases★	Imported cases	Total cases★	Imported cases
<b>Category I</b>	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
<b>Category II</b>	Acute Flaccid Paralysis	0	2	22	0	27	0
	Acute Viral Hepatitis type A	7	24	325	34	745	64
	Amoebiasis	6	7	231	127	198	96
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	1	9	9	8	8
	Cholera	0	2	0	0	6	0
	Dengue Fever	14	18	208	205	672	233
	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	4	4	6	6
	Measles	0	1	5	5	13	7
	Meningococcal Meningitis	1	0	11	0	2	0
	Paratyphoid Fever	0	0	3	3	5	2
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	0	2	2	4	3
	Shigellosis	1	1	113	40	137	66
	Typhoid fever	0	0	13	12	3	2
West Nile Fever	0	0	0	0	0	0	
<b>Category III</b>	Acute Viral Hepatitis type B	3	4	108	4	67	2
	Acute Viral Hepatitis type C	7	8	198	1	140	2
	Acute Viral Hepatitis type D	0	0	1	0	1	0
	Acute Viral Hepatitis type E	0	0	13	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	7	0	18	0
	Haemophilus Influenza type b Infection	0	1	3	0	13	0
	Japanese Encephalitis	0	0	22	0	16	0
	Legionellosis	2	2	109	12	70	1
	Mumps	13	14	438	7	386	7
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	3	1	25	0	12	0
	Tetanus	0	0	6	0	8	0
	<b>Category IV</b>	Botulism	0	0	0	0	4
Brucellosis		0	0	0	0	0	0
Complicated Influenza		25	3	1173	5	1859	2
Complicated Varicella		0	0	18	1	25	0
Endemic Typhus Fever		0	0	28	1	11	0
Herpesvirus B Infection		0	0	0	0	0	0
Invasive Pneumococcal Disease		4	10	326	2	401	0
Leptospirosis		3	3	59	1	55	2
Lyme Disease		0	1	0	0	1	1
Melioidosis		2	2	16	0	16	1
Q Fever		1	1	12	0	34	3
Scrub Typhus		6	5	288	0	309	3
Toxoplasmosis		1	0	10	0	7	0
Tularemia		0	0	0	0	0	0
<b>Category V</b>	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	3	3	6	6

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, Gonorrhea, 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

- Twenty-five clusters were reported, including 11 tuberculosis clusters, 5 diarrhea clusters, 4 upper respiratory tract infection clusters, 4 influenza-like illness clusters and 1 enterovirus cluster.

## Imported Infectious Diseases

- 17 confirmed cases were imported from 8 countries during Week 34 of 2017.

Disease \ Country	Indonesia	Vietnam	Philippines	China	Myanmar	Malaysia	Thailand	India	Total
DF	2	6	2		1	1	1	1	14
Amoebiasis	2								2
Legionellosis				1					1
Total	4	6	2	1	1	1	1	1	17

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

- A total of 476 confirmed cases were imported from 28 countries in 2017.
- Top 3 imported diseases : Dengue fever (205), Amoebiasis (127), Shigellosis (40).
- Top 3 countries responsible for most imported cases : Indonesia (166), Vietnam (73), Philippines (57).

## Summary of Epidemic

- **Enterovirus** : The enterovirus epidemic season has begun. Most reported cases experience mild symptoms. EV71 virus is still circulating in the community.
- **Japanese Encephalitis** : Although the Japanese encephalitis epidemic season has passed its peak, the season has not ended yet. The high risk areas are mainly in central and southern Taiwan.
- **Scrub Typhus** : The scrub typhus epidemic season has begun. The high risk areas include Hualien County, Taitung County, Kinmen County and Penghu County.
- **Dengue Fever** : Epidemics in Southeast Asian countries are slowly on the rise, which have resulted in an increase in the number of imported cases and clusters recently. Meanwhile, indigenous dengue fever cases have been confirmed and as the rain has continued to occur in southern Taiwan, the risk of imported and indigenous epidemic is elevated.

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