

Risk Assessment of Enterovirus D68 in Taiwan

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Abstract

Enterovirus D68 (EV-D68) was associated with a widespread outbreak of severe respiratory disease since August 2014 in the US and acute flaccid myelitis during the 2014 outbreak. Some regions in Canada and European countries have also reported sporadic cases of laboratory-confirmed EV-D68 infections. Frequent travelling between the US, Europe and Taiwan posed a threat to Taiwan during enterovirus season, which triggered the risk assessment on EV-D68.

We estimated the probability and population-level impact of EV-D68 infections in Taiwan by referring to the risk assessment reports on EV-D68, the international risk assessment framework and algorithm, viral characteristics, global epidemiology, susceptibility of the population and other information currently available.

To date, the available information and scientific evidence indicated that the likelihood of any sporadic cases and clusters due to EV-D68 in Taiwan is medium, while the risk that sporadic case of severe respiratory illness and acute flaccid myelitis detected is due to EV-D68 is very low. EV-D68 detection and surveillance in Taiwan should be considered and enhanced in persons with severe unexplained acute respiratory disease or unexplained neurological symptoms. We recommended that healthcare professionals should be vigilant about preventing the spread of EV-D68, perform wash hands correctly and maintain a hygienic environment during enterovirus seasons.

Keywords: Severe unexplained acute respiratory disease ; Enterovirus ; Risk assessment ; Acute flaccid myelitis ; Acute flaccid paralysis

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Coxsackievirus A6 Infections in Taiwan

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Abstract

Based on the surveillance data from the contract laboratories of Taiwan Centers for Disease Control, several large outbreaks of enterovirus infection associated with Coxsackievirus A6 (CA6) took place in the years 2009, 2010 and 2013 in Taiwan. In addition, a small CA6 outbreak was also observed, which began by the end of 2014 and continued in 2015. We detected a mutant strain of CA6, which started circulating in Taiwan in 2010. Patients' symptoms associated with this mutant strain were different, predominately hand, foot, and mouth disease (HFMD) with large vesicles, onychomadesis, and desquamation but not herpangina. Although CA6 is not highly prevalent currently, the epidemic occurred a few times in the past several years. Continued monitoring of CA6, especially the mutant strain, is needed to reduce the impact of CA6 epidemic.

Keywords : Enterovirus ; Coxsackievirus A6 ; Vesicles ; Onychomadesis

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Fatal Dengue Cases, May–September 2015

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Abstract

The number of dengue cases in 2015 had been the highest compared with the numbers in past years since dengue fever became notifiable in Taiwan. During May–September 2015, 13,682 local cases, including 46 deaths, were reported. Of 46 deaths, 36 were directly related to dengue as determined by an expert committee.

The median age of the 46 deaths was 77 years (range 49–94 years); 24 (52.2%) were male and 41 (89.1%) had at least one chronic conditions. Sixteen (34.8%) of 46 patients had initial presentations compatible to severe dengue fever. Of 30 cases that did not meet the criteria for severe dengue fever, 13 showed warning signs. Half of the mortality occurred within 5 days after symptoms onset. It is important to monitor carefully for severe dengue and dengue with warning signs, especially in elderly patients and those who have multiple comorbidities, which implicate higher risk of mortality.

Keywords : Dengue ; Mortality

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

Case diagnosis week		Week 42		Week 1—42	
Classification	Disease Diagnosed ¹	2015	2014	2015	2014
Category I	Plague	0	0	0	0
	Rabies	0	0	0	0
	SARS	0	0	0	0
	Smallpox	0	0	0	0
Category II	Acute Flaccid Paralysis	0	0	13	29
	Acute Viral Hepatitis type A	4	5	110	91
	Amoebiasis	5	4	292	229
	Anthrax	0	0	0	0
	Chikungunya Fever	0	0	4	7
	Cholera	2	0	10	4
	Dengue Fever	2100	1126	27593	5909
	Diphtheria	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0
	Epidemic Typhus Fever	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	2	1
	Malaria	0	3	8	18
	Measles	0	0	29	20
	Meningococcal Meningitis	1	0	3	3
	Paratyphoid Fever	0	0	2	8
	Poliomyelitis	0	0	0	0
	Rubella	0	0	6	5
	Shigellosis	3	3	148	109
Typhoid fever	0	0	24	20	
West Nile Fever	0	0	0	0	
Category III	Acute Viral Hepatitis type B	4	2	101	94
	Acute Viral Hepatitis type C ⁵	2	6	168	147
	Acute Viral Hepatitis type D	0	0	1	1
	Acute Viral Hepatitis type E	0	0	2	10
	Acute Viral Hepatitis untype	0	0	2	4
	Congenital Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	5	6
	Haemophilus Influenza type b Infection	0	0	2	3
	Japanese Encephalitis	1	0	29	15
	Legionellosis	4	1	138	106
	Mumps ²	15	21	638	741
	Neonatal Tetanus	0	0	0	0
	Pertussis	0	2	72	58
	Tetanus ²	1	0	9	5
	Category IV	Botulism	0	0	2
Brucellosis		0	0	2	0
Complicated Influenza		1	0	805	1753
Complicated Varicella ⁴		0	0	43	44
Endemic Typhus Fever		1	1	30	22
Herpesvirus B Infection		0	0	0	0
Invasive Pneumococcal Disease		7	7	422	472
Leptospirosis		5	1	68	74
Lyme Disease		0	0	2	2
Melioidosis		1	0	28	27
Q Fever		1	0	37	43
Scrub Typhus		19	14	314	354
Toxoplasmosis		1	0	10	11
Tularremia		0	0	0	0
Category V	Ebola Virus Disease	0	0	0	0
	Ebola-Marburg Hemorrhagic Fever	0	0	0	0
	Novel Influenza A Virus Infections ⁶	0	0	0	0
	Lassa Fever	0	0	0	0
	Rift Valley Fever	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus Yellow Fever	0 0	0 0	0 0	0 0

1. The following 8 chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.
2. Reported cases.
3. Since 2014/1/1, "Varicella" was modified to "Complicated Varicella".
4. Since 2014/3/6, the case definition for confirmed Acute hepatitis C was changed from "meet the clinical and laboratory conditions" to "meet the clinical or laboratory conditions".
5. Since 2014/7/1, various subtypes of human cases of avian influenza are reported as "novel influenza A virus infections", a Category V Notifiable Infectious Disease. The original "H5N1 flu" and "H7N9 flu", which were respectively listed as a Category I Notifiable Infectious Disease and a Category V Notifiable Infectious Disease were removed from the list on the same day.

Suspected Clusters

- Fourteen clusters were reported, including 8 diarrhea clusters, 4 tuberculosis clusters, 1 upper respiratory tract infection cluster, and 1 varicella cluster.

Imported Infectious Diseases

- 16 confirmed cases were imported from 7 countries during Week 42 of 2015.

Country Disease	Vietnam	Philippines	Thailand	India	Indonesia	China	Malaysia	Total
Dengue Fever	3	3	3	1			1	11
Amoebiasis	1				1			2
Legionellosis						1		1
Cholera	1							1
Leptospirosis	1							1
Total	6	3	3	1	1	1	1	16

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

- A total of 612 confirmed cases were imported from 33 countries in 2015.
- Top 3 imported diseases : Dengue fever (272), Amoebiasis (168), Shigellosis (70).
- Top 3 countries responsible for most imported cases : Indonesia (291), Philippines (56), Vietnam (52).

Summary of Epidemic

- **Dengue Fever** : Dengue activity has entered the peak of the epidemic season. The public is urged to clean up and remove any vector breeding sites. The epidemic has increased in Kaohsiung City and the number of new cases reported during Week 42 is 1.2 times higher than that reported during Week 41. The hot spots of the epidemic in Kaohsiung City are Sanmin District, Lingya District and Cianjhen District. On the other hand, the epidemic has slowed down and the number of new cases reported during Week 42 is 30% less than that reported during Week 41 in Tainan City. The majority of the cases were reported in East District, Tainan City. The epidemic has increased slightly in Pingtung County. The majority of the cases were reported in Pingtung City. Since May 1, 2015, 122 deaths were confirmed to be caused by dengue infection, while 29 deaths are waiting to be reviewed. As of now, 27 dengue cases are still being treated in the intensive care unit (ICU), and 92.3% of the reported cases have recovered.

- **Enterovirus** : Enterovirus season has continued and enterovirus activity is above the epidemic threshold. The number of visits to ER and the consultation rate for enterovirus infection during Week 42 are lower than that during Week 41. Coxsackie A virus is currently the dominant strain circulating in the community.
- **Influenza** : Influenza activity has not fluctuated and remained at the baseline level. H3N2 is currently the dominant strain circulating in the community.

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

Classification	Case diagnosis week Disease Diagnosed ¹	Week 43		Week 1—43	
		2015	2014	2015	2014
Category I	Plague	0	0	0	0
	Rabies	0	0	0	0
	SARS	0	0	0	0
	Smallpox	0	0	0	0
Category II	Acute Flaccid Paralysis	6	0	19	29
	Acute Viral Hepatitis type A	5	2	115	93
	Amoebiasis	6	7	298	236
	Anthrax	0	0	0	0
	Chikungunya Fever	0	0	4	7
	Cholera	0	0	10	4
	Dengue Fever	2151	1511	29737	7420
	Diphtheria	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0
	Epidemic Typhus Fever	0	0	0	0
	Hantavirus Pulmonary Syndrome	0	0	0	0
	Hemorrhagic Fever with Renal Syndrome	0	0	2	1
	Malaria	0	0	8	18
	Measles	0	1	29	21
	Meningococcal Meningitis	0	0	3	3
	Paratyphoid Fever	1	0	3	8
	Poliomyelitis	0	0	0	0
	Rubella	0	0	6	5
	Shigellosis	5	3	153	112
Typhoid fever	0	0	24	20	
West Nile Fever	0	0	0	0	
Category III	Acute Viral Hepatitis type B	1	0	102	94
	Acute Viral Hepatitis type C ⁵	4	8	172	155
	Acute Viral Hepatitis type D	0	0	1	1
	Acute Viral Hepatitis type E	0	1	2	11
	Acute Viral Hepatitis untype	0	0	2	4
	Congenital Rubella Syndrome	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	1	5	7
	Haemophilus Influenza type b Infection	0	0	2	3
	Japanese Encephalitis	0	0	29	15
	Legionellosis	2	3	140	109
	Mumps ²	19	16	657	757
	Neonatal Tetanus	0	0	0	0
	Pertussis	2	2	74	60
	Tetanus ²	0	1	9	6
Category IV	Botulism	0	0	2	0
	Brucellosis	0	0	2	0
	Complicated Influenza	1	2	806	1755
	Complicated Varicella ⁴	2	4	45	48
	Endemic Typhus Fever	0	1	30	23
	Herpesvirus B Infection	0	0	0	0
	Invasive Pneumococcal Disease	8	10	430	482
	Leptospirosis	2	2	70	76
	Lyme Disease	0	0	2	2
	Melioidosis	1	0	29	27
	Q Fever	1	2	38	45
	Scrub Typhus	21	22	335	376
	Toxoplasmosis	1	1	11	12
Tularremia	0	0	0	0	
Category V	Ebola Virus Disease	0	0	0	0
	Ebola-Marburg Hemorrhagic Fever	0	0	0	0
	Novel Influenza A Virus Infections ⁶	0	0	0	0
	Lassa Fever	0	0	0	0
	Rift Valley Fever	0	0	0	0
	Middle East Respiratory Syndrome Coronavirus	0	0	0	0
Yellow Fever	0	0	0	0	

1. The following 8 chronic diseases are excluded from the table: MDR-TB, Tuberculosis, Syphilis, Gonorrhea, HIV Infection, AIDS, Hansen Disease and Creutzfeldt-Jakob Disease.
2. Reported cases.
3. Since 2014/1/1, "Varicella" was modified to "Complicated Varicella".
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5. Since 2014/7/1, various subtypes of human cases of avian influenza are reported as "novel influenza A virus infections", a Category V Notifiable Infectious Disease. The original "H5N1 flu" and "H7N9 flu", which were respectively listed as a Category I Notifiable Infectious Disease and a Category V Notifiable Infectious Disease were removed from the list on the same day.

Suspected Clusters

- Nine clusters were reported, including 7 diarrhea clusters, 1 upper respiratory tract infection cluster, and 1 varicella cluster.

Imported Infectious Diseases

- 12 confirmed cases were imported from 9 countries during Week 41 of 2015..

Country Disease	Indonesia	Malaysia	Philippines	Myanmar	Australia	Thailand	China	India	Total
Dengue Fever	1	3	2	2	2	1		1	12
Amoebiasis	3								3
Shigellosis	1						1		2
Hepatitis A								1	1
Total	5	3	2	2	2	1	1	1	18

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

- A total of 628 confirmed cases were imported from 33 countries in 2015.
- Top 3 imported diseases : Dengue fever (284), Amoebiasis (171), Shigellosis (72).
- Top 3 countries responsible for most imported cases : Indonesia (296), Philippines (58), Vietnam (52).

Summary of Epidemic

- **Dengue Fever** : Dengue activity has entered the peak of the epidemic season. The public is urged to clean up and remove any vector breeding sites. The epidemic has increased in Kaohsiung City and the number of new cases reported during Week 43 is 1.3 times higher than that reported during Week 42. The hot spots of the epidemic in Kaohsiung City are Sanmin District, Lingya District, Fongshan District and Cianjhen District. On the other hand, the epidemic has slowed down and the number of new cases reported during Week 43 is 30% less than that reported during Week 42 in Tainan City. The majority of the cases were reported in East District, Tainan City. Since May 1, 2015, 129 deaths were confirmed to be caused by dengue infection, while 27 deaths are waiting to be reviewed. As of now, 28 dengue cases are still being treated in the intensive care unit (ICU), and 92.9% of the reported cases have recovered.

- **Enterovirus** : Enterovirus season has continued and enterovirus activity is above the epidemic threshold. The number of visits to outpatient services and ER for enterovirus infection during Week 43 are higher than that during Week 42. Coxsackie A virus is currently the dominant strain circulating in the community.
- **Influenza** : Influenza activity has not fluctuated and remained at the baseline level. H3N2 is currently the dominant strain circulating in the community.

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