

Discussion on The Establishment of Biosafety Officers in Biorisk Management System in Taiwan

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Abstract

Since the implementation of the "Regulations for the Management of Infectious Biological Materials" in 2005, the laboratory biosafety management system has been in operation for more than 15 years. With the advancement of international laboratory biosafety management policies and standards, it has become a trend for laboratories to implement biorisk management systems. In response to this trend, the Taiwan Centers for Disease Control (Taiwan CDC) has been actively guiding specific laboratories to implement biorisk management systems in recent years. Since the biosafety officer (BSO) is the key person in the system management, Taiwan CDC is planning to amend the regulation in 2021 to incorporate the qualifications, responsibilities, training, and maintenance of BSOs into the system. We compiled and compared the management systems of BSOs in developed countries, including the United States, Canada, the United Kingdom, and Singapore, to facilitate the appointment of a BSO in biorisk management system that is consistent with national conditions and in line with international standards.

Keywords: Laboratory, biosafety, biorisk management system, biosafety officer

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Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 44★		Week 1-44			
Classification	Disease Diagnosed	2023	2022	2023		2022	
				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	Cholera	0	1	1	0	1	0
	Typhoid fever	0	0	8	6	3	1
	Paratyphoid Fever	3	1	16	1	4	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Shigellosis	3	8	58	12	68	6
	Amoebiasis	6	5	232	97	178	60
	Enterohemorrhagic E.coli Infection	0	0	0	0	2	0
	Anthrax	0	0	0	0	0	0
	Diphtheria	0	0	0	0	0	0
	Meningococcal Meningitis	1	0	4	0	1	0
	Poliomyelitis	0	0	0	0	0	0
	Acute Flaccid Paralysis	1	2	51	0	25	0
	Measles	0	0	2	2	1	0
	Rubella	0	0	0	0	0	0
	Dengue Fever	1,592	1	21,822	219	71	51
	West Nile Fever	0	0	0	0	0	0
	Acute Viral Hepatitis type A	0	0	75	5	114	1
	Malaria	0	0	1	1	2	2
	Chikungunya Fever	0	0	8	8	1	1
Hantavirus syndrome	0	0	6	0	3	0	
Zika virus infection	0	0	3	3	0	0	
Mpox	1	0	351	13	4	4	
Category III	Acute Viral Hepatitis type B	5	1	118	6	86	0
	Acute Viral Hepatitis type C	10	17	441	1	410	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	1	12	5	11	0
	Acute Viral Hepatitis, untyped	0	0	9	2	0	0
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	0	13	0	0	0
	Haemophilus Influenza type b Infection	0	0	1	0	2	0
	Japanese Encephalitis	0	0	24	0	19	0
	Legionnaires' Disease	7	13	331	8	285	1
	Mumps	8	17	247	8	229	0
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	0	0	1	0
Tetanus	0	0	5	0	7	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	1	1	39	0	29	0
	Endemic Typhus Fever	0	0	23	0	11	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	22	1	897	12	2	0
	Invasive Pneumococcal Disease	6	3	234	1	151	0
	Leptospirosis	4	0	67	0	54	0
	Listeriosis	3	4	165	2	124	0
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	1	0	21	2	20	2
	Q Fever	0	0	3	0	3	0
	Scrub Typhus	7	2	175	0	242	0
	Toxoplasmosis	0	1	23	2	22	0
	Tularemia	0	0	0	0	0	0
Severe Fever with Thrombocytopenia Syndrome	0	0	0	0	1	0	
Severe Pneumonia with Novel Pathogens	248	197,462	1,394,261	18,139	7,870,482	34,247	
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 Infections	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	1	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
Yellow Fever	0	0	0	0	0	0	

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's Disease and Creutzfeldt-Jakob Disease are excluded from the table.
 3. Numbers of Mumps and Tetanus are based on reported cases and summed up by week of report.
 4. "Mpox" has been listed as a Notifiable Infectious Disease since June 23, 2022.
 5. "Severe Pneumonia with Novel Pathogens": The case definition has been revised to include patients who have both a positive test for SARS-CoV-2 and associated complications since March 20, 2023. Additionally, it has been modified from Category V to Category IV since May 1, 2023.

Suspected Clusters

- Sixty-six clusters related to Upper respiratory tract infection (39), Diarrhea (17), TB (7), Enterovirus (2), and Varicella (1) were reported during week 44.

Imported Infectious Diseases

- There were 13 imported cases from at least 6 countries / areas during week 44.
 - Dengue Fever** : 9 cases from Vietnam (4), Malaysia (4), and the Philippines (1).
 - Severe Pneumonia with Novel Pathogens** : 1 case from Germany.
 - Influenza Case with Severe Complications** : 1 case from Korea.
 - Mumps** : 1 case from Japan.
 - Amoebiasis** : 1 case from the Philippines.
- During week 1-44, there were 18555 imported cases of notifiable diseases. The top three were Severe Pneumonia with Novel Pathogens (18139), Dengue Fever (219), Amoebiasis (97).
- During week 1-44, imported cases of notifiable diseases were from at least 48 countries/areas. The top three China (3179), Japan (729), Thailand (209).

Summary of Epidemic

- **Influenza**: The epidemic has decreased recently.
- **Dengue Fever**: The epidemic is similar to the previous week, but the risk of transmission remains high.

Weekly Data of Notifiable Inases (by week of diagnosis)

Case diagnosis year		Week 45		Week 1-45			
Classification	Disease Diagnosed	2023	2022	2023		2022	
				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
	Cholera	0	0	1	0	1	0
Category II	Typhoid fever	0	0	8	6	3	1
	Paratyphoid Fever	3	0	19	1	4	0
	Epidemic Typhus Fever	0	0	0	0	0	0
	Shigellosis	2	1	60	12	69	6
	Amoebiasis	7	2	239	98	180	61
	Enterohemorrhagic E.coli Infection	0	0	0	0	2	0
	Anthrax	0	0	0	0	0	0
	Diphtheria	0	0	0	0	0	0
	Meningococcal Meningitis	0	0	4	0	1	0
	Poliomyelitis	0	0	0	0	0	0
	Acute Flaccid Paralysis	3	2	54	0	27	0
	Measles	0	0	2	2	1	0
	Rubella	0	0	0	0	0	0
	Dengue Fever	1,440	3	23,261	235	74	54
	West Nile Fever	0	0	0	0	0	0
	Acute Viral Hepatitis type A	1	1	76	5	115	1
	Malaria	0	0	1	1	2	2
	Chikungunya Fever	0	0	8	8	1	1
	Hantavirus syndrome	0	1	6	0	4	0
	Zika virus infection	0	0	3	3	0	0
Mpox	1	0	352	13	4	4	
Category III	Acute Viral Hepatitis type B	5	1	123	6	87	0
	Acute Viral Hepatitis type C	9	13	450	1	423	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	12	5	11	0
	Acute Viral Hepatitis, untyped	0	0	9	2	0	0
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	1	0	14	0	0	0
	Haemophilus Influenza type b Infection	0	0	1	0	2	0
	Japanese Encephalitis	2	0	26	0	19	0
	Legionnaires' Disease	7	6	338	8	291	1
	Mumps	7	16	254	8	245	0
	Neonatal Tetanus	0	0	0	0	0	0
Pertussis	0	0	0	0	1	0	
Tetanus	0	0	5	0	7	0	
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	1	1	40	0	30	0
	Endemic Typhus Fever	1	0	24	0	11	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	16	1	913	12	3	0
	Invasive Pneumococcal Disease	6	5	240	1	156	0
	Leptospirosis	1	2	68	0	56	0
	Listeriosis	1	3	166	2	127	0
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	4	1	25	2	21	2
	Q Fever	0	0	3	0	3	0
	Scrub Typhus	4	7	179	0	249	0
	Toxoplasmosis	0	0	23	2	22	0
	Tularemia	0	0	0	0	0	0
Severe Fever with Thrombocytopenia Syndrome	0	0	0	0	1	0	
Severe Pneumonia with Novel Pathogens	235	146,759	1,394,496	18,142	8,017,241	34,525	
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 Infections	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	1	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
Yellow Fever	0	0	0	0	0	0	

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's 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.
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5. "Severe Pneumonia with Novel Pathogens": The case definition has been revised to include patients who have both a positive test for SARS-CoV-2 and associated complications since March 20, 2023. Additionally, it has been modified from Category V to Category IV since May 1, 2023.

Suspected Clusters

- Fifty-six clusters related to Upper respiratory tract infection (30), Diarrhea (17), TB (3), Enterovirus (3), and Varicella (3) were reported during week 45.

Imported Infectious Diseases

- There were 20 imported cases from at least 9 countries / areas during week 45.
 - Dengue Fever** : 16 cases from Vietnam (5), Indonesia (3), India (2), Thailand (2), Malaysia (2), Nepal (1), and the Philippines (1).
 - Severe Pneumonia with Novel Pathogens** : 3 cases from USA (1), Vietnam (1), and Hong Kong (1).
 - Amoebiasis** : 1 case from Indonesia.
- During week 1-45, the imported cases of notifiable diseases. The top three were Severe Pneumonia with Novel Pathogens(18,142), Dengue Fever(235), and Amoebiasis(98).
- During week 1-45, imported cases of notifiable diseases were from at least 49 countries/areas. The top three were China(3,179), Japan(729), and Thailand(211).

Summary of Epidemic

- **Influenza**: The epidemic has decreased recently and is still in an epidemic period.
- **Dengue Fever**: The epidemic has decreased, but the risk of transmission persists.

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