

Current Status of Biological Select Agents And Toxins Management in Taiwan

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Abstract

By participating in the Global Health Security Agenda (GHSA), Taiwan Centers for Disease Control (Taiwan CDC) is aware of the importance of biological select agents and toxins (BSAT) biosafety and biosecurity management. In 2016, we used the Joint External Evaluation Tool (JEE Tool) developed by the World Health Organization (WHO) to evaluate our epidemic prevention system, including the BSAT management. By the process of preparing the evaluation and improving the nonconformities, we aimed to enhance the BSAT management in: (1) Formulating BSAT management regulations and guidelines, managing 40 items of BSAT and regulatory requirements for BSAT entities; (2) Conducting personnel training of BSAT laboratory and storage institutions to enhance personnel safety awareness and competence; (3) Expanding the functions of the “Laboratory Biosafety Management Information System” at Taiwan CDC to oversee the BSAT preservation status and transfer process; (4) Conducting the BSAT entities' on-site inspection to improve the vulnerabilities and potential risks of BSAT management. With the development of various works and the accumulation of practical experience, our BSAT management system will be more comprehensive and in line with the GHSA's highest management standards.

Keywords: Biological Select Agents and Toxins, Global Health Security Agenda, Joint External Evaluation Tool, biosafety, biosecurity

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

Case diagnosis year		Week 21★		Week 1–21			
Classification	Disease Diagnosed	2020	2019	2020		2019	
				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	2	13	0	22	0
	Acute Viral Hepatitis type A	2	2	33	7	38	10
	Amoebiasis	5	8	105	56	141	73
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	2	2	2	6	6
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	6	57	57	157	156
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	1	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	6	0	0	0
	Malaria	0	0	1	1	1	1
	Measles	0	1	2	2	95	32
	Meningococcal Meningitis	1	0	5	0	2	0
	Paratyphoid Fever	0	0	0	0	2	1
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	2	0	0	15	12
	Shigellosis	2	1	73	20	56	17
	Typhoid fever	0	0	5	3	9	9
	West Nile Fever	0	0	0	0	0	0
	Zika virus infection	0	0	2	2	1	1
Category III	Acute Viral Hepatitis type B	2	0	39	2	42	1
	Acute Viral Hepatitis type C	13	11	257	2	239	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	6	0	6	2
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	1	7	0	11	1
	Haemophilus Influenza type b Infection	0	0	3	0	0	0
	Japanese Encephalitis	0	0	0	0	1	0
	Legionnaires' Disease	2	9	99	7	111	9
	Mumps	12	11	193	6	258	2
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	8	0	19	0
	Tetanus	0	0	5	0	0	0
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	6	1	23	0	27	1
	Endemic Typhus Fever	1	0	4	0	3	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	27	546	6	882	5
	Invasive Pneumococcal Disease	1	7	142	0	213	2
	Leptospirosis	1	3	17	0	21	0
	Listeriosis	3	7	47	0	80	0
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	1	0	7	1	4	0
	Q Fever	0	0	4	0	7	1
	Scrub Typhus	5	27	91	1	139	2
Category V	Toxoplasmosis	0	0	1	0	7	0
	Tularemia	0	0	0	0	0	0
	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	0	0	0	0	0	0
	Coronavirus Infections	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	0	0	0	0
Category V	Rift Valley Fever	0	0	0	0	0	0
	Severe Pneumonia with Novel Pathogens	1	-	441	386	-	-
	Yellow Fever	0	0	0	0	0	0

- ★The weekly and cumulative total numbers include indigenous and imported cases of notifiable infectious diseases.
- MDR-TB, Tuberculosis, Syphilis, Gonorrhea, HIV Infection, AIDS, Hansen's Disease and Creutzfeldt-Jakob Disease are excluded from the table.
- Numbers of mumps and tetanus cases are summed up by the week of report.
- Since 2020/1/15, "Severe Pneumonia with Novel Pathogens" was listed as a Notifiable Infectious Disease.

Suspected Clusters

- Sixteen clusters were reported during week 21, including 8 tuberculosis clusters, 7 diarrhea clusters, 1 upper respiratory tract infection cluster.

Imported Infectious Diseases

- There were 2 imported cases from 2 countries during week 21 of 2020.

Diseases \ Countries	Mexico	Indonesia	Total
Severe Pneumonia with Novel Pathogens	1		1
Amoebiasis		1	1
Total	1	1	2

- As of week 21 in 2020, there were 555 imported cases from 44 different countries. The top 3 countries are Indonesia (96), USA (91), UK (72).
- The three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (386), Dengue Fever (57), Amoebiasis (56).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The risk of acquiring SARS-CoV-2 infection in Taiwan is low.

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

Case diagnosis year		Week 22★		Week 1–22			
Classification	Disease Diagnosed	2020	2019	2020		2019	
				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	1	14	0	23	0
	Acute Viral Hepatitis type A	1	2	34	7	40	11
	Amoebiasis	5	5	110	57	146	77
	Anthrax	0	0	0	0	0	0
	Chikungunya Fever	0	1	2	2	7	7
	Cholera	0	0	0	0	0	0
	Dengue Fever	0	13	57	57	170	162
	Diphtheria	0	0	0	0	0	0
	Enterohemorrhagic E. coli Infection	0	0	0	0	1	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	6	0	0	0
	Malaria	0	0	1	1	1	1
	Measles	0	3	2	2	98	34
	Meningococcal Meningitis	0	0	5	0	2	0
	Paratyphoid Fever	0	0	0	0	2	1
	Poliomyelitis	0	0	0	0	0	0
	Rubella	0	1	0	0	16	13
	Shigellosis	2	3	75	20	59	19
	Typhoid fever	0	0	5	3	9	9
	West Nile Fever	0	0	0	0	0	0
	Zika virus infection	0	0	2	2	1	1
Category III	Acute Viral Hepatitis type B	1	1	40	2	43	1
	Acute Viral Hepatitis type C	15	11	271	2	250	2
	Acute Viral Hepatitis type D	0	0	0	0	0	0
	Acute Viral Hepatitis type E	0	0	6	0	6	2
	Congenital Syphilis	0	0	0	0	0	0
	Congenital Rubella Syndrome	0	0	0	0	0	0
	Enteroviruses Infection with Severe Complications	0	1	7	0	12	1
	Haemophilus Influenza type b Infection	0	0	3	0	0	0
	Japanese Encephalitis	0	2	0	0	3	0
	Legionnaires' Disease	2	5	101	7	116	10
	Mumps	12	8	205	6	266	2
	Neonatal Tetanus	0	0	0	0	0	0
	Pertussis	0	0	8	0	19	0
	Tetanus	0	0	5	0	0	0
Category IV	Botulism	0	0	0	0	0	0
	Brucellosis	0	0	0	0	0	0
	Complicated Varicella	0	0	23	0	27	1
	Endemic Typhus Fever	1	0	5	0	3	0
	Herpesvirus B Infection	0	0	0	0	0	0
	Influenza Case with Severe Complications	0	26	546	6	908	5
	Invasive Pneumococcal Disease	2	5	144	0	218	2
	Leptospirosis	1	1	18	0	22	0
	Listeriosis	7	3	54	0	83	0
	Lyme Disease	0	0	0	0	1	1
	Melioidosis	0	0	7	1	4	0
	Q Fever	0	0	4	0	7	1
	Scrub Typhus	11	6	102	1	145	2
	Toxoplasmosis	0	0	1	0	7	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	0	0	0	0	0	0
	Coronavirus Infections	0	0	0	0	0	0
	Novel Influenza A Virus Infections	0	0	0	0	0	0
	Rift Valley Fever	0	0	0	0	0	0
	Severe Pneumonia with Novel Pathogens	1	-	442	387	-	-
	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, Gonorrhea, 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.
4. Since 2020/1/15, "Severe Pneumonia with Novel Pathogens" was listed as a Notifiable Infectious Disease.

Suspected Clusters

- Fourteen clusters were reported during week 22, including 7 tuberculosis clusters, 5 diarrhea clusters, 2 varicella clusters.

Imported Infectious Diseases

- There were 2 imported cases from 2 countries during week 22 of 2020.

Diseases	Countries		
	Russia	Indonesia	Total
Severe Pneumonia with Novel Pathogens	1		1
Amoebiasis		1	1
Total	1	1	2

- As of week 22 in 2020, there were 557 imported cases from 45 different countries. The top 3 countries are Indonesia (97), USA (91), UK (72).
- The three notifiable diseases with the highest number of imported cases are Severe Pneumonia with Novel Pathogens (387), Dengue Fever (57), Amoebiasis (57).

Summary of Epidemic

- **Severe Pneumonia with Novel Pathogens** : The risk of acquiring SARS-CoV-2 infection in Taiwan is low. However, due to the severe international epidemic, the sporadic imported cases are expected.

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