



SHORT COMMUNICATION

Global Infectious Diseases in February 2023: Monthly Analysis

Dongliang Liu^{1,#}, Guodan Li^{1,#}, Qun Su², Yi Luo¹, Taihan Li¹, Yufan Wu¹, Jiazhen Zou¹, Yinfu Sun¹, Qi Xiang¹, Shiping He^{1,*}, Wenjin Yu^{3,*} and Dayong Gu^{1,*}

ABSTRACT

Public health security in human societies is placed under enormous strain by infectious disease epidemics. According to the WHO, COVID-19 and Mpox remain on the list of PHEICs, whereas cholera, dengue, and other contagious diseases remain endemic in several countries and regions. Data on prevalent infectious diseases have been collected worldwide in recent weeks, and may provide new ideas for international collaboration in public health.

Key words: infectious disease, COVID-19, dengue

#Dongliang Liu and Guodan Li contributed equally to this work.

***Corresponding authors:**

E-mail: ericheshi@163.com,
Tel: +86-13538047813 (SH);
hiwenjin@vip.qq.com,
Tel: +86-13332997646 (WY);
wanhood@163.com,
Tel: +86-13602601597 (DG)

¹Department of Laboratory Medicine, Shenzhen Second People's Hospital, The First Affiliated Hospital of Shenzhen University, Health Science Center, Shenzhen, China

²School of Computer and Information Engineering, Xiamen University of Technology, Xiamen, Fujian, China

³Shenzhen Data Thinking Corporation, Shenzhen, China

Received: March 11 2023

Revised: March 12 2023

Accepted: March 13 2023

Published Online: March 22 2023

INTRODUCTION

Both traditional and new infectious diseases in recent years have challenged global health. Conventional contagious diseases have not been eliminated but instead have intensified. To monitor and analyze infectious disease cases worldwide, tracking and prediction of the development of infectious diseases are required. From 2023, the number of COVID-19 cases has significantly decreased. The subsequent spread of COVID-19 may fluctuate. The emergence of new strains, climate change, and large-scale population flow will affect the record period and virus transmission. Currently, COVID-19 persists, and the current epidemic infection status cannot be considered to indicate the eradication of the disease. Recently, the rate of positive influenza virus tests has continued to rise in many countries, thus indicating that the epidemic form of influenza virus is increasing, and active prevention and control measures are required. Global health continues to be affected by infectious diseases such as Mpox, dengue, and chikungunya.

By using Shusi Tech's Global Epidemic Information Monitoring System, we analyzed the prevalence of infectious diseases

worldwide and have described other types of infectious diseases with relatively low incidence from January 24, 2023 to February 24, 2023, in the greatest detail possible (Fig 1).

COVID-19

As a result of the Chinese government's changes in prevention and control policies for COVID-19, the international community has officially entered the post-pandemic era. After an exponential rise in SARS-CoV-2 infections in China, the number of cases has fallen rapidly. However, the international community continues to see a surge in new infectious cases (Fig 2). After the pandemic, international cooperation will play a major role in public health. The Omicron variant of SARS-CoV-2, despite carrying many mutations, is currently the most prevalent virus variant spreading.

MPOX

Because the Mpox virus is transmitted primarily from animals to humans, and chains of human-to-human transmission are limited, cases of MPOX infections have frequently been detected near tropical rainforests, which are home a variety

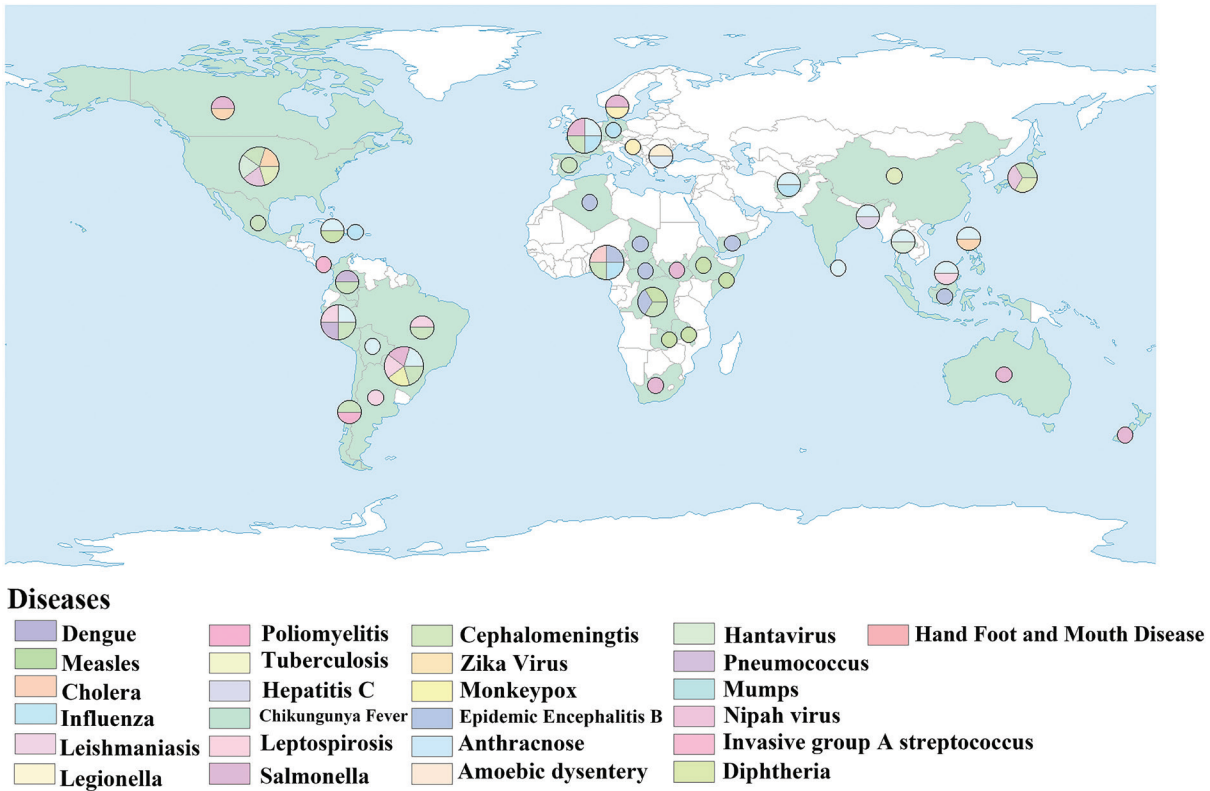


FIGURE 1 | Worldwide distribution of infectious diseases from January 24, 2023 to February 23, 2023.

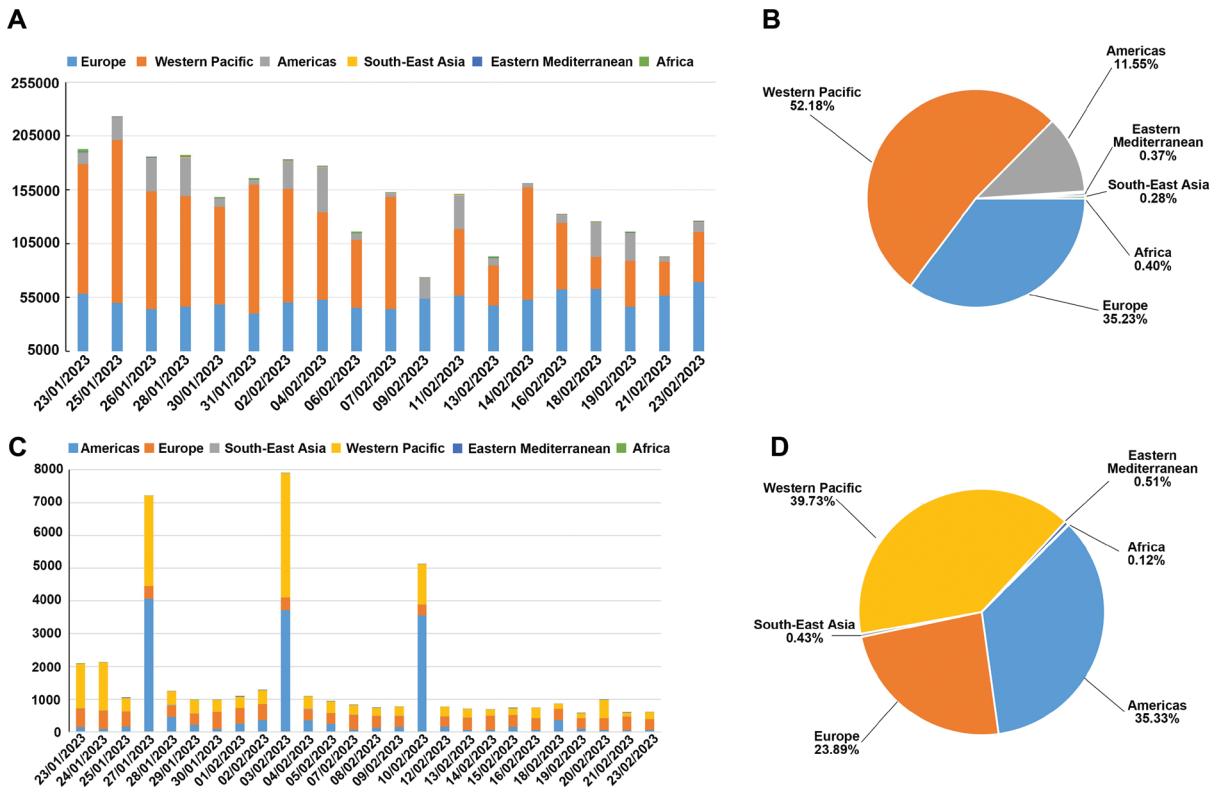


FIGURE 2 | Statistics on new confirmed cases and deaths due to COVID-19 worldwide daily. A, C: New cases and deaths due to COVID-19, reported daily on every continent (the primary coordinate on the left is the columnar ordinate, and the secondary coordinate on the right is the broken line ordinate). B, D: Continent-specific proportions of new confirmed cases and deaths due to COVID-19 (January 24, 2023 to February 23, 2023; data were obtained from the World Health Organization website: <https://COVID19.who.int/>).

of animals capable of carrying the virus [1]. Global attention has been paid to MPOX since the WHO declared the outbreak a public health emergency of international concern (PHEIC). Nevertheless, monkeypox viral infections have decreased in recent years. In many countries, monkeypox outbreaks have subsided (Table 1). Some West African and Central African countries continue to report cases. As reported by Nature, the WHO's director-general has stated that MPOX remains a public-health emergency [2].

CHOLERA

Globally, cholera continues to be a major cause of outbreaks, particularly in areas with inadequate water, sanitation, and hygiene services. Earlier this year, the Euphrates River in Syria was contaminated, thus causing an outbreak in Africa. Pollution is partly due to damage to water treatment systems caused by war and earthquakes. In addition, as shown in Table 2, Haiti continues to experience cholera outbreaks.

TABLE 1 | Worldwide Mpox cases reported between 23/01/2023 and 24/02/2023.

Record period	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2023	Data source
04/02/2023–04/02/2023	Hong Kong	1		HK Government News
13/06/2022–31/01/2023	Chile	1411 (2)		WHO
19/05/2022–25/01/2023	Spain	7518 (3)		WHO
23/01/2023–29/01/2023	Japan	6	7	Japan National Institute of Infectious Diseases
30/01/2023–05/02/2023		2	10	
06/02/2023–12/02/2023		1	11	
01/01/2023–25/01/2023	Nigeria	775 (7)		WHO
28/05/2022–31/01/2023	Mexico	3768 (4)		WHO
26/06/2022–25/01/2023	Peru	3723 (15)		WHO
18/05/2022–01/02/2023	USA	30123 (28)		U.S. CDC
23/06/2022–25/01/2023	Columbia	4066		WHO
01/01/2022–25/01/2023	Congo	348		WHO
20/05/2022–25/01/2023	France	4128		WHO
08/06/2022–30/01/2023	Brazil	10745 (15)		Brazil Ministry of Health
21/02/2023–21/02/2023	Paraguay	1		Outbreak News Today

TABLE 2 | Worldwide cholera cases reported between 23/01/2023 and 24/02/2023.

Record period	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2023	Data source
11/04/2022–05/02/2023	Zambia	1934 (18)		Outbreak News Today
01/01/2023–29/01/2023	Somalia	916 (1)	916	WHO Regional Office for the Eastern Mediterranean
03/03/2022–03/02/2023	Malawi	36943 (1210)		Outbreak News Today
30/09/2022–24/01/2023	Haiti	26435 (511)		WHO Regional Office for the Americas
30/09/2022–12/02/2023		31032 (594)		
25/01/2023–31/01/2023		1311 (49)		
07/02/2023–12/02/2023		1383 (34)		
01/01/2023–04/02/2023	Democratic Republic of the Congo	4386 (16)	4386	WHO Regional Office for the Americas
27/08/2022–26/01/2023	Ethiopia	1027 (28)		WHO Regional Office for Africa
29/01/2023–04/02/2023		9	1083 (28)	

DENGUE

Known as a mosquito-borne disease, dengue virus is one of four types of positive-sense single-stranded RNA viruses (DENV-1 to DENV-4) [3]. As shown in Table 3, the greatest burden of the disease was reported in tropical and subtropical regions, such as Singapore and Malaysia. Singapore has experienced dengue epidemics in multi-annual cycles since dengue outbreaks were first documented in 1901, owing to changes in the predominant serotype [4].

MEASLES

Measles is a highly contagious viral disease caused by the measles virus, which is transmitted primarily via respiratory

droplets and aerosols [5]. As shown in Table 4, most new cases were reported in South Sudan, where immunization campaigns are limited. In Paraguay, the first case of measles since 1998 was reported on January 23, 2023.

INFLUENZA

Influenza viruses can be transmitted through the respiratory tract or through direct contact. According to World Health Organization statistics, 1 billion people have been estimated to contract seasonal influenza each year, of whom 650,000 die (nearly one death due to influenza every 49 seconds). As shown in Table 5, influenza is prevalent primarily in European and American countries, such

TABLE 3 | Worldwide dengue cases reported between 23/01/2023 and 24/02/2023.

Record period	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2023	Data source
29/01/2023–04/02/2023	Taiwan, China	1	8	China Taiwan Disease Control Agency
05/02/2023–11/02/2023		3	11	
22/01/2023–28/01/2023	Singapore	186	1019	Health Ministry of Singapore
29/01/2023–04/02/2023		224	1242	
01/01/2023–12/02/2023			1469	
05/02/2023–11/02/2023		219		
12/02/2023–18/02/2023		149	1609	
01/01/2022–31/01/2023	Thailand	2683	2683	Thailand Ministry of Health
28/01/2023–03/02/2023	Sri Lanka	1150		Sri Lanka Ministry of Health
01/01/2023–17/02/2023	Peru	11585 (16)		Outbreak News Today
01/01/2023–31/01/2023	Bangladesh	566 (6)		Bangladesh Ministry of Health and Family Welfare
01/01/2023–22/02/2023	Malaysia		16427 (9)	Outbreak News Today
22/01/2023–28/01/2023	Korea	1	5	Korea CDC
29/01/2023–04/02/2023		1	9	
05/02/2023–11/02/2023		1	12	
01/01/2023–28/01/2023	Haiti	27099 (560)		WHO Regional Office for the Americas
01/01/2023–28/01/2023	Philippines	7804 (22)		Philippine Ministry of Health
01/02/2023–19/02/2023	France	13		Outbreak News Today
01/01/2023–04/02/2023	Bolivia	3437 (13)		Outbreak News Today
01/01/2023–08/02/2023		4230 (17)	4230 (17)	
01/01/2023–14/02/2023		6453 (26)	6453 (26)	
01/01/2023–22/02/2023		8909 (29)	8909 (29)	
22/01/2023–28/01/2023		Paraguay	29	
29/01/2023–04/02/2023		25	169	
01/02/2023–21/02/2023		203		
29/01/2023–04/02/2023	Afghanistan	6	1304 (2)	WHO Regional Office for the Eastern Mediterranean
05/02/2023–11/02/2023		7	1311 (2)	

TABLE 4 | Worldwide measles cases reported between 23/01/2023 and 24/02/2023.

Record period	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2023	Data source
01/01/2023–23/01/2023	Paraguay	1	1	WHO
01/01/2023–01/02/2023	South Sudan	4339 (46)		WHO
01/01/2023–13/01/2023	New Zealand	1		Outbreak News Today
01/01/2023–18/02/2023	Australia	8		Outbreak News Today
20/02/2023–20/02/2023	Canada	1		Outbreak News Today
24/01/2023–17/02/2023	South Africa	4		Outbreak News Today

TABLE 5 | Worldwide influenza cases reported between 22/01/2023 and 12/02/2023.

Record period	Location	Cumulative cases (deaths) reported during record period	Data source
22/01/2023–04/02/2023	Canada	575	Public Health Agency of Canada
29/01/2023–11/02/2023	U.S.A.	2262	U.S. CDC
02/01/2023–12/02/2023	France	8993	World Health Organization
02/01/2023–12/02/2023	Denmark	7756	World Health Organization

as the United States and France. Data indicate that influenza poses a deadly threat. Many parts of the world, particularly Southeast Asia, are experiencing a co-epidemic of influenza with COVID-19. Children have a significantly higher proportion of co-infection and more severe outcomes of co-infection than adults. Consequently, COVID-19 and influenza continue to pose a risk of co-infection this season. The transmission of influenza virus has been decreased by non-pharmacological interventions, such as long-term mask wearing and social distancing. Non-drug interventions may lead to a decrease in human immunity to influenza viruses, thereby increasing the susceptibility of influenza viruses.

CHIKUNGUNYA VIRUS

Chikungunya virus (CHIKV) has been identified in more than 110 countries in Asia, Africa, Europe, and the Americas. Among these regions, Asia and America are most affected by chikungunya fever. The similar symptoms of chikungunya and dengue or Zika infections

may result in misdiagnosis. Currently, no specific antiviral drug treatment or commercial vaccine is available to protect against CHIKV viral infection. In some countries, polio has been reported to have spread over the past month. It is worth noting that the number of polio cases is steadily increasing in Paraguay (Table 6).

POLIO

As shown in Table 7, countries such as the Democratic Republic of the Congo, Chad, the Central African Republic, and Indonesia have reported polio cases. Polio transmission is increasing in the Democratic Republic of the Congo and may be a matter of concern. The WHO has estimated that one of every 200 infections may result in irreversible paralysis. Five to ten percent of people who are paralyzed die when their breathing muscles become immobile. Under-immunized areas can experience polio outbreaks, and polio continues to spread in parts of Africa, Asia, and Europe. The disease might potentially return if the goal of eliminating polio is not achieved.

TABLE 6 | Worldwide chikungunya virus cases reported between 01/01/2023 and 21/02/2023.

Record period	Location	Cumulative cases (deaths) reported during record period	Cumulative cases (deaths) reported since 1/1/2023	Data source
01/01/2023–11/02/2023	Brazil	5138		WHO Regional Office for the Americas
01/01/2023–08/02/2023	Malaysia	72		Outbreak News Today
18/02/2023–18/02/2023	Argentina	3		Outbreak News Today
29/01/2023–21/02/2023	Paraguay	11864		Outbreak News Today
29/01/2023–04/02/2023	Peru	53	143	WHO Regional Office for the Americas

TABLE 7 | Worldwide polio cases reported between 25/01/2023 and 08/02/2023.

Record period	Location	Cumulative cases	Data source
		Reported during record period	
25/01/2023–31/01/2023	Central African Republic	1	Global Polio Website
25/01/2023–31/01/2023	Yemen	1	
25/01/2023–31/01/2023	Indonesia	1	
25/01/2023–31/01/2023	Nigeria	1	
25/01/2023–14/02/2023	Chad	16	
01/02/2023–07/02/2023	Algeria	1	
01/02/2023–07/02/2023	Mali	1	
01/02/2023–14/02/2023	Democratic Republic of the Congo	28	
08/02/2023–14/02/2023	Nigeria	1	
08/02/2023–14/02/2023	Indonesia	1	

TABLE 8 | Worldwide hepatitis C cases reported between 29/01/2023 and 11/02/2023.

Record period	Location	Cumulative cases (deaths) reported during record period	Cumulative cases	Data source
			Reported since 1/1/2022	
29/01/2023–11/02/2023	Taiwan, China	25	69	Taiwan Disease Control Agency of China
05/02/2023–11/02/2023	Korea	133	878	Korea CDC

HEPATITIS C

Hepatitis C is an infectious disease caused by the hepatitis C virus. This liver disease is characterized by inflammation and necrosis which caused by infectious factors. Hepatitis C virus is an RNA virus present in the liver cells and blood of infected people. The hepatitis C virus causes the body to mount an immune response, thereby causing damage to liver cells and inflammation of the liver. Hepatitis C infection can cause chronic liver inflammation, necrosis, and fibrosis. Approximately 15% of people with chronic hepatitis C develop liver cancer, which is life-threatening. Because HCV symptoms and signs are unclear in patients, early detection is the only way to diagnose HCV infection. In some Asian countries, hepatitis C cases have been reported over the past month (Table 8).

OTHER INFECTIOUS DISEASES

In the past month, some infectious diseases have shown regional epidemiological trends. Several epidemic diseases are listed in Table 9, including Nipah virus disease, Japanese encephalitis, leishmaniasis, anthrax, amoebic dysentery, malaria, scarlet fever, hand-foot-mouth disease, Salmonella, hantavirus, pneumococcal, mumps, Zika

virus, Leptospira, tuberculosis, Nipah virus, diphtheria, and legionella.

CONCLUSION

China has entered the post-epidemic era by adjusting its COVID-19 prevention and control policies. New cases of SARS-CoV-2 infection were found primarily in the Western Pacific, Europe, and the Americas. The Omicron variant of SARS-CoV-2 has been reported to be the predominant variant spreading. To prevent SARS-CoV-2 from mutating, more effective strategies should be implemented. According to a Nature article, Mpox was predicted to be removed from the list of PHEIC, owing to a decreasing number of new cases reported. However, no vaccine is available to prevent monkeypox viral infection. Therefore, monkeypox virus surveillance should not be relaxed. Several countries and areas lack water, sanitation, and hygiene services because of wars and natural disasters. Consequently, combatting infectious diseases in this environment is difficult. To curb the international epidemic in advance, the international community should provide support to these countries. Given the current prevalence of infectious diseases in many countries, monitoring and collecting data on global outbreaks will alert the international community to ongoing outbreaks.

TABLE 9 | Worldwide cases of other infectious diseases reported between 01/01/2022 and 23/02/2023.

Record period	Location	Cumulative cases (deaths) reported during record period	Cumulative cases Reported since 1/1/2022	Data source
Epidemic encephalitis B				
18/02/2023–18/02/2023	India	5		ProMED-mail
Leishmaniasis				
01/01/2023–04/02/2023	Paraguay	13		Outbreak News Today
Anthraxnose				
06/02/2023–06/02/2023	Bulgaria	1		ProMED-mail
Amoebic dysentery				
05/02/2023–11/02/2023	Taiwan, China	7	33	Taiwan Disease Control Agency of China
Malaria				
01/01/2023–12/02/2023	Japan	3		
29/01/2023–04/02/2023	Korea	1	5	Korea CDC
Scarlet fever				
01/01/2023–31/01/2023	Thailand	48		ProMED-mail
16/01/2023–12/02/2023	U.K.	6049		U.K. Health and Safety Executive
Meningitis				
01/10/2022–04/02/2023	Nigeria	398 (38)		WHO Regional Office for Africa
Hand foot and mouth disease				
01/01/2023–02/04/2023	Philippines	3250		Outbreak News Today
01/01/2023–31/01/2023	Thailand	2821		
01/01/2023–01/02/2023	U.S.A.	42		Outbreak News Today
Salmonella				
29/01/2023–04/02/2023	U.S.A.	219	1961	U.S. CDC
Hantavirus				
01/01/2023–15/02/2023	Panama	4 (1)		ProMED-mail
01/12/2022–15/02/2023	Chile	2		ProMED-mail
05/02/2023–11/02/2023	Taiwan, China	1		ProMED-mail
Pneumococcus				
29/01/2023–11/02/2023	Taiwan, China	18	68	Taiwan Disease Control Agency of China
29/01/2023–04/02/2023	U.S.A.	201	1807	U.S. CDC
30/01/2023–05/02/2023	Japan	19	166	Japan National Institute of Infectious Diseases
Mumps				
29/01/2023–11/02/2023	Korea	220	673	Korea CDC
Zika virus				
01/01/2023–04/02/2023	Peru	74		ProMED-mail
01/01/2023–04/02/2023	Colombia	46		WHO Regional Office for the Americas

TABLE 9 | (continued)

Record period	Location	Cumulative cases (deaths) reported during record period	Cumulative cases Reported since 1/1/2022	Data source
Leptospira				
28/01/2023–10/02/2023	Sri Lanka	95	726	Ministry of Health, Sri Lanka
Tuberculosis				
01/01/2023–31/01/2023	Thailand	888 (1)		ProMED-mail
23/01/2023–05/02/2023	Japan	373	1936	Japan National Institute of Infectious Diseases
23/01/2023–05/02/2023	Korea	738	2270	Korea CDC
Nipah virus				
01/01/2023–20/02/2023	Bangladesh	11 (8)		World Health Organization
Invasive group A streptococcus				
01/01/2023–31/01/2023	Denmark	99		EU CDC
01/09/2022–01/02/2023	Croatia	15 (4)		EU CDC
Diphtheria				
01/01/2023–29/01/2023	France	127 (17)		EU CDC
01/01/2023–08/02/2023	Dominican Republic	4 (1)		ProMED-mail
23/01/2023–05/02/2023	Nigeria	56 (4)		Nigeria CDC
25/01/2023–02/02/2023	Germany	31	147	
29/01/2023–05/02/2023	Afghanistan	13	1082	
Legionella				
05/02/2023–11/02/2023	Hong Kong, China	2	7	Center for Health Protection, Hong Kong, China
29/01/2023–04/02/2023	U.S.A.	16	236	U.S. CDC
29/01/2023–04/02/2023	Korea	7	38	Korea CDC
29/01/2023–11/02/2023	Taiwan, China	12	67	Taiwan Disease Control Agency of China
30/01/2023–05/02/2023	Japan	13	126	Japan National Institute of Infectious Diseases

ACKNOWLEDGEMENTS

Dayong Gu and Wenjin Yu conceived and designed the project. The data were collected by Dongliang Liu, Guodan Li, Taihan Li, and Yi Luo. The manuscript was written by Dongliang Liu and Guodan Li. Shiping He revised the manuscript. Dayong Gu supervised the study. This research was supported by the National Key Research and Development Program of China (No. 2022YFC2302700), Guangdong Science and Technology Foundation (Nos. 2021A1515220084 and 2020B1111160001), and Shenzhen Science and Technology Foundation (ZDSYS20210623092001003, GJHZ20200731095604013, JSGG20220301090003004, and GJHZ20210705142007022).

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