



SHORT COMMUNICATION

Global Infectious Diseases in September 2022: Monthly Analysis

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Abstract

The threat of infectious diseases caused by pathogenic microorganisms to both human health and the economy is enormous. Coronavirus Disease 2019 (COVID-19) remains a global pandemic. In contrast to many other infectious diseases, monkeypox spreads rapidly and cannot be ignored. Collection of data on contagious diseases can provide quantitative evidence to support effective pandemic control strategies. Global data on predominant infectious diseases collected in the past several weeks and a summary of their epidemiology are presented herein.

Keywords: infectious disease, transmission, COVID-19

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INTRODUCTION

Most infectious diseases are caused by viruses, bacteria, parasites, or fungi. New infectious diseases will inevitably appear, thus posing a continuing challenge for public health systems worldwide. For example, the early 20th century's HIV/AIDS epidemic, the SARS- and MERS-coronavirus outbreaks, the West Nile virus outbreak, and the Nipah virus outbreak are just several emerging infectious diseases [1]. Under suitable conditions, infectious disease transmission can spread exponentially among populations within relatively short time periods, thus resulting in public fear, economic hardship, and other adverse effects.

The emergence of new infectious agents is a major continuing problem. As a result of the COVID-19 pandemic, unexpected illnesses and deaths have caused global societal and economic consequences. Infectious disease prevention and control have become more complex because of increased global connectivity and interdependence [2]. Through quantitative

analysis, information can be synthesized to develop a basis for decision-making [3]. Therefore, we have collected data on predominant contagious diseases worldwide and summarized their epidemiology herein (Fig 1).

COVID-19

Globally, 127 countries or regions have confirmed more than 100,000 COVID-19 cases, for a total of 612,920,987 cases representing 99.7% of all cases. The number of confirmed COVID-19 cases and deaths has decreased worldwide since August (Fig 2). In China, Hainan Province, Chongqing Municipality and Xinjiang Uyghur Autonomous Region, there were significantly fewer confirmed cases in September than in August. In contrast, Sichuan, Guangdong, Jiangxi, and Tibet Autonomous Regions reported the most new cases in September.

Monkeypox

Although the rapid spread of monkeypox virus has raised international concerns

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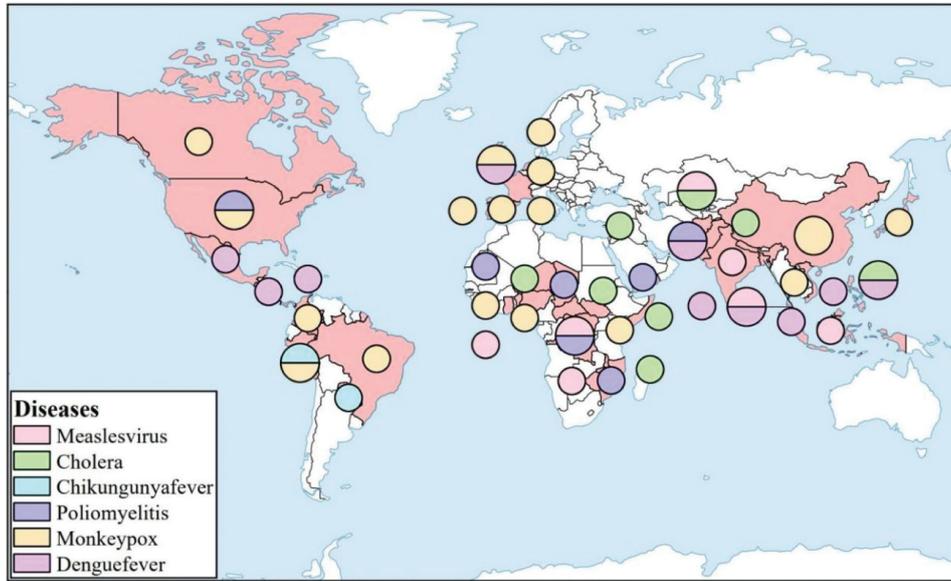
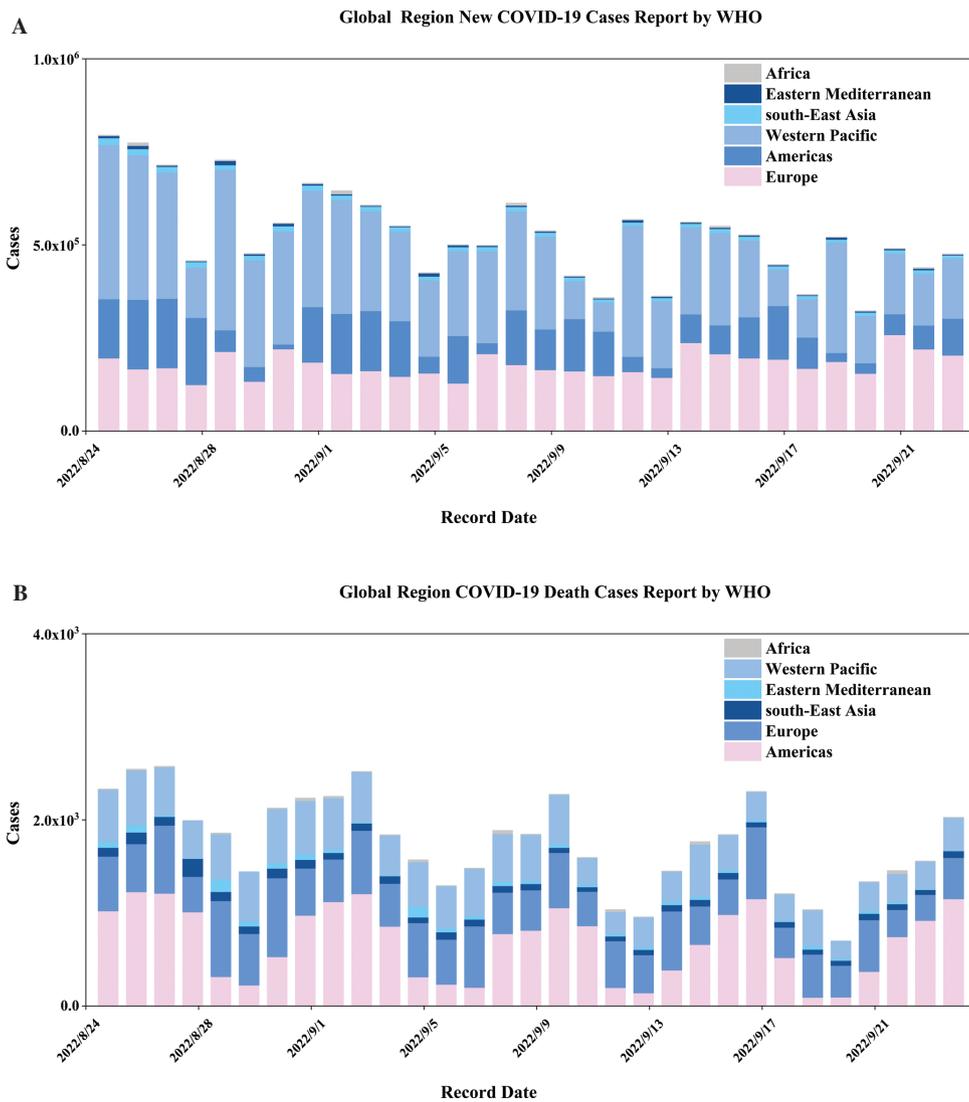


FIGURE 1 | Global distribution of infectious diseases in September 2022. Partial data on infectious diseases in the past week worldwide were collected by using Shushi Tech’s Global Epidemic Information Monitoring System.



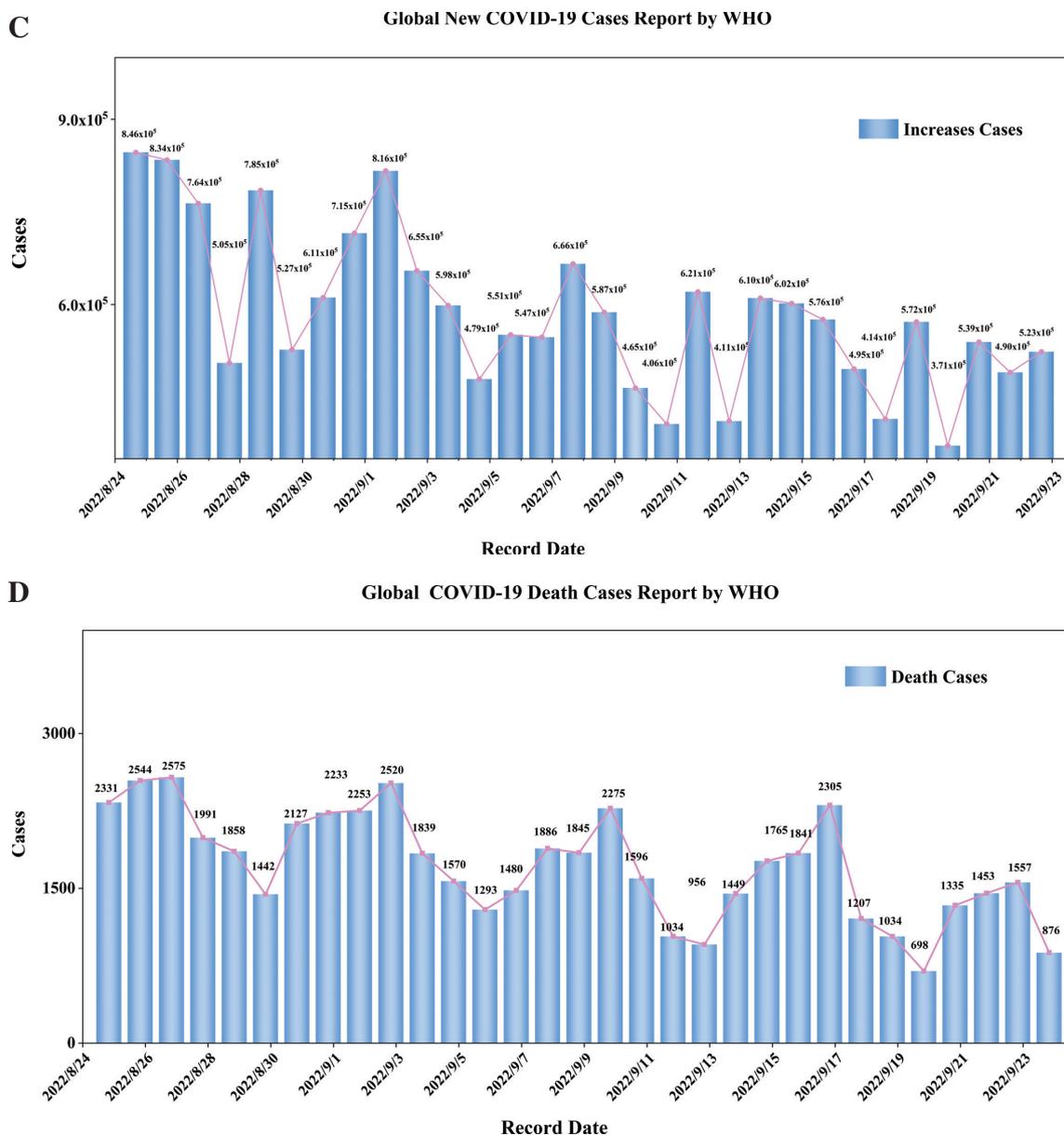


FIGURE 2 | Continued.

regarding the potential beginning of a new epidemic, the outbreak remains ongoing. As of September 2022, new outbreaks of monkeypox have been reported in several Asian countries. Europe and America also saw a rapid increase in confirmed cases last month (Table 1). Moreover, the lack of vaccines may make new outbreaks difficult to control.

Dengue

As shown in Table 2, the number of reported cases has decreased since August, except in some tropical countries. In 2022, dengue fever outbreaks have been reported in several countries including the Philippines, Malaysia, and Singapore. Singapore has reported more than 20,000 cases of dengue fever, a number already far exceeding those reported in all of 2021.

Measles

Measles is highly contagious and spreads through the air. People with weakened immune systems or those who have not been vaccinated against measles are at risk of infection. Since 2022, several countries have experienced measles outbreaks. Thousands of cases have been confirmed in the Democratic Republic of Congo, Nigeria, India, and other countries. A global report on measles outbreaks is provided below (Table 3).

Poliomyelitis

The international community has recently become concerned regarding an outbreak of poliomyelitis worldwide. Nineteen cases, including two deaths, of wild poliovirus type I were reported in Pakistan between January 1 and

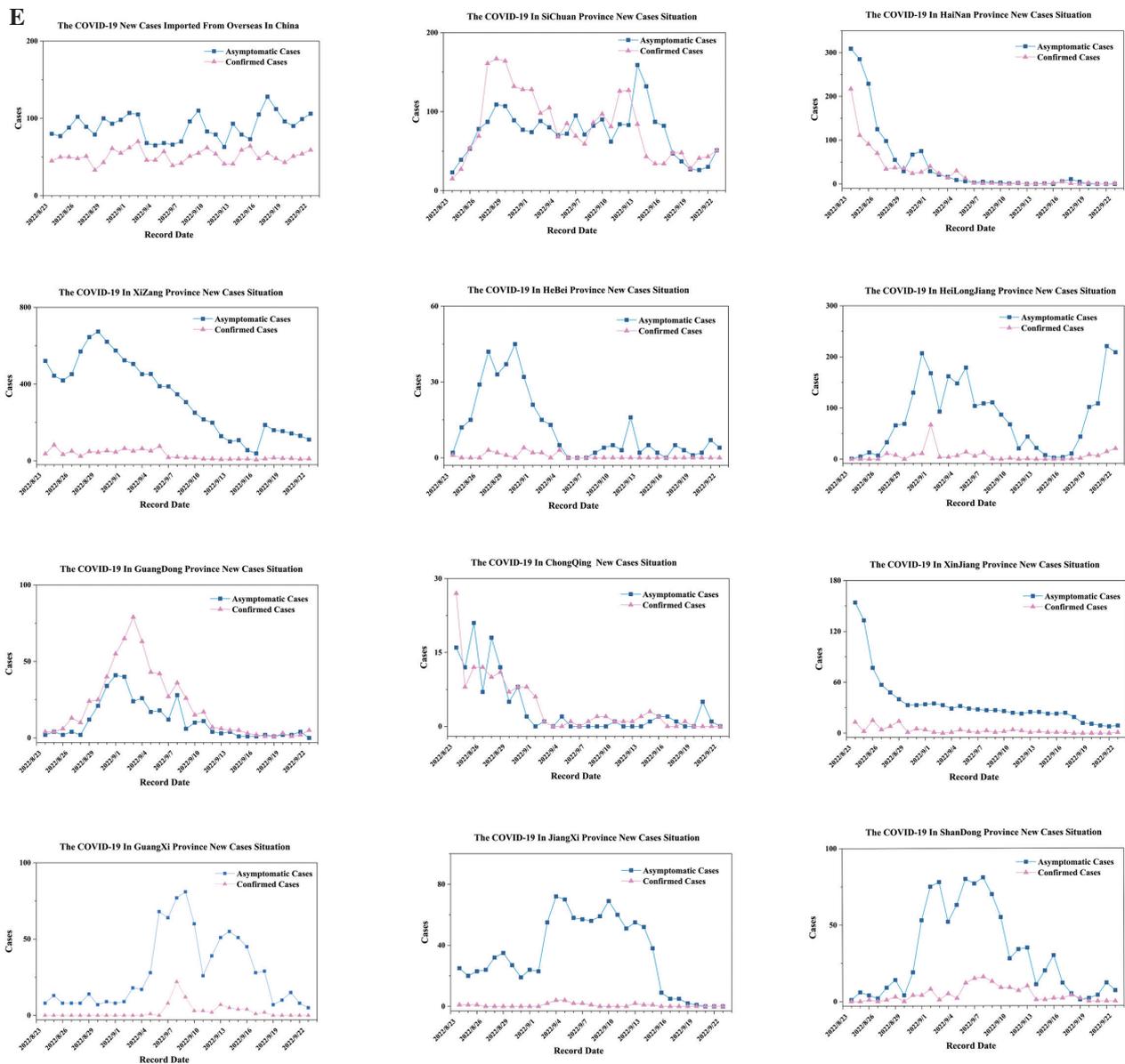


FIGURE 2 | Daily statistics of new confirmed cases worldwide. A-B: New daily confirmed cases and deaths in September worldwide (distribution map of each continent). C-D: New daily confirmed cases and deaths worldwide (August 24, 2022–September 23, 2022; data obtained from the World Health Organization website: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019> as of September 23, 2022). E: New weekly confirmed cases in some provinces in China (August 24, 2022–September 23, 2022; data obtained from the National Health Commission of the People's Republic of China website: <http://www.nhc.gov.cn/> as of September 23, 2022).

September 15, 2022. Last month's report on the global polio epidemic is provided below.

Cholera

The Syrian Ministry of Health has reported that more than 70% of cholera cases are concentrated in Aleppo, and the rest are distributed in Hasakah, Deir ez-Zor, and Latakia. From August 28 to September 10, Afghanistan reported more than 15,000 new confirmed cases, according to the WHO Regional Office for Africa. Last month's cholera report is provided below (Table 5).

Other infectious diseases

Influenza, Lassa fever, viral hepatitis, yellow fever, and Chikungunya virus reports globally in the past month have indicated sporadic transmission in some continents or countries, as shown in the tables below (Table 6).

CONCLUSION

Currently, COVID-19 remains a global pandemic [4]. Clinical studies have shown that vaccination against COVID-19 can still significantly decrease severe cases and death rates, and protect people's health [5,6]. In Shenzhen,

Table 1 | Monkeypox reports worldwide between 2022/05/18 and 2022/09/20.

Occurrence time (Year 2022)	Location	Cases newly on the latest date	Cumulative cases of the year	Data source
05/18-09/19	America		23893	ProMED-mail
05/19-09/07	Canada		1317	
05/19-09/19	Spain		7037	
05/20-09/15	France		3898	
05/20-09/20	Germany		3570	
05/24-08/28	Ghana		373	
05/27-09/07	Netherlands		1195	
06/05-08/29	Singapore	96		Singapore Environment Agency
06/05-09/16	UK		3439	ProMED-mail
06/08-09/18	Brazil		6869	
06/23-09/05	Colombia		938	
06/26-09/07	Peru		1760	
08/22-08/28	Nigeria	100	704	
08/28	Thailand	1	7	CCTV News
09/06	Hong Kong, China	1	1	Centre for Health Protection, Hong Kong, China
09/15	Japan	1		CCTV News
09/16	China	1	1	

TABLE 2 | Dengue virus reports worldwide between 2022/08/01 and 2022/09/19.

Occurrence time (Year 2022)	Location	Cases newly on the latest date	Cumulative cases of the year	Data source
08/01-08/27	Bangladesh	2656		Global Incident Map
08/14-09/03	Nicaragua	10073	47442	WHO Regional Office for the Americas
08/20-09/09	Sri Lanka	2468	45895	Sri Lanka Ministry of Health
08/21-08/27	Philippine	3512	145341	Philippine Department of Health
08/21-09/03	Mexico	3617	3957	WHO Regional Office for the Americas
08/21-09/03	Colombia	2628	26925	
08/21-09/03	Vietnam	18077	190005	Outbreak News Today
08/21-09/17	Singapore	2374	27283	Singapore Environment Agency
08/28-09/03	Panama	468	6631	WHO Regional Office for the Americas
08/29-09/03	Malaysia	1247		Ministry of Health Malaysia
07/31-08/06	Philippine	3417	118526	Philippine Department of Health
09/08	Malaysia	177		Ministry of Health Malaysia
09/09	France	5	16	CCTV News
09/13	Malaysia	173		Ministry of Health Malaysia
09/15	Bangladesh	395		Global Incident Map
09/19		438		
09/19	Pakistan	673	11369	CCTV News
09/19	Malaysia	222	39993	Ministry of Health Malaysia

TABLE 3 | Measles virus reports worldwide between 2022/01/01 and 2022/09/10.

Occurrence time (Year 2022)	Location	Cases newly on the latest date	Cumulative cases of the year	Data source
01/01-08/28	Democratic Republic of Congo		100044	WHO Regional Office for Africa
01/01-09/06	Liberia		5925	WHO
01/01-09/06	Nigeria		25408	
01/01-09/06	Bangladesh		3877	
01/01-09/06	Indonesia		6608	
01/01-09/06	India		41927	
04/10-09/06	Zimbabwe	6551		Outbreak News Today
07/01-07/31	Thailand	47		Thailand Ministry of Health
08/22-09/04	Somalia	486	13436	WHO Regional Office for the Eastern Mediterranean
08/28-09/10	Afghanistan	1088	67855	

TABLE 4 | Poliomyelitis reports worldwide between 2022/08/24 and 2022/09/15.

Occurrence time (Year 2022)	Location	Cases newly on the latest date	Cumulative cases of the year	Data source
08/24-08/30	Benin	2		Global Polio Website
08/24-08/30	Chad	4		
08/24-09/13	Yemen	36		
08/24-09/13	Democratic Republic of Congo	38		
08/29	Pakistan	1		Outbreak News Today
08/31		2		
08/31-09/06	Ghana	1		Global Polio Website
08/31-09/06	Mozambique	2		
09/07-09/13	America	1		
09/12	Pakistan	1		Outbreak News Today
09/15		1	19	

TABLE 5 | Cholera reports worldwide from 2022/03/03 to 2022/09/20.

Occurrence time (Year 2022)	Location	Cases newly on the latest date	Cumulative cases of the year	Data source
03/03-09/11	Malawi	2479		WHO Regional Office for the Eastern Mediterranean
07/24-08/27	Philippine	41	3318	Philippine Department of Health
08/04-08/30	Nepal	142		United Nations Office for the Coordination of Humanitarian Affairs
08/22-09/04	Somalia	430	9677	WHO Regional Office for the Eastern Mediterranean
08/25-09/20	Syria	253		ProMED-mail
08/28-09/10	Afghanistan	17908		WHO Regional Office for Africa
08/28	Singapore	41		Singapore Environment Agency
08/29-09/04	South Sudan	4		United Nations Office for the Coordination of Humanitarian Affairs
09/01-09/04	Niger	14		WHO Regional Office for Africa

TABLE 6 | Other infectious disease reports worldwide.

Occurrence time (Year 2022)	Location	Cases newly on the latest date	Cumulative cases of the year	Data source
Influenza				
09/17-08/25	Kenya	175		WHO Regional Office for Africa
07/24-08/27	Canada	124		Public Health Canada
08/15-09/11	Australia	3147	223678	Australian Department of Health
08/21-09/10	America	735	135450	US CDC
Lassa fever				
08/22-09/11	Nigeria	268	6660	Nigeria CDC
Virus Hepatitis				
08/01-08/31	Thailand	445	3169	Ministry of Health of Thailand
08/28-09/10	Taiwan, China	25	313	Taiwan Centers for Disease Control and Prevention
Yellow fever				
01/12-08/25	Kenya	123		WHO Regional Office for Africa
08/13-08/26	Côte d'Ivoire	86		
Chikungunya Virus				
01/01-09/10	Peru		246	WHO Regional Office for the Americas
01/01-09/10	Paraguay		563	Paraguay Ministry of Health
01/01-08/27	Malaysia		591	Ministry of Health Malaysia
Malaria Virus				
01/01-09/09	Panama		4076	Outbreak News Today
01/03-08/28	Borno State, Nigeria		575685	United Nations Office for the Coordination of Humanitarian Affairs
Zika Virus				
01/01-08/27	Colombia		124	WHO Regional Office for the Americas
Encephalitis B Virus				
07/01-08/24	India		390	ProMED-mail

China, on August 23, the BF.15 variant (a subclade of BA.5.2.1) was discovered. China's epidemic prevention and control measures will face tremendous pressure, high risk, and severe conditions in the future.

The number of confirmed monkeypox cases increased by 91%, and the number of deaths increased by 64% in less than a month, with a 0.03% overall morbidity rate. Although monkeypox cases have declined from their peak in August, close attention should still be paid to the virus's global spread [7]. Furthermore, because the weather in tropical countries is suitable for mosquitoes and other insects to live and breed, mosquito-borne infectious diseases (Dengue, Chikungunya, epidemic encephalitis B, Zika virus, malaria and *Leishmania* sp.) and insect-borne infectious diseases (Crimea-Congo hemorrhagic fever and yellow fever) continue to be prevalent mainly in tropical countries. An unprecedented level of highly pathogenic avian influenza virus was detected in

wild birds in EU countries between June and August 2022, according to CCTV News. Five times as many infections on poultry farms occurred from June to September of this year compared with 2021. Monitoring of their incidence and epidemic trends should be continued.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest associated with the material presented herein.

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