Global Infectious Diseases in September 2022: Monthly Analysis

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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 Shusi 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
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                              | 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           |
| 07/31-09/06                | 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                      | 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                        | WHO Regional Office for Africa             |

### 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                              |                              | Global Polio Website                  |
| 08/24-09/13                 | Yemen      | 36                             |                              | Global Polio Website                  |
| 08/24-09/13                 | Democratic Republic of Congo   | 38                             |                              | Global Polio Website                  |
| 08/29                      | Pakistan   | 1                              |                              | Outbreak News Today                   |
| 08/31                      | Pakistan   | 2                              |                              | Outbreak News Today                   |
| 08/31-09/06                | Ghana      | 1                              |                              | Global Polio Website                  |
| 08/31-09/06                | Mozambique | 2                              |                              | Global Polio Website                  |
| 09/07-09/13                | America    | 1                              |                              | Outbreak News Today                   |
| 09/12                      | Pakistan   | 1                              |                              | Outbreak News Today                   |
| 09/15                      | Pakistan   | 1                              | 19                           | Outbreak News Today                   |

### 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                 |
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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**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 |
CONFLICTS OF INTEREST

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

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