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Global updates on COVID-19 and other diseases
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- Mpox is still a major issue in Africa.
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- Ghana and Zambia reported their first case of mpox.
- Antiviral-resistant clade II MPXV strains are reported in the US.
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- Germany reported H5N1 in poultry in an area bordering the Czech Republic.
- Australia and New Zealand are actively preparing for an outbreak of bird flu.
- Marburg virus disease outbreak is still ongoing in Rwanda, though controlled.
- A vaccine against Marburg virus is being trialled in Rwanda.
- The WHO has called against travel bans and trade restrictions to control Marburg infections because they are not effective.
- Japan saw an increase in cases of mycoplasma in the last week of September 2024.
- The WHO has published its latest Strategic Plan to combat dengue and other arboviruses.
- Dengue continues to plague The Americas.

- Iran has reported increased cases of dengue, mainly imported from neighbouring countries.
- Western-central India reported an increased number of Zika cases.
- A death from Crimean Congo haemorrhagic fever (CCHF) was reported in Jodphur, India.
- Hong Kong is expecting the number of melioidosis to increase due to worsening weather.
- India reported glanders in horses.
- Sabah aims to fight off the possible threat of rabies from neighbouring Sarawak and Kalimantan.
- US outdoor concert-goers may have been exposed to rabies from bats.
- Spain detected circulating vaccine-derived *poliovirus* type 2 (cVDPV2) for the first time from environmental samples in September 2024.
- French Guiana reported circulating vaccine-derived *poliovirus* type 3 (cVDPV3)-positive environmental samples.
- Laboratories can unintentionally sample poliovirus Potentially Infectious Material (PIM) from multiple sources.
- Vaccines can reduce antimicrobial resistance (AMR) deaths and antibiotic use.

1.0 Situational summary: cases and related issues

1.1 Asia-Pacific and Southeast Asia

1.1.1 Free Vaccination Program, Taiwan

Taiwan launched its free influenza and COVID-19 vaccination program at hospitals and medical centres nationwide on 1 October 2024. As in past years, Taiwan began the programme ahead of flu season, which starts in November, peaks over winter, and ends in March. This year, health officials are encouraging residents to get their COVID-19 vaccine at the same time.[1]

1.1.2 New Zealand

The number of reported COVID-19 cases has increased nationwide. For the week ending 29 September 2024, there were 1,339 new cases and four additional deaths linked to the virus. In comparison, the previous week (ending 22 September 2024), there were 1,012 new cases and two deaths attributed to COVID-19. This trend indicates a concerning rise in COVID-19 infections and fatalities.[2]

2.0 Vaccines and vaccinations

Electronic nudges increase vaccine uptake, Denmark

For people with chronic diseases, an electronic nudge increased influenza vaccination compared to usual care.[3,4]

During the 2022 to 2023 influenza season in Denmark, only 40.7% of patients with diabetes and 44.6% of patients with heart failure obtained vaccination. To increase uptake, researchers of a study designed 6 electronic letters to be sent to 299,881 adult patients (18-64 years old) emphasising the benefits of vaccination. The main outcome was the receipt of the seasonal flu vaccine by January 2024.

Influenza vaccination rates were found to be higher among those receiving any intervention letter (39.6%) compared to the standard care of no letter (27.9%). A letter emphasising the benefits of vaccination for cardiac health was most effective, with 39.8% vaccinated compared to 27.9% in standard care.

The outcome of the study suggested that simple, scalable and cost-effective electronic letter strategies can have substantial public health implications.

3.0 Outcome

Disparities in all-cause deaths during COVID-19 pandemic, the US

A report found that the US's all-cause excess mortality during the COVID-19 pandemic disproportionately affected several minoritised populations, with the largest relative increase in adults aged 25-64 years; which implied lasting downstream consequences.[5–7]

The researchers measured all-cause excess mortality during the pandemic (March 2020 – May 2023), characterised it by race and ethnicity and (crucially) by age group. From there, the disparities in mortality were measured.

The findings are summarised as follows (paraphrased):[5,7]

- Over 1.38 million excess deaths during the public health emergency.
- Disparities widened, particularly during COVID-19 waves among non-Whites.
- Disparities were greater in the "core" working-age adult population (ages 25-64) – though not the geriatric population—which had the largest relative increase over baseline figures.
- During the pandemic, there was a 15% in deaths from all causes across the total population.
- However, there was a 20% increase among people aged 25-64 years in the population compared to just 13% in the population ≥ 65 years.

Therefore, while a numeric majority of excess deaths occurred in the geriatric population (because that group has the highest mortality at baseline), the largest ratio was in the working-age population.

According to the researchers, this "has staggering" implications in the long run, in terms of economic wealth, amongst other issues. Of the 1.38 million excess deaths during the pandemic, 454,000 were in people < 65 years old—which is "a lot more than most people realise".

The study demonstrated that the pandemic appears to have "exacerbated historical mortality disparities that have long been understood to reflect strata in social determinants of health, structural inequality, and racism, and which have persisted".

To summarise, racial disparities cannot be explained by genetics alone, and while "pandemics are inevitable, disparities are not". The need to address the conditions that create health disparities, before the next public health crisis, is evident.

4.0 Planning

4.1 The WHO's Strategic Plan to fight rising dengue and other Aedes-borne arboviral disease

On 3 October 2024, the WHO launched the Global Strategic Preparedness, Readiness and Response Plan (SPRP) to tackle dengue and other Aedes-borne arboviruses. The Plan aims at reducing the burden of disease, suffering and deaths from dengue and other Aedes-borne arboviral diseases such as Zika and chikungunya, by fostering a global coordinated response. [8,9]

It outlines priority actions to control transmission and offers recommendations to affected countries across various sectors, including disease surveillance, laboratory activities, vector control, community engagement, clinical management, and research and development, through a whole-of-society and regional approach.

The SPRP comprises 5 key components essential for a successful outbreak response:

1. Emergency coordination: Establishing leadership and coordination activities;
2. Collaborative surveillance: Developing and using tools for early detection and control of dengue and other Aedes-borne outbreaks, including strengthened indicator and event-based surveillance, epidemiological analysis, laboratory diagnostics, and field investigations;
3. Community protection: Engaging communities through active dialogue and local adaptation of prevention and response measures, including mosquito population control;
4. Safe and scalable care: Ensuring effective clinical management and resilient health services to ensure patients can receive adequate care and prevent illness and death; and
5. Access to countermeasures: Promoting research and innovation for improved treatments and effective vaccines against these diseases.

The Plan will be implemented over one year until September 2025, and requires USD55 million to support health preparedness, readiness and response efforts. It is aligned with the Global Vector Control Response 2017-2030,[10] a global strategy to strengthen vector control worldwide, and the Global Arbovirus Initiative, launched in 2022,[11] which focuses on tackling mosquito-borne arboviruses with epidemic potential.

4.2 New respiratory illnesses dashboard, the CDC

The CDC launched a new "community snapshot" on 11 October 2024. It includes a metric to rate overall illness from COVID, influenza, and other illnesses in every state (Respiratory Illnesses Data Channel | Respiratory Illnesses | CDC). It offers a simpler, streamlined look that is easy to use.[12]

4.3 Mpox kit ready for tech-transfer, India

The rapid mpox test kit developed by the Indian Council of Medical Research—National Institute of Virology (ICMR-NIV) is set to be transferred to manufacturers for large-scale production.[13]

The kit is expected to reduce both the cost and turnaround time by 60%-70%. Visually interpreted results would be known within an hour of conducting the test and have 100% sensitivity and specificity. It will be priced at an estimated Rs350-400 (USD4.2-4). The kit is based on the Loop-Mediated Isothermal Amplification (LAMP) method, without the need to use expensive machines such as real-time PCR (RT-PCR) or specialised personnel/skills.

The WHO approved an *in vitro* diagnostic (RT-PCR) test, Alinity m MPXV assay (Abbott Molecular Inc, US) for mpox detection for emergency use listing (EUL) earlier on 4 October 2024.[14] The assay enables the detection of mpox virus, MPXV, (clade I/II) DNA from human skin lesion swabs.

5.0 Mpox

5.1 Africa update

In Epidemiology Week 39 (week ending 6 October 2024), 3,186 new notifications were received by the African CDC including 489 confirmed mpox cases and 53 deaths. The Republic of Congo's capital, Brazzaville, reported its first case in 6 weeks. There has been a 300% increase in confirmed cases this year (n=7,339) compared to the entire 2023. Though 16 countries in the region have reported cases this year, 5 comprise approximately 98% of the total cases reported so far: The Democratic Republic of the Congo (DRC), Burundi, Nigeria, Ivory Coast, and Uganda.[15–17]

The testing rate in Africa is 52.6% and the positivity rate is 36.5% (15 out of 16 countries reporting). The testing rate remains < 80% in the DRC, Congo and Liberia. Approximately 67% of people affected are vulnerable populations including those in camps for internally displaced people and 75% of cases are in children.

The burden of the disease in children < 15 years old remains high in the DRC, Burundi, Nigeria, Ivory Coast, and Central African Republic (CAR). In the DRC, 5 provinces are reporting only clade Ib mpox virus: South Kivu, North Kivu, Tanganyika, Kinshasa and Tshopo. Two, Kinshasa

and Tshopo, are reporting a mix of clade Ia and Ib infections. Burundi is reporting clade Ib in its confirmed cases, with children making up approximately 53% of cases. More epidemiologic information is needed to show how the virus is spreading in this vulnerable population including investigations into the underlying causes of mortality; not all children infected die from the virus.

Over 1,600 people have been vaccinated so far with massive efforts made to communicate with the public about the disease and vaccine rollout. The DRC began vaccinating high-risk groups in some of its hot spots on 5 October 2024. So far, the country has received 265,000 doses of the Jynneos (MVA-BN; Bavarian Nordic) vaccines. The next steps include launching vaccination campaigns in the remaining affected provinces and health zones in Kinshasa. Challenges are mainly logistical. The Africa CDC is monitoring the allocation of the LC16 vaccine (KM Biologics), donated by Japan, for the vaccination of children < 18 years old.

The WHO prequalified Jynneos vaccines for adolescents aged 12 - 17 years on 8 October 2024. This age group is considered especially vulnerable to outbreaks of the disease.

5.2 First case

5.2.1 Zambia

Zambia's health ministry reported the country's first case of mpox on 10 October 2024 without disclosing which variant had been recorded. The case is a 32-year-old male of Tanzanian nationality who arrived in Zambia in early September 2024, before travelling around the country and developing symptoms including muscle aches, fatigue and a sore throat on 2 October 2024. The patient is being treated at a rural health centre.[18]

Given the patient's extensive travel history and interactions at multiple points in Zambia, there is a heightened risk of local transmission and potential cross-border spread. Contact tracing was underway. Risk communication and community engagement in all the areas that the individual has passed through since he entered Zambia have been intensified. Surveillance and response teams across the country remain on high alert for any further cases of mpox.

5.2.2 Ghana

Ghana reported its first mpox case for the year in early October 2024. The clade has not been shared. It was reported that testing was underway to determine whether it was the clade Ib form of the mpox virus (MPXV). The young male patient had presented with a fever, rash and body pains. Twenty-five (25) contacts have been identified and are being monitored. The country had previously reported cases in 2022 and 2023.[19]

Countries are instituting public health messaging and targeted containment policies, such as Uganda's new school guidelines to prevent the spread of mpox.[20] The latest Africa Infodemic Response Alliance (AIRA) mpox report highlighted the critical and ongoing need to support

local actors to mitigate misinformation and the importance of elevating factual messaging via the media. In general, 'conversations' about mpox had declined, a concerning trend that can hamper guidance to vaccines and management of the disease and address distrust in health authorities and therapeutics.[21]

5.3 Resistant strains, the US

A cluster of mpox variant, resistant to the antivirus tecovirimat (TPOXX) was identified in 5 states. It involved a total of 18 individuals infected with clade II MPXV between 6 October 2023 and 15 February 2024 who had never taken the treatment before. This indicates naturally occurring resistance. [22,23]

Sequencing identified a unique combination of resistance mutations in 20 specimens collected from 18 patients. The patients were from 5 states: Illinois (8), California (5), Louisiana (2), Texas (2), and New York (1). Of the 16 patients with available history, one had received the drug before the sample was collected. Of 17 patients with available clinical data, illnesses were mild and similar to standard clade II infections, though two were hospitalised for pain management.

The drug-resistant mpox cases followed an initial, unrelated cluster reported in California in late 2022-early 2023. These new cases are the first involving multiple states. According to experts, the cases are likely to have been underestimated because not all cases of mpox undergo genetic sequencing to determine the variant causing the infection.

Routine surveillance is needed to monitor the emergence of drug resistance to safeguard the effectiveness of TPOXX. Doctors are to closely follow the protocol for TPOXX use and to ensure that patients take the drug as prescribed. The CDC stressed that the virus can still be spread even while patients are taking the drug. The findings also emphasised the need for additional mpox treatments as TPOXX, along with smallpox biothreat preparedness.

6.0 Others

6.1 Influenza

6.1.1 H5N1

6.1.1.1 Bird flu primarily transmitted among dairy cows via milking under experimental conditions

A small study conducted by researchers from Germany and the US involving experimentally infected cows suggested that the virus is mainly spread between cattle through milk and milking procedures, and not via respiratory route. Two genotypes of the highly pathogenic avian influenza virus (HPAIV) clade 2.3.4.4b H5N1 virus were used in this experiment: one found in dairy cattle (H5N1 B3.13) and another circulating among wild birds in Europe (H5N1 euDG).[24,25]

A. In the first experiment:

- 6 healthy calves were inoculated with H5N1 B3.13 using an aerosolising device squirted into the mouth and nose.
- After 2 days, the 6 inoculated calves co-mingled with 3 other calves.
- Signs of illness were observed for 21 days; the calves were compared with 3 uninfected control animals.

B. In the second experiment:

- 6 lactating cows were inoculated with either one of the two strains through an injection into the chambers of their udders.
- Signs of illness were observed over 21 days; the cows were compared with a control animal.

The results are simplified in **Table 1.**

Table 1. Outcomes of experimentally inoculating cows with avian influenza H5N1 using different routes extracted from H5N1 clade 2.3.4.4b dynamics in experimentally infected calves and cows | Nature. $TCID_{50}$ = 50% Tissue Culture Infectious Dose (assay to determine the quantity of the virus able to kill 50% of the inoculated cells in the culture).

Experiment	Observation
Oronasal inoculation of H5N1 virus. N = 6 healthy calves.	▪ Mild respiratory illnesses, such as secretions from the nose and coughing, were seen in cows exposed to the virus oronasally. ▪ All the animals in this group maintained normal appetites and activity levels. ▪ Co-mingled calves did not become infected.
Intramammary inoculation of the H5N1 virus. N = 6 lactating cows.	▪ Regardless of the H5N1 strain, all animals showed signs of severe illness, including lethargy, high fever, and inflammation of breast tissue. ▪ All of the animals reduced their feed intake. ▪ Milk production fell by approximately 90%; the quality declined as early as 2 days post-inoculation. ▪ 2 animals had low to moderate viral shedding in their nasal passages. ▪ All of the cows' milk had high levels of infectious viral particles (10^8 $TCID_{50}$/mL at its peak). ▪ 4 animals displayed signs qualifying them for humane euthanasia.

Based on the results, it was proposed that contaminated milk and milking machines are the main causes of transmission. To date, human cases in the US comprise of individuals who were working primarily in the milking areas.[Footnote1] They presented with mild symptoms, including conjunctivitis. It was speculated that receptors of the H5N1 virus are present in

[1] Majority of human cases in 2024 in the US presented with mild symptoms including conjunctivitis.

tissues around the eyes. The avian H5N1 viral receptor was shown to be present in the mammary gland tissue, though not in the rest of the cow.

There have been questions about the possibility of the virus adapting (mutating) its ability to bind to other receptors in the future. These findings suggest that other versions of the virus, such as those circulating in Europe, could replicate in cows' udders and continue to evolve there.

That the virus has limited respiratory spread is a good sign. However, it still warrants continued surveillance; though the risk of human transmission remains small, the situation can change overnight.

6.1.1.2 Human cases, the US

The CDC has confirmed two of California's latest probable human H5 avian flu cases with another likely. If the former is confirmed, it would raise the state's human cases to 7. According to the California Department of Public Health (CDPH), most of the earlier patients infected at California farms were from different facilities (epidemiologically unlinked). However, the latest two were from the same Central Valley farm although working at different facilities. Both of them were exposed to infected cows, suggesting that only animal-to-human transmission is occurring in California. All 6 patients experienced mild symptoms, including conjunctivitis and all were treated based on the CDC's guidance. None were hospitalised. Specimens from the seventh possible case have been sent to the CDC for confirmation. The new confirmations add to 20 cases of human H5 infections this year. Except for one, all were related to contact with sick cows and poultry. Health officials are still investigating the source of a human H5 infection in Missouri, including illness symptoms in 7 contacts, one household member and 6 healthcare workers. The CDC is working with health officials to help prevent the spread of H5N1 from animals to humans.[26–29]

Sequencing analysis from three patients found them to be closely related to viruses in dairy cattle. Analysis of the haemagglutinin sequences suggested none were linked to increased infectivity or transmissibility among humans. The sequences do not suggest a reduction in susceptibility to antiviral treatments or any changes in other gene segments that would suggest mammalian adaptation.

According to the US Department of Agriculture (USDA) Animal and Plant Inspection (APHIS), 100 dairy herds in California—the largest dairy producer in the US—are affected by H5N1 outbreaks up to late August 2024.

Human H5N1 cases in the US are slowly rising, with exposure linked to both birds and cattle. As of October 2024, over 300 dairy cattle herds across 14 US states have tested positive for bird flu, raising concerns about the implications for human health.[30] While human-to-human transmission has not been confirmed the increasing global infections over the past two years

suggest it may only be a matter of time. The risk of a pandemic is growing, though the timing remains uncertain.[31]

In an update on the human cases in Missouri, public health response includes intensive interviews of the patients and household contacts as well as an infection control investigation at the hospital where the latest patient was admitted. Retrospective investigations at the hospital revealed 112 healthcare workers who interacted with the patient. Six of them reported respiratory symptoms; one reported a negative influenza PCR test, and the others had not been tested and had recovered. Specific serological (or antibody) testing for H5 viruses had to be developed by the CDC and subsequently validated as none are available commercially, hence the 'slow' developments. The CDC is also revising its H5 protocol to address evidence of cross-reactivity between seasonal H1 antibodies and H5N1 viruses, a step being taken to ensure the test's accuracy and avoid a false positive result. Conclusive results are expected in mid-October.[32]

6.1.1.3 Poultry cases, Germany

On 25 September 2024, an outbreak of highly pathogenic (HPAI) H5N1 bird flu was reported on a farm in eastern Saxony, near the Czech Republic border, resulting in the deaths of 76 out of 184 birds in the town of Muldenhammer. Bird flu, which can be lethal for poultry, has severely impacted farm flocks worldwide in recent years. Health officials are also addressing cases of cross-species transmission, including incidents involving dairy cows in the US.[33,34]

6.1.2 Preparing for an outbreak, Australia and New Zealand

Because of its geographical isolation—The Wallace Line [Foonote2] – and that it does not import live poultry, Australia and the rest of Oceania are the last regions to remain free of the HPAI H5N1 virus that has caused mass mortality in birds across the world and a massive outbreak in dairy cattle in the US. Many of the endemic birds there also do not migrate to regions where the virus is spreading.[35]

It is thought that long-distance migratory shorebirds and seabirds that come from Siberia and Alaska through southeast Asia to Australia are most likely to carry the virus into the country. Therefore, scientists have begun swabbing the first of approximately 1,000 migratory birds for the virus as they migrate from the northern autumn to the southern spring. To do so, the researchers will need to travel to 7 locations across Australia, as far apart as Exmouth in the northwest, Lord Howe Island in the east and Phillip Island in the south (**Figure 1**).

Blood is to be tested for antibodies that will reveal previous exposure. Testing will be done for the H5N1 clade 2.3.4.4b in particular.

[2] Wallace Line is a faunal boundary line drawn in 1859 by the British naturalist Alfred Russel Wallace. It separates/delineates Australian and Southeast Asian fauna; representing an abrupt limit of distribution for many major animal groups. The line extends from the Indian Ocean through the Lombok Strait (between the islands of Bali and Lombok), northward through the Makassar Strait (between Borneo and Celebes), and eastward, south of Mindanao, into the Philippine Sea. [80,81]

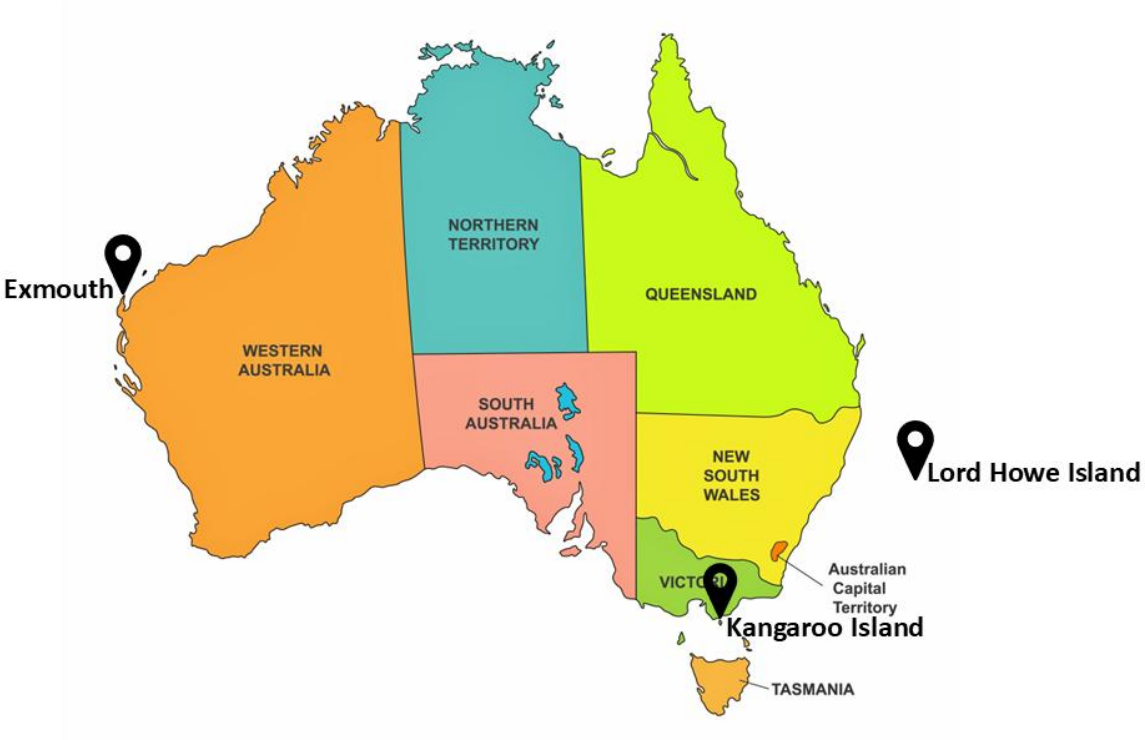

Figure 1. Approximate locations of three of the 7 stations from which bird sab samples are to be collected as part of H5N1 surveillance. The map was amended from the original obtained from orangesmile.com/common/img_country_maps_provinces/australia-map-provinces-0.jpg

Another possible route for the virus is through ducks; migrating ducks and geese can spread the disease without dying from it. Epithelial cells in ducks have a sensor, known as retinoic acid inducible gene I (RIG-I), that detects an invading influenza virus and triggers an immune response that usually protects them from the virus.[36,37] Generally, ducks in this region are endemic and they do not tend to migrate overseas. However, nomadic species, such as the Pacific black duck (*Anas superciliosa*) and the spotted whistling duck (*Dendrocygna guttata*) do tend to cross the Wallace Line, potentially spreading the H5N1 virus in the region.

If and when the virus is detected in poultry, as it happened in May 2024,[Footnote3] government veterinarians will immediately cull the affected population.

For now, it is unknown how the virus would affect the many species of animals (birds and mammals) in Australia as they too could probably be susceptible to the virus. The gap in knowledge about endemic animals and avian influenza needs to be looked into.

While geographic isolation has protected both Australia and New Zealand from HPAI influenza viruses before, it cannot be relied on forever. Both countries have intensified

[3] Report 2024-R20, Section 5.2.2.1 Over 400,000 chickens had to be culled in the state of Victoria because of H7N3 and H9N2 outbreaks.

preparation to face potential outbreaks by instituting extensive biosecurity measures. Government agencies from both nations have launched a multi-departmental task force to enhance readiness through scenario-based training as part of 'Exercise Volare'. [38–40]

Poultry farms are enhancing their sanitation and containment procedures, with an emphasis on preventing contact between wild birds and farmed poultry, a common transmission pathway; this includes the use of automated systems to scare away migratory birds. Both countries have prepared vaccination and treatment strategies for workers at risk of exposure and are raising public awareness about how to reduce the chances of transmission.

New Zealand has trialled a vaccine on 5 endangered native birds and these could be rolled out to more species. Australia is also developing options for vaccinating threatened wild birds held in captivity. The two vaccination schemes are among the only ones for non-farmed animals in the world.

The preparation is not only for agricultural purposes. It is also to safeguard the wildlife population. While the poultry industry can be locked down to contain any avian flu outbreaks, wild populations cannot. (Agricultural) Industry stakeholders are overseeing preparations as every single containment has huge mortality events in wildlife.

6.1.3 H5N5, Japan

H5N5 bird flu has been reported to the World Organisation for Animal Health (WOAH) in wild birds in Japan. The H5N5 high-pathogenic avian influenza viruses (HPAIVs) discovered have unique gene combinations, likely introduced into Japan by migratory birds travelling through northern Eurasia. Experts found two genetically distinct viruses circulating within a single flock of crows. While H5N5 infections in Japan's waterfowl are not well-documented, the lack of reports from nearby countries—particularly Europe—has made tracing this virus's spread to East Asia challenging. Ongoing monitoring and quick information sharing between countries are crucial to understanding the global spread of HPAIVs and preventing further outbreaks. [41,42]

6.2 Marburg virus

6.2.1 Rwanda

After two days of no new cases, Rwanda's health ministry reported three new infections and one more death from the disease on 11 October 2024, raising the total to 61 cases, including 14 deaths from the outbreak, with most cases part of two hospital clusters in Kinshasa. Up to 11 October, the case-fatality rate (CFR) is currently 22%, which is much lower than previous outbreaks; early identification of cases, good supportive care, and the use of antivirals and monoclonal antibodies have saved lives. Sixteen people have recovered from their infections, and 31 are still in isolation and treatment.[43–45]

The country began immunising people at high risk for infection, mainly healthcare workers in Kigali, last weekend. Rwanda received an initial shipment of approximately 700 doses of an investigational vaccine from the Sabin Vaccine Institute (Washington, DC) which the Rwanda Biomedical Centre is using as part of a rapid response phase II open-label clinical trial targetted at at-risk adults using a ring vaccination strategy. The vaccines will be given at 6 clinical trial sites in Rwanda. It is based on a modified chimpanzee adenovirus (ChAd3) platform and is given as a single dose. Phase I clinical trials and non-clinical studies suggest that the vaccine is safe and prompts a rapid and robust immune response. The current trial design is designed to protect those most at risk. A delayed-dose arm of the study will be conducted during a later phase. So far, 501 doses have been administered via mobile clinics. Two drugs are being used for patients: remdesivir and monoclonal antibodies.[46,47]

Pending a request from Rwanda and authorisation from the US Biomedical Advanced Research and Development Authority (BARDA, part of the Department of Health and Human Services, HSS) more vaccines will be provided by the US for the trial. Currently, there are no approved treatments or vaccines for Marburg virus disease (MVD), which has a case-fatality rate as high as 88%.

Investigations as to the source of the virus (of the initial case) are still ongoing and the results of genetic sequencing and serology findings will be available soon.

In another update, a suspected case from the Democratic Republic of the Congo (DRC) turned out negative for Marburg virus.

With regards to travel bans, the Africa CDC issued a statement on 8 October 2024 urging countries to avoid implementing travel bans or restrictions targeting African nations in response to mpox and Marburg virus outbreaks.[48]

6.2.2 The US

The CDC issued a ‘Level 3’ travel notice for the country on 9 October 2024 and it will begin screening travellers who have recently been in Rwanda: level 3 warnings tell people to reconsider non-essential travel. The agency had initially issued a ‘Level 2’ warning (to practise enhanced precautions) during the earlier phase of the outbreak. The recommendation applies to all of Rwanda because Marburg infections have been confirmed in several districts. The agency urged anyone traveling to Rwanda to consider getting travel insurance to cover delays, illnesses, or injuries, and to take steps to avoid people experiencing Marburg symptoms, potential animal sources of the virus, and non-essential visits to health facilities in outbreak areas. To prevent imported cases, traveller screening commenced on 14 October 2024 and applied to people who have been in Rwanda in the past 21 days (the outer range for the incubation period). Passengers who have been in Rwanda will be rerouted for screening at one of three airports: Chicago’s O’Hare International Airport, New York City’s John F. Kennedy International Airport, and the Washington, DC Dulles International Airport.[49–51]

Rwandan counterpart has been screening departures.[52]

A factsheet published by the US Department of Health and Human Services (HSS) provided details of the on-the-ground support for Rwanda including scientific support from the CDC field office that has been in the country since 2002 and deployment of CDC senior scientists.[53]

6.2.3 Update, the WHO

According to the first update from the WHO on 11 October 2024, the vast majority of cases are from three districts within Kigali. All new cases confirmed in the past week are associated with two hospital clusters in Kigali, the country's capital. To date, over 700 contacts have been identified and are under monitoring. The contact who is known to have travelled to Germany is still being monitored by local health officials, and a contact who travelled to Belgium has completed the 21-day monitoring period.[54]

The WHO issued a statement on 10 October 2024 which said that travel and trade restrictions are ineffective in controlling the ongoing Marburg outbreak in Rwanda. It can hurt affected countries and discourage countries from rapidly sharing data. It noted that several countries have introduced travel-related measures, including temporarily discouraging travel to Rwanda.[55]

6.3 Mycoplasma, Japan

Japan recorded the highest number of cases of mycoplasma pneumonia during the last week of September 2024. The most recent data from the National Institute of Infectious Diseases showed an average of 1.64 patients with the disease being reported per medical facility in the week between 23 and 29 September 2024. This is the highest number since the institute began recording cases in 1999. During the same period in 2023, the average was 0.04 patients per hospital. The previous high was reported in 2016—when the infection was rampant—with 1.61 patients per hospital.[56,57]

Tokyo Metropolitan Government announced that in Tokyo alone, cases had risen to a record high of 2.8 per hospital in the third week of September 2024, to only increase further to 2.96 a week later; with > 90% of the patients so far this year < 19 years old.

According to the health ministry, the possibility of the disease transmitting through short-term exposure is not very high, and most commonly occurs through close contact. As a preventive measure, people are encouraged to thoroughly wash their hands and wear masks when coughing, as well as avoid sharing towels with family members who may get infected.

6.4 Dengue

6.4.1 Pan American Health Organization (PAHO)/the WHO updates

Dengue cases continue to increase in Central America and Mexico. Furthermore, dengue season is expected to arrive in South America soon. Because of that, the Pan American Health Organization (PAHO)/the WHO has encouraged Member States to continue their efforts in surveillance, early diagnosis, and timely care of dengue and other arbovirus cases. This is to prevent severe cases and deaths associated with these diseases. Countries in South America especially, are to review their dengue response plans.[58]

According to the latest report published on 7 October 2024, the number of dengue cases recorded during the first half of 2024 exceeded the number of cases historically reported in a year, as compared to all previously recorded years. As of epidemiological week 36 (EW36/2024), 47 countries and territories in the Americas Region have reported 11,732,921 dengue cases; this number is 2.5 times as high as the number of cases recorded throughout 2023 (4,594,823 dengue cases).

Between E 1/2024 and EW 36/2024, of the total reported dengue cases, 6,253,754 (53%) were laboratory-confirmed. Of this total, 17,610 were characterised as severe dengue (0.15%) and 6,650 fatal cases were recorded (case fatality rate, CFR of 0.057%). Cases from 6 countries make up 97% of the fatal dengue cases in the Americas Region: Brazil with 5,303 (82.4%), Argentina with 408 (6.1%), Peru with 234 (3.5%), Colombia with 131 (1.97%), Paraguay with 121 (1.8%), and Ecuador with 59 (0.88%) fatal dengue cases.

All 4 serotypes of the dengue virus have been circulating in the Americas Region as of EW 36/2024. Brazil, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, and Panama report simultaneous circulation of the 4 serotypes (DENV-1, DENV-2, DENV-3, and DENV-4). Additionally, Argentina, French Guiana, Peru, and Puerto Rico reported simultaneous circulation of DENV-1, DENV-2, and DENV-3.

6.4.2 Malaysia

According to Kementerian Kesihatan Malaysia (KKM), dengue fever cases declined in epidemiological week 40 (EW40/2024; from 29 September to 5 October) from the previous week; from 1,760 to 1,639. Three deaths from dengue fever complications were reported in EW40/2024.[59]

Up to EW40/2024, there was an accumulative of:

- 105,149 dengue cases in 2024, compared to 91,910 cases for the same period in 2023, and
- 95 deaths compared to 67 for the same period last year.

The number of dengue hotspots increased to 35 from 33; the most were in Selangor (26), four in Penang, two in Negeri Sembilan, and one each in Johor, Kelantan and Sabah.

Two cases of chikungunya were recorded in EW40/2024, raising the total this year to 78. No outbreaks were reported.

Of the 2,081 samples (blood, urine and cerebrospinal fluid) taken for Zika virus surveillance, none tested positive.

6.4.3 Bangladesh

According to authorities, Bangladesh appears to be heading towards another massive outbreak of dengue. On 9 October 2024, three dengue-related deaths were recorded. In the capital, Dhaka, 1,033 dengue patients were hospitalised on the same day.[60]

This year, a total of 39,822 patients were hospitalised, while 196 deaths from dengue disease were reported.

The number of cases has been increasing over the past three years. In 2020, 1,405 confirmed cases were reported, increasing to 28,429 in 2021 and 62,382 in 2022. In 2019, it was 101,354. In 2023, 1,705 dengue-related fatalities and a total of 321,179 cases were reported.

6.4.4 Sri Lanka

As of 8 October 2024, Sri Lanka National Dengue Control Unit (NDCU) has recorded 40,109 dengue cases with 19 fatalities so far this year.[61]

The western province recorded the highest number of cases accounting for 42.3% of the total, followed by the northern (12%) and central provinces (10.3%). Colombo district in the western province reported the highest number of cases (10,027) followed by Gampaha district (4,698 cases).

As previously, the unit has identified 10 high-risk areas for dengue, however, the information is not yet made available on the official NDCU webpages (NDCU - Publications - 2024 (health.gov.lk).

In 2023, over 88,000 dengue cases were reported with 57 fatalities.

6.4.5 India

Between 2 and 7 October 2024, approximately 1,108 dengue cases have been recorded in Rajasthan state in northwest India. In Jaipur city, at least 251 people have been reported as positive. A second death was reported on 7 October 2024. The victim was an anesthesiologist who was posted at a community health centre in Dausa district in the state. She was admitted with a low platelet count (10,000/µl); she died 10 days later. According to reports, most of the hospital beds in the state are occupied by an overwhelming number of seasonal diseases and dengue. Most of the cases belong to scrub typhus, dengue, and viral infections. The public was advised to seek treatments and tests at the right time to avoid complications in all these cases, especially dengue fever.[62]

Punjab, another state in the northwestern part of India, has seen an uptick in dengue cases, with almost 60 new infections being reported every day. So far, over 1,471 cases have already been recorded across the state. The numbers are expected to rise further due to the delayed monsoon season; favourable breeding conditions are expected in the next fortnight. Larvicides have been applied at open sites wherever there is stagnant water to deter breeding. However, the outbreak cannot be curbed without community participation. The public is encouraged to assist in checking larva breeding sites and destroying them.[63]

6.4.6 Iran

Iran's Infectious Diseases Control Center has warned against the rapid rise of dengue infection in the country. Cases have increased "dramatically" this year with 226 cases reported so far. However, the majority of cases were imported from neighbouring countries; only 76 cases were associated with local transmission of the disease. Dengue is considered an emerging disease in Iran, coinciding with the global increase of the disease incidence. Both dengue and chikungunya fevers are prevalent in neighbouring countries Pakistan and Afghanistan; Iranian provinces that are most affected are located near the southeast borders, bordering these countries.[64]

6.5 Zika, India

The number of Zika virus infections in Pune (west-central part of India) and the nearby areas continues to steadily increase. Since 8 August 2024, the total number of confirmed cases in Pune City has increased from 73 to 103. Blood samples from another three suspected cases have been sent to the National Institute of Virology (NIV) for testing and confirmation. Five deaths were reported, all of whom were older adults from Pune with pre-existing comorbidities. The case number for pregnant women remains at 45, unchanged since 14 September 2024. Pune Municipal Corporation and health authorities are working to contain the outbreak, emphasising the importance of mosquito control measures and public awareness. Residents are advised to take necessary precautions to prevent mosquito bites, the primary mode of Zika virus transmission. They are urged to remain vigilant and cooperate with health authorities to combat the Zika virus outbreak.[65]

Travellers should be aware of the Zika alert in Maharashtra, especially in Pune, and avoid travel there or avoid mosquito bites if going there. Pregnant women and their partners should be especially cautious about travelling to areas where active Zika virus transmission is occurring in the Pune area. The virus can be sexually transmitted and can cross the placenta and cause serious teratogenic effects or foetal death.

6.6 Crimean Congo haemorrhagic fever, India

A 51-year-old woman from Jodhpur (in the north-western state of Rajasthan) died of Crimean Congo haemorrhagic fever (CCHF) on 9 October 2024 at an Ahmedabad hospital. The

confirmation was made by the laboratories at the National Institute of Virology in Pune. The medical and health departments in Rajasthan have issued the necessary guidelines for the prevention and protection against the disease across the state. A rapid response team has been sent to the area affected to control the spread of the infection. Suspected and symptomatic patients in the area have been asked to be traced and kept in isolation. As CCHF is a zoonotic disease, the necessary steps have been taken by the Animal Husbandry Department to prevent and control the disease.[66]

6.7 Melioidosis, China

The Centre for Health Protection (CHP) of the Hong Kong Department of Health confirmed two new confirmed melioidosis, an infection caused by the bacteria *Burkholderia pseudomallei*, on 10 October 2024. The cases were recorded from 4-9 October 2024.[67]

The first case involves an 83-year-old female with underlying illness who lives in Sham Shui Po. She developed a fever and cough on 20 September 2024 and was admitted to Prince of Wales Hospital on 1 October 2024. The second case involves an 82-year-old male with an underlying illness who lives in Kwun Tong. He developed a right neck swelling in August 2024, and a fever, cough, and shortness of breath on 20 September 2024 and was admitted to Queen Elizabeth Hospital on the same day. Both patients are in stable condition.

The CHP is investigating the infection source of the cases. To date, 18 melioidosis infection cases have been recorded in Hong Kong in 2024. In 2023, there were 17 recorded.

Melioidosis is an endemic disease in Hong Kong, and cases are reported annually. The CHP reiterated that person-to-person transmission and animal-to-human transmission are rare; however, cases are more common after typhoons or floods caused by storms. *Burkholderia pseudomallei*, which can be found in soil and muddy water, may become exposed especially after typhoons or storms, causing it to spread more easily. The CHP expects the number of cases to increase with the increase of these natural weather events.

The public was reminded where practical, they should stay indoors during typhoons and storms, avoid travelling to areas with potential flooding, and not wade in or have contact with muddy water and soil. In addition, high-risk individuals should avoid paths near stormwater drains where aerosols may be generated from contaminated water. They should also take the following preventive measures against infection:

- Avoid contact with contaminated soil;
- Wear appropriate protective clothing or footwear when participating in activities with possible contact with soil or water (for example, using gloves and wearing boots). High-risk individuals may also consider wearing a surgical mask;
- Wash or shower after exposure to contaminated water or soil;
- Always clean any wounds as soon as possible and cover any cuts or grazes with waterproof dressings;
- Wash hands with liquid soap and water after handling soil or gardening; and

- Observe food hygiene and avoid drinking raw water.

Travellers can contract the disease through outdoor water sports. The risk of infection can be minimised by avoiding exposure to water sources (such as rivers, ponds, or lakes) that might be contaminated.

The public was advised to seek medical advice if they develop symptoms, in particular people with diabetes or other immunocompromised conditions, to receive an appropriate medical diagnosis and treatment.

6.7 Glanders, India

Three horses had to be put down (euthanised) when they tested positive for glanders, a zoonotic disease caused by the bacterium *Burkholderia mallei*. While human beings can contract glanders, it primarily affects horses and also impacts donkeys, mules, goats, dogs, and cats. The disease is commonly contracted by consuming food or water contaminated by the nasal discharge of carrier animals. It is characterised by purulent nasal discharge, nasal mucosal ulceration, lung lesions, and ulcerating nodules.[68]

Under the protocol of the National Action Plan for Control and Eradication of Glanders in India (NAPCEGI), all infected horses must be immediately quarantined, and all equines within a 5 km radius should be tested. Blood samples collected from horses illegally used to pull carts (tongas) were found to be positive 6 months ago. However, these infected horses were left among the public until 31 Aug 2024, increasing the risk of glanders spreading. There is a renewed call to ban horse-drawn carts and to check on personnel handling the inspection/testing of animals to ensure no further compromise to public safety.

Note:

Glanders and melioidosis are infectious diseases caused by *Burkholderia mallei* and *Burkholderia pseudomallei*, respectively. While glanders have been eliminated from the US, it is still present in Africa, Asia, the Middle East, Central America, and South America. Melioidosis is endemic to southeast Asia and northern Australia; however, it has also occurred in South America, Central America, Africa, and the Middle East.[69]

In humans, the first symptom of glanders is usually fever, followed by pneumonia, pustules, and abscesses. The acute form of the disease usually is fatal within 7-10 days of onset, though chronic glanders do occur.

The incubation period of melioidosis can be highly variable, ranging from 2 days to several years. Symptoms of acute melioidosis include fever, cough, pleurisy, arthralgia, myalgia, headache, anorexia, and night sweats. Melioidosis can occur acutely or chronically, and presentation is highly variable, ranging from localised infections to abscesses of the liver, spleen, prostate, or parotid glands to sepsis.

6.8 Rabies

6.8.1 Sabah, Malaysia

Sabah is to tighten its border controls and quarantine measures against the possible threat of rabies from neighbouring Sarawak and Kalimantan; the situation there is seen as alarming. The disease needs to be managed before it arrives at Sabah's borders. It was reported that Sarawak has had 81 (human) bite cases, with 74 resulting in deaths. According to the Sabah Department of Veterinary Services (DVS), although <10 rabies cases have been reported so far in the state in 2024, every precautionary measure is taken to ensure the disease does not breach Sabah's borders. The Ministry of Agriculture, Fisheries and Food Industry noted that these proactive actions are critical in protecting the rabies-free status Sabah has had since 1881. The importance of raising public awareness is stressed as many residents may not fully understand the dangers of rabies or the need to vaccinate their pets.[70]

Together with public awareness campaigns, both border control and quarantine prevent rabies-infected animals from entering Sabah from high-risk areas. According to the Sabah DVS, all pets must be vaccinated against rabies at least 6 months before entering the state. Vaccination status must be stated in all import licenses. Rabies vaccination and antibody titre tests are to be made mandatory for pets, especially dogs and cats, before entering Sabah. Animals without sufficient antibodies could face up to three months of quarantine in high-risk cases, while lower-risk cases may involve quarantine periods ranging from two weeks to two months. Veterinary officers stationed at border checkpoints will enforce these regulations. Violators (failing to meet vaccination or health standards) will be fined accordingly.

Potential illegal practices involving the improper handling and sale of animals that may not have been properly tested for rabies are also being investigated. A task force has been established to manage these matters and ensure compliance with the required procedures.

Other than for rabies, simulation training for the preparedness for other contagious diseases, such as African Swine Fever (ASF), which almost wiped out the wild boar population in Sabah, would also be included.

6.8.2 The US

The Chicago Department of Public Health (CPDH) issued a warning to outdoor concertgoers that the venue may have been exposed to rabies-carrying bats; the 'possible' exposure took place on 12 September 2024, between 5-10 pm. The department encouraged bitten or scratched attendees or those who are concerned with the situation to contact their healthcare provider to discuss rabies post-exposure prophylaxis (PEP). Bat bites or scratches are hard to detect as they may not be felt and may leave marks that are not easily seen due to the mammal's small teeth.[71]

6.9 Polio

6.9.1 Multicountry updates

Four countries reported new cases, with Spain and French Guiana reporting positive environmental samples.[72]

Wild poliovirus type I (WPV1):

Pakistan; four cases. This brings the total in 2024 to 28 cases. The new cases all experienced paralysis onset in September 2024, and were located in Balochistan, Khyber Pakhtunkhwa, and Sindh provinces.

Vaccine-derived poliovirus type II (cVDPV2):

- Angola; four cases, which raises this year's total to 7.
- Nigeria; four cases, totalling 61 cases this year.
- South Sudan; one case adding to the previous 8 in 2024.

Two countries reported environmental samples of vaccine-derived polio for the first time.

- French Guiana: Three cVDPV3-positive samples in total were isolated from samples collected in Cayenne province in May, June and August 2024.
- Spain: One cVDPV2-positive sample was collected in Barcelona in September 2024. This is the first time cVDVP2 has been reported in Spain.

6.9.2 Minimising the risk, Bangladesh

Bangladesh saw its last case of polio in 2006 thanks to robust surveillance, vaccination and multi-sector collaborations. While the country does not have facilities that plan to retain poliovirus infectious material long-term (and thereby undergo containment certification), it is home to several labs and research centres known to be working with poliovirus Potentially Infectious Material (PIM).[73]

PIMs oftentimes include materials unrelated to polio and can be found in laboratories or research facilities. It refers to respiratory, concentrated sewage or other environmental samples collected at the time and place where polioviruses were circulating or oral polio vaccines were in use. Facilities with a high probability of holding PIM include those working with/researching rotavirus or other intestinal viruses, hepatitis viruses, influenza/respiratory viruses, or measles. Others could include those involved in nutrition research or environmental facilities.

The icddr,b, formerly the International Centre for Diarrheal Disease Research, Bangladesh, in Dhaka, works with PIM. Through innovative research, the centre is committed to addressing public health challenges in low- and middle-income countries (LMIC). Other non-polio facilities that may inadvertently be holding PIM and the use of available guidance is invaluable to knowing what to do if these facilities discover they have PIM in their possession.

To maintain the country's polio-free status, strict biorisk management must be in place at all facilities (public and research labs) in the country. These facilities need to know exactly what

they are handling and storing so that risk can be effectively managed and public health is not jeopardised. To help these facilities identify and take action to minimise the risk of PIM, the WHO has developed special guidance. Depending on the materials found, certified containment or other precautions may be necessary.[74]

Globally, 22 countries host 78 facilities retaining poliovirus infectious materials, with the majority moving to achieve certified containment. While the identification of facilities retaining infectious materials has been completed, the search for PIM is an ongoing process; countries are urged to make use of the available guidance to do so. Bangladesh's continuous work to manage PIM risk is an example of vigilance and global citizenship.

6.10 Antimicrobial resistance, the WHO

A new report released by the WHO on 11 October 2024 estimated that vaccines could avoid thousands of antimicrobial resistance (AMR) deaths and reduce antibiotic use by billions of doses annually.[75]

Specifically, the introduction and deployment of 44 vaccines against 24 pathogens could avert more than half a million deaths from drug-resistant infections annually, cut AMR-related healthcare costs and productivity losses by billions of dollars, and reduce the number of antibiotics needed to treat infections by 2.5 billion doses annually.[76,77]

The purpose of the report was to quantify the impact that vaccines could have on AMR across three criteria: the AMR-related health burden, the economic burden (including hospital costs and productivity losses), and antimicrobial use. To do so, the WHO analysed data and sought expert opinions on 44 distinct vaccines targeting 24 pathogens (19 bacteria, 4 viruses, and 1 parasite).

A summary is as follows.

- Vaccines already in existence for *Streptococcus pneumoniae*, *Haemophilus influenzae* type b (HIB), and *Salmonella typhi* (typhoid). If these vaccines were more widely deployed, they could avert up to 106,000 AMR-related deaths, 9.1 million disability-adjusted life years (DALYs), and USD861 million and USD5.9 billion in hospital and productivity costs, respectively, while reducing antibiotic use by 142 million defined daily doses (DDDs).
  Therefore, countries must scale up the use of these existing vaccines, and ensure that they are used appropriately, especially in countries with low vaccine coverage.
- It was estimated that if vaccines that are in the late stages of clinical development, including candidate vaccines for tuberculosis (TB), extraintestinal pathogenic *Escherichia coli* (ExPEC), gonorrhoea, and S*almonella paratyphi* A, were approved and quickly introduced, they could avert up to 135,000 deaths annually could be averted annually, along with 5 million DALYs, USD1.2 billion in hospital costs, and USD2.2 billion in productivity losses.

TB vaccine alone would dramatically reduce annual antimicrobial use, since TB treatment regimens are very long (≥6 months) and involve the administration of several drugs daily. To develop and fully use [TB] vaccines would mean not having to use between 1.2 and 1.9 billion antimicrobial doses, which is a large proportion of the total antimicrobial burden.

- Together, vaccines that are in the early stages of clinical development, such as a maternal vaccine targeting *Klebsiella pneumoniae* (the leading cause of neonatal sepsis globally) and vaccine candidates that target *Acinetobacter baumannii*, *Staphylococcus aureus*, and Group A *Streptococcus*, could avert up to 408,000 deaths, 23 million DALYs, USD30 billion in hospital costs, and USD17.7 billion in productivity losses annually. They would decrease antimicrobial use by 548 million DDDs. It was noted that while the vaccine candidates in this group have a high potential impact on AMR, the feasibility of development for some is low because of challenges in identifying and accessing vaccine target populations.

Health experts have known for many years that vaccines could play a role in controlling AMR. However, these estimates now give vaccine developers and AMR stakeholders a starting point for prioritising research and development efforts.

The report recommends that global, regional, and national AMR and immunisation strategies and implementation frameworks should include vaccines as interventions to reduce AMR and should advocate for their broader implementation.

To boost vaccine development, the report recommends including AMR endpoints in clinical trials, engaging with regulatory agencies, and creating research roadmaps for challenging bacterial vaccines. Governments, the private sector, and investors have a role to invest in the development of new and improved vaccines. Strong research and development are needed and will be a game-changer in fighting the growing threat of AMR.

"The best infection is the one that doesn't occur. When we vaccinate people, then they don't develop infections and they don't require antibiotics."

Yvan Hutin, MD, PhD, The WHO Director of Surveillance, Protection and Control, AMR Division

7.0 Implications for Sarawak based on the views of SIDC

Reports of COVID-19 waxes and wanes, though very much not seasonal.[78,79]

Depending on the individual, a SARS-CoV-2 infection may seem similar to the 'normal' seasonal flu. However, for some, it can present as an 'extreme version of the flu' or worse.

COVID-19 has, in general, slipped away from everyday thoughts when a sickness is reported. Many in our society believe they do not have COVID-19 merely from not testing for it. More

surprising (or not), this statement was made by 'highly educated members' of the public. They view all respiratory viruses as the same (as a move to 'live with the virus'). This is understandable after almost 5 years since the public health emergency was declared for the SARS-CoV-2 virus.

However, such sentiment can be considered a red flag from a public health perspective. The SARS-CoV-2 virus is still evolving rapidly. A new strain emerges and becomes dominant within less than a year. While the trend of viral mutation/evolution seems to be for better or more efficient transmissibility and immune escape, we do not know if the virus would evolve to be more virulent. The effect of vaccination and infection does wane in time and the virus continues to affect vulnerable people. Not being tested for a disease does not mean that the disease does not exist; in this case, ignorance is not bliss.

Respiratory diseases spread easily, as seen with COVID-19, the common cold, mycoplasma pneumonia, pertussis as well as influenza. It can become an outbreak if not detected early and without the necessary control or interventions. Not testing or investigating respiratory infections may be a missed opportunity to determine the type of infection, rule out what is known, and investigate what is unknown (new infection/disease or new strain or a known disease). Knowing the type of infection can help determine the course of infection management to be taken. Knowing the rates and incidence of disease helps public health systems adjust and prepare to manage the situation – whether it warrants full public health intervention or otherwise (extent of an outbreak).

There is no harm in reminding the public of the usefulness of getting tested for COVID-19 or other respiratory diseases or non-respiratory illnesses if it means getting the right management for these illnesses.

[Note: It was noted recently, that the at-home rapid test kit for COVID-19 is hard to come by in Kuching, Sarawak.]

With regards to bird flu, would animal spillover become the norm? This is one of the pressing questions even as human-to-human transmission has not been confirmed yet. If the virus has effectively jumped species, would human-to-human transmission eventually happen too? So far, human infections of H5N1 have been mild. However, those who have caught the virus are reportedly healthy and young. We have not yet received reports of the viral infection in older, and more vulnerable people. Should the latter occur, we might be seeing people with severe illness – as was seen with SARS-CoV-2 infections. Also of concern is if the different strains of influenza virus re-assort and mutate to emerge as a new strain (as for swine flu subtypes). These could evolve to be more transmissible and/or virulent. Hence, the a need to keep up with the monitoring/surveillance of influenza viruses in general.

The speed at which Rwanda responded to the Marburg virus outbreak is to be commended. With the right protocols and resources, and partners, it is a move that we can emulate for future health emergencies.

Health discrepancies, inequalities and inequity need to be addressed for Sarawak to have a healthy and strong population; one that can contribute to its socioeconomic growth. Starting with diseases that can be controlled via vaccination such as HPV, we can eliminate cancers linked to the virus amongst the working-age population – a step in ensuring that we do not lose our population via vaccine-preventable diseases.

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