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Global updates on COVID-19 and other diseases
Sarawak Infectious Disease Centre (SIDC)

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Summary

- The current COVID-19 situation seems encouraging.
    - The major surges in cases observed globally have continued to decline.
    - However, the WHO's ratio tracking method is not able to conclusively determine if the newer Omicron variants are less virulent.
- A European study has concluded that booster doses saved the lives of vulnerable people during the Omicron period (2022-2023).
- The global pandemic treaty is at risk of falling apart.
- The global flu activity has slowed down.
- Measles, a disease entirely preventable by vaccination, is resurgent in Europe and the UK, and has been more noticeable in the US.
- Malaria vaccine has been included in routine vaccination programmes in Cameroon.
- Dengue has overrun South America.
- Climate change will continue to play a dominant role in health.
- The emergence of Disease X as a result of permafrost melting is not impossible.

1.0 Situational summary: cases and related issues

According to the WHO's monthly update, over the past month (11 December 2023 – 7 January 2024), the global trend of COVID-19 cases rose slightly while reports of deaths continued to decline. However, due to the decline in global reporting, this information should be taken with caution.

Wastewater surveillance has estimated the clinical detection of cases underestimates the real burden from 2 to 19-fold.

Regionally, cases increased in Southeast Asia and the Western Pacific, with Indonesia and India as well as Malaysia and Singapore reporting the highest increases.

Only 22 countries regularly report COVID-19 hospitalisations and 18 intensive care unit (ICU) admissions. Based on their reports, 36% of them which included Indonesia, Malta, Brunei Darussalam, Malaysia, Greece, Singapore, the US, and Ireland, saw a ≥ 20% rise in hospitalisations over the past month. Forty-four percent of countries with ICU data indicated a ≥ 20% rise in COVID admissions; they include Indonesia, Malaysia, Singapore, Estonia, Ireland, the Netherlands, Greece, and the Czech Republic. Monitoring the ICU-to-hospitalisation and death-to-hospitalisation ratios enables the WHO to track disease severity.

According to the WHO, the ICU-to-hospitalisation ratio has been decreasing since the peak in July 2021, with a stable trend in recent weeks. Likewise, the death-to-hospitalisation ratio has also been declining since July 2021, and since January 2023 has remained under 0.15.

In the last week of 2023, the JN.1 VOI made up 65.5% of sequences, a sharp increase from 24.8% the month before. This widely occurring strain is currently reported by 71 countries. Its parent lineage, BA.2.86 VOI, is stable and accounted for 7.8% of sequences in week 52 compared to 7.0% in week 48. According to the risk evaluation on 19 December 2023, the JN.1 has an overall evaluation of low public health risk at the global level based on available evidence.[1] [2] [3]

The peak of the current COVID-19 wave (epidemiology week, EW, 51/52) in Malaysia has passed and the trend in cases continues to decline steadily. The pattern is similar in Singapore.[1] [2] [4] [5]

1.1 Asia-Pacific and Southeast Asia

Taiwan

Seroprevalence data from Taiwan's Centers for Disease Control (CDC) has suggested that ≥ 90% of the population had likely contracted COVID-19. Last year, blood samples that were randomly selected between January and June (n=7,000) were found to be approximately 80% seropositive for the SARS-CoV-2 virus. The pattern of seropositivity aligned with the peaks that were observed in the third and fourth waves; from 61.5% in January to 65.1% in February, and 69.4% in May to 78.9% in June, respectively.

The positivity rates were the highest among people in the 17-24 age group (83.7%), followed by the 25-34 age group (80.8%), the 35-44 age group (80.4&), the 45-54 age group (76.8%), and the 55-65 age group (75.5%).

Authorities have urged the public to get the latest monovalent COVID-19 vaccinations as prior infection does not guarantee lifelong immunity against a virus that rapidly evolves and displays strong transmissibility.[6]

According to the Taiwan CDC web pages, there have not been any reported COVID-19 cases since the beginning of 2024. The centre has reported an average of ≤ 10 new cases per week since mid-March 2023.[7]

1.2 The Americas

The US

In general, the US respiratory virus (influenza, respiratory syncytial virus [RSV], and COVID-19) activity remains high though it continues to ebb. Although the trend in

deaths continues to decline, 10 paediatric influenza deaths were reported between 23 December 2023 and 13 January 2024, culminating in 57 for the season. Six involved influenza A (subtype 2009 H1N1) and three influenza B, while one died of a 2009 H1N1 and influenza B coinfection.[8]

As of 20 January 2024, the JN.1 VOI was estimated to be linked to 86% of all cases in the US.[9] According to the CDC, all COVID-19 markers (early indicators and disease severity) have shown a downward trend.[10] Wastewater surveillance has continued to detect a high presence of viral particles in samples. However, levels have begun to decline.[11] [12]

2.0 Vaccines and vaccinations

Corbevax, emergency use listing

The WHO has approved Corbevax for emergency use listing (EUL). The recombinant protein–based vaccine was co-engineered by researchers at Texas Children's Hospital and Baylor College of Medicine. It is the 14th COVID-19 vaccine to receive the WHO EUL.

The vaccine is licensed to Biological E Limited (India) for development and manufacturing, and subsequently for clinical trials.

Corbevax was granted emergency use authorisation (EUA) in India in 2022, first as a first as 2-dose primary series, and then for use as a booster. Approximately 100 million doses of Corbevax have been administered in India.[13] [14]

3.0 Drugs and pharmaceuticals, and non-pharmaceuticals

3.1 Isolation guideline, California, the US

As of 10 January 2024, California's new COVID-19 isolation policy differs from that of the CDC.[15] Residents who are confirmed positive can end their isolation once they have not had a fever (resolved naturally without fever-reducing medication) for 24 hours and other symptoms are improving. Asymptomatic patients do not need to isolate at all. Masking for 10 days is assumed to be sufficient and those who have come out of isolation are to avoid contact with those people at higher risk for severe COVID-19 for 10 days.

The blog *Inside Medicine* highlighted the problems linked to the new rule which likely stems from the idea that decreasing viral loads often (though not always) correlate to reductions in symptoms.[16]

As most people were not likely to abide by the CDC's isolation rules[Footnote1], the updated Californian rule more likely offers them an option (to do something about isolating) that they would most likely comply with. The new rule highlighted harm reduction issues: an asymptomatic person can have viral loads that continue to climb until the emergence of symptoms. During that time, this individual would be considered a "superspreader".

The context in which the advisory is taken is important to avoid risking spreading the virus to people. This also includes when to test for COVID-19 when an infection is suspected. Avoiding contact with high-risk people was not explicitly mentioned in the new rule; which could mean differently for different people. For those in the healthcare system, it should mean that they should not attend to many patients at that time.

3.2 Toilet habits and viral contamination

A recent study co-conducted by scientists from the University of Arizona and Reckitt Benckiser LLC, the company that makes the disinfectant, found that closing toilet lids does not have a meaningful impact on preventing the spread of viral particles (including the SARS-CoV-2 virus) from contaminating bathroom surfaces.

The plumes were able to land on surfaces approximately 1.5 metres (5 feet) away. The study did not find any significant differences in the amount of virus collected on household toilets or floors when the lids were closed or open. Toilet seats had the most contamination while walls had little.

Comparable contamination patterns were noted with the public toilet. Cleaning the toilet bowl reduced contamination of bowl water (vs no disinfectant) by > 99%; disinfecting the toilet brush lowered the contamination by 98%. Adding disinfectants to the bowl before flushing helped in lessening flush-related contamination, likewise, if disinfectant dispensers were used in the tank.

The study highlighted the importance of regularly disinfecting toilets to reduce contamination and prevent the spread of viruses.[17] [18]

4.0 Outcome

4.1 Long-COVID and Paxlovid, discordant findings

In 2022, a study of the effect of Paxlovid (nirmatrelvir) on long-COVID showed that the drug was linked to a 26% lower risk of developing long-COVID over a period of 6 months. It also showed that the antiviral "might decrease" the risk of death by 47%

[1] As of 11 May 2023, the rule is to isolate for 5 days if tested positive for COVID-19. [71]

and the risk of hospitalisation by 24%. The study was based on prescription records of participants from the US Department of Veterans Affairs in 2022.[19]

A study in 2023 indicated a small but promising outlook: Paxlovid had an absolute risk reduction of 2.7% (small reduction) in reducing long-term in Medicare (insurance) participants diagnosed as having COVID-19. [20]

However, the most recent findings from an observational cohort study (survey) within the Covid Citizen Science (CCS) study (online cohort with > 10,000 participants) found the opposite: Paxlovid did not prevent long-COVID from developing, and if used, it leads to more rebounding infections. This study included vaccinated, non-hospitalised, non-pregnant individuals who reported their first SARS-CoV-2 positive test between March-August 2022.[20]

However, compared with the other studies, this study has limitations; respondent bias (not all respondents reported), and relies on self-reported long-COVID. The discordant results highlighted the need to learn more about the effects of antivirals and long-COVID. It is an opportunity to have more drug trials.[21]

4.2 Omicron and long-COVID, Malaysia

An observational study using questionnaires delivered via the *MySejahtera* app (n=44,386) and conducted during the first Omicron variant surge (April to June 2022) has suggested that 3.4% of adult COVID-19 survivors in Malaysia had persistent symptoms 3 months after infection. The study also suggested that an estimated 20% found that the symptoms limited their ability to perform activities of daily living, while 33% found themselves less able to work.

The most common symptoms reported were cough (50.6%), fatigue (45.8%), memory loss (37.4%), shortness of breath on exertion (31.3%), impaired ability to focus (27.8%), headache (26.5%), muscle or joint pain (25.8%), and insomnia (23.4%).

The likelihood of long-term COVID was found mainly in women aged 30-59 years (as opposed to those aged 18-29 years), and those with underlying medical conditions, symptomatic infection, and/or hospitalisation during infection.

Symptomatic infection was linked to an estimated 13 times greater likelihood (adjusted odds ratio, 13.3) of developing long-COVID. In contrast, participants aged ≥ 60 old and minority ethnicities were less likely to develop the condition. Managing long-COVID requires dynamic and coordinated cross-sectoral interventions involving multiple specialties as the condition involves multiple organ systems.[22] [23]

4.3 Vaccinated patients and the risk of long-COVID

There is more evidence that vaccination reduces the risk of long-COVID.

The latest findings came from the Immunity Associated with SARS-CoV-2 (IASO) study, an ongoing prospective cohort study of employees and students of the University of Michigan (n=3,375) which began in October of 2020 based on surveys. The study found that at 90 days post-infection, 8% of vaccinated cases were still reporting symptoms, compared with 27% of unvaccinated cases. [24] [25]

4.4 Maternal vaccination and risk to infants

A small longitudinal study conducted in the US found that infants born to unvaccinated mothers who had COVID-19 during pregnancy were at high risk for developing neonatal respiratory distress while pregnant; odds ratio, OR: 3.06 (95% CI: 1.08-10.21). None of the infants were COVID-positive.

The opposite was found in COVID-exposed infants born to mothers who had been vaccinated; in those who had received at least one mRNA vaccine dose before a SARS-CoV-2 infection, the odds of their infants developing neonatal respiratory distress declined 67% to 0.33 (95% CI: 0.10-0.96).

Maternal disease severity was also associated with the incidence of neonatal respiratory distress: 21% of infants with respiratory distress were born to mothers with severe or critical COVID-19, while 6% of babies without respiratory distress were born to women with severe disease (P=0.009).

Approximately 56% of infants with respiratory distress were either late preterm or term deliveries and 44% were preterm with preterm infants more likely to experience heightened inflammatory responses (OR: 10.87, P=0.0036). [26] [27]

4.5 COVID-19 vaccines and lives saved, Europe

According to the preprint publication based on data from December 2020 through March 2023, COVID-19 vaccines reduced deaths by 57% and saved an estimated 1.4 million lives in Europe. A summary of the publication is as follows (paraphrased): [28]

- Among adults ≥ 25 years old: 1.5 million lives (range, 0.7-2.6 million) were saved because of vaccines during the first 2.5 years of use.
- Overall, the first booster dose of vaccine delivered before the Omicron variant became dominant saved the most lives, 721,122 of 1,408,967 (57%) of all lives saved. Omicron emerged in November 2021 in South Africa. The first booster dose became available in Europe in July 2021
- Most lives (67%) were saved during the Omicron period (942,571), and lives saved were almost all among adults ≥ 60 years old (96%, or 1,349,617).

It was concluded in the 2.5 years it was used, booster doses in older age groups played an important role in saving lives. The first booster dose was responsible for the majority of lives saved in Europe which reinforced the importance of up-to-date vaccination in those in high-risk age groups. Further investigations using modeling studies should be conducted to evaluate the indirect effects of vaccination and public health and social measures.

4.6 Childhood obesity, the UK

Obesity prevalence among preschoolers aged 4 to 5 years old increased by 45% during the first year of the pandemic (2020 and 2021). According to the authors, this is the largest single-year increase in overweight and obesity prevalence in recent UK history. It will add £800 million (USD1 billion) in healthcare costs for the now-overweight children who will likely suffer chronic diseases. Children from lower-income families were also found more likely to be obese.

The results illustrated the profound impact COVID-19 has on children's development. The economic effect of managing childhood obesity needs to be addressed. New policy measures are required to reduce obesity and "secure wellbeing and prosperity for the country as a whole".

Obesity prevalence among young children 4-5 years old was 9.9% from 2019 to 2020, increasing to 14.4% from 2020 to 2021. The prevalence then decreased to pre-pandemic levels in 2021 and 2022 (10.1%) in returning to the pre-pandemic trend.[29] [30]

5.0 Planning

5.1 Pandemic accord deadline, the WHO

According to the WHO, the world is at risk of missing the deadline for agreeing to a legally binding treaty on fighting pandemics; amid fake news, lies, and conspiracy theories.[31] [32]

Several outstanding issues have yet to be resolved and many countries have yet to indicate their commitment to the agreement.

"A failure to deliver the pandemic agreement and the IHR (International Health Regulations) amendments will be a missed opportunity for which future generations may not forgive us."

The WHO Director-General Tedros Adhanom Ghebreyesus

Negotiations for such treaties normally take 7 years; the process for this pandemic treaty was given 2 years. Time is running out to make the right decisions for the generations to come.

5.2 The WHO board meeting

The call to "promote, provide, and protect health and wellbeing for all people, everywhere" was reiterated at the WHO board meeting recently. Attendees were urged to "seize (the) opportunities to shape the future of global health".

The following were discussed during the WHO's executive board meeting, as taken from the Pandemic Action Playbook newsletter.
The key agenda items and outcomes to date (paraphrased): [33]

- Setting the next global health agenda.
  - The reviewing of the draft fourteenth General Programme of Work (GPW14) by Member States which sets the WHO's strategy and work for 2025 through 2028. The draft acknowledges the evolving complexities — climate change, human migration, crises, and emergencies — and their impact on health seeks to advance health equity, and builds resilient systems.
- Elevating climate's impact on health.
  - The Director General's report positions climate crisis-related health work as a top priority and sets the stage for a potential World Health Assembly resolution on climate change and health as early as May 2024. The draft includes, among other provisions, language on climate-sensitive infectious disease R&D and increasing access to tools for those hit hardest by climate-sensitive infectious diseases.
- Sustainably financed the work.
  - The Executive Board approved a historic investment round of USD7 billion to support the GPW14 and provide long-term sustainable and flexible funding for priorities.

5.3 New appointments, the WHO

The WHO Executive Board appointed three new Regional Directors; in the Eastern Mediterranean, Southeast Asia, and Western Pacific Regions. They are Dr Hanan Hassan Balkhy, Ms Saima Wazed, and Dr Saia Ma'u Piukala, who will serve the Eastern Mediterranean, Southeast Asia, and the Western Pacific regions, respectively, for the next 5 years starting on 1 February 2024.[34]

6.0 Others

6.1 Measles

6.1.1 Europe

The WHO has raised the alarm on the almost 45-fold increase in measles cases in Europe last year. Approximately 42,200 people were infected in 2023, compared to

941 during the whole of 2022. The increase could be the result of fewer children being vaccinated against the disease during the COVID-19 pandemic.[35]

The WHO's regional office in Europe has warned of a rapidly expanding measles activity across Europe, with Kazakhstan being the hardest hit. The large number of susceptible children who missed doses of measles-containing vaccine during the COVID-19 pandemic is reportedly fuelling the outbreaks. Approximately 65% of the reported measles cases in Kazakhstan have been children <5 years old.[36]

A month ago (December 2023), the WHO raised the alarm on the disturbing rise in measles cases in the European Region (including some parts of Asia); there was a > 30-fold rise in cases in 2023 (42,346 cases) compared to 2022 (941 cases).[37]

Health authorities have initiated extensive outbreak response, including isolating confirmed-case patients, vaccinating contacts, providing supplemental and catch-up vaccination, and initiating educational efforts. The Kazakhstan government has bought 1.5 million more doses of measles, mumps, and rubella (MMR) vaccines to implement the various measles vaccination programme.

According to the latest surveillance update from the WHO Europe, other countries which have been reporting a high number of cases include Russia, Kyrgyzstan, Turkey, Azerbaijan, Romania, and Uzbekistan (**Figure 1**).[38]

Of the 24 genotypes recognised, three are commonly linked to the most recent outbreaks worldwide. They are H, B3, and D8.[39] The most prevalent genotype reported in the WHO European Region in 2023 was D8.[38]

Note:
All 24 genotypes of the measles virus (MV) are considered serologically monotypic. Most vaccines are based on genotype A Edmonston strain isolated in 1954. These vaccines are still highly effective in providing protection. However, the occurrences of outbreaks that also involve those who have been vaccinated suggest a re-evaluation of strains (i.e.) not monotypic) to prevent the spread of strains that can escape vaccine-induced immune response.[39]

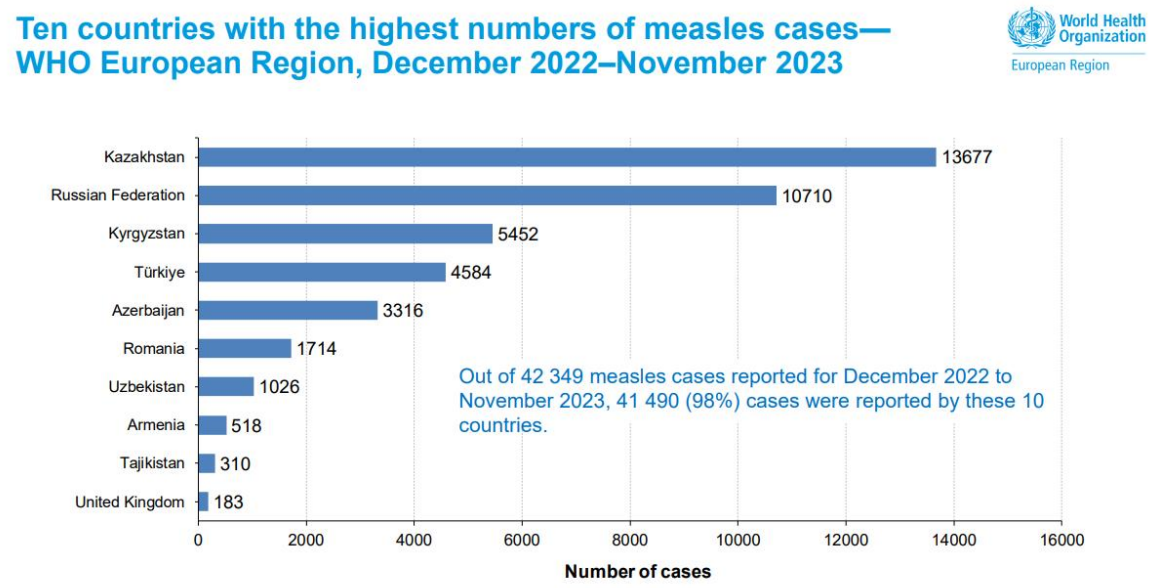

Figure 1. Ten countries in the WHO European Region with the highest numbers of measles cases from December 2022–November 2023. Forty-one countries reported over 12 months. The data presented as of 10 January 2024. The chart was obtained from PowerPoint Presentation (who.int)

6.1.2 The UK

Last week, the UKHSA warned of an outbreak of highly contagious measles in the West Midlands that could spread rapidly to other towns and cities with low vaccination rates.[40] [41] According to the NHS, > 3.4 million children < 16 years old are unprotected against measles and are at risk of becoming ill from it.

The UK has started an MMR vaccination campaign in response. [42] Millions of parents and carers, and young adults have been contacted by the agency (text, email, or letter) to make appointments to get their children or themselves vaccinated. A similar campaign last winter had increased vaccinations by 10%.

The legacy of a published report that falsely linked the vaccine and autism has led to many young adults in the UK, mainly in their 20s, remaining unvaccinated. The myth remains entrenched in some communities leading to vaccine hesitancy. Those who were born after the report was published missed out on vaccinations because of their parents' concerns at the time. Many parents who have not seen measles before, because it was almost eliminated in the UK.

6.1.3 The US

The CDC has urged healthcare providers to be alert for patients who have fevers and rashes and have travelled abroad. There have been 23 reports of measles since 1 December 2023 in the US. Of the 23 cases, 7 were imported cases in international travellers. There have also been two outbreaks of > 5 cases each.[43] One outbreak in

Philadelphia was linked to infections at a hospital and a daycare facility.[44] Another was linked to a family cluster of 6 cases in two different counties in the southwestern part of Washington state.[45]

In mid-January 2024, Virginia had reported measles exposures at two international airports.[46] New Jersey confirmed a case in Camden County.[47] Georgia reported a case in Cobb County involving an unvaccinated resident who had recently travelled outside the country.[48]

6.1.4 Australia

Authorities in Sydney have, on 17 January 2024, issued a measles alert as cases are being identified there. Two cases were confirmed and involved travellers. The first was a 7-month-old infant who had returned from the Middle East, where there have been outbreaks of measles in several countries. The infant, who was too young to be vaccinated, was not considered to be infectious on the flight into Sydney. This is the second case involving an overseas traveller.[49]

6.2 Dengue, South America

The global dengue situation saw an upsurge in 2023. It was characterised by a significant increase in the number, scale, and simultaneous occurrence of multiple outbreaks, spreading into regions previously unaffected by the disease. [50] According to the latest information from the Pan American Health Organization (PAHO), the number of dengue cases almost doubled in 2023 compared to 2022. There were 4.49 million dengue cases (>1.98 million confirmed) (7,537 severe) and 2,289 deaths registered in 2023. In 2022, there were >2.81 million cases (>1.36 million confirmed) and 4,606 deaths registered.[51] The majority of these reports come from the "Southern Cone" of South America. [Footnote2].

The current surge coincides with the southern hemisphere summer (December-February) with conditions ideal for mosquitoes to breed, and spread diseases.

Paraguay and Uruguay issued epidemiological alerts for the illness in December 2023 following intense rains (standing water provides ideal mosquito breeding conditions).

In Brazil, cases more than doubled in the first week of January 2024; dengue as caseloads in the capital Brazilia leapt by as much as 646% in the first 20 days of January 2024 versus last year. The country will roll out a novel vaccine campaign "within days". It will be the first country in the world to offer a dengue vaccine

[2] The Southern Cone region of South America is located south of the tropics. It comprises of Uruguay, Argentina, and Chile. The name is an indication of the physical shape of the southern portion of the continent. [72]

through the public health system. Authorities have also begun to spray insecticide from trucks (fogging) as the disease "rips through" previously unaffected regions.

Argentina has recorded >12,500 cases of the disease in the last month and continues to face shortages of insect repellent amid health warnings of the disease. Hospitals in Paraguay have set up night clinics to attend to the sick due to elevated dengue activity. [52]

South America and other locations worldwide have been observing the spread of dengue exacerbated. In December 2023, scientists warned that the rising temperatures and the El Nino weather pattern in the Pacific contribute to prolonged dengue seasons and the geographical spread of infections. Climate change has expanded the range for mosquitoes to breed, both in the Americas and globally.[53]

6.3 Routine vaccination for malaria, Cameroon

Malaria remains a global burden despite the progress in eliminating it. The WHO African Region bears the heaviest burden, comprising 94% of cases and 95% of deaths globally. Children especially are vulnerable with nearly half a million African children dying from malaria every year.[54]

In April 2023, GAVI (The Vaccine Alliance) outlined plans for a sustainable supply of malaria vaccine. [55] In July, the first allocations of the vaccine were marked for 12 African nations for 2023-2025, and by November, Cameroon received the first shipment of RTS,S[Footnote3] vaccine.

Cameroon was not previously involved in the malaria vaccine pilot programme and had planned to launch the introduction of the malaria vaccine in early 2024.[56] It began the world's first routine vaccine programme against malaria for children ≤5 years old on 22 January 2024 using the WHO-approved RTS,S vaccine (Mosquirix) developed by GSK. The country had taken in > 300,000 doses of RTS,S with hopes to vaccinate about 250,000 children this year and next year. Malaria kills approximately 14,000 people in Cameroon annually.[57] [58] [59]

The response however was slow, with many parents having not been adequately informed about the vaccine, some were afraid to consent to their children receiving it while others were not aware of the campaign. The roll-out was accompanied by extensive community outreach to combat any vaccine hesitancy and emphasise the

[3] The vaccine was given the name RTS,S because it was created by combining genes from the repeat ('R') and T-cell epitope ('T') of the pre-erythrocytic circumsporozoite protein (CSP) of the Plasmodium falciparum malaria parasite with a surface antigen ('S') of the hepatitis B virus and then mixed with additional hepatitis B surface antigen (HBsAg) to improve purification, hence the extra "S"

importance of continuing to use all protective measures alongside the vaccines (such as bed nets).[60]

Nineteen other countries aim to roll out the same programme this year. Overall, ≥30 countries in Africa have expressed interest in introducing the vaccine to their people. Fears of inadequate supply are now unfounded as there is sufficient supply – including the RTS,S there are two vaccines for malaria – the R21 vaccine completed a key regulatory step in December 2023.[55] [56]

6.4 Antimicrobial resistance, review of lower- and middle-income countries

Researchers in Bangladesh reviewed 182 relevant articles that looked into antimicrobial stewardship programs (ASP) perceptions, facilitators to ASP development, barriers to ASP implementation, and impacts of ASP interventions.

Eighty-four studies that met the inclusion criteria represented 34 low- and middle-income countries (LMIC), with India, China, and Pakistan the most represented countries. The scoping review found that prescribers in LMIC hold positive attitudes toward antimicrobial stewardship.

However, they have suboptimal knowledge, and stewardship programmes in the setting face a range of barriers:

- human-resources shortage,
- lack of microbiology laboratory support,
- absence of leadership, and
- limited government support

Facilitators of ASP development include:

- the availability of antibiotic guidelines,
- ASP protocols,
- dedicated multidisciplinary ASP committees, and
- prompt laboratory support.

Nearly 80% of the studies documented a decrease in antibiotic consumption and an improvement in rational antibiotic use after ASP implementation, while 42% reported decreases in the prevalence of multidrug-resistant strains. Fifteen studies reported decreases in hospital procurement costs, savings in antibiotic costs, and declines in hospitalisation costs.[61]

The finding underscores the need for widespread antimicrobial stewardship in LMIC hospital settings. It also highlights that ASP success can be achieved by addressing the barriers identified (increasing human resources, context-specific interventions,

the development of accessible antibiotic usage guidelines, and heightened awareness via training and education).[62]

6.5 Influenza, global updates

According to the WHO's latest updates, generally, the global trend declined in the last weeks of 2023 and into the first weeks of 2024. Regionally, the update is as follows (paraphrased): [63]

- Flu continues to rise in some Northern Hemisphere countries.
- Illness activity remained elevated in North America, mainly due to the 2009 H1N1 strain.
- Central America and the Caribbean reported further rises in flu detections.
- Activity increased in Europe and Central Asia, along with sharp rises in hospitalisations and intensive care unit admissions.
- Except for Egypt, activity rose in parts of North Africa.
- Flu activity declined in the Arabian Peninsula, as well as in South Asia.
- While flu activity remained elevated in East Asia, the activity showed an overall decline due to decreased detections in China and South Korea. Both Hong Kong and Mongolia, however, reported increasing trends. Southeast Asia's flu activity has remained elevated, mainly due to the H3N2 strain.
- Detections declined in South America's tropical regions, except for Colombia and French Guiana. Except for Chile, there was little activity in South America's temperate countries.

Of respiratory samples that tested positive for flu at national flu labs during the reporting period, 84.2% were influenza A, with 73% H3N2.

6.6 Rabies, Sarawak, Malaysia

Three people, 2 from Kuching and 1 from Bintulu, have died from rabies in 2024. All three did not seek medical help or receive anti-rabies vaccinations after being scratched or bitten by animals. The cases were linked to either strays or unvaccinated pets that were left to roam free.

The rabies outbreak has now involved 78 human cases, with 71 lives lost since it was declared in 2017. Of the 78, 38 were caused by domesticated dogs that mixed with stray animals; 20 by stray dogs; 5 by domesticated cats that mixed freely with wild animals; and one by stray cat. The cause of the other 14 human cases remains undetermined.[64]

According to authorities, as of 20 January 2024, there have been 381 cases of animal bites reported per week since 1 January 2024. As rabies is preventable, the public was reminded to immediately seek medical attention when scratched or bitten by strays or pets. Vaccines against rabies are accessible from 190 post-bite clinics in public health facilities around the state as well as 29 private medical facilities. The

public was also reminded of precautionary and preventive measures to avoid getting infected, including getting their pets vaccinated and not letting them roam unattended as well as to refrain from handling strays or wild animals (live or dead). The public plays a big role in effectively implementing preventive and control measures against the rabies virus.[65]

6.7 Warming climate and permafrost 'zombie viruses'

There is a genuine concern that the melting of permafrost in the Arctic could lead to the release of ancient strains of microorganisms known as Methuselah microbes[Footnote4] or zombie viruses. Rather than novel diseases, these microbes could trigger a global health emergency of a disease from the distant past. Scientists have begun planning an Arctic monitoring network that would detect early cases of a disease caused by ancient microorganisms. The planning would also include quarantine and treatment expertise to contain any possible outbreaks and prevent infected people from leaving the region.[66] In 2014, researchers successfully revived a 30,000-year-old Pandoravirus, *Pithovirus sibericum*, a large amoeba-infecting virus isolated from the Siberian permafrost.[67] [68]

6.8 Vaping/e-cigarettes, the US

E-cigarettes have inundated middle and high schools across the US despite efforts to limit access by raising the legal age to 21 and banning flavoured products preferred by teenagers. Some schools have started using surveillance technology to catch students who vape. The punishment meted out to those who were caught vaping can be harsh. The funds that were invested (the use of technology) to control vaping were obtained partly from federal COVID-19 emergency relief money. It was meant to help schools through the pandemic and aid students' academic recovery. [69]

7.0 Implications for Sarawak

Keeping children up-to-date with their childhood vaccinations is crucial to control outbreaks of preventable diseases that are linked to childhood illnesses such as polio and measles. All healthcare providers in Sarawak should be aware of the current situation of measles in Europe, the UK, and the US as people travel to and from these areas. All vaccine hesitancy issues in the state, if any, need to be addressed to prevent the re-emergence of vaccine-preventable diseases.

The assessment of the economic cost of the pandemic on treating 'generational post-COVID illnesses' such as childhood obesity, and long-COVID or psychological issues, should be considered in future health plans for the people of Sarawak.

[4] They are named after Methuselah, who had the longest lifespan of all those given in the Bible, having died at the age of 969. According to the Book of Genesis, Methuselah was the son of Enoch, the father of Lamech, and the grandfather of Noah.

Re-emergence, emergence and the discovery of potential disease-causing microbes cannot be ignored.[70] With the expansion of land use, there is always a possibility of exposing humans to previously undescribed or known pathogens. The healthcare services, public and private should pay attention to illnesses/infections that are 'atypical' or do not fit known descriptions of illnesses for further investigation.

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