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

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Summary

- Omicron BA.2.87.1 sublineage has reportedly been detected in Southeast Asia.
- SARS-CoV-2 infection was associated with an increased risk for incident autoimmune inflammatory rheumatic disease (AIRD).
- Hypervaccination against the SARS-CoV-2 virus, though it may not be dangerous, is not recommended.
- Japan is to end all subsidies for COVID-19 treatment.
- New Zealand has begun offering the updated monovalent mRNA COVID-19 vaccine to eligible people.
- The new antiviral against COVID-19 has gained approval for use in Japan.
- Community health workers in India have the foremost important role in public health services.
- Cases of human anthrax are reported in Laos and Indonesia.
- A rise in psittacosis has been noted in Europe.
- Compared to January 2023, whooping cough has risen 9-fold in January 2024 in England.
- Mpox transmission was mainly controlled by behaviour.
- Brazil is using genetically modified mosquitoes to control the dengue surge there, while Malaysia is considering repurposing drugs for the treatment of dengue.
- Insecticide paint was shown to control mosquito populations.
- WHO report warns of growing resistance to dolutegravir, a cornerstone of HIV regimens.
- Disinformation on diseases and disease management policies is rife.

1.0 Situational summary: cases and related issues

Asia-Pacific and Southeast Asia

Japan

According to officials, the number of COVID-19 sufferers treated at > 5,000 designated medical (sentinel) institutions continued to fall for the third straight week. The average was 7.92 per institution in the week ending 25 February 2024 (epidemiology week, EW, 8). In general, COVID-19 cases have declined in all of Japan's 47 prefectures in EW8 compared to a week before. Experts have suggested the country's 10th COVID-19 wave has passed its peak. [1]

The government will continue to monitor COVID-19 trends and a possible outbreak of a new variant as well as provide various support for "COVID-19 aftereffects". The government will continue to maintain telephone consultation lines and partly subsidise COVID-19 vaccination when Japan reverts to pre-pandemic status in April 2024.

2.0 Variant

BA.2.87.1, Southeast Asia

Wastewater surveillance from several Southeast Asian[footnote1] countries has detected Omicron BA.2.87.1 sublineage – the first known detection outside of South Africa.[footnote2]The variant was found in samples from the last week of December 2023 and the second week of January 2024. Transmission, however, was very low. [2] [3]

The US CDC is actively monitoring the sublineage [4] and ECDC has designated BA.2.87.1 as a variant under monitoring (VUM). [5]

3.0 Drugs and pharmaceuticals, and non-pharmaceuticals

Domestically produced antiviral (Xocova), approval in Japan

The Ministry of Health, Labour and Welfare (MHLW) granted formal approval on 5 March 2024 for Shionogi Co. and Ltd (Osaka) to manufacture and sell the oral COVID-19 antiviral drug, Xocova (ensitrelvir fumaric acid). The firm earned emergency approval in November 2022 for the first domestically-produced oral treatment for the disease.[6] It is also the first COVID-19 treatment antiviral to receive standard approval in Japan. [7] [1] [8] [9]

The standard approval of Xocova is based on positive results from the Phase II/III study (SCORPIO-SR) conducted in Japan, South Korea, and Vietnam during the Omicron-dominant phase of the epidemic. The study was conducted in a predominantly vaccinated population, regardless of risk factors for severe disease. Xocova is the first antiviral agent to show both

[1] Not disclosed.
[2] First detected in South Africa. Reports 2024-R4 (Section 2.0) and 2024-R6 (Section 1.0).

clinical symptomatic efficacy (resolved fast) for 5 typical COVID-19 symptoms (cough, sore throat, runny nose/nasal congestion, fatigue, and fever) and antiviral efficacy in patients with mild-to-moderate SARS-CoV-2 infection. The drug has been confirmed to be safe and is estimated to be effective for people aged ≥ 12 years old. Most adverse events were mild in severity and no deaths were reported from the study. The drug was effective against variants, including the then dominant Omicron BA.5 subvariant.[10]

Xocova is a protease inhibitor co-developed by researchers from Hokkaido University and Shionogi CO. and Ltd. It suppresses the replication of the SARS-CoV-2 virus by selectively inhibiting the 3CL protease, an essential enzyme for viral replication. The drug is to be administered once daily for 5 days.

Singapore approved the drug in November 2023 based on the Special Access Route application.[11]

Ensitrelvir remains an investigational drug outside of Japan and Singapore.[9] The US has just begun conducting trials for the drug.[12] [13] [14]

4.0 Outcome

4.1 COVID-19 and rheumatic disease

Data from a binational, longitudinal, propensity-matched cohort study from two countries, South Korea (n = 10,027,506) and Japan (n = 12,218,680), showed that the rates of new-onset autoimmune inflammatory rheumatic disease (AIRD) such as rheumatoid arthritis and systemic lupus erythematosus were significantly increased following COVID-19 infection or with influenza infection. [15] [16]

When compared to people who were not infected, the rates were 25% higher in South Korea (95% CI: 18-31) and 79% greater in Japan (95% CI: 77-82). The absolute rates after COVID-19 were 1.15% in South Korea and 3.87% in Japan.

Comparisons between COVID-19 patients and people treated for influenza found that AIRD rates were significantly greater in the COVID-19 groups, by 30% in the South Korean data and by 14% in Japan.

The study also found that vaccination against the SARS-CoV-2 virus reduced the likelihood of developing AIRD following breakthrough infection; for COVID-19 survivors who had been vaccinated, the hazard ratio was 0.59 after one dose and 0.42 after two (both $P<0.05$). However, vaccination against COVID-19 did not fully protect people from AIRD; when compared to uninfected controls, those with moderate to severe infections had an HR of 1.30.

The researchers did not label AIRD as a form of long-COVID even as it qualifies as a long-term COVID-19 complication: AIRD development rates remained strongly elevated in both countries up to a year after infection; Japanese data found that it went beyond that (hazards ratio, HR = 1.57 vs general population, 95% CI: 1.50-1.64).

Not all results were similar for both countries:

- Relative to the general population, the rates of inflammatory arthritis were not elevated in South Korea (HR 0.90, 95% CI: 0.65-1.24); the risk doubled in Japan (HR 2.02, 95% CI: 1.96-2.07).
- South Koreans with COVID-19 had a greater risk for inflammatory arthritis than did those with flu, even though without statistical significance (HR 1.92, 95% CI: 0.34-3.65), while the rates in Japan hardly differed (HR 1.07, 95% CI: 1.03-1.13).

There are some limitations to the study. It is restricted to East Asian populations, and the data were recorded before 2022; predating the broad spread of the Omicron SARS-CoV-2 variant.

4.2 More response to the CDC's updated COVID-19 management

On 1 March 2024, the CDC simplified its COVID-19 isolation rules to one akin to the management of other respiratory infections.[footnote3]

It is expected that the guidance will be more relaxed as time goes by, as people build up their immunity against the SARS-CoV-2 virus. There are now fewer people getting severe COVID-19 or dying from the infection. Furthermore, people have become less tolerant of public health precautions.[17]

It is known that the SARS-CoV-2 virus has not evolved to become less contagious.

To some, the new recommendation has put certain people at risk of COVID-19 at risk of the disease – those who are immunocompromised, chronically ill, disabled, or at heightened risk of severe COVID-19.

For some, they can ill afford to stay at home while sick – they choose to work than stay at home to recover.[18] [19] The "old normal" where stoicism towards illness and high value is placed on productivity is hard to uproot.

Furthermore, the absence of symptoms does not guarantee the absence of the virus or if a person is no longer contagious.[20] Rapid diagnostic tests (RATs) or lateral flow test (LFT) kits provide some information about potential contagiousness, though some people opt out of testing "just because" or do not want to know their (infection) status . [21] [22]

Regardless of personal views, the public should use common sense to slow down the spread of the SARS-CoV-2 virus, especially when among older people or people who are at risk of severe disease – most COVID-19 deaths in the US are among the elderly. [23]

4.3 Hypervaccintion against COVID-19, Germany

A 62-year-old German man has allegedly received 217 doses of 8 different COVID-19 vaccines over a period of 29 months. He did it for "private reasons". He was found to have a fully

[3] Report 2024-R8, Section 3.0

functional immune system, and "much higher" concentrations of immune cells and antibodies against the SARS-CoV-2 virus than those seen in recipients of three doses of the vaccines. These findings were reported in *The Lancet* recently.[24] [25]

Of the alleged 217 doses, only 134 have been officially confirmed. There was no evidence of past COVID-19 infection nor reports of adverse effects from the vaccinations. The man's immune system's effectiveness against other pathogens remained unchanged.

However, researchers did not recommend overvaccination to protect against COVID-19.[26]

5.0 Planning

5.1 Updated monovalent mRNA COVID-19 vaccine rollout, New Zealand

The New Zealand government began to offer the updated monovalent (against XBB.1.5) mRNA COVID-19 vaccine – for free – to adults ≥ 30 years old on 5 March 2024. [27] As the risk of severe disease is low in healthy people ≤ 30 years old, exceptions were made for people aged ≥ 12 years old who are at high risk for the disease and those who are pregnant and older than 16 years old.[28] While the real-world data on the effectiveness of the vaccine is patchy – given that it is less than a year since the vaccine was offered in the countries that have already offered it – the health authorities in New Zealand are confident that the updated vaccine prevents severe illness (as with earlier versions). [29] [30] Those who have missed their second booster are encouraged to get vaccinated.

5.2 End of COVID-19 treatment subsidies, Japan

The Japanese government will end all COVID-19 treatment subsidies, including the control of the costs of medicines, at the end of March 2024 due to a decline in the number of cases in the country. Government subsidies for hospitalisations and medical institutions reserving beds for COVID-19 inpatients will also end. Japan plans to return to pre-pandemic status in April 2024. By then, patients will have to pay between 10% and 30% of the cost of drugs for COVID-19 treatment. Income levels and age will determine how much each person pays. There are, however, fears that the rising costs from the withdrawal of subsidies could discourage those who become infected from purchasing drugs/medicines or seeking treatment.[1]

5.3 ASHA workers' role against communicable diseases, India

Accredited Social Health Activists (ASHA) workers stationed at respective districts play an important role in these areas. These community health workers (CHWs) help raise awareness among residents about preventing and effectively controlling communicable diseases. They are trained on the dangers of communicable diseases, recognising symptoms, and implement control measures to prevent spread. As mosquitoes are important vectors for diseases (dengue, chikungunya, and malaria), newly trained ASHAs were reminded of their role in

disease surveillance and control; they can help identify areas of potential mosquito-borne outbreaks and teach communities how best to eliminate the insects and prevent disease transmission. [31]

Note:

ASHA are community-based frontline female health workers trained to work as an interface between the community and the public health system. They are India's solution to the growing shortage of health workers and reaching the vulnerable. They help mobilise the community to facilitate access to health services available at both the primary health centres as well as the sub-centres close to the village where they are assigned to. They are the driving force in India's public health services and played a pivotal role in the COVID-19 pandemic. ASHAs face a myriad of challenges being on the frontline of the healthcare system.[32] [33] In 2022, ASHAs were recognised for their outstanding contribution towards protecting and promoting health by the WHO and were among the 6 recipients of the WHO Director-General's Global Health Leaders Award.[34]

6.0 Others

6.1 Human anthrax

6.1.1 Indonesia

A case of suspected human anthrax from Gedangsari District was reported to the Dinas Kesehatan Gunungkidul, DI Yogyakarta on 8 March 2024. The patient is currently under treatment at a regional hospital nearby. The Gunungkidul Livestock and Animal Health Service reported a dead cow at the suspected patient's house – the animal was not slaughtered but was buried immediately. Investigations are ongoing to determine close contacts of the patient.[35]

Other than the dead animal that was linked to the human case, three other dead livestock (one cow and two goats), all from areas that are in "close proximity" in the same district, are being investigated for anthrax.[36]

6.1.2 Laos

According to officials, three people including one in "serious condition" were ill after contracting anthrax from animals. They were all from Sukhuma, Champasak Province, in Southern Laos. To control the spread of the disease, the public was warned to refrain from consuming raw beef or buffalo meat. Trading of animals is prohibited as with their movement in and out of the city. All abattoirs and "pet slaughterhouses" within the city are prohibited from killing cattle or buffalo. The public was further reminded not to consume dead animals. Pet and livestock owners were reminded to monitor their animals for symptoms (consistent with anthrax).[37] [38]

6.2 Psittacosis, Europe

Austria, Denmark, Germany, Sweden, and The Netherlands reported an increase in psittacosis cases in 2023 and at the beginning of 2024; with an increase most evident in November-December 2023. Up to February 2024, 5 deaths were reported. Exposure to wild and/or domestic birds was reported in most of the cases. Psittacosis is caused by the bacteria *Chlamydophila psittaci*. [39]

Epidemiological investigations are ongoing to identify potential exposures and the presence of clustering of cases. Samples from birds that are tested for influenza are also subjected to testing for *C. psittaci*. The WHO continues to monitor the situation, and based on the currently available information, the risk posed by this event is assessed as low.

Note:

Psittacosis is a zoonotic bacterial infection caused by *Chlamydophila psittaci* that often infects a wide range of bird species as well as mammals. It is commonly known as parrot fever and ornithosis. Human infections occur mainly through contact with secretions from infected birds. It is mostly associated with those who work with pet birds, poultry workers, veterinarians, pet bird owners, and gardeners in areas where the bacterium is epizootic or prevalent in the native bird population.[40]

In general, psittacosis is a mild illness, with symptoms including fever and chills, headache, muscle aches, and dry cough. Most people begin developing signs and symptoms within 5 to 14 days after exposure to the bacteria. According to the WHO, prompt antibiotic treatment is effective against the disease, and helps prevent complications such as pneumonia. With appropriate antibiotic treatment, psittacosis rarely (<1%) results in death.

6.3 Pertussis/whooping cough, the UK

The UK Health Security Agency (UKHSA) confirmed 553 new cases of whooping cough in England in January 2024. The agency warned of the spike that was reportedly to be the highest in a decade; there was a 61-fold rise in the 9 cases logged over the same month in 2023 (**Figure 1**).[41] [42] [43]

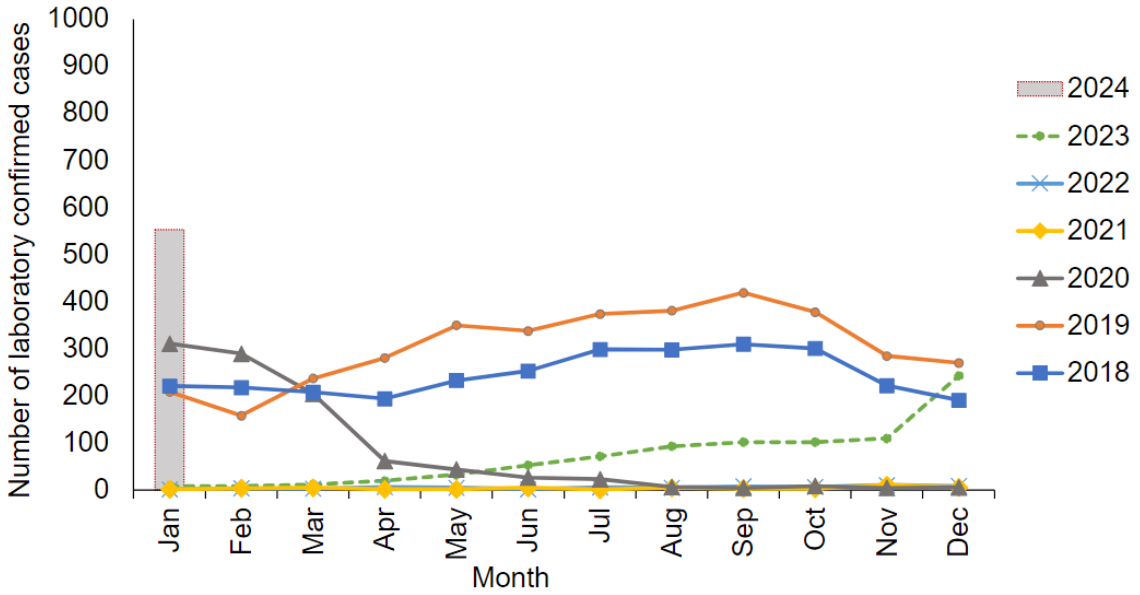

Figure 1. Laboratory confirmed cases of pertussis by month in England: 2018 to January 2024. The grey boxed area highlights the 553 cases that were confirmed in January 2024 – a 51-fold increase from 2023 (broken green line). The chart was obtained from Confirmed cases of pertussis in England by month - GOV.UK (www.gov.uk).

According to data, of the 553 cases that were confirmed, approximately 52% (287 cases) were in people ≥15 years old, and 30% were in children aged between 10 and 14 years (161 cases). The cause of the surge is thought to be the low uptake of vaccines among children and pregnant women, as well as post-Covid resurgence due to low immunity because of social distancing.

As part of the UKHSA's response, mothers-to-be are reminded to get up-to-date with their vaccinations. The reminder is part of the agency's campaign to get people up-to-date with their vaccinations. Parents were urged to check on the vaccination status of their children against measles and other serious diseases.[44]

6.4 Dengue

6.4.1 Genetically modified mosquito for dengue control, Brazil

Brazil has begun to use genetically modified (GM) mosquitoes developed by Oxitec (UK) to control the dengue surge in the country. The male GM mosquitoes carry a gene that kills female offspring[footnote4] before they reach maturity, effectively suppressing the population – when released in a given region, the GM mosquitoes proliferate and the total population of the insect decreases. Officials have reported a ≥90% reduction in the mosquito population in a location where the mosquitoes were released compared to neighbouring areas where none

[4] Only females bite and transmit the dengue virus.

were. Brazil is struggling[footnote5] to control an outbreak of dengue fever fuelled by the current rainy hot season. Officials have been notified of >973,000 cases as of 27 February 2024; 195 people have died, while a further 672 deaths are being investigated.

6.4.2 Repurposing drugs, Malaysia

Kementerian Kesihatan Malaysia (KKM) is considering repurposing drugs as an approach to fight dengue. A clinical study is being conducted together with the Dengue for Neglected Diseases Initiative (DNDi) and the Institute of Medical Research (IMR) to identify the effectiveness of these drugs, including Nelfinavir, a drug that is used for Hepatitis C.

KKM together with DNDi and other dengue-endemic countries, formed the Dengue Alliance in 2022 "dedicated to developing affordable and accessible treatments for dengue" by having joint projects, advancing pre-clinical development of new drug candidates and clinical trials. Repurposing licensed drugs is a cost-effective (funds and time) method in finding drugs for other diseases. In the case of dengue, new therapeutics are expected within 5 years.[45]

6.5 Influenza, India

Northern India has been having a spate of influenza outbreaks over the last two months. The trends of influenza and other viral infections are tracked by the Sanjay Gandhi Post Graduate Institute of Medical Sciences (SGPGIMS) in Lucknow. The institute reported that approximately 13% of suspected influenza cases were identified as H1N1 2009 or Influenza A (pdm) 09 strain (also known as swine flu[footnote6]). Symptoms of the infection are mild, and people who have caught it have responded well to treatment. The public was reminded to "embrace preventive behaviour and keep viral infections at bay". [46]

6.6 Mpox, update

A study in *Cell* suggested the 2022 mpox outbreak was curbed primarily by behaviour rather than vaccination. It also suggested that extensive, underdetected dissemination promoted rapid local transmission of the disease.[47]

6.7 Cryptosporidium, the UK

The UK's Animal and Plant Health Agency (APHA) featured the zoonotic parasite *Cryptosporidium sp.* in their monthly blog in February 2024. The blog also summarised the

[5] Report 2024-R5, Section 4.2.1 (Dengue/Brazil).
[6] Not zoonotic swine flu because it is not transferred from pigs to humans. It is spread through airborne droplets from human to human, and potentially, through human contact with inanimate objects contaminated with the virus and transferred to the eyes or nose. Symptoms in humans are similar to those seen in swine, possibly due to the reassortment of the viral RNA structure, which allowed for human-to-human transfer of the virus.

operationalisation of the One Health approach when facing outbreaks of zoonotic diseases. A gist of it is as follows: [48]

Cryptosporidium sp. is a parasite that is mainly transmitted via the faecal-oral route. It causes a variety of symptoms, the most frequent of which is acute watery diarrhoea. People with weakened immune systems, such as those on some immunosuppressive drugs or with genetic conditions, untreated HIV/AIDS, or malnourished children, are at greater risk of serious illness.

On average, England and Wales collectively diagnose > 4,000 human cryptosporidiosis annually. However, there may be more as many people go undiagnosed. The infection is most common in children aged between one to 5 years old.

Cryptosporidiasis is a notifiable disease in the UK. Laboratory-confirmed human cases must be notified to the UK Health Security Agency (UKHSA) which manages the surveillance database for most diseases. UKHSA convenes an Incident Management Team (IMT) to discuss the outbreak, investigations required and control measures. The IMT consists of individuals from transdisciplinary fields and agencies such as Local Authorities, NHS, Food Standards Agency, Environment Agency, and Health and Safety Executive and includes communication specialists, epidemiologists, and microbiologists as well as laboratory scientists who each bring their specific knowledge and skillset. APHA veterinarians attend to specifically advise where there are thought to be animal aspects to the outbreak.

Surveillance is crucial in controlling any outbreak or detecting possible suspected cases; APHA veterinary surgeons liaise with private veterinary surgeons (PVS) to do so. Lessons learnt from an outbreak will serve as a way to improve and develop the approaches to disease control and management.

Note:

Several species of the parasite cause cryptosporidiosis in humans; the most common are *C. hominis* and *C. parvum*. The former is transmitted from person to person while the latter is of more zoonotic importance. The parasite, in general, lacks host specificity. Therefore, it can infect many animal species, including birds and humans. Commonly known as ‘crypto’, the parasite is transmitted via the faecal-oral route: humans ingest the oocysts that are shed together in the faeces from an infected person/animal) and become infected, via contaminated water or through direct contact (for example, petting) or indirect contact (for example, through contact with animal faeces) with infected animals. [49] [50] [51]

Animals that are infected may or may not present symptoms. Oocysts that are shed are directly infective, resistant to disinfection, and can persist in the environment for long periods, especially in cool, moist conditions. Most cases in children occur after they have visited farms or petting zoos.

6.8 Norovirus, the US

The latest data on norovirus (NoV) illness showed an increasing trend in the US (**Figure 2**), especially in the northeast region of the country. Nationwide, approximately 12% of NoV tests sent to the CDC were positive; in the northeast, it was 16% while the rates were between 9% to 13% in the other three regions.[52]

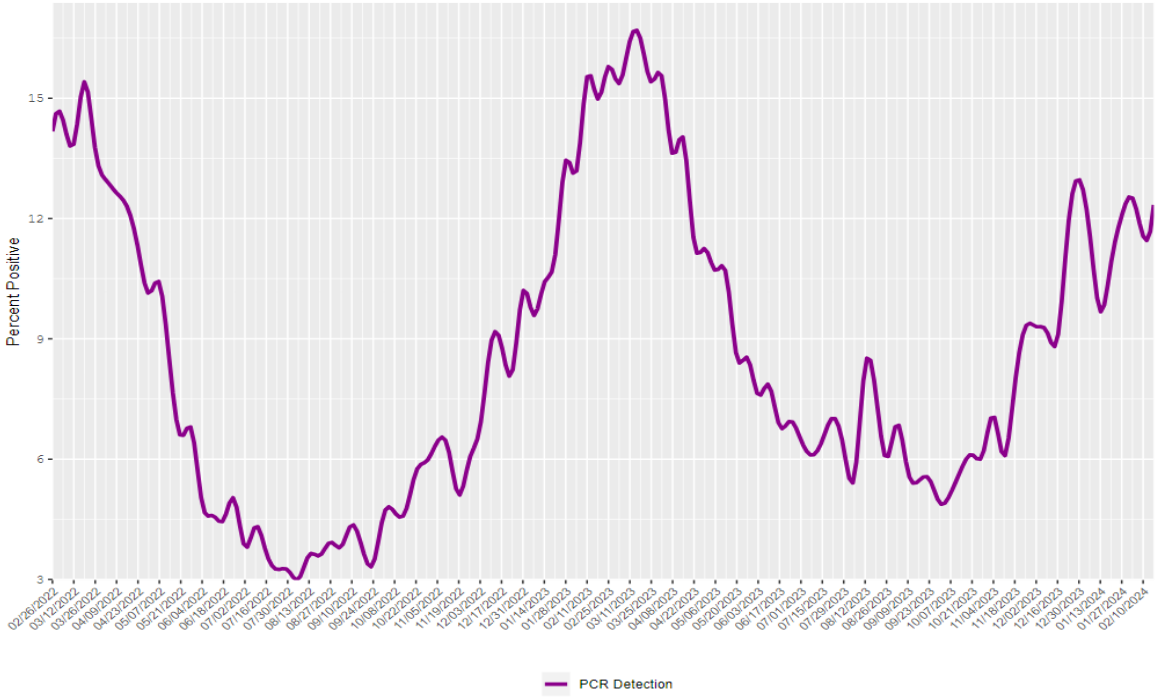

Figure 2. The three-week average of norovirus confirmed using polymerase chain reaction (PCR) for two years (from 26 February 2022 until 10 February 2024) in the US showing an increasing trend. The chart was obtained from Norovirus National Trends - NREVSS | CDC.

According to the CDC, the frequency of cases typically increases during the colder months of the year, and early spring; with some variation in the timing of cases between regions and between communities in the same region.

Note:

Norovirus, also known as Norwalk virus, is a non-envelope virus that belongs to the *Caliciviridae* family. It is very contagious and causes acute gastroenteritis globally. It is sometimes called "stomach flu" although it is not related to influenza/flu.

Symptoms include acute onset diarrhoea and vomiting. Complications include dehydration with young children, older people, and those with weakened immune systems at most risk. NoV is usually spread by the faecal-oral route via contaminated food or water or person-to-person contact. It may also spread via contaminated surfaces or through air from the vomit of an infected person.

Prevention involves proper hand washing and disinfection of contaminated surfaces. According to the UK's National Health Services (NHS), alcohol-based hand sanitisers are not effective against the virus because it is a non-enveloped virus. There is no medication to treat norovirus. Most infections are self-limiting and resolve within three days. [53] [54] [55] [56] [57]

According to the WHO, an estimated 685 million cases of NoV are seen annually, including 200 million cases amongst children ≤5 years old. The burden of NoV is significant; it causes an estimated 200,000 deaths per year, including 50,000 child deaths, primarily impacting low-income countries. The virus is estimated to cost USD60 billion globally as a result of healthcare costs and economic losses.

There are currently four vaccines in the WHO's NoV pipeline – three in Phase III and one in Phase IV. [58]

6.9 Vector control: mosquitoes, insecticide-releasing paint

Researchers from Africa reported that insecticide-releasing paint (IP) was able to control local populations of *Aedes aegypti* mosquitoes for up to one year. Ninety-eight per cent of residents with houses coated in transfluthrin-based insecticide paint, Inesfly Vesta, reported a significant reduction in the mosquitoes that transmit yellow fever, malaria, Zika, and dengue during the year-long experiment in Cape Verde, off the coast of West Africa.[59] [60]

The houses (n=228) were located in two densely neighbourhoods with reported high mosquito activity. These neighbourhoods lacked proper territorial planning and are in low-lying areas of the city with insufficient drainage leads to flooding in the rainy season. Drinking water supply and wastewater disposal were also deficient. The IP was double-coated onto the exterior walls of these homes. The insecticide in the paint is released in small quantities over a long period; a feature that would make it more sustainable and eco-friendlier.

To determine the effectiveness of the IP, WHO cone bioassays were conducted at 1, 3, 6, and 12 months from two randomly selected houses in each neighborhood. The mortality of the *Ae aegypti* mosquitoes is as follows (paraphrased): [61]

- At 1 month, IP caused complete mortality (100%) of *Ae aegypti* mosquitoes. By month 3, all IP-treated houses exceeded the WHO efficiency threshold for mosquito control, which is 80% mortality.
- The mortality rates were maintained at 6 and 12 months.

Inesfly Vesta was tested together with two other IPs, ARES and 5A IGR; mortality rates from both fell below the WHO's threshold at 6 and 12 months.

No serious adverse effects were observed among residents who lived in IP houses; 16.7% reported some adverse effects. However, most were mild, including eye and or nose irritation (10%), dullness (4%), and headache (4%).

Further large-scale community-based studies are needed to reaffirm the efficacy and acceptability of the IP.

6.10 HIV growing resistance to first-line drugs, the WHO

The WHO reported the growing resistance to a widely used HIV drug, dolutegravir (DTG), among patients. [62] [63] [64] Dolutegravir is an antiretroviral drug used in combination with other drugs to reduce the amount of virus in the body to an undetectable level. Although not a cure, it is effective in preventing the development of serious illness, as well as further transmission. It was recommended by the WHO as the preferred first-line treatment for HIV since 2018 and is currently used by > 24 million patients worldwide.

The WHO's data is based on research in Malawi, Mozambique, Ukraine, and Uganda found that resistance to dolutegravir ranged from approximately 4% to 20% among patients surveyed.

The report also highlighted one case of DTG resistance in an infant newly diagnosed with HIV in Haiti. The infant's mother has been receiving DTG-based anti-retrovial treatment.

The update on HIV drug resistance (HIVDR) is concerning, considering the need to have sustained surveillance to effectively track HIV mutations and understand patterns of resistance to ensure the quality of HIV care and management. [65] Currently, only 12 of the 45 countries identified by the WHO as HIV prevalent have reported routine monitoring of drug resistance.

The WHO recommends the need for more countries to routinely implement standardised surveillance of HIVDR – to follow the prevalence and patterns of resistance among people not achieving suppressed viral load. The information and data from the agency's surveys are critical in influencing the development of treatment guidelines, and informing the quality of treatment programmes.

Note:

While "huge progress" has been made towards global targets, particularly about HIV treatment and care, the United Nation's Sustainable Developmental Goals SDG. 3.3 – "(To) Ensure healthy lives and promote wellbeing for all at all ages…by the end(ing) AIDS as a public health threat by 2030" [66] – is off track. [62] [67] According to the WHO, to get there, more people from marginalised communities need to be able to access HIV services, and HIV prevention and testing services must increase. It includes therapeutics that are effective in controlling the infection.

6.11 Malnutrition, update from the WHO

According to the latest estimates published in *The Lancet*, > 1 billion people globally, or one in eight, are now living with obesity.[68] [69] The prevalence rate is highest among children and teenagers, quadrupling from 1990-2022. Estimations suggested (paraphrased):

- 879 million adults were living with obesity (57.3% women and 42.7% men) in 2022 – four and a half times higher than that recorded in 1990.

- 159 million children ad adolescents were affected in 2022, a significant increase from the 31 million recorded thirty years ago; mirroring the situation of adults in 1990.

Obesity is a chronic and complex condition that can put people at a higher risk of diseases such as type 2 diabetes, cardiovascular diseases as well as certain cancers. It is therefore important to prevent and manage obesity from early life to adulthood through diet, physical activity, and adequate care. Based on these findings, the WHO's 2025 global target to halt the rise of diabetes and obesity is unlikely to be met.

Undernutrition continues to affect "hundreds of millions" despite a decreasing prevalence. Approximately 347 million adults and 185 million children and adolescents were still affected by the condition; it is most evident in the poorest countries, such as those in Southeast Asia and sub-Saharan Africa. According to the WHO, undernutrition is responsible for half the deaths of children <5 years old.

Malnutrition includes undernutrition (wasting, stunting, underweight), inadequate vitamins or minerals, overweight and obesity. Keeping malnutrition in check requires the cooperation of the private sector, which must be accountable for the health impacts of their products. It can only be beaten if there is a significant improvement in the availability and affordability of healthy and nutritious foods. Global issues such as climate change, supply-chain disruptions as well inflation were also risk factors in this public health crisis.

Addressing undernutrition specifically requires multisectoral action in agriculture, social protection, and health, to reduce food insecurity, improve access to clean water and sanitation, and ensure universal access to essential nutrition interventions.[70]

6.12 Spread of misinformation, Disease X

The spread of misinformation about Disease X is rife in the US and it has spilled to the world, including Asia where it is relayed in multiple languages. The spread of these conspiracy theories increased during and after the World Economic Forum, especially when a panel of experts convened to discuss "*Preparing for Disease X*" [7] which focused on a possible future pandemic.

It has been four years since the WHO declared COVID-19 as an international public health emergency and a pandemic. The fast-spreading misinformation about COVID-19, as well as the hypothetical Disease X, illustrates "the perils" of reduced content moderation on social media sites, threatens to fuel vaccine hesitancy, and jeopardise preparation for the coming public health emergencies.

These falsehoods have also been noticeably exploited and monetised.

Among the misinformation that is amplified and spread that has been listed by the news agency *AFP* recently were: [71]

[7] Report 2024-R2, Section 5.1 (Planning/Preparing for Disease X, World Economic Forum 2024).

- The original post from the US was that the unknown pathogen X “indicates an elitist plot to depopulate the earth”. When spread to China, it was the “Chinese government rolling out mobile cremation ovens to cope with mass deaths”. When fact-checked by the AFP, the videos used in the posts were pet cremation services.
- In October 2023, AFP fact-checkers debunked online posts in Malaysia that claimed nurses were being forced to take a non-existent vaccine for Disease X.
- Misinformation on the origin of the SARS-CoV-2 virus – that it was bioengineered in a laboratory – was used to sell unproven COVID-19 treatment in medical kits by a US-based supplements supplier.

Conspiracy theories built on growing vaccine hesitancy since COVID-19 is likely to have "far-reaching" public health effects. There has been declining support for childhood vaccines (for example, measles), more support for parents' rights to reject vaccines for their children as well as the complete rejection of future vaccines by people who believe these unproven theories.

Disinformation can also lead to a proportion of the population using either ineffective or harmful measures during an epidemic/outbreak of illness.

7.0 Implications for Sarawak based on the views of SIDC

Not much news has been reported about new therapeutics for COVID-19. However, with the report of Xocovo’s approval in Japan, perhaps it is time to consider updating the choice of antiviral for use against the disease: can be taken by anyone who has COVID-19 (not restricted to people at high-risk of severe disease); the number of tablets to be taken (dosage); price of tablets for a complete course of the treatment; palatability (no bitter after-taste) and to date, no serious adverse effects have been reported and fewer rebound reports. [72] [73] [74] [75] [76]

The continued monitoring of zoonotic disease is important for human and animal health, the latter important for food security.

Undernutrition needs to be investigated. Undernutrition in younger populations would affect the future of manpower in the state, and in older populations, it could be a socio-economic burden. Addressing it would also mean addressing equitable and sustainable food sources, and health systems.

Any form of disinformation, misinformation, and false news will not bode well in the management of public health issues or the One Health approach. It leads to ineffective or harmful measures during epidemics and also impedes proactive preparation and prevention efforts against emerging contagious diseases. Addressing the issue would mean transparency in the management of outbreaks/epidemics and preparations for future outbreaks/epidemics.

Reference

1. Japan's government to stop subsidizing COVID-19 treatment after March. *The Japan Times* https://www.japantimes.co.jp/news/2024/03/05/japan/science-health/japan-covid-subsidies-end/?utm_source=pianodnu&utm_medium=email&utm_campaign=72&tpcc=dnu&pnespid=pozlni1eu6zi_bdo_qpytvgp5xafui5lgrj3bxiz6vcvxhpnoyreqkjjzdfqse5ympxt_w (2024).

2. Schnirring, L. BA.2.87.1 COVID variant detected in Southeast Asia. *CIDRAP (University of Minnesota)* https://www.cidrap.umn.edu/covid-19/ba2871-covid-variant-detected-southeast-asia (2024).

3. Dr. Leshan Wannigama @dr_leshan (Mar 3, 2024). We found a handful of wastewater samples in Southeast Asia are positive for BA.2.87.1 but compared to JN.1 it's seems like it's transmission is very low. https://twitter.com/dr_leshan/status/17641867327010941.

4. CDC Tracks New SARS-CoV-2 Variant, BA.2.87.1. February 9, 2024. *Centers for Disease Control and Prevention (CDC)* https://www.cdc.gov/respiratory-viruses/whats-new/covid-19-variant-update-2024-02-09.html (2024).

5. SARS-CoV-2 variants of concern as of 1 March 2024. *European Centre for Disease Prevention and Control (ECDC)* https://www.ecdc.europa.eu/en/covid-19/variants-concern (2024).

6. Xocova® (Ensitrelvir Fumaric Acid) Tablets 125mg Approved in Japan for the Treatment of SARS-CoV-2 Infection, under the Emergency Regulatory Approval System. 2022/11/22. at https://www.shionogi.com/global/en/news/2022/11/e20221122.html (2022).

7. Japan distributes Xocova, first domestic COVID drug. *NHK* https://www3.nhk.or.jp/nhkworld/en/news/backstories/2156/ (2022).

8. MHLW (Japan) grants full approval for Xocova (ensitrelvir) to treatSARS-CoV-2. *Medthority* https://www.medthority.com/news/2024/3/mhlw-japan--grants-full-approval-for-xocova--ensitrelvir-to-treatsars-cov-2-infection-in-japan.--shionogi/ (2024).

9. Shionogi Announces Xocova® (Ensitrelvir Fumaric Acid) Obtained Standard Approval in Japan for the Treatment of SARS-CoV-2 Infection. 2024/03/05. at https://www.shionogi.com/us/en/news/2024/03/shionogi-announces-xocova-ensitrelvir-fumaric-acid-obtained-standard-approval-in-japan-for-the-treatment-of-sars-cov-2-infection.html (2024).

10. Yotsuyanagi, H. *et al.* Efficacy and Safety of 5-Day Oral Ensitrelvir for Patients With Mild-to-Moderate COVID-19: The SCORPIO-SR Randomized Clinical Trial. *medRix Prepr.* (2023) doi:https://doi.org/10.1101/2023.07.11.23292264.

11. Execution of Sub-license Agreement from Ping An-Shionogi Hong Kong to Juniper Therapeutics and SAR approval in Singapore regarding ensitrelvir fumaric acid, a treatment drug for the novel coronaviru infection (COVID-19). 2023/12/19. at https://www.shionogi.com/global/en/news/2023/12/e20231219.html (2023).

12. NIH trial to evaluate Shionogi antiviral in adults hospitalized with COVID-19. at https://www.nih.gov/news-events/news-releases/nih-trial-evaluate-shionogi-antiviral-adults-hospitalized-covid-19 (2024).

13. A Study to Compare S-217622 With Placebo in Non-Hospitalized Participants With COVID-19 (SCORPIO-HR). ClinicalTrials ID NCT05305547. *National Institute of Health* https://clinicaltrials.gov/study/NCT05305547 (2024).

14. Strategies and Treatments for Respiratory Infections &; Viral Emergencies (STRIVE): Shionogi Protease Inhibitor. ClinicalTrials.gov ID NCT05605093. *National Institute of Health (NIH)* https://clinicaltrials.gov/study/NCT05605093 (2024).

15. Gever, J. COVID-19 Tied to Increased Risk for Rheumatic Disease. *MedPage Today* https://www.medpagetoday.com/rheumatology/generalrheumatology/109000?xid=nl_mpt_DHE_2024-03-04&eun=g1917798d0r&utm_source=Sailthru&utm_medium=email&utm_campaign=Daily Headlines Evening 2024-03-04&utm_term=NL_Daily_DHE_dual-gmail-definition (2024).

16. Kim, M. S. *et al.* Long-Term Autoimmune Inflammatory Rheumatic Outcomes of COVID-19. *Ann. Intern. Med.* (2024) doi:10.7326/M23-1831.

17. Ducharme, J. The CDC Dropped Its COVID-19 Isolation Guidelines. Experts Are Split. *Time* https://time.com/6695102/covid-19-isolation-guidelines-experts/?utm_medium=email&utm_source=sfmc&utm_campaign=newsletter+brief+default+ac&utm_content=+++20240302+++body&et_rid=240513843&lctg=240513843 (2024).

18. Shafer, L. *et al.* Relationship between Telework Experience and Presenteeism during COVID-19 Pandemic, United States, March–November 2020. *Emerg. Infect. Dis.* **29**, 278–285 (2023).

19. Linsenmeyer, K. *et al.* Sickness presenteeism in healthcare workers during the coronavirus disease 2019 (COVID-19) pandemic: An observational cohort study. *Infect. Control Hosp. Epidemiol.* **44**, 1693–1696 (2023).

20. Johansson, M. A. *et al.* SARS-CoV-2 Transmission From People Without COVID-19 Symptoms. *JAMA Netw. Open* **4**, e2035057 (2021).

21. Ducharme, J. Why Rapid COVID-19 Test Results Are Getting More Confusing. *Time* https://time.com/6246838/confusing-rapid-covid-19-test-results/ (2024).

22. Kirby, J. E. *et al.* Sars-Cov-2 antigen tests predict infectivity based on viral culture: comparison of antigen, PCR viral load, and viral culture testing on a large sample cohort. *Clin. Microbiol. Infect.* **29**, 94–100 (2023).

23. Beusekom, M. Van. Older adults made up 90% of US COVID deaths in 2023. *CIDRAP (University of Minnesota)* https://www.cidrap.umn.edu/covid-19/older-adults-made-90-us-covid-deaths-2023 (2023).

24. Beusekom, M. Van. Case report: 217 COVID vaccine doses haven't harmed man's immune system. *CIDRAP (University of Minnesota)* https://www.cidrap.umn.edu/covid-19/case-report-217-covid-vaccine-doses-havent-harmed-mans-immune-system (2024).

25. Kocher, K. *et al.* Adaptive immune responses are larger and functionally preserved in a hypervaccinated individual. *Lancet Infect. Dis.* (2024) doi:10.1016/S1473-3099(24)00134-8.

26. Researchers investigate immune response of a man who received 217 Covid vaccinations. *Eureka Alert* https://www.eurekalert.org/news-releases/1036405 (2024).

27. Morton, J. NZ's new Covid-19 vaccine rolls out today - here's what you need to know. *New Zealand Herald* https://www.nzherald.co.nz/nz/nzs-new-covid-19-vaccine-rolls-out-today-heres-what-you-need-to-know/4KUSJQXXB5DZHAICME5O4DHJ44/?lid=71zqdq2vj7xd&utm_source=newsletter&utm_medium=nzh_email&utm_campaign=Digi_Newsletter_Morning_Headlines&uuid=040afc1a8f3040f4 (2024).

28. COVID-19 vaccines additional doses. *Health New Zealand, Te Whatu Ora* https://info.health.nz/immunisations/vaccines-aotearoa/covid-19-vaccines/covid-19-vaccine-boosters/ (2024).

29. Hansen, C. H. *et al.* Short-term effectiveness of the XBB.1.5 updated COVID-19 vaccine against hospitalisation in Denmark: a national cohort study. *Lancet Infect. Dis.* **24**, e73–e74 (2024).

30. Werkhoven, C. H. van *et al.* Early COVID-19 vaccine effectiveness of XBB.1.5 vaccine against hospitalization and ICU admission, the Netherlands, 9 October - 5 December 2023. *medRix Prepr.* (2023) doi:https://doi.org/10.1101/2023.12.12.23299855.

31. ASHA workers urged to raise awareness against communicable diseases. *The Economic Times of India/TNN* https://health.economictimes.indiatimes.com/news/industry/asha-workers-urged-to-raise-awareness-against-communicable-diseases/108126090?action=profile_completion&utm_source=Mailer&utm_medium=newsletter&utm_campaign=ethealth_news_2024-03-02&dt=2024-03-02&e (2024).

32. ASHA — the driving force behind India's public health services. 3 December 2021. *World Health Organiszation (WHO)* https://www.who.int/india/news/feature-stories/detail/asha-the-driving-force-behind-india-s-public-health-services (2021).

33. Manjunath, U. *et al.* Assessment of Workload of ASHAs: A Multi-stakeholder Perspective Study for Task-sharing and Task-shifting. *J. Health Manag.* **24**, 62–73 (2022).

34. Asha workers win Global Health Leaders Award. *World Health Organization (WHO)* https://www.who.int/india/india-asha-workers (2022).

35. Yuwono, M. & Rusiana, D. A. Seorang Warga Gunungkidul Suspek Antraks (A Resident of Gunungkidul Suspek Anthrax). *Kompas* https://yogyakarta.kompas.com/read/2024/03/08/085848578/seorang-warga-gunungkidul-suspek-antraks (2024).

36. Firdaus, H. Tiga Ekor Hewan Ternak di Gunungkidul Mati, Dugaan Antraks Diselidiki (Three Livestock in Gunungkidul Died, Suspected Anthrax Investigated). *Kompas* https://www.kompas.id/baca/nusantara/2024/03/08/tiga-ekor-hewan-ternak-di-gunungkidul-mati-dugaan-antraks-diselidiki (2024).

37. Horrible! Warning to refrain from raw 'cow-buffalo' meat after seeing a patient 'Anthrax' Serious symptoms. *Daily News* https://www.dailynews.co.th/news/3236798/ (2024).

38. Laos reports three cases of anthrax. *Vietnam Plus* https://en.vietnamplus.vn/laos-reports-three-cases-of-anthrax/282525.vnp (2024).

39. Psittacosis – European region. 5 March 2024. at https://www.who.int/emergencies/disease-outbreak-news/item/2024-DON509 (2024).

40. Chu;, J., Yarrarapu, S. N. S., Vaqar, S. & Durrani, M. I. Psittacosis. in *StatPearls [Internet]* (Treasure Island (FL)/StatPearls Publishing, 2024).

41. Stearn, E. Urgent warning over whooping cough as cases spike. *MSN/Daily Mail* https://www.msn.com/en-ae/health/other/urgent-warning-over-whooping-cough-as-cases-spike-to-decade-high-health-chiefs-beg-parents-to-get-children-vaccinated-against-100-day-cough/ar-BB1jvnNa (2024).

42. Whooping cough infections rise. 7 March 2024. at https://www.gov.uk/government/news/whooping-cough-infections-rise (2024).

43. *Confirmed cases of pertussis in England by month, to end January 2024*. https://www.gov.uk/government/publications/pertussis-epidemiology-in-england-2024/confirmed-cases-of-pertussis-in-england-by-month (2024).

44. Marketing campaign launches to drive up childhood vaccinations. 29 January 2024. at https://www.gov.uk/government/news/marketing-campaign-launches-to-drive-up-childhood-vaccinations (2024).

45. Aziz, F. Health Ministry turns to drug repurposing to combat dengue. *MSN/The Star Online* https://www.msn.com/en-my/health/other/health-ministry-turns-to-drug-repurposing-to-combat-dengue/ar-BB1jivqJ?ocid=msedgntp&pc=HCTS&cvid=313f59f399d84d26abfe1e502cc259a0&ei=45 (2024).

46. Swine flu in 13% influenza cases: PGI study. *The Economic Times of India/TNN* https://health.economictimes.indiatimes.com/news/industry/swine-flu-in-13-

influenza-cases-pgi-study/108179030?action=profile_completion&utm_source=Mailer&utm_medium=newsletter&utm_campaign=ethealth_news_2024-03-04&dt=2024-03-04&em=c3VuaXRhc2hhbXN1bEBnbWFp (2024).

47. Paredes, M. I. *et al.* Underdetected dispersal and extensive local transmission drove the 2022 mpox epidemic. *Cell* (2024) doi:10.1016/j.cell.2024.02.003.

48. Rawlins, M (29 February 2024). APHA Science Blog.Cryptosporidium: A One Health approach. https://aphascience.blog.gov.uk/2024/02/29/cryptosporidium/. at (2024).

49. Parasites - Cryptosporidium (also known as 'Crypto'). *Centers for Disease Control and Prevention (CDC)* https://www.cdc.gov/parasites/crypto/index.html (2024).

50. Guidance Cryptosporidium: public advice. *UK Health Security Agency (UKHSA)* https://www.gov.uk/guidance/cryptosporidium-public-advice (2023).

51. Cryptosporidiosis. Queensland Health Guidelines for Public Health Units. *Queensland Government* https://www.health.qld.gov.au/cdcg/index/crypto (2024).

52. The National Respiratory and Enteric Virus Surveillance System (NREVSS). National Trends. Updated February 29, 2024. *Centers for Disease Control and Prevention (CDC)* https://www.cdc.gov/surveillance/nrevss/norovirus/natl-trend.html (2024).

53. Kapikian, A. Z. Overview of viral gastroenteritis. in *Archives of Virology* (ed. Chiba, S., Estes, M.K., Nakata, S., Calisher, C. H.) vol. 12 7–19 (Springer International Publishing, 1996).

54. Caliciviridae. *International Committee on Taxonomy of Viruses (ICTV)* https://web.archive.org/web/20210829153606/https://talk.ictvonline.org/ictv-reports/ictv_online_report/positive-sense-rna-viruses/w/caliciviridae (2024).

55. Vinjé, J. *et al.* ICTV Virus Taxonomy Profile: Caliciviridae. *J. Gen. Virol.* **100**, 1469–1470 (2019).

56. Moore, M. D., Goulter, R. M. & Jaykus, L.-A. Human Norovirus as a Foodborne Pathogen: Challenges and Developments. *Annu. Rev. Food Sci. Technol.* **6**, 411–433 (2015).

57. Norovirus (vomiting bug). *National Health Service (NHS)* https://www.nhs.uk/conditions/norovirus/ (2021).

58. Immunization, Vaccines and Biologicals. Norovirus. *World Health Organization (WHO)* https://www.who.int/teams/immunization-vaccines-and-biologicals/diseases/norovirus (2024).

59. Insecticide-releasing house paint found to be effective in killing yellow fever mosquitoes. *The Economic Times of India/PTI* https://health.economictimes.indiatimes.com/news/industry/insecticide-releasing-house-paint-found-to-be-effective-in-killing-yellow-fever-mosquitoes/108233897?action=profile_completion&utm_source=Mailer&utm_medium=newsletter&utm_campaign=ethealth_news_202 (2024).

60. Soucheray, S. Insecticide paint controls mosquito population up to 1 year, experiment shows. *CIDRAP (University of Minnesota)* https://www.cidrap.umn.edu/misc-emerging-topics/insecticide-paint-controls-mosquito-population-1-year-experiment-shows (2024).

61. Gómez, L. F. *et al.* Insecticide paints: a new community strategy for controlling dengue and zika mosquito vectors in Cabo Verde. *Front. Trop. Dis.* **5**, (2024).

62. Cullinan, M. WHO warns of growing resistance to first-line HIV drug. *The Telegraph* https://www.telegraph.co.uk/global-health/science-and-disease/who-warns-of-growing-resistance-to-first-line-hiv-drug/ (2024).

63. New report documents increase in HIV drug resistance to dolutegravir. 5 March 2024. at https://www.who.int/news/item/05-03-2024-new-report-documents-increase-in-hiv-drug-resistance-to-dolutegravir (2024).

64. *HIV drug resistance – brief report 2024. 29 February 2024*. https://www.who.int/publications/i/item/9789240086319 (2024).

65. Global HIV Programme. *World Health Organization (WHO)* https://www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/hiv/treatment/hiv-drug-resistance (2024).

66. HIV: fact sheet on Sustainable Development Goals (SDGs): health targets. 8 at https://iris.who.int/handle/10665/340795 (2017).

67. Understanding the HIV epidemic. Global HIV targets. *Be In The Know* https://www.beintheknow.org/understanding-hiv-epidemic/context/global-hiv-targets (2024).

68. Duboust, O. More than one billion people globally are now living with obesity, according to a new study. *euronews* https://www.euronews.com/health/2024/03/01/more-than-one-billion-people-globally-are-now-living-with-obesity-according-to-a-new-study?utm_source=newsletter&utm_campaign=today_newsletter&utm_medium=referral&insEmail=1&insNltCmpId=209&insNltSldt=10080&insPn (2024).

69. Phelps, N. H. *et al.* Worldwide trends in underweight and obesity from 1990 to 2022: a pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults. *Lancet* (2024) doi:10.1016/S0140-6736(23)02750-2.

70. One in eight people are now living with obesity. 1 March 2024. at https://www.who.int/news/item/01-03-2024-one-in-eight-people-are-now-living-with-obesity (2024).

71. US conspiracy theorists monetise 'Disease X' misinformation. *CNA/AFP* https://www.channelnewsasia.com/world/disease-x-us-conspiracy-theorists-alex-jones-monetise-misinformation-vaccines-4168031 (2024).

72. Gutman-Wei, R. Americans Don't Get to Have the Best New COVID Drug. *The Atlantic* https://www.theatlantic.com/health/archive/2023/10/xocova-ensitrelvir-covid-

antiviral/675768/ (2023).

73. Rockoff, J. D. & Hopkins, J. S. Pfizer Prices Covid Drug Paxlovid at $1,400 for a Five-Day Course. *The Wall Street Journal* https://www.wsj.com/health/healthcare/pfizer-covid-drug-paxlovid-pricing-80f83785 (2023).

74. COVID-19 Drug Interactions. *University of Liverpool* https://www.covid19-druginteractions.org/view_all_interactions (2024).

75. Pandit, J. A. *et al.* The Coronavirus Disease 2019 Rebound Study: A Prospective Cohort Study to Evaluate Viral and Symptom Rebound Differences in Participants Treated With Nirmatrelvir Plus Ritonavir Versus Untreated Controls. *Clin. Infect. Dis.* **77**, 25–31 (2023).

76. ECCMID 2023: Shionogi to Present Data Showing COVID-19 Symptom Recurrence is Not Associated with Ensitrelvir Treatment Additional Data to be Presented Showing Significantly Faster Time to Negative Viral Titer (Culture) Compared to Placebo. at https://www.shionogi.com/us/en/news/2023/04/eccmid-2023-shionogi-to-present-data-showing-covid-19-symptom-recurrence-is-not-associated-with-ensitrelvir-treatment.html (2023).