Insight paper

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Six global health threats to watch in 2026

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Special thanks to Gavi's Global Health Security and Communications teams for their expert contributions to this report.

Cover image: Marburg virus particles colourised.
Credit: The National Institute of Allergy and Infectious Diseases (NIAID)

Foreword

By Pascal Barollier

Six years after the worst pandemic in a century first swept across the world, threats to our health have now, understandably, taken a backseat to the political challenges on the front pages.

That doesn't mean, however, that they've gone away.

Conflict and climate change are both increasing the threat of disease. Meanwhile, shrinking resources and growing health misinformation are making it harder to maintain our defences against deadly pathogens.

Immunisation acts as a key component of these defences. By maintaining global vaccine stockpiles, we can help stop outbreaks from becoming global threats. And by increasing access to routine immunisation in the most challenging of contexts, we can help bring healthcare to the most vulnerable.

This report, compiled with support from experts in the Gavi Secretariat as well as partner organisations from across the Vaccine Alliance, shines a spotlight on the threats we cannot afford to ignore in the year ahead.

The good news is the threats we identify are not insurmountable. This paper is not intended to spread fear: for each threat, we have included a range of solutions – all products of global collaboration and scientific endeavour.

A constellation of multilateral organisations, research institutions, governments and health workers across the world are working to make sure these threats to our collective global health remain just threats.

As well as a clarion call, this paper should act as an opportunity to celebrate those working every day to keep us all safe from harm.

Pascal Barollier is Gavi's Chief External Engagement, Communications & Advocacy Officer.

Credit: Gavi/2024/Pascal Barollier

Introduction

These are challenging times for those working to achieve greater health equity worldwide. The risks – from disease outbreaks driven by conflict and health misinformation, to the impacts of climate change and antimicrobial resistance – are many and various. They can, at times, seem overwhelming.

Yet despite the scale of these challenges, global health organisations and other actors are coming together, using research and other resources to find ways to bolster our defences against these global health threats.

While not seeking to be comprehensive, this Gavi insight paper considers six key immediate threats to global and regional health in 2026: conflict-associated outbreaks; climate change and arboviruses; global health funding cuts; health misinformation; Marburg virus disease; and Disease X. In each case, it characterises the threat, describes why it is important in 2026, includes perspectives of global health experts, and highlights some of the initiatives, projects, tools and other potential solutions designed to keep these threats at bay.

Credit: Gavi/2019/Isaac Griberg

Conflict-associated outbreaks

Conflict, armed or otherwise, increases the emergence and transmission of infectious diseases.

Disputes and violence within and between states are at or close to record levels since World War II by some measures. There were 61 active conflicts across 36 countries in 2024 – the highest number recorded since 1946 – according to the Peace Research Institute Oslo, in Norway. Reported deaths in wars were also well above the average.

Better understanding of why conflicts can drive outbreaks can inform preparedness and response strategies. In 2024, researchers at the European Centre for Disease Prevention and Control, in Solna, Sweden, reviewed 51 previous studies of the conflict-associated spread of AIDS, hepatitis B, tuberculosis, cholera, COVID-19, Ebola, polio, malaria, leishmaniasis, measles, diphtheria, dengue and bacterial meningitis.

They found key factors driving the outbreaks included: population displacement, destruction of key infrastructure, disrupted healthcare provision, and disruptions in the supply chain of safe water, food, and medication. Armed conflict is also fuelling the spread of antimicrobial resistance (AMR).

Multiple interacting factors affect the degree to which conflicts contribute towards disease outbreaks. “It depends on the conditions on the ground,” says Carrie Nielsen, immunisation lead at the International Federation of Red Cross and Red Crescent Societies (IFRC). “A lot of factors contribute including environmental conditions, the ability to deliver health services during the conflict, and pre-conflict health infrastructure and immunisation coverage.”

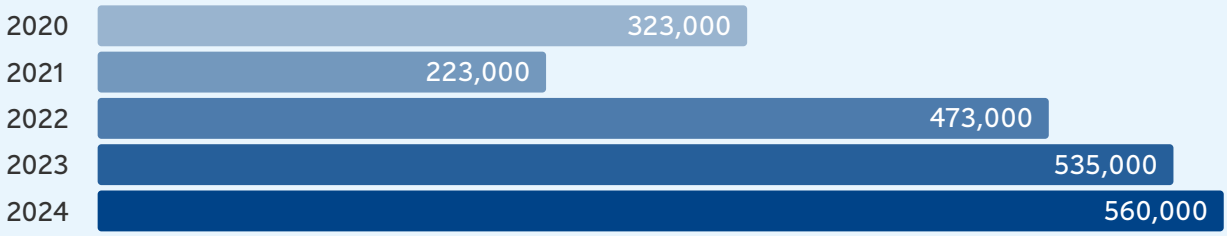
Take cholera, for example. More than 6,000 people died of the disease in 2024 – that’s up by 50% compared to 2023. The number of countries reporting cases rose from 45 to 60 over the same period. The current upsurge in cases began in 2021. Surveillance activities and response measures have been obstructed in several locations affected by conflicts, including parts of Sudan and the Democratic Republic of Congo.

"The provision of safe water and sanitation, and effective case management, are essential for outbreak control," says Allyson Russell, a Senior Programme Manager in Gavi's Outbreaks and Global Health Security team. "The current upsurge is the result of a multitude of factors, but in areas affected by conflict, when people are being displaced, it can be difficult to provide basic services and prevent the disease spreading."

Conflict can also lead to outbreaks of diseases that are usually kept in check by routine immunisation, either because providing the required vaccines is no longer possible or because people are on the move. Political instability and conflicts across the Sahel region have led to declining routine immunisation coverage rates and contributed towards increased outbreaks of diseases including polio, measles and diphtheria, for example.

Figure 1 The cholera upsurge

Worldwide reported cases of cholera, 2020–2024



Note: The numbers of cases reported are known to be underestimates of actual case numbers due to a lack of complete detection and reporting, however the trends are representative of the true picture.

Sources: WHO Weekly Epidemiological Record, No. 37, 2021, pp. 445-460; WHO Weekly Epidemiological Record, No. 37, 2022, pp. 453-464. WHO Weekly Epidemiological Record, No. 37, 2023, pp. 481-496; WHO Weekly Epidemiological Record, No. 36, 2024, pp. 481-495; WHO Weekly Epidemiological Record, No. 36, 2024, pp. 347–364.

Solutions

Oral cholera vaccine

Multiple stakeholders have worked to increase the global supply of oral cholera vaccine (OCV) from around 30 million doses in 2022 to 80 million in 2025. EuBiologics, a South Korean biopharmaceutical company, has ramped up production of a simplified version of its Euvichol vaccine, with support from the Gates Foundation. Gavi has supported the development of an expanded cholera vaccine market by launching the preventive cholera vaccination programme – doubling funding for outbreak response in recent years – and has budgeted to spend almost US$ 600 million on cholera vaccines during 2026–2030. The International Coordinating Group (ICG) on Vaccine Provision has been managing the Gavi-funded global stockpile of oral cholera vaccine since its inception in 2013.

Delivery during conflicts

UNICEF Supply Division has access to unparalleled humanitarian logistics networks, enabling it to deliver essential supplies in conflict settings including food, shelter, clothing and vaccines. Its vital work – seen in recent years during conflicts in Sudan, Gaza and Haiti – helps save the lives of children and families in many ways, including through the prevention of infectious disease outbreaks.

Focusing resources on those in most need

Through its new Fragility & Humanitarian Approach and despite funding constraints, Gavi is increasing its support for populations in conflict and other fragile settings by more than 15% during 2026–2030 compared to the previous five-year period. A new Gavi Resilience Mechanism will address: unforeseen needs to prevent and control epidemics; humanitarian emergencies impacting immunisation in fragile and humanitarian contexts; and vaccines for less predictable outbreaks.

Climate change and arboviruses

Climate change is driving shifts in the geographic distributions of arboviruses – those spread by arthropods including mosquitoes. While the relationships between these viruses and climatic variables are complex, a growing body of evidence shows changing weather patterns are driving growing threats from arboviral diseases.

"Through changes such as higher temperatures, changing rainfall patterns and increased flooding, climate change is providing increased breeding opportunities for mosquitoes and enabling their spread into new areas," says Ignacio Esteban, Senior Manager in Gavi's Policy team. "This is leading to more outbreaks of diseases including malaria, yellow fever, chikungunya and dengue."

Many recent studies have identified links between climate change and increasing arbovirus outbreaks. When scientists from Imperial College London and the World Health Organization (WHO) modelled yellow fever cases in Africa, for example, they found deaths could increase by 11–25% by 2050. One study found that the global population at risk of mosquito-borne diseases will increase by around half a billion to 6.5 billion by 2050.

In 2025, an international team published updated maps of the estimated distribution and risks of dengue, chikungunya, Zika and yellow fever. When the researchers compared these to previous maps, they noted expansions into higher latitudes, particularly in Mexico, Europe and the Middle East, and highlighted climate change as potentially already driving increases in arboviral disease distribution.

Temperature plays a key role in arbovirus vector distribution and viral replication within vectors. Mosquitoes – especially *Aedes aegypti* and *Aedes albopictus* – are the main vectors for dengue, Zika and chikungunya. They are highly sensitive to temperature changes.

"When temperatures rise, mosquitoes become adults more quickly, and the incubation period of the viruses within mosquitoes is shorter, which increases the speed of transmission of these viruses to humans," says infectious disease epidemiologist Diana P. Rojas, of the WHO Global Arbovirus Programme and co-lead of the Global Arbovirus Initiative.

The year 2024 was the warmest on record to date, with a global mean temperature around 1.55°C above pre-industrial levels. More than 14.4 million dengue cases were reported globally that year – more than double the previous historic highpoint in 2023.

Climate change is also increasing the spread of arboviruses through elevated intensity and frequency of extreme weather events. In 2024, the severity of droughts and floods – based on the total area affected, duration, and how wet or dry they were – was twice that of the 2003–2020 average, according to NASA scientists. The study was not peer-reviewed, and the researchers said they would need data over a longer period to better understand why this was the case; however, they said other evidence suggests the steep increase in extreme weather intensity was the result of rising temperatures.

A health worker prepares to administer yellow fever vaccine to a child at the Duhuma Health Post, Andaza ward, Jigawa State.

Credit: Gavi/2023/Nr Dambali

Experts interviewed for the World Economic Forum's Global Risks Report 2026 ranked extreme weather events as the top risk category over the next decade for the third year running. Scientists say increased precipitation, floods and droughts can all drive increased arbovirus outbreaks. "After a rainy season, when there are floods or when people collect water because of drought, there will be more breeding sites for mosquitoes, and then those places are more likely to have dengue or other arbovirus outbreaks," says Dr Rojas.

The health impacts of increasing arbovirus infections fall disproportionately on populations in lower-income countries. Within these countries, the hardest hit are vulnerable population groups including children, women and displaced populations including refugees.

That's also the case for many of the other ways climate change is harming health. Cholera cases and deaths have, for example, surged in recent years, from more than 223,000 cases and some 4,150 deaths reported in 2021 to more than 560,000 cases and over 6,000 deaths reported in 2024. Climate change drives the spread of cholera through extreme weather events that can contaminate water, damage sanitation systems and displace populations, for example.

Solutions

Collaborating to maximise impact

The Global Arbovirus Initiative was launched in 2022 by WHO as an integrated approach to tackling the growing risks posed by arboviruses. It seeks to optimise resource use and impact based on six key pillars: risk monitoring and anticipation; reducing local risks of epidemics; strengthening vector control; pandemic prevention; enhancing innovation; and building a coalition of partners.

Vaccines against climate-sensitive diseases

From 2026–2030, Gavi plans to spend around US$ 2.2 billion on vaccines against climate-sensitive diseases including cholera, Japanese encephalitis, malaria, meningitis A, typhoid and yellow fever by funding routine immunisation, emergency vaccine stockpiles and, subject to final Gavi Board approval, a new vaccine against dengue.

Reducing the ability of mosquitoes to spread disease

The World Mosquito Program is working with communities in Asia, Africa, Latin America and the Western Pacific to release mosquitoes infected with *Wolbachia*, a bacterium which reduces their ability to transmit viruses to people. The project is estimated to have protected over 13.3 million people from mosquito-borne diseases, and prevented around 1 million cases of dengue.

Global health funding cuts

Sharp falls in government aid from high-income to lower-income nations during 2025 have disrupted critical health services – from disease surveillance and vaccination, to maternal care and health emergency preparedness.

The scale and speed of the funding cuts are already jeopardising hard-won health gains and impacting lives in low- and middle-income countries (LMICs). The degree to which countries can mobilise other sources of funding and become more self-reliant will become clearer during 2026.

The Organisation for Economic Co-operation and Development has predicted cuts to official development assistance (ODA) of 9% to 17% in 2025, on top of a 9% drop in 2024.

Health aid from ODA will drop from over US$ 25 billion in 2023 to close to US$ 15 billion in 2025, WHO said in November. The funding cuts led to reductions in funding for critical health services of up to 70%, as well as job losses among health and care workers; and major disruptions to health worker training programmes in more than 50 countries, according to a WHO survey of LMICs.

The current funding cuts are exacerbated by other ongoing health financing challenges for LMICs, including inflation, economic uncertainty, budgetary underfunding and increasing debt burdens.

Whether gaps created by falling multilateral funding can in part be filled through bilateral and domestic funding is as yet unclear, and it will take some time before the full impacts of the cuts become clear. There is, however, evidence to suggest existing systems and infrastructure are being damaged in ways that are undermining the ability of countries to prevent and respond to disease outbreaks.

In October, GiveWell, a US non-profit charity assessment organisation, published a report on the impact of the funding cuts on immunisation programmes in the Democratic Republic of the Congo, Madagascar and Nigeria, all of which are heavily reliant on donor support. Based on interviews and discussions with stakeholders including vaccinators and health facility managers, the authors warned of consequences including:

- a loss of community health workers and stipends for volunteers was undermining service delivery, outreach and mobilisation activities;
- last-mile delivery and distribution of vaccines was becoming unreliable, causing stock-outs and session cancellations;
- some vaccine coverage rates were in decline;
- progress made in reaching zero-dose children was being lost in part because rural sites were being disproportionately affected by funding cuts; and
- data and reporting systems were being undermined.

Some global health experts have highlighted the potentially harmful impacts of the funding cuts on disease surveillance. Others say cuts to donor funding of some global health organisations could affect the collection of vital demographic and health data, as well as potentially undermining efforts to reach disadvantaged populations such as zero-dose children.

"Unless countries and donors ensure funding is ring-fenced so that it reaches populations in fragile and conflict settings, there is a danger they might not be prioritised and could therefore be disadvantaged," says Carrie Nielsen, immunisation lead at the International Federation of Red Cross and Red Crescent Societies (IFRC).

Solutions

Country first approach

Alongside the well-documented fall in ODA, there are also growing, yet perhaps less visible, calls from lower-income countries to assume greater sovereignty over public health. As part of Gavi's reform agenda, the Gavi Leap has been designed to facilitate a historic and sustainable transfer of decision-making discretion over how immunisation resources are spent, according to countries' national priorities.

Funding health by taxing unhealthy products

Could a tax on tobacco, alcohol and sugary drinks be part of the solution? A WHO-led initiative called 3 by 35 calls for the prices of these unhealthy products to rise by at least 50% by 2035 through tax increases to help establish sustainable, domestically sourced financing.

Sustainable finance

Gavi is working with multilateral development banks such as the World Bank and the Asian Development Bank to help countries gain access to sustainable financing for health and immunisation programmes.

"Cholera is preventable, and it's my job as a volunteer to help protect children from this deadly disease. Vaccination is the most effective way to stop cholera and other diseases from spreading."

Mohammad Zahangir, 23, Expanded Programme on Immunization (EPI) volunteer, Bangladesh

Credit: Gavi/2025/Ashraful Arefin

Health misinformation

Health misinformation and disinformation are rapidly becoming two of the most destabilising forces in global health. They undermine trust, reshape behaviour and weaken health systems at a moment when the world is already seeing the resurgence of vaccine-preventable diseases such as measles, alongside the ever-present risk of another pandemic. As we enter 2026, the question is whether global health systems are equipped to confront misinformation with the same seriousness as biological threats.

Misinformation is when someone spreads incorrect medical information but believes it to be true, while disinformation involves its deliberate spread. Concern about both is now reflected at the highest levels of global risk assessment. Although neither focuses on health specifically, both the UN Global Risk Report 2024 and the World Economic Forum's Global Risks Report 2026 rank mis- and disinformation among the most severe global threats, warning that it is already occurring at scale while institutions struggle to respond.

"The attacks on science and this entire change of rhetoric around what is fact and what is not, and manipulating information to make certain points, is really dangerous," says Maria Van Kerkhove, interim Director of WHO's Department of Epidemic and Pandemic Management. "Obviously, we dealt with a lot of this during COVID-19, but it's recently taken on another level."

Vaccines provide a clear case study of how this threat can manifest. While it is entirely appropriate for people to ask questions about vaccine safety, the growing spread of false or misleading information makes it harder for individuals to make informed decisions about their health and well-being. When confidence in vaccines erodes, preventable diseases return, pandemic preparedness weakens and trust in institutions fractures further. Yet while the scale of vaccine misinformation is growing, the narratives underpinning it remain remarkably consistent.

Safety concerns dominate, including false claims about infertility, toxic ingredients and severe side effects. These are often amplified by historical grievances over medical exploitation, inequitable vaccine access and religious misconceptions. Vaccines are also framed as tools of government control or profit-driven schemes, as seen during the 2024 mpox outbreak in Niger, when social media claims accused international organisations of deliberately spreading the virus and distributing harmful vaccines.

Credit: Gavi/2025/Wilson Photographer

While the risk is global, its expression is local. In North America and parts of Europe, for instance, vaccine misinformation is closely tied to political polarisation and declining trust in institutions. In sub-Saharan Africa, fertility fears, colonial narratives and suspicions of foreign interference are more prominent, often spreading through WhatsApp, radio and community networks.

Despite these differences, a defining trend in 2025 was the merging of global and local narratives. Vaccine rumours can be imported from anti-vaccination movements elsewhere, then adapted to local histories, identities and grievances, increasing their resonance and durability. In Slovakia, for instance, far-right politician Miroslav Heredoš attacked Pope Francis in April 2025 for supporting COVID-19 vaccination, describing mRNA vaccines as a "dubious genetic" intervention, and linking vaccine advocacy to conspiracy theories about migration and moral decline.

What makes 2026 different is not the novelty of these claims, but the environment in which they now circulate. The 2025 Edelman Trust Barometer Special Report: Trust and Health shows that trust in traditional health authorities continues to decline, with one in three young adults globally expressing uncertainty about childhood vaccines, and relying more on social media and personal experience than on doctors or scientific evidence.

Mis- and disinformation are increasingly intertwined with AI-driven technologies and geopolitical competition, making them harder to attribute or regulate. The growing use of deepfakes in health disinformation illustrates how quickly false narratives can now be produced and spread. In July 2025, for example, a fake video circulated on Facebook purporting to show a WHO press conference in which a spokeswoman falsely claimed that a proposed pandemic treaty would remove human rights protections and impose mass surveillance and censorship. Meanwhile, Nigeria's advertising regulator has warned that AI-generated adverts using cloned images and voices of trusted religious and media figures are circulating on social platforms to promote fake medical cures.

Mis- and disinformation do not operate in isolation. The UN Global Risk Report highlights its deep connections to other global risks, including artificial intelligence and cybersecurity breakdowns. Addressing health misinformation will therefore require a coordinated, cross-sector response that extends well beyond public health.

That response cannot come too soon. In the case of immunisation, misinformation does not simply reduce vaccine uptake and increase disease outbreaks; it risks amplifying the impact of future health emergencies by eroding trust before those crises even begin.

Solutions

Cross-sector collaboration

The Africa Infodemic Response Alliance (AIRA) is a WHO-hosted partnership that connects ministries of health and other public health authorities with intergovernmental organisations, non-governmental organisations, fact-checking groups, researchers and media partners to address health misinformation in Africa. It publishes a biweekly report, which helps keeps infodemic managers, communicators and public health professionals informed about the main misinformation trends circulating in the region.

Working with tech companies

Gavi has worked with Google to help boost vaccine awareness and education through ads that promote accurate, authoritative information where people are actively searching for vaccine-related terms. From 2021–2024, these targeted ads reached more than 92 million people – more than 1.6% of all internet users. WHO also works with partners such as Google, Meta and NewsGuard to analyse data on emerging misinformation trends so that trustworthy, science-based health information can be targeted where it's needed most.

Strengthening demand for immunisation

Gavi funds efforts to boost sustainable demand for immunisation, including programmes to train and support health workers so they can better meet community needs for vaccination, and to help countries anticipate and respond to rumours or misinformation around vaccines.

Marburg virus disease

Marburg virus disease (MVD) isn't the most likely candidate for the next global epidemic. But in 2026 it is a growing regional threat in parts of Africa – and a stark case study in how ecological disruption can increase the odds of rare, lethal pathogens spilling over into people, with the greatest impact felt in communities where health systems are weakest and access to care is delayed. While it is difficult to predict whether 2026 will bring further outbreaks, experts stress that preparedness – particularly early detection and strong health systems – will determine whether future cases remain isolated or escalate into major crises.

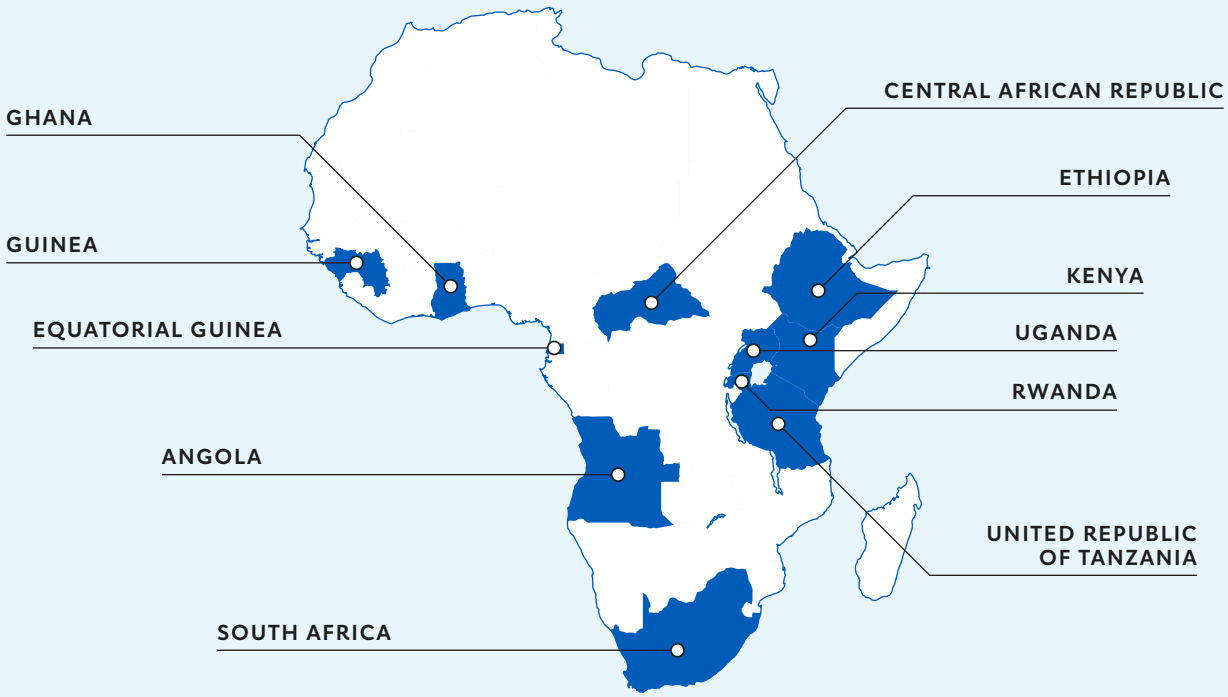
Marburg virus belongs to the filovirus family, alongside Ebola virus, and spreads mainly through direct contact with bodily fluids. It causes a severe disease, marked by very high fever, muscle pain, gastrointestinal symptoms and, in severe cases, internal and external bleeding. Case fatality rates frequently exceed 50%, particularly where detection and supportive care are delayed.

"Marburg virus disease is not a global threat per se, based on current understanding of the virus," says Anaïs Legand, Technical Officer for Viral Haemorrhagic Fevers at WHO. The greater concern is its effect on countries where the virus can emerge: "For those countries, an outbreak can have a major economic impact, alongside the strain on health systems and the heavy toll on affected communities, alongside potentially very high mortality."

What has changed in recent years is where the virus is being detected. Several countries have confirmed Marburg outbreaks for the first time, including Guinea (2021), Ghana (2022), United Republic of Tanzania (2023), Equatoria Guinea (2023), Rwanda (2024) and Ethiopia (2025). This pattern has placed parts of East Africa on heightened alert, particularly given cross-border movement and shared ecological risk zones.

Figure 2 **Marburg virus outbreaks in Africa**

Since 1975, there have been outbreaks of Marburg virus disease in 11 African countries



Sources: Idris I, Adesola RO, D'Souza, JN Marburg virus outbreaks in Africa. Bulletin of the National Research Centre, 2023, volume 47, 96; https://www.who.int/emergencies/disease-outbreak-news/item/2024-DON548; https://www.who.int/emergencies/disease-outbreak-news/item/2025-DON585

This apparent expansion does not necessarily mean the virus is new to these countries, as improved surveillance and laboratory capacity may explain part of the trend. But ecological changes are also a plausible driver. Marburg's natural reservoir is Egyptian rousette fruit bats; and as land use changes, forests fragment, and human activity expands into previously undisturbed areas – increasing the opportunities for human-bat contact, and raising the risk of viral spillover.

Studies show that Marburg's bat reservoir is widely distributed across East, Central and West Africa. Bats also harbour many other viruses, meaning Marburg may be only one of several pathogens whose emergence is shaped by the same underlying pressures. The solution is not killing bats – which play vital ecological roles – but reducing general contact between bats and humans, while strengthening detection and response.

Marburg virus has not yet caused a major epidemic, but that does not mean it could not. Ebola was once considered a remote threat too, until the 2014–2016 West Africa outbreak showed how filoviruses can devastate countries with fragile health systems. Today, the world is better prepared for Ebola virus disease, with effective vaccines, treatments and preventive vaccination of health workers in at-risk areas.

Marburg is thought to be slightly less transmissible than Ebola, but it remains a serious threat in certain countries. If an outbreak were to occur unrecognised, in a densely populated urban area – particularly where detection is delayed and health systems are weak – there is concern it could escalate rapidly.

"The worry is that right now, we don't have sufficient data to understand exactly which are the places at risk in every country with *Rousettus* bat presence, limiting ability to reduce bat-to-human exposure and prevent spillover events," says Legand.

With fewer than 800 confirmed human cases worldwide since the virus was first identified in 1967, Marburg alone cannot justify large, standalone investments. Preparedness must instead be embedded within broader health system strengthening – from surveillance and laboratory capacity, to infection prevention and control, and community trust – that also improves responses to more common infectious threats.

The challenge for 2026 is sustaining this progress amid funding pressures on surveillance and public health. Marburg may not threaten the world at large, but for communities across vulnerable parts of Africa it remains a serious regional risk – and a reminder that preventing the next outbreak depends as much on human behaviour as on the virus itself.

Solutions

Marburg vaccines and therapeutics

Although there are currently no licensed vaccines or treatments for Marburg disease, at least 28 vaccine candidates are in development. Most advanced is a candidate developed by the Sabin Vaccine Institute, which was assessed as part of a phase 2 trial during Rwanda's first Marburg outbreak in 2024. Multivalent vaccines capable of protecting against several filoviruses – including Marburg, Ebola and Sudan virus – rather than single-pathogen vaccines, are also being developed. Separately, WHO is coordinating the SOLIDARITY PARTNERS trial, which aims to identify effective treatments for filoviruses, including Marburg and Ebola.

Collaborative research

WHO also supports global research preparedness for filoviruses, including Ebola and Marburg, through initiatives such as the Filovirus Collaborative Open Research Consortium (CORC), which brings together researchers, public health agencies and clinicians to align priorities and approaches, and to improve data sharing. Its aim is to ensure that when an outbreak occurs, studies of vaccines, treatments and diagnostics can be launched quickly and ethically, using pre-agreed protocols and collaborative frameworks.

Capacity building for surveillance and diagnostics

Regional efforts, led by the Africa Centres for Disease Control and Prevention (Africa CDC) are supporting national laboratories with molecular diagnostic tools, genome sequencing and workforce training. WHO and the U.S. Centers for Disease Control and Prevention have also been closely involved in outbreak responses, including deploying technical personnel and supplies.

Disease X

When global health experts talk about Disease X, they are not predicting a specific virus or a precise date. The term is shorthand for the next unknown pathogen with the potential to spark a serious international epidemic or pandemic. And while there is nothing uniquely dangerous about 2026 itself, a growing body of assessments suggest the world may be entering the year less prepared than it was in the immediate aftermath of COVID-19.

As the Coalition for Epidemic Preparedness Innovations (CEPI) has noted, COVID-19 was itself a Disease X – a newly emerged coronavirus that spread rapidly across the globe, exposing deep weaknesses in surveillance, preparedness and response.

Such events are not as rare as they may seem. This century alone has already seen an influenza pandemic (H1N1 in 2009), alongside major epidemics driven by emerging or re-emerging pathogens including SARS-CoV-1, MERS, Ebola virus disease, mpox and Zika.

Although preparing for an unknown pathogen is inherently difficult, scientists increasingly agree that the next major threat is most likely to emerge from one of roughly 25 viral families already known to infect humans. Many of these families include pathogens that circulate with limited monitoring and receive far less attention and funding than headline threats such as COVID-19 or Ebola.

One viral family already under close watch is the orthomyxoviruses, which include influenza. H5N1 avian influenza, in particular, is being monitored closely because sporadic spillover into humans and other mammals creates opportunities for viral change.

But H5N1 is not the only influenza virus of concern. Maria Van Kerkhove, interim Director of WHO's Department of Epidemic and Pandemic Management, warns that the greater risk lies in zoonotic influenza more broadly – where animal influenza viruses (such as those in birds or pigs) that occasionally infect people could evolve into strains adapted for sustained human spread.

In rare circumstances, these viruses can exchange genetic material, producing a strain to which humans have little or no immunity. "The possibility of such a reassortment sparking the next pandemic is strong," Van Kerkhove says. Preparedness assessments caution that without sustained surveillance and rapid, deployable diagnostics, such viruses could go undetected until transmission is already well under way.

Credit: Gavi/2024/Ryan Donnell

Other priority threats include coronaviruses, filoviruses such as Ebola and mosquito-borne viruses like dengue – all capable of overwhelming health systems when detection fails.

A 2024 implementation review of the 100 Days Mission (see "Solutions" below) by the International Pandemic Preparedness Secretariat (IPPS) found that preparedness remains uneven across pathogens, with diagnostics and therapeutics lagging far behind vaccines. While scientific tools and platforms have advanced, the report warned that the systems needed to deploy them quickly – including regulation, manufacturing and financing – remain too fragile to guarantee a rapid response to Disease X.

Surveillance is another weak point. The most acute risk is not that new diseases are becoming more likely to emerge, but that outbreaks may go undetected for longer.

In its 2025 report, the Global Preparedness Monitoring Board warned that global health security is "hanging in the balance," citing funding cuts, workforce losses and weakened surveillance systems. "If a new pandemic were to occur soon," the board warned, "the world could be even more vulnerable than it was in 2019 – still in the midst of recovery and without having fully internalised the lessons of COVID-19."

Van Kerkhove warns of a "collective amnesia" after COVID-19 and other major crises – the tendency to declare a threat over, dismantle systems, and then scramble to rebuild them from scratch when the next outbreak hits.

As 2026 dawns, global leaders are grappling with a crowded agenda of geopolitical, economic and climate crises. Disease X may sound abstract, but COVID-19 showed how quickly a new pathogen can upend societies and economies on a global scale. As political focus shifts elsewhere, experts warn that the systems needed to detect and contain the next health crisis are being allowed to erode – leaving the world dangerously exposed.

Solutions

Making outbreak detection routine

WHO's Strategic Plan for Coronavirus Disease Threat Management 2025–2030 calls for surveillance of COVID-19, MERS-CoV, influenza and other respiratory pathogens to be fully integrated into routine health systems rather than scaled up only during crises. The plan promotes multi-pathogen surveillance platforms – combining laboratory testing, genomic sequencing, syndromic reporting and wastewater monitoring – so early-warning systems remain active even when political attention wanes. It emphasises that disease surveillance works best when countries share information globally, because even strong national systems can struggle to spot emerging threats if neighbours are not doing the same.

Investing in platform technologies

CEPI's response to the threat posed by Disease X is the 100 Days Mission, which prioritises vaccine and diagnostic platform technologies – such as mRNA and viral vectors – that can be rapidly adapted once a new pathogen is identified. It is also funding development of a vaccine library: prototype versions of vaccines against representative viruses from high-risk families, which could be swiftly adapted to tackle other related viruses.

Fixing the diagnostics gap

A 2025 Global Diagnostics Gap Assessment conducted in support of the 100 Days Mission finds diagnostics to be the weakest link in pandemic preparedness, calling for sustained investment in adaptable testing platforms, regional evaluation hubs and regulatory convergence to avoid duplicative approvals. It warns that without faster, coordinated action by governments, funders and industry, diagnostics will continue to lag behind pandemic threats.