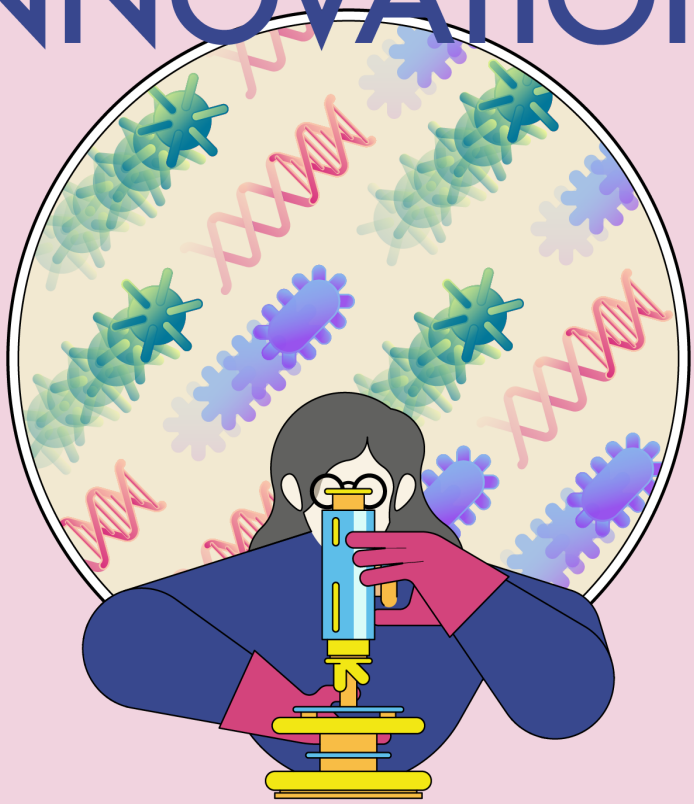
NO ERADICATION WITHOUT INNOVATION



THE EU AT A CROSSROADS TO ELIMINATE HIV/AIDS, TB, AND MALARIA

BETTER HEALTH
STRONGER INNOVATION

GLOBAL HEALTH ADVOCATES
PASTEUR NETWORK

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No eradication without innovation: the EU at a crossroads to eliminate HIV/AIDS, TB, and malaria

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Executive summary

Over several decades, the fight against HIV/AIDS, tuberculosis, and malaria saw remarkable progress. Much of this success was the result of major scientific breakthroughs and determined international cooperation, which have been critical in saving millions of lives around the world. Twenty years ago, these three diseases ranked among the deadliest globally, disproportionately affecting the most vulnerable populations. Thanks to scientific innovation and the widespread distribution of effective tools, we have not only contained their spread, but also begun to envision the possibility of eradication.

Yet, this progress is fragile. Amid growing scepticism toward science and the rise of inward-looking political policies, we must remember that complacency could undo years of hard-won gains. Lowering our guard now would result in a rapid and devastating resurgence of preventable infections and deaths, potentially returning us to a time when these diseases reached epidemic proportions.

Today, the fight against HIV/AIDS, tuberculosis, and malaria has entered a critical new era. Investments in research and development (R&D) have led to revolutionary tools to prevent, detect, and treat these diseases. Where we were once helpless, we are now equipped with the medical tools to end them. In addition, initiatives to reduce global inequalities in access to medical products have been created, such as the Global Fund and Unitaid.

The European Union has played a leading role in this global effort, supporting Global Health Initiatives both politically and financially. Now more than ever, this support must be sustained. Scientific progress and global solidarity must be defended, for the sake of the millions of lives at risk from a retreat into isolationism and anti-science rhetoric.

This report highlights the key medical innovations that have been developed for the fight against HIV/AIDS, tuberculosis, and malaria, as well as the progress achieved thanks to global efforts to deliver them. It also explores recent and upcoming breakthroughs that could have a significant impact, if scaled effectively. Finally, it identifies current threats and presents targeted recommendations to ensure that we do not lose ground in this fight.

I.
Drones, AI, and X-rays: 25 years of groundbreaking innovation

Innovation has transformed the fight against HIV/AIDS, tuberculosis, and malaria. A wave of biomedical and technological advances has reshaped how these diseases are prevented, detected, and treated. Previously considered a death sentence, these infections are now often manageable, and increasingly preventable, thanks to groundbreaking tools such as AI-powered diagnostics and mobile X-ray units. These innovations have not only saved lives but also improved the quality of life for millions of affected individuals. Crucially, they have also reduced the overall cost of response efforts as earlier detection, more effective treatments, and better delivery systems have collectively eased the economic burden of care, particularly in low-resource settings.

Between 2000 and 2023, the number of AIDS-related deaths fell by nearly 65%, a testament to scientific progress and the global push for equitable access to treatment[1].

How medical science curbed the health disaster of HIV/AIDS

Over the past two decades, access to HIV/AIDS care has improved dramatically. Between 2000 and 2023, the number of AIDS-related deaths fell by nearly 65%, a testament to scientific progress and the global push for equitable access to treatment[1].

A turning point: the rise of antiretrovirals (ARVs)

Antiretroviral therapies have transformed HIV/AIDS from a fatal infection into a manageable chronic condition. In the 1980s and 1990s, an HIV infected person was almost always destined to die, as the virus steadily weakened the immune system and left people vulnerable to deadly opportunistic infections or cancers.

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Today, ARVs can reduce the viral load to undetectable levels, halting the progression of the virus in the body and preserving immune function. Crucially, people with undetectable viral loads cannot transmit HIV, a game-changing shift both in controlling the epidemic and in reducing stigma. Thanks to these advances, people living with HIV who are receiving treatment now have a life expectancy close to that of the general population[2].

Thanks to ongoing research, ARV treatments have become more effective, less toxic, and easier to take. What once required multiple pills daily is now often managed with a single tablet, or even long-acting injections, greatly improving patient adherence. Between 2017 and 2022, the cost of ARVs in West and Central Africa dropped from over $300 per person per year to just $60[3].

1 https://www.unaids.org/en and https://fr.statista.com/infographie/16232/chiffres-sur-evolution-epidemie-de-sida-vih-dans-le-monde
2 https://www.unaids.org/en/topic/treatment
3 https://hivfinancial.unaids.org/hivfinancialdashboards.html

The development of more targeted molecules has reduced side effects, improving patient well-being and long-term treatment success. Unitaid has also played a critical role in ensuring access to child-friendly formulations, addressing a long-standing gap in pediatric HIV care.

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PrEP: a pill, an injection - and a game-changer in prevention

Pre-exposure prophylaxis (PrEP)[4] has revolutionised HIV prevention. Indeed, it offers non-infected people protection in case of exposure. Originally available as a daily pill or one taken before potential exposure, PrEP now includes monthly injections and, most recently, a twice-yearly injectable option. Authorised in Europe in 2025, Lenacapavir has shown exceptional efficacy, offering long-lasting protection, which is especially valuable in settings with limited access to healthcare services[5]. However, affordability remains a major barrier to large-scale adoption, particularly in low- and middle-income countries.

Coupled with medical advances, adapting patient care approaches has made a real difference in the fight against HIV/AIDS. This is particularly true of prevention of mother-to-child transmission (PMTCT), which can reduce the risk of transmission to less than 5%[6]. This method combines ARV treatment and PrEP before, during, and after pregnancy to act at all stages when transmission could occur.

Dignity in diagnosis: faster, easier, and more confidential

Significant advances in diagnostics have made HIV/AIDS testing faster, simpler, and more discreet. Rapid, user-friendly tests now allow for mobile screening campaigns without the need for a lab visit, bulky equipment or medical staff. Self-testing kits have further transformed access by enabling individuals to test themselves privately, a crucial innovation for people who face stigma or discrimination.

4 https://www.theglobalfund.org/en/hivaids/
5 https://unitaid.org/news-blog/from-promise-to-impact-unlocking-lenacapavirs-potential-to-end-hiv/
6 https://www.unaids.org/sites/default/files/media_asset/FactSheet_Children_en.pdf

A leap in the millennia-long fight against tuberculosis

Investments into the fight against tuberculosis have saved 79 million lives since 2000[7].

Less burdensome treatment protocols

Short treatment regimens for TB have emerged over the last decade, marking a decisive breakthrough. In the past, treatments could last up to 36 months, with daily doses of medication causing severe side effects (digestive[8] and neurological[9] disorders, etc.), which some patients described as worse than the disease itself[10]. Protocols have evolved significantly, and the latest WHO recommendations now prescribe treatments for 1 to 3 months. Even for cases of drug-resistant tuberculosis[11], current molecules allow for shorter, more effective, and better-tolerated care. These developments have greatly reduced treatment costs and significantly increased the number of people receiving and adhering to treatment pathways.

Thanks to a partnership between the Global Fund and Unitaid, the short-course preventive treatment 3HP has been scaled up, from 35,000 beneficiaries in 2017 to over 4 million in 2022, with the cost dropping from $70 to $15 per treatment[12].

Investments into the fight against tuberculosis have saved 79 million lives since 2000[7].

Artificial intelligence for detection

In terms of screening, older methods involved painful techniques and were only effective when the people being tested had reached high levels of bacterial concentration. In addition, these methods required samples to be transported over long distances, sometimes in poor conditions, due to a lack of equipped labs nearby. Gradually, more accurate diagnostics and easier-to-use machines were deployed to better cover affected areas[13]. Today, innovative methods such as artificial intelligence (AI)-guided lung ultrasound perform analyses with much greater accuracy than conventional methods. X-ray images can be processed in less than a minute using new interpretation technologies, allowing more patients to be treated more quickly. These techniques facilitate early detection and limit the transmission of the disease, even in remote areas.

Spectacular breakthroughs against malaria

Nearly 50 countries are certified malaria-free, 21 of them have eradicated the disease since 2000[14].

Massive prevention for maximum impact

Since 2012, the WHO has recommended the use of seasonal malaria chemoprevention (SMC), a preventive treatment for children living in particularly exposed areas during high-risk seasons, which significantly reduces infections. In recent years, two vaccines have also been approved by the WHO, representing a major breakthrough in the fight against malaria as they activate the immune response before symptoms appear. These vaccines are particularly effective, capable of reducing malaria cases by 75%, when combined with SMC[15].

7 https://www.who.int/news-room/fact-sheets/detail/tuberculosis
8 https://tbksp.who.int/en/node/2178
9 https://www.actupparis.org/2000/03/01/les-effets-secondaires-des-traitements-vih/
10 https://www.ecdc.europa.eu/en/fridas-battle-multidrug-resistant-tuberculosis-one-day-time
11 https://www.msf.fr/communiques-presse/un-essai-clinique-msf-met-au-point-un-traitement-plus-efficace-contre-la-tuberculose-multiresistante
12 https://www.kncvtbplus.com/articles/news/new-study-without-tb-prevention-tuberculosis-will-result-close-1-million-deaths-2035
13 https://www.msf.fr/actualites/philippines-comment-l-intelligence-artificielle-ameliore-le-depistage-de-la-tuberculose-a-tondo-l-un-des-plus-grands
14 https://www.who.int/teams/global-malaria-programme/elimination/countries-and-territories-certified-malaria-free-by-who
15 https://www.theglobalfund.org/en/malaria/

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Close protection that makes a difference

Long-lasting insecticide-treated mosquito nets offer more durable protection against mosquito bites[16] and, when combined with indoor insecticide spraying, prevented 80% of malaria deaths between 2000 and 2015. New-generation mosquito nets have since been developed. They are treated with two or more insecticides, and reduce infections in children under 10 by almost half compared to standard nets[17].

Drones are now being used to map mosquito breeding areas and to spray insecticides. This has increased the effectiveness of malaria eradication campaigns[18], including in hard-to-reach areas.

Integrating innovation in the fight against these three pandemics not only contributes to saving lives but also limits the spread of these diseases and prevents the emergence of resistant variants.

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The game-changing benefits of digital health

Digital health is now a valuable asset to healthcare workers and systems. Digital applications and AI facilitate the screening and management of diseases, particularly in areas where healthcare services struggle to cover. For example, digital platforms make it possible to share real-time information of patient-centred screening, care, and treatment services[19]. Patients can also use them to report obstacles encountered in their care journey in real time, as offered by the OneImpact[20] application for pediatric TB, for example.

The digitisation of health data and advanced diagnostic technologies have improved health systems' capacity to detect disease outbreaks[21]. The digitisation of laboratory information systems speeds up diagnostics and identifies potential emerging variants, enabling a faster response to local and international health threats[22].

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16 https://afidep.org/advancements-in-malaria-control-innovations-shaping-the-fight-against-a-global-health-threat/
17 https://unitaid.org/innovations/next-generation-mosquito-nets/
18 https://afidep.org/advancements-in-malaria-control-innovations-shaping-the-fight-against-a-global-health-threat/
19 https://developedngo.org/wp-content/uploads/The-Global-Fund-Digital-Health-and-Human-Rights_Updated-June-2025.pdf
20 https://linitiative.expertisefrance.fr/en/combating-childhood-tuberculosis/
21 https://www.theglobalfund.org/en/resilient-sustainable-systems-for-health/laboratory-systems/
22 https://www.theglobalfund.org/en/news/2023/2023-05-25-global-fund-and-partners-to-invest-usd54-million-in-laboratory-systems-to-accelerate-pandemic-preparedness/

II.
Research and genetics: the promise of tomorrow's innovation

Medical research is sometimes a long and costly process, but it is an investment that can lead to extraordinary changes, particularly against the deadliest diseases. Many promising innovations are currently under development, and if successful, they could truly transform the fight against HIV/AIDS, tuberculosis, and malaria.

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HIV/AIDS: hopes for a vaccine

Many vaccine candidates are currently undergoing clinical trials. Several are being developed or supported by European consortia[23]. All avenues are being explored to address the HIV virus' exceptional ability to mutate[24]. These promising advances offer real hope for an effective HIV vaccine within the next few years.

Tuberculosis: a successor for the BCG vaccine

TB vaccine development has never been more active. In 2024, there were no fewer than 15 vaccine candidates in the clinical trials phase. The MTBVAC, developed by IAVI, Biofabri, and the Institut Pasteur, is one of the most promising[25], having successfully completed two of the three stages of research. This vaccine candidate is supported by EU public funding via the European & Developing Countries Clinical Trials Partnership (EDCTP3)[26]. Another leading candidate, the M72 vaccine [27], developed by GSK and Aeras, also shows encouraging results for protecting adults. For the first time in a century, a new, effective TB vaccine is within reach.

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23 https://www.treatmentactiongroup.org/wp-content/uploads/2024/07/pipeline_HIV_VAX_2024_final.pdf

24 https://www.sidaction.org/transversal/vaccins-contre-le-vih-quelles-avancees/

25 https://www.who.int/teams/global-programme-on-tuberculosis-and-lung-health/tb-reports/global-tuberculosis-report-2024/tb-research-and-innovation

26 https://www.edctp.org/news/biofabri-and-iavi-announce-partnership-to-advance-mtbvac-into-efficacy-trials/

27 https://www.gavi.org/vaccineswork/how-new-vaccines-could-revolutionise-our-relationship-tuberculosis

Malaria: unlocking the power of genetics

Among the most promising advances are gene editing technologies aimed at blocking the transmission of the malaria parasite directly in the mosquito vector. In 2017, researchers from Institut Pasteur, the Centre national de la recherche scientifique (CNRS), and the Institut de recherche pour le développement (IRD) identified a genetic marker capable of distinguishing the mosquitoes most susceptible to infection by the malaria parasite[28]. This discovery has the potential to neutralise the transmission capacity of these "super-spreader" mosquitoes.

Among the most promising advances are gene editing technologies.

In addition, the first drug for infants, Coartem Baby, should soon be approved for market release. Until now, there was no treatment for malaria specifically designed for newborns. Clinicians had to improvise by dividing tablets intended for older children to obtain doses that were approximately suitable for infants, posing serious safety risks[29]. This new drug is a real breakthrough, considering three-quarters of the malaria deaths in 2023 were children under the age of five[30].

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28 https://www.pasteur.fr/en/press-area/press-documents/malaria-genetic-marker-helps-identify-super-spreading-mosquitoes?language=fr

29 https://www.nature.com/articles/d44148-025-00246-7

30 https://www.lecho.be/entreprises/pharma-biotechnologie/novartis-annonce-une-avancee-importante-dans-la-lutte-contre-le-paludisme/10615083.html

III.
Progress under threat

In 2024, over 40 million people were still living with HIV, with 1.5 million new infections recorded[31].

In 2023, 1.25 million people died from tuberculosis, and more than 10 million people contracted the disease[32].

In 2023, 597.000 people died from malaria, and 263 million new cases were reported[33].

Growing hostility towards science and multilateralism

At the international level, we are currently witnessing a fundamental political shift that calls into question the foundations of medical research and global health cooperation. Yet, these are the very instruments which have helped accelerate progress in the fight against HIV/AIDS, tuberculosis, and malaria.

Science is coming under increasingly fierce attack, with the research community facing increasing criticism and obstruction. Funding is being cut without warning, jeopardising the completion of long-term work on essential projects. The results of rigorous research are simply being ignored, challenged, or denounced. Even data collection is sometimes simply stopped, and the history of observations is also being deleted. Such an environment will inevitably lead to a major slowdown in research progress. At the same time, the continuity of health surveillance is no longer guaranteed, raising the risk of large-scale epidemic resurgences that go undetected.

At the same time, the very essence of multilateralism is being questioned. While international cooperation has made it possible to tackle global threats, some political actors are now advocating for isolationism, forgetting that pandemics know no borders. Without global coordination, the fight against HIV/AIDS, tuberculosis, and malaria will inevitably become fragmented, leaving the most vulnerable populations at risk.

While international cooperation has made it possible to tackle global threats, some political actors are now advocating for isolationism, forgetting that pandemics know no borders.

31 https://www.who.int/news-room/fact-sheets/detail/hiv-aids
32 https://www.who.int/news-room/fact-sheets/detail/tuberculosis
33 https://www.who.int/teams/global-malaria-programme/reports/world-malaria-report-2024

The dire consequences of insufficient funding

This growing hostility to international cooperation has also resulted in a massive decline in official development assistance (ODA), particularly in the area of health, and for the lowest-income countries. The United States, the main donor in the fight against the three diseases, has abruptly paused and even terminated the vast majority of its health ODA programmes. US decisions alone could lead to an additional 14 million deaths by 2030[34],with 6.5 million more people infected with HIV[35] and 18 million additional cases of malaria in Africa[36]. Already this year, an additional 300,000 tuberculosis-related deaths are projected.

Other major donors are also following a similar trend. The United Kingdom, France, and the European Union[37], have also drastically cut their ODA, and projections for the coming years are concerning. This withdrawal is deeply concerning, given the financial resources needed in the fight against the three diseases are still far from being met. Even before US cuts, there was already a $3 billion annual deficit to end AIDS by 2030[38], and current funding for tuberculosis R&D is less than a quarter of the $5 billion annual target set by governments in 2023[39]. Similarly, the funding gap for malaria has only widened in recent years, exceeding 50% in 2023[40].

The consequences of these massive funding cuts to an already underfunded situation will be nothing less than catastrophic. Access to medical tools will be limited, access to innovations will be even more inequitable, and above all, the number of preventable deaths and infectious diseases will only increase.

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However, the more these diseases circulate, the more they develop a resistance to treatments, and the more ground is lost on the path to their eradication. Viruses, bacteria, and parasites mutate and can become partially or completely resistant to treatments, whether antiretrovirals or antibiotics. This resistance leads to medical complications and additional costs. Between 2025 and 2050, antimicrobial resistance (AMR) could directly cause more than 39 million deaths worldwide[41]. The economic impact of increased AMR alone (without investment in innovation or new treatments) is estimated at more than US$2 trillion by 2050[42]. AMR directly threatens the overall effectiveness of healthcare systems, and is therefore a global public health issue.

These combined threats risk erasing the hard-won progress made over the last few decades. It is essential that the European Union commits to reversing this deadly trend and puts science and international health cooperation back at the service of eradicating these diseases. They continue to claim, threaten, or disrupt the lives of far too many people, even though tools to eliminate them exist or are within reach - provided adequate investment is ensured.

34 https://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2825%2901186-9/fulltext
35 https://www.france24.com/fr/info-en-continu/20250317-la-vie-de-millions-de-personnes-menac%C3%A9e-par-les-coupes-dans-l-aide-am%C3%A9ricaine-selon-l-oms
36 https://www.nytimes.com/2025/03/02/health/usaid-cuts-deaths-infections.html
37 https://www.ghadvocates.eu/eu-health-oda-at-its-lowest-level-in-five-years-a-worrying-decline/
38 https://www.unaids.org/en/resources/fact-sheet
39 https://www.ghadvocates.eu/global-tb-rd-funding-below-global-commitments/
40 https://cdn.who.int/media/docs/default-source/malaria/world-malaria-reports/world-malaria-report-2024-global-briefing-kit-eng.pdf?sfvrsn=affbbec7_7&download=true
41 https://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2824%2901867-1/fulltext
42 https://www.cgdev.org/media/forecasting-fallout-amr-economic-impacts-antimicrobial-resistance-humans

Recommendations

In order to accelerate the elimination of HIV, tuberculosis, and malaria, innovation must remain at the heart of the global response. Recent progress proves that it is possible to act faster and more effectively, but large-scale deployment depends on strategic choices and global cooperation. As a centre for research excellence and a key supporter of multilateralism, the European Union has a vital role to play.

The EU must increase its investments in poverty-related and neglected diseases R&D.

Health research must continue to be supported, particularly in areas with high unmet medical needs and subject to market failures, where private sector engagement is limited. While numerous discoveries have already been made, the development of even more cutting-edge tools is within reach. The vacuum left by the massive withdrawal of US support must not imperil ongoing R&D projects. In particular:

- The EU's future research programme – Horizon Europe/FP10 - must have an ambitious budget of €200 billion, with at least 10% dedicated to health.
- The EU must strengthen R&D collaboration with low- and middle-income countries. Programmes like EDCTP3 have proven to deliver and must be continued in the next budget cycle.
- The EU must guarantee the accessibility and affordability of tools developed using European public funding, by including clear access provisions to EU R&D funding and by facilitating technology transfers.

The EU must reaffirm its support for multilateralism in health.

Millions of lives depend on programmes supported by Global Health Initiatives, including the Global Fund and Unitaid. GHIs have catalysed R&D in response to the most pressing needs. They have made the most effective tools accessible to as many people as possible, particularly to the most vulnerable populations. In particular:

- The EU must increase its support to the Global Fund by pledging €800 million to its eighth replenishment this year.
- The EU future external action instrument – Global Europe – must allocate at least €200 billion to ODA, and ensure health remains a key priority area of international cooperation.

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