Innovation to End the HIV, TB and Malaria Epidemics: Global Fund Accelerating Progress, Focused on Communities

FRIENDS OF THE GLOBAL FIGHT
AGAINST AIDS, TUBERCULOSIS AND MALARIA

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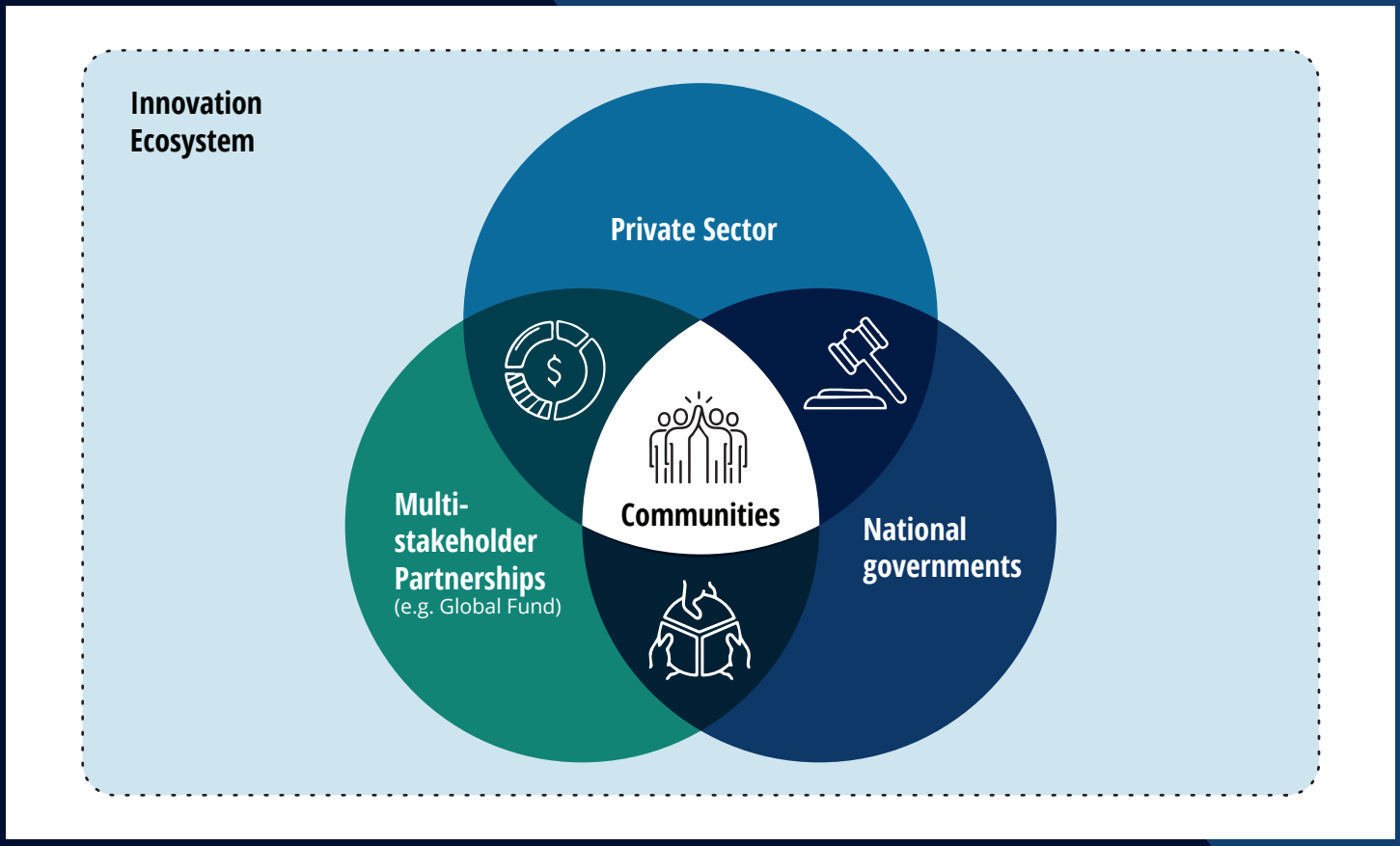


Cover photos: (Left) ARV medications available at the Klinika Eastwood in Quezon City, Metro Manila, Philippines. The Global Fund/Vincent Becker. *(Center Left)* A lab scientist examines samples at the National Health Laboratory and Diagnostic Services in Uganda. The Global Fund/Brian Otieno. *(Center Right)* A community health worker uses a mobile health app at Boane Halth Centre in Mozambique. The Global Fund/Tommy Trenchard/Rooftop. *(Right)* A man uses uses an oral HIV self-testing kit at a field clinic in Sri Lanka. The Global Fund.

Executive Summary

Global health has seen transformative innovations in recent years. Diseases once considered fatal are now manageable, global surveillance and immunization have slowed the spread of pathogens and tens of millions of lives have been saved. Innovation can take many different forms; biomedical innovation that diagnoses, treats or prevents illness faster or cheaper; access or supply chain innovations that allow people access to products; or quality of care innovations that ensures patients get the right care when they need it. However, innovation is only impactful if it is accessible. To drive progress and continue saving lives, *key stakeholders* must collaborate to ensure that new medical innovations reach those who need them most — regardless of income or circumstance.

This report underscores the indispensable role of communities in shaping and delivering innovation, from demand creation to design, testing and implementation.

Communities who are the most affected by diseases are essential to driving effective innovations. Communities understand their needs and the solutions that work best in their specific contexts. Many of the most effective breakthroughs in the fight against HIV, tuberculosis (TB) and malaria have been possible only through their direct involvement. Their firsthand knowledge, lived experience and leadership are indispensable to advancing the fights against the diseases.

The **private sector** is an essential partner in global health innovation. Its value is not limited to funding; the private sector, alone, cannot bridge all funding gaps. Its expertise in, among other things, technology, research and supply chain management, make it invaluable in accelerating progress. This is true not only at the global level, through the actions of multinational corporations and coalitions, but also at the national level, where local companies working closely with affected communities is one of the most encouraging aspects of recent innovation in global health. The private sector can also play a key role in procurement and durable delivery systems.

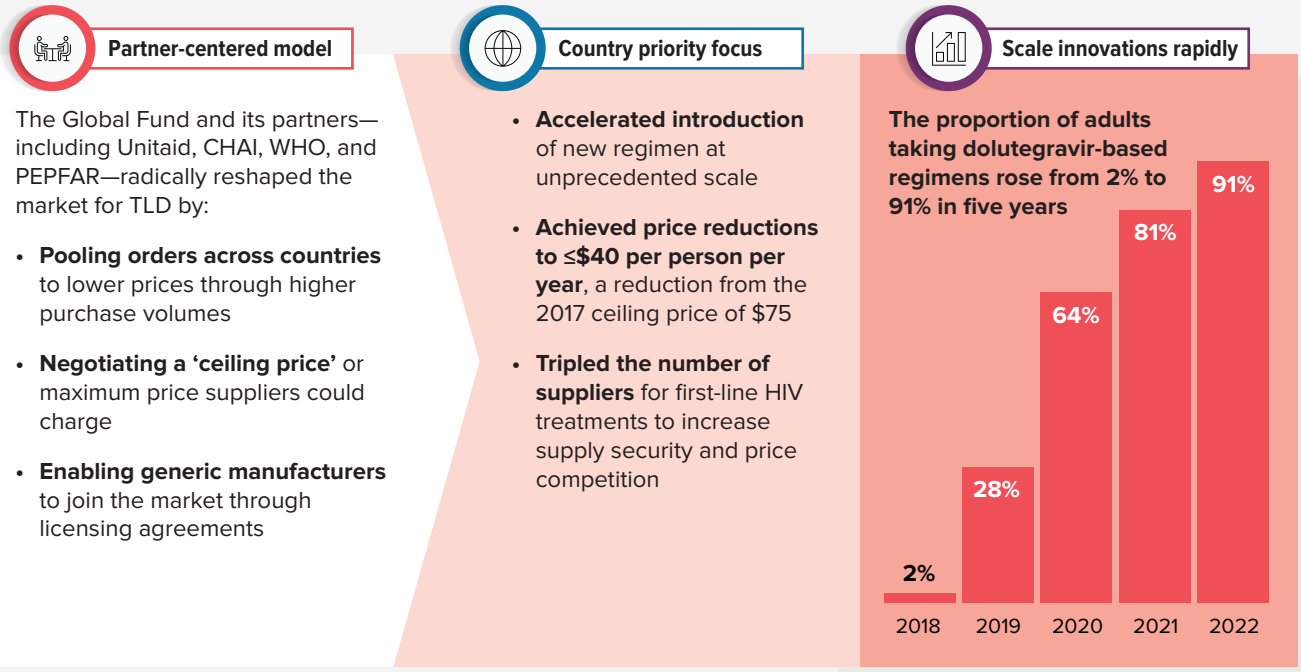
Multi-stakeholder organizations like the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), the Coalition for Epidemic Preparedness Innovation (CEPI) and Unitaid are essential to scaling up innovation. A partnership of governments, civil society, the private sector and technical agencies, the Global Fund is a cornerstone in the global health response, financing programs that save millions of lives and fostering significant health improvements for the world's most vulnerable populations. The Global Fund finances networks and community partners across low- and middle-income countries (LMICs) in areas where the disease burden of HIV, TB and malaria is high and national resources are constrained. Beyond the three diseases, the Global Fund has also been instrumental in contributing to progress in areas ranging from human rights and gender equality to antimicrobial resistance, among others.

In November 2024, Friends of the Global Fight Against AIDS, Tuberculosis and Malaria, in partnership with the Georgetown University Global Health Institute, convened over two dozen experts from the tech and healthcare industries, academia and civil society to discuss the role of innovation and collaboration in ending the three epidemics. This report synthesizes key insights from the convening and interviews with healthcare innovators working alongside the Global Fund. It showcases game-changing advancements in prevention, diagnostics and treatment, alongside critical innovations in access—such as supply chains and laboratory networks. It underscores the indispensable role of communities in shaping and delivering innovation, from demand creation to design, testing and implementation.

Recommended actions informed by this research include:

- Ensuring *communities* are at the center of innovation, setting the priorities and collaborating on the design of interventions so that new health technologies are well aligned with their needs, highly effective and accessible to all.
- Engaging a broad set of *multisectoral stakeholders*—at the local and global level, as well as in the private sector—in the identification, scale-up and utilization of innovations.
- Ensuring national governments are investing in innovations.
- Incentivizing the private sector to develop new and innovative approaches to addressing global health challenges.
- Fully funding the Global Fund for optimum impact in incentivizing innovation, bringing new technologies to market and ensuring they are accessible to those who need them most—accelerating an end to three epidemics.

Figure 1. Example of the Global Fund's market shaping efforts: TID (Tenofovir/lamivudine/Dolutegravir), an HIV medication which rapidly suppresses the virus and has fewer side effects and a high barrier to resistance.



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I. Market Shaping: The Global Fund's Role in Increasing Access to Innovative Healthcare

As the largest international financier of global health programs in LMICs, the Global Fund uses a set of interventions to make health products more affordable, accessible and reliable in the countries where it operates. Using an approach known as market shaping, the Global Fund fosters partnerships with countries, funders and product developers to remove market barriers and help get tools into the hands of the communities that need them—and incentivize more innovation.

The Global Fund's market shaping activities address:

- **Affordability and pricing models:** Affordable pricing is critical to ensuring broad access to healthcare innovations. The Global Fund negotiates low prices through bulk purchasing agreements and voluntary licensing mechanisms, enabling LMICs to access critical medicines and diagnostics at significantly reduced costs. It also enables countries to procure lifesaving medicines and other health products efficiently and effectively through tools such as its procurement platform, wambo.org, which allows implementing countries to compare prices on commodities and equipment readily.
- **Purchasing power and commitments:** Strategic purchasing commitments from major global health entities like the Global Fund and the President's Emergency Fund for AIDS Relief (PEPFAR) guarantee a market for manufacturers, encouraging production and ensuring steady supply chains.
- **Demand creation:** Generating demand for new technologies is essential for widespread adoption as well as continued innovation and production. Through partnerships with local governments and community organizations, the Global Fund fosters awareness and encourages the use of innovative healthcare tools.
- **Adapting delivery and access systems:** Through its deep investments in health systems, including community health workers and other human resources, the Global Fund is able to support countries' scaled adoption and access to new technologies.
- **Driving next generation innovation:** Through its partnership model, the Global Fund creates investment opportunities that help catalyze private sector funding, multiplying investments to accelerate access to cutting-edge solutions.

Adding to its market shaping, the Global Fund has created catalytic funds with private sector partners to drive innovation and capacity-building. These include the Digital Health Impact Accelerator[1] (DHIA); the Labs Systems Integration Fund[2] (LSIF) with the Rockefeller Foundation, IQVIA and the Abbott Fund; and the Africa Frontline First (AFF) Catalytic Fund[3] for community health workers' capacity with the Johnson & Johnson Foundation and the Skoll Foundation.

Photo: GeneXpert machine at a laboratory in Moldova. The Global Fund/Vincent Becker.

"True innovation is most successful when it's developed, implemented, championed and shared by the countries themselves—even more so when the experts, clinicians, laboratorians, patients and communities are at the heart of those innovations."

– Patrick Royle, Lead of Laboratory Systems and Health Security Catalytic Initiatives at The Global Fund.

Involving Communities

The Global Fund and its partners work closely with communities to ensure that innovation is effectively developed and deployed to meet their needs. A key component of the Global Fund's approach is empowering community health workers, who often serve as the first point of contact for healthcare in underserved regions. By training and equipping these workers, the Global Fund strengthens local healthcare systems and improves the efficiency of supply chains in hard-to-reach areas. Community-based organizations also play a vital role in monitoring access to health products and services. This community-led accountability ensures that market shaping efforts remain focused on increasing global access. In addition, the Global Fund supports community-based distribution models—such as local health centers or peer-to-peer networks—that ensure even the most remote communities can access life-saving treatments and other innovations.

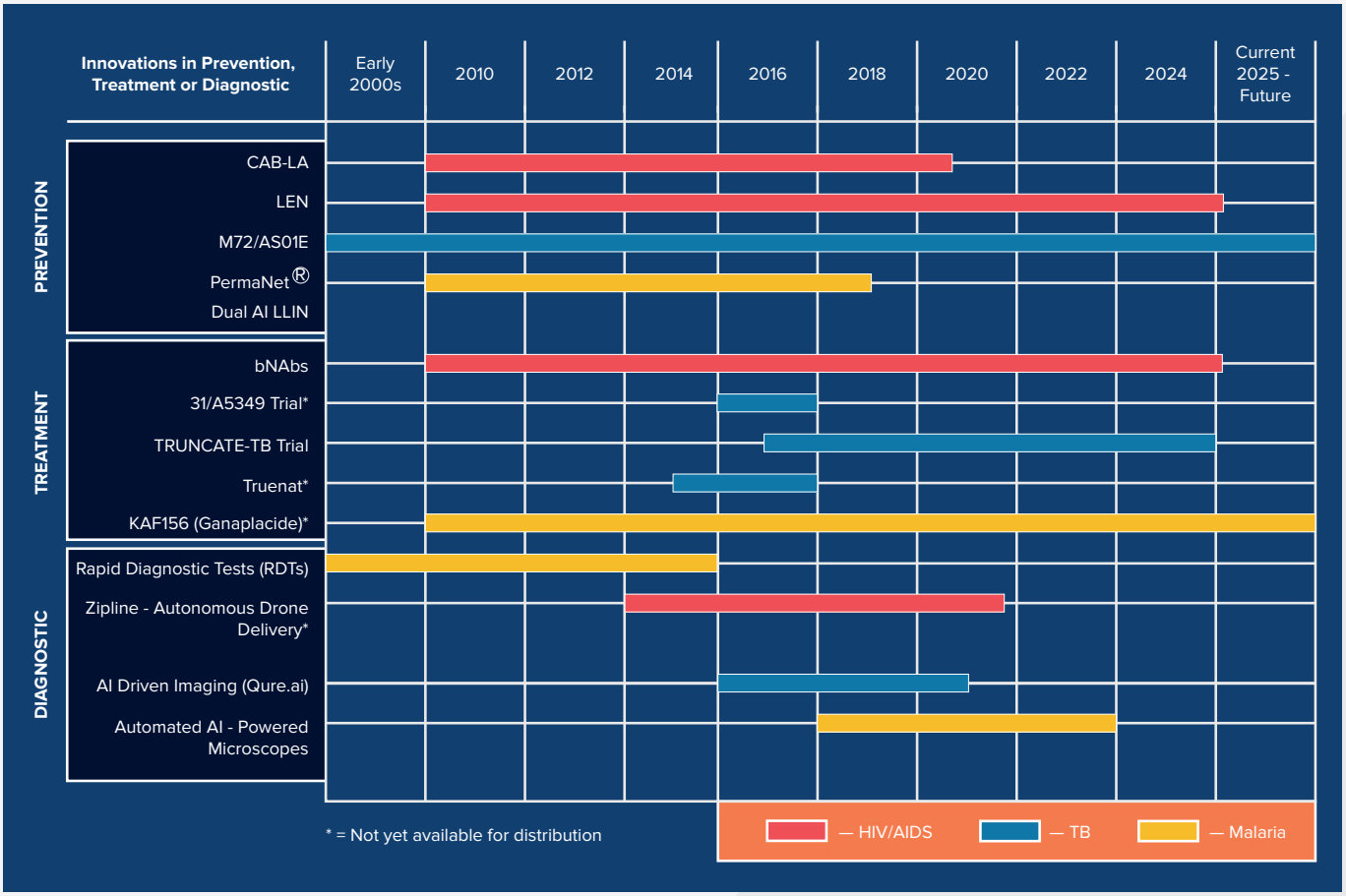
Figure 2. Snapshot of HIV, TB and Malaria innovations covered in this report

	HIV	TB	Malaria
Prevention	Gilead trial evaluating lenacapavir Cabotegravir Dapivirine Vaginal Ring (DPV-VR)	M72/AS01E vaccine	Dual ingredient insecticide-treated nets
Diagnostics	Zipline — autonomous drone delivery	AI-driven imaging (Qure.ai)	Automated AI-powered microscopes
Treatment	Broadly neutralizing antibodies (nNAbs)	Shorter treatment regimens •31/A5349 trial — 4-month regimen •TRUNCATE-TB trial — 2-month regimen Digital health tools (smart pilloboxes, video observed therapy, mobile apps)	Novartis drugs in development •KAF156 (Ganaplacide) •KAE609 (Cipargamin)

Note: This list is not intended to be exhaustive, as new innovations are continuously under development.

Photo: Champa Tikadar (third from left), a community health worker, poses with members of her village in Bangladesh. Champa and her cohort – supported by the NGO BRAC and trained by Bangladesh's National TB Program (NTP), both Global Fund partners – teach friends and neighbors to recognize TB symptoms, collect sputum samples for testing and provide TB medicine for up to six months to those who test positive. The Global Fund/Vincent Becker.

Figure 3. Innovations timeline



"The Global Fund has been instrumental in enabling such a huge, fast scale-up for the manufacturing and deployments of these nets. This is a relatively new thing in this space ... and that's enabled us to make these big investments in expanding capacity, knowing that the demand would be there."

- Amar Ali, Vestergaard CEO

II. Innovations in Prevention

New approaches and groundbreaking innovations in the fight against HIV, TB and malaria—such as vaccine development, genetic engineering and pharmacology—are transforming how these diseases are prevented.

While a new malaria vaccine has rightly recently received significant policymaker and media attention[4], it's not the only innovation showing promise for combatting transmission of the disease. Cutting-edge gene-drive research, including projects like Target Malaria[5] funded by the Gates Foundation, aims to modify mosquito populations to curb malaria transmission. Similarly, Oxitec's bioengineered male mosquitoes, which have been released in controlled trials in the Florida Keys, aim to significantly decrease mosquito populations and, in turn, the transmission of malaria, while ensuring environmental safety.

Meanwhile, innovative TB vaccine candidates hold promise for preventing the spread of multidrug-resistant strains. And breakthroughs in pre-exposure prophylaxis (PrEP), along with long-acting injectable antiretroviral treatments, are offering more accessible and effective measures to prevent HIV transmission.

Community Informs a Simple, Yet Effective, Malaria Innovation

SC Johnson's Guardian was designed expressly to meet the needs defined by the communities that use it to repel insects, vectors of malaria. This seemingly simple solution—a spatial repellent designed to hang on a wall for up to a year—was created in response to the community's desire for something that didn't interfere with their daily lives.

As Thomas Putzer, Head of the Healthier World Group in the Office of the Chairman and CEO at SC Johnson, said: "We heard things like 'I don't want malaria, but it's just a way of life for us. I have to feed my family, I have to come up with money to send my children to school. I have enough things to think about. Malaria is just one of the issues I'm dealing with.' This was intentionally designed; just hang it up and you don't even think about it, you don't interact with it at all. It just works."

The design was also informed by the needs of community health workers, as it is easy to distribute. Manufacturing, too, was intentionally based on the needs of the community, with facilities located close to epicenters of the disease.

Dual Active-Ingredient Mosquito Nets

Dual active-ingredient long-lasting insecticide treated mosquito nets, or "dual AI LLINs," represent a significant advance in the fight against malaria. Unlike traditional insecticide-treated nets, dual AI nets combine two different active ingredients to combat mosquito populations and address the growing problem of insecticide resistance due to mosquito adaptation.[6] The World Health Organization has issued a strong recommendation[7] for the deployment of dual AI nets in areas with insecticide resistance, as they offer superior efficacy compared to standard nets. Studies in Africa[8] have shown that dual AI nets can reduce malaria incidence by up to 50%, especially in regions with widespread pyrethroid resistance.

While breakthroughs like malaria vaccines are promising, they will take time to develop, test and distribute at scale. Innovations that enhance existing interventions, like dual AI nets, can be deployed rapidly using established supply chains and infrastructure to accelerate impact and ensure affordability and accessibility for communities.

The Global Fund has been instrumental in scaling up the deployment of dual AI nets. Through initiatives like the New Nets Project, the Global Fund worked collaboratively with communities, manufacturers and governments to ensure the development and distribution of nets. Between 2019 and 2022, the New Nets Project and the Global Fund supported the deployment of 56 million mosquito nets in 17 countries across sub-Saharan Africa, saving an estimated 25,000 lives.[9]

More recently, the Global Fund teamed up with Vestergaard, headquartered in Switzerland, to secure better prices for over 65 million of its patented PermaNet® Dual AI LLINs by utilizing a new operating model and a multi-year volume guarantee agreement. This financial mechanism uses the advanced market commitments which are noted above. This provides a useful example of how volume guarantees can be used to drive more affordable access to next generation prevention tools, as well as how volume guarantees help reduce production complexity and improve responsiveness, leading to additional cost savings across the supply chain.

The Dapivirine Vaginal Ring

The Dapivirine Vaginal Ring[10] (DPV-VR) offers women a discreet and long-acting HIV prevention option. The ring works by releasing Dapivirinean, an antiretroviral (ARV) drug that helps prevent HIV from replicating cells, into the vagina. Researchers actively engaged with women's communities[11] to understand their needs and concerns regarding HIV prevention options, which informed the development of the ring. In fact, the inclusion of pregnant women in the first of the three clinical trials (the Purpose 1 trial) came at the explicit demand of the communities consulted through the clinical design trial process. As noted in the New York Times:

> *"The Purpose 1 trial is unusual for the young age of the participants, who were between 16 and 25, and for the fact that it enrolled pregnant and lactating women and kept women in the trial if they got pregnant. While pharmaceutical companies have historically been reluctant to test drugs in those groups... community participants were adamant that this trial must include those most at risk of new infection—that is, sexually active late-adolescent girls."*

While daily oral HIV pre-exposure prophylaxis (PrEP) is more effective at preventing HIV infection, it is not a viable option for some women, and many have said they prefer to use the ring.[12]

The tool was originally developed by the International Partnership for Microbicides[13] (IPM) through a license from Janssen Pharmaceutical Companies and Johnson & Johnson Global Public Health. While the ring is currently approved for use in 11 African countries, it is currently only available in six. To help broaden its availability and lower costs, in 2024, the Children's Investment Fund Foundation (CIFF) partnered with the Global Fund on a $2 million initiative[14] to purchase approximately 150,000 DPV-VRs in countries that implement Global Fund grants. This partnership, known as an early market access vehicle, is supporting early procurement of the ring, helping to minimize risk for manufacturers, accelerate regulatory approvals and encourage other funders, governments and organizations to scale up investment in the ring to facilitate early access for users. The initiative is expected to lower costs for the ring from $12.8 per month to roughly $5 per month and broaden its availability to at least two more countries.

Photo: In Cameroon, midwife Emily Otondo provides a pregnant woman with a dual AI mosquito net and preventative medicine to help protect her from malaria throughout her pregnancy. The Global Fund/Vincent Becker.

Long-Acting Injectable Antiretrovirals

Long-acting injectable drugs represent extraordinary promise in the fight against HIV. Cabotegravir Long-Acting (CAB-LA) and the more recently developed Lenacapavir (LEN) are potential game changers in the reduction of new HIV infections. They are also innovations making a significant impact in terms of treatment, as noted later in this report.

CAB-LA received approval from the U.S. Food and Drug Administration (FDA) in late 2021, becoming the first long-acting injectable option. Previously, PrEP required a single pill every day to prevent HIV infection, but CAB-LA is an injection which can be taken every two months. The Global Fund is helping to ensure widespread availability of CAB-LA in LMICs. For example, the Global Fund worked with ViiV Healthcare on a voluntary licensing agreement[15] to facilitate affordable access to the drug, allowing generic versions to be produced and helping to lower the drug's cost significantly in lower-income countries.

LEN provides an even longer-acting option, requiring an injection only every six months. The drug showed such remarkable results—100% efficacy among women—in its 2022 PURPOSE trial[16] that the independent Data Monitoring Committee recommended stopping the blinded phase of the trial and offering open-label use of the drug to all participants. The Global Fund, PEPFAR, CIFF and the Gates Foundation recently announced a coordinated effort[17] to provide affordable and nondiscriminatory access to LEN rapidly once it receives regulatory approval and a positive WHO recommendation for programmatic use.

Next Generation TB Vaccines

Although the Bacille Calmette-Guérin (BCG) vaccine, developed over a century ago, is still widely used to protect infants and children against severe TB, it offers limited protection for adults and adolescents who are at the greatest risk of transmitting the disease. To address this gap, several promising candidates for next-generation TB vaccines are now advancing through clinical trials.

A particularly notable candidate, the M72/AS01E vaccine, has demonstrated a 50% reduction[18] in the risk of active TB disease among individuals with latent TB infection. Welcome Trust and the Gates Foundation are working together to fund a Phase III clinical trial for the vaccine, which will cost an estimated $550 million. The Global Fund complements these efforts by working with governments, communities and technical partners to ensure that the infrastructure and financing needed to roll out new TB vaccines at scale are in place once they become available.

Photo: Carolyne takes her antiretroviral treatment. Through support from the Global Fund, Carolyne and her fellow peer educators will reach 20,000 HIV positive adolescent girls in five countries in sub-Saharan Africa. The Global Fund/Saiba Sehmi.

III. Innovations in Diagnostics

In recent years, significant advancements in diagnostic technologies have transformed the ability to detect diseases, particularly in resource-limited settings where the burden is highest. For TB, new tools like Truenat, a chip-based, real-time PCR (polymerase chain reaction) test for detecting *Mycobacterium tuberculosis* and rifampicin antibiotic resistance, are bringing rapid, point-of-care diagnostics to communities where conventional laboratory-based tests are impractical.

A recent study in Nigeria[19] demonstrated the success of Truenat in providing reliable, same-day results, strengthening efforts to detect drug-resistant TB earlier and initiate appropriate treatment. Similarly, cutting-edge technologies such as CRISPR-based TB detection—which uses gene editing equipment to find genetic sequences specific to the disease—are emerging as highly sensitive and cost-effective tools, offering the potential to revolutionize detecting TB DNA16 quickly and accurately, even in low-resource settings.

For malaria, innovations in rapid diagnostic tests (RDTs) have improved case detection and surveillance, while new molecular techniques are enhancing the ability to identify drug-resistant malaria strains.[20] In the fight against HIV, point-of-care tests, including integrated antigen-antibody assays and molecular diagnostics, are driving earlier detection and treatment initiation, especially in hard-to-reach populations.[21]

BOX 1.
Self-testing is a critical tool for diagnosing and treating HIV. And the private sector is helping to increase its availability in multiple ways.

Smart phones, nearly ubiquitous even in remote areas of the world, can help ensure self-testing is accessible to more people, regardless of their location. One example is the SMARTtest app,[22] which is making HIV testing more portable, affordable and accessible, especially in areas with limited healthcare infrastructure. By using a dongle connected to a phone, combined with an existing blood-based rapid HIV and syphilis test (the INSTI Multiplex®), individuals can learn whether they are infected within one minute.

Between 2020 and 2023, the Global Fund scaled up HIV self-testing in seven countries in its portfolio with $25 million in catalytic funding from the Children's Investment Fund Foundation (CIFF). This catalytic funding led to a $110 million investment across all countries in the Global Fund portfolio. This represents a seven-fold increase in the Global Fund's investment in HIV self-testing over previous years. The procurement of self-test kits in these seven countries has also increased markedly, from about 950,000 in 2020 to more than 17 million by the end of 2023.[23]

Photos: (Top) A woman in Georgia uses a mobile app to track her TB treatment and receive video supported therapy. The Global Fund. *(Bottom)* HIV oral self-testing kit. The Global Fund.

Drone-Delivered Tests for Youth Bolster HIV Care

As HIV continues to disproportionately impact young people in many parts of Africa, innovative solutions are urgently needed. A groundbreaking partnership between the Elton John AIDS Foundation and Zipline,[24] the world's largest drone delivery service, is transforming HIV care across countries in Africa. Merging the Elton John AIDS Foundation's decades of advocacy and implementation expertise with Zipline's cutting-edge drone technology, this initiative brings life-saving testing, prevention and treatment to unconventional locations in an effort to meet young people where they are–overcoming longstanding logistical challenges, cost barriers and fears of stigma.

"In many countries, HIV prevalence rates among young adults are rising partly because this group is not going to clinics for testing or treatment," explains Dr. Lindsay Hayden, Young People Portfolio Lead at the Elton John AIDS Foundation.[25] "To address this challenge, we had to understand the target audience deeply and develop a whole new kind of intervention. Zipline worked closely with universities and community-based organizations that are youth-led or youth-focused to map out the social networks and behaviors of young people. This collaborative approach helped us pinpoint the best ways to reach young people how and where they feel most comfortable."

Since the partnership began, over 105,000 young people in Kenya have been screened for HIV and received preventative care, and more than 8,331 high-risk individuals have started PrEP.[26] This community-based outreach model has proven far more effective, reaching 27 times more high-risk youth than traditional, facility-based approaches and ensuring reliable access to HIV services.

Looking ahead, the Elton John AIDS Foundation and Zipline plan to expand this partnership further, reaching community antiretroviral treatment (ART) refill groups, private pharmacies and eventually individual households. As the global health funding landscape shifts, Zipline and the Foundation remain committed to adapting, ensuring HIV supply chains continue providing patients with life-saving treatment.

"We looked to work with organizations re-imagining the traditional health clinic focused paradigm, who could help us bring services to young people in appealing, cost-effective and truly scalable ways. Zipline is a prime example of what can be done, particularly when you start to integrate some of the private sector thinking into this arena." – Dr. Lindsay Hayden, Young People Portfolio Lead, Elton John AIDS Foundation

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– Dr. Lindsay Hayden, Young People Portfolio Lead, Elton John AIDS Foundation

"Don't only wait for new innovations to come. There are many innovations available right now. Let's actually scale them up and reap the benefit now."

—Dr. Shibu Vijayan, Chief Medical Officer for Global Health, Qure.ai

AI-Driven TB and Malaria Diagnostics

AI-driven imaging is transforming TB diagnosis by enabling faster, more accurate detection of TB-related abnormalities, particularly in regions with limited access to radiologists and diagnostic infrastructure. Traditional TB screening often relies on chest X-rays, which require skilled personnel to interpret, leading to critical delays in diagnosis—especially in rural or resource-limited settings. AI technologies are addressing these challenges by automating the interpretation of X-ray images.[27]

AI technology has also improved TB screening capacity and case notification in the private sector, including medicine vendors close to the communities in need. The Mobile Application for TB Screening (MATS) helps healthcare providers, even with limited clinical experience with TB, to identify presumptive TB cases and refer them for testing at official diagnostic centers. Developed by PharmAccess[28] in partnership with the National TB program in Nigeria, MATS links facilities with community-based units and increases the contribution of the private sector to TB case notification, which has increased from 14% in 2019 to 26% in 2020.[29]

Qure.ai is a health-tech company headquartered in Mumbai that has deployed its TB screening software in 90 countries around the world, including India, the Philippines, Haiti and Nigeria. Qure.ai uses AI algorithms to analyze chest X-rays and identify potential TB cases in a matter of minutes. In rural areas, where diagnosis turnaround time has traditionally taken up to 1.5 months due to logistical and personnel constraints, Qure.ai's technology has shortened the process[30] to just one week. This enables earlier treatment initiation, which is critical for improving patient outcomes and curbing TB transmission.

The Global Fund is working with Qure.ai and Siemens Healthineers, a German medical technology company, to speed up the adoption of AI in chest X-rays screening for TB. They will provide free software licenses and train healthcare workers as AI processes are integrated into their workflows. The initial phase of this partnership is in the Philippines, a country that ranks fourth worldwide in tuberculosis incidence. About one million Filipinos have active tuberculosis, and nearly 70 Filipinos die every day from this curable disease.[31]

AI is also being used to expedite malaria diagnoses. Whereas traditional microscopy involves time-consuming, labor-intensive examination of blood smears by trained technicians, AI-powered microscopes leverage machine learning algorithms to analyze blood samples within minutes, significantly reducing diagnostic turnaround times.

Research conducted at University College London Hospitals found that AI-powered automated microscopes identified malaria parasites with an 88% diagnostic accuracy rate[32] relative to human microscopists. Several pilot programs have demonstrated the utility of AI-powered microscopes in Africa and Southeast Asia. With continued investment, research to determine whether the microscopes work accurately, reliably and as intended, these tools have the potential to revolutionize malaria diagnostics globally.

IV. Innovations in Treatment

From groundbreaking therapies to novel digital tools, innovations are addressing challenges in treatment such as adherence, drug resistance and accessibility. For HIV, long-acting injectables, including cabotegravir and lenacapavir, are redefining care by offering sustained viral suppression with less frequent dosing, enhancing convenience and patient adherence. Meanwhile, malaria treatments are benefiting from new antimalarial compounds and resistance-proof combinations, and TB therapies are being streamlined with shorter, more effective regimens.

Combating Drug Resistance

To combat drug-resistant strains of Plasmodium falciparum that threaten progress in malaria control, Novartis is spearheading the development of a number of treatments—each from a new class—and which could conserve the utility of current treatments. These include Ganaplacide/Lumefantrine in Phase III clinical trials for acute uncomplicated malaria and Cipargamin in Phase II clinical trials for severe malaria, as of 2025.

The Global Fund could play a pivotal role in scaling up these and other antimalarial drugs by using market shaping to lower costs and increase access.

Broadly Neutralizing Antibodies

Antibodies play a critical role in defense against infection and disease. A unique type of antibodies—known as broadly neutralizing antibodies, or bNAbs[33]—have been found to recognize and block many strains of HIV from entering healthy cells and may help proactively destroy HIV-infected cells. Discovered in people living with HIV who demonstrated a particularly strong immune response, bNAbs are now being studied as an alternative to antiretroviral therapy (ART). Robust research is underway to investigate bNAbs not only for their therapeutic potential, but also for prevention and even a cure. The International AIDS Vaccine Initiative, in collaboration with ViiV Healthcare and other partners, is running several clinical trials including PAUSE (Pausing Antiretroviral Treatment Under Structured Evaluation), ACACIA (Antiretrovirals Combined with Antibodies for HIV-1 Cure in Africa) and AMP (Antibody-Mediated Prevention).[34]

“These new treatments could really be game changers in the fight against resistance, but will come to the market at a higher cost than the existing standard of care which is highly genericized. Significant investment is needed to make these innovative treatments affordable to the countries and individuals that need them the most.”

– Dr. Nekoye Otsyula, Medical Affairs Director, Novartis

BOX 2.
ARTISTRY-1

The ARTISTRY-1 clinical trial by Gilead Sciences is a once-daily oral regimen combining bictegravir and LEN for people living with HIV who have been on complex ART regimens that require multiple pills or injections daily. Nearly all trial participants maintained virologic suppression, and the medication was well-tolerated, with minimal adverse events and low discontinuation rates.[35]

Shorter Treatment Regimens

TB has long been known for its challenging treatment regimens, often requiring patients to adhere to months of daily medication. However, the standard treatment for drug-susceptible TB has been reduced from 16 to just four months,[36] significantly easing the burden on patients and healthcare systems. Similarly, treatment for drug-resistant TB, which once required up to four years of complex therapy, has been reduced to as little as six months thanks to the development of new, more effective drug combinations.[37]

These breakthroughs are crucial in addressing the global TB crisis, as longer treatments can lead to lower adherence rates, once patients feel better, and higher risks of resistance. Momentum is building, with 29 drugs or combinations in clinical trials for TB treatment, in addition to 34 drugs being explored for the prevention of TB infection.

The Global Fund plays a critical role in ensuring that these promising new treatments reach patients in need. In 2024, it partnered with the Stop TB Partnership[38] to scale up the delivery of innovative, shorter and more effective TB treatments. This collaboration leverages each partner's funding, policy advocacy and expertise to ensure that these potentially game-changing new drugs and regimens are accessible to the millions of people with the greatest risk and need.

Digital Health Tools for Treatment Adherence

Innovations in digital health tools can provide more personalized, accessible and efficient care. For example, new mobile apps for monitoring and support are proving particularly useful in rural and resource-limited settings. Smart pillboxes can now track when a pill is taken, alert patients if a dose is missed and send notifications to caregivers or healthcare providers. And video observed therapy (VOT) adapts traditional directly observed therapy (DOT)[39] by allowing patients to use devices to record themselves taking TB medication under healthcare worker supervision.

Photo: Pauline Bimbamba, community health worker, opens the CommCare app on her phone to help manage health profiles for people in her community. The Global Fund/ Olympia de Maismont.

V. Additional Innovations Addressing Access Challenges

The fight against HIV, TB and malaria hinges not only on the development of groundbreaking healthcare technologies, but also on ensuring that these innovations reach the people who need them most. Communities are helping to inform innovative strategies to overcome these barriers to help ensure the most widely accessible distribution of healthcare technologies:

- **Cross-cutting supply chain innovations:** The private sector can play an important role in helping to solve the challenge of getting services and treatment to the hardest-to-reach communities. For example, the Global Fund has partnered with Coca-Cola and Project Last Mile[40] since 2010 to apply private-sector logistics expertise to the healthcare sector. By improving transportation, storage and distribution systems, this partnership helps ensure that medicines and supplies are available.
- **Data-driven supply chain management:** Tracking demand with robust data systems has been revolutionizing supply chain operations. For example, by leveraging real-time data, the Global Fund and its partners are anticipating needs, avoiding stock-outs and ensuring that resources are deployed effectively. Learn more in Friends' report, Digitizing Healthcare Demand and Supply in Africa[41].
- **Diagnostic Network Optimization (DNO):** Advanced analytics and logistics planning, including strategically placed laboratories and diagnostic facilities, are enhancing diagnostic networks. In Uganda, DNO has shortened diagnostic turnaround time in some cases by over 50%,[42] observes Patrick Royle, Lead at The Global Fund's Laboratory Systems Integration Fund. "These system design approaches and innovations bring services closer to key patient populations, ensuring that we remove at least some of the structural and logistical barriers to seeking diagnosis," says Royle.
- **Laboratory innovation:** The Global Fund, through its Laboratory Systems Integration Fund, is supporting innovation in laboratory systems, including the introduction of advanced diagnostic technologies and the integration of lab services into broader healthcare frameworks to improve accuracy and efficiency.

Photo: A worker at the national warehouse in Abuja, Nigeria, inspects a delivery of malaria medicine. Supply chain transformation is one of the focus areas of the Global Fund's partnership with the Health Finance Coalition. The Global Fund/Aurelia Rusek.

VI. Moving Forward: Scaling Up Innovation for Accelerated Impact

The development and deployment of new prevention, diagnostic and treatment interventions have the potential to transform HIV, TB and malaria outcomes, particularly for the world's most vulnerable populations. However, realizing this potential requires a coordinated, multi- sectoral effort that leverages the strengths of key stakeholders. The private sector plays a crucial role in driving research, technological advancements and supply chain efficiencies that make medical breakthroughs possible. Communities are at the heart of effective innovation, ensuring that new tools are not only developed, but also adopted, trusted and effectively implemented where they are needed most. Multistakeholder organizations like the Global Fund are indispensable in scaling these innovations, mobilizing resources and ensuring equitable access, particularly for the most vulnerable populations.

To accelerate impact, it is essential to:

- **Ensure that communities lead the way.** Community members understand best the social, behavioral and stigma-based challenges to access surrounding the development, rollout and real-life, effective uses of new healthcare technologies. Not only is their participation essential, but they must be drivers and key implementers for the lifesaving impact of innovations to be realized. *The private sector should scale up work with communities to develop, deploy and build demand for innovations. The Global Fund's emphasis on communities should be further deepened in its Board-approved budget and its practice.*
- **Facilitate participatory dialogue, decision-making and action.** Civil society and affected communities, the technology and healthcare industries, public health officials, donors and key international partners must all be engaged in efforts to identify, scale up and effectively utilize healthcare innovations. *The Global Fund is a high-value, results-focused catalyst for this open approach to driving innovation's impact, which other global health institutions and programs should leverage.*
- **Focus on access.** Efforts to incentivize, design, deploy and implement innovations to fight HIV, TB and malaria must focus on strategies to allow affordable, unimpeded access to innovations. *National governments, donors and, importantly, private sector innovators themselves need to prioritize access, necessitating robust use of the Global Fund as a vital vehicle for collaboration on access.*
- **Accelerate national leadership.** National responsibility in LMICs must include civil society buy-in and government investment. Many LMICs already invest significant resources to fight the three diseases. For example, a recent UNAIDS report[43] shows that many countries are contributing 50% of the total amount mobilized for their own national HIV/AIDS responses. In November 2024, the Global Fund Board approved significant policy enhancements[44] of the Global Fund's ability to mobilize new resources from LMICs and help more countries transition to self-sufficiency. *Facilitated by international partners, national leadership must grow, prioritize and invest in effective use of innovations.*

The future of healthcare innovation for HIV, TB and malaria is promising. But innovation in and of itself will not end the three diseases as public health threats. New tools and approaches must be accessible to everyone, leaving no one behind.

"We need to make sure these breakthroughs are available to the communities that need them the most."

— Sandeep Dahiya, Akkaway Professor of Entrepreneurship and Director of Initiative on Business of Health at Georgetown McDonough School of Business.

- **Incentivize private sector focus on global health challenges.** The private sector must continue to focus on health challenges facing LMICs—challenges which can only be overcome with dynamic development of more effective technologies. *LMIC governments, donors and international partners should incentivize the private sector through financing that stimulates research and development. The Global Fund should further broaden what LMICs can buy in its pooled procurement platform and expand volume guarantees.*
- **Invest in the Global Fund.** To leverage its comparative strengths, sustain the marked progress made over the past two decades and reach the goal of ending AIDS, TB and malaria as public health threats, *the Global Fund must be fully resourced for 2026-2028 by donors in its eighth replenishment in 2025.*

The future of healthcare innovation for HIV, TB and malaria is promising. But innovation in and of itself will not end the three diseases as public health threats. New tools and approaches must be accessible to everyone, leaving no one behind. Success hinges on collaboration among stakeholders, with communities at the center. Plans for the widest, nondiscriminatory access need to be established *before* bringing an innovation to market. By fostering innovation, access *and* community, we can accelerate medical advances and ensure they reach the people and places where they are most needed.

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