### Artificial intelligence to enhance HIV prevention in age of disruptions

Artificial intelligence is no longer just on the horizon—it's here, reshaping global health programming with new urgency and potential ... This landmark report - shaped by a consultation hosted by Audere and the Desmond Tutu Health Foundation in March, 2025 explores how to move from crisis to opportunity.

Recommendations from the Audere and Desmond Tutu Health Foundation Expert Consultation









# Why AI and why now?

The global HIV response stands at a precarious crossroads. With U.S. government funding freezes, shifting donor priorities, and geopolitical uncertainty, hard-won gains in prevention and treatment are under threat. signal that global health leaders are beginning to take this shift seriously.



While PrEP scale-up was continuing to accelerate in 2024, overall prevention efforts remain far off track, with new HIV infections continuing to outpace PrEP uptake.<sup>1</sup>

PEPFAR's current funding freeze on HIV prevention, as part of the Trump administration's 90-day foreign aid review, exacerbates this crisis, halting momentum on PrEP scale up precisely when acceleration is most needed.<sup>2</sup>

Amid this turbulence, artificial intelligence (AI) is no longer just on the horizon—it's here, reshaping global health programming with new urgency and potential.

With health systems under strain and human resources stretched thin, Al presents a transformative opportunity to overcome programmatic barriers and fast-track progress toward achieving global targets by 2030.

However, this potential can only be fully realized if AI solutions are designed with community input, prioritize digital equity, and uphold quality and ethical standards, ensuring that innovations serve those who need them most.

In 2024, PEPFAR acknowledged this potential by including AI in its draft country operational guidance, and early in 2025, WHO announced a collaborating center on AI - a signal that global health leaders

are beginning to take this shift

seriously. 34





In HIV care, traditional risk assessment tools have failed to keep pace with the dynamic nature of the epidemic. Al and machine learning can help rethink risk stratification, drawing from richer, community-informed data to better tailor services.<sup>5</sup> At the same time, promising but underutilized platforms—such as pharmacies and mobile delivery—remain untapped opportunities for expanding access, especially when paired with Al-driven tools.

Still, the HIV field is well positioned to lead the integration of AI into health systems with decades of experience in innovation, community-centered design, and task-shifting. What's more, the HIV response operates at a scale unmatched in global health—thanks to robust public-private partner-ships, community-led networks, and established platforms supported by major funders like PEPFAR, the Global Fund, the Gates Foundation and others. These assets offer a unique testbed for responsibly deploying AI technologies in ways that can inform broader health systems, from TB and STIs to primary care and health surveillance.

This landmark report—shaped by a consultation hosted by Audere and the Desmond Tutu Health Foundation in March, 2025—explores how to move from crisis to opportunity. It lays out how smart, ethical, and inclusive AI deployment can help reinvigorate the HIV response, ensure no one is left behind, and build a more resilient health future.







# The value proposition of AI in HIV prevention

Participants in the consultation highlighted the catalytic role AI can play in strengthening and scaling HIV prevention programs, especially amid health workforce shortages, limited funding, and the need for more targeted services. Al and digital tools can optimize HIV prevention by enhancing demand creation, predicting adherence risks, and supporting differentiated service delivery models. By analyzing behavioral patterns, identifying adherence challenges, and tailoring interventions to individual needs, AI can enable programs to align more closely with user preferences. This personalized approach can improve retention, enhance outcomes, and make PrEP services more accessible, efficient, and responsive. Ultimately, integrating AI into HIV prevention has the potential to improve service delivery, expand reach, and accelerate progress toward epidemic control.

Al tools can also help provide information and remote access to services to people who face stigma, enable more precise HIV vulnerability risk stratification, identify individuals at risk of disengagement from care, and optimize the timing and targeting of prevention services. Evidence from electronic medical record (EMR)-based machine learning models shows effectiveness in clinical decision support across the HIV continuum—from PrEP initiation to retention and viral suppression—while also reducing costs and improving resource allocation.<sup>6</sup>

Additionally, AI can automate data collection and analysis, enabling governments and partners to identify gaps, adapt programs in real time, and improve overall efficiency. When collective, scalable solutions are developed and integrated responsibly into donor-supported HIV platforms, AI can support more responsive, differentiated, and equitable service delivery.

A key area of agreement was enhanced HIV program management. Al can support health

workers by handling routine tasks such as initial risk assessments, adherence reminders, and appointment scheduling. This allows staff to focus on more complex aspects of care while maintaining service coverage, especially in areas facing workforce shortages.

Al also supports HIV self-management. Through chatbots, virtual check-ins, and personalized digital reminders, Al-enabled tools can help individuals manage PrEP adherence, navigate side effects, or find nearby services through geo-location. 7 This not only empowers clients but also reduces the burden on frontline workers, making service delivery more sustainable.<sup>8</sup>

Participants also highlighted Al's potential to drive personalized prevention efforts. Al also shows promise in improving risk stratification—a long-standing challenge in HIV prevention.<sup>9</sup> Traditional screening tools often fall short in identifying those who would most benefit from PrEP. Al-based models could help address this gap by using more diverse, real-time data, combined with the confidentiality afforded by Al chatbots, to improve targeting.

On a systems level, AI can contribute to data-informed decision-making through rapid analysis of large-scale datasets, including better forecasting of supply needs, optimizing outreach, and identifying geographic hotspots for intervention. <sup>10</sup> These insights can help programs do more with fewer resources, especially as financial uncertainty grows. Finally, AI was recognized as a potential resilience mechanism-- with the right enabling environment, AI can help provide continuity and efficiency during periods of disruption, such as funding disruptions and staff shortages.





One approach gaining traction is **AI as a digital** coworker



## **Innovative** approaches underway

While AI in HIV programming may still feel new to some, participants highlighted a growing number of innovations already in use or being tested — many of which are helping close gaps in access, workforce capacity, and client engagement. One approach gaining traction is AI as a **"digital coworker."** In several settings, AI tools are already supporting overstretched staff by handling triage, automating documentation, and even providing training and supervision to community health workers. These applications are not about replacing people—they're about extending the reach and effectiveness of existing teams, especially in rural or under-resourced areas.<sup>11</sup>

In low- and middle-income countries (LMICs), AI and telemedicine are transforming how HIV prevention—particularly PrEP—is delivered to those who need it most. AI-powered risk prediction models are now being integrated into clinics to identify individuals most vulnerable to HIV acquisition, helping providers offer PrEP more strategically. These models analyze data from EMR, behavioral patterns, and community-level risk factors, often in real time. Meanwhile, chatbots and virtual counselors are enabling stigma-free education and support, offering users private, judgment-free spaces to learn about PrEP, manage side effects, and ask questions—especially critical for young people and key populations.<sup>12</sup>

Telemedicine has also opened new doors for PrEP access by eliminating the need for frequent in-person visits. In countries like Nigeria and Kenya, clients can start and manage PrEP through video consultations, app-based self-screening, and pharmacy pick-up options. All is further used to forecast medication demand, reducing stockouts and ensuring a stable supply of PrEP at decentralized locations. Together, these tools are making PrEP delivery smarter, more inclusive, and more sustainable—even in resource-constrained settings.

Pharmacies and other community access points are another area of opportunity. While these platforms already play a role in HIV testing and PrEP distribution in some countries, they remain largely limited in scope. There are various reasons for the limited expansion of these options, including restrictive policies, and sometimes, inadequate staffing. Al-enabled tools could enhance these access points – streamlining client intake, flagging high-risk individuals, and enabling follow-up without needing to rely on traditional clinical infrastructure. When coupled with interoperability facilitated through a national digital health architecture, Al also enables the ability to monitor care delivery across diverse access points to ensure consistent linkage to quality care.

Lastly, AI is already being explored as a tool for demand generation. By analyzing trends, preferences, and behaviors, AI can inform more relevant, targeted outreach—especially for younger populations or groups with limited engagement in traditional healthcare systems. Chatbots, SMS campaigns, and social listening tools powered by AI are being piloted to improve awareness and uptake of PrEP and HIV testing services.<sup>13</sup>







### Risk & mitigation strategies for AI in Golbal Health

While Al offers promise in global health, it carries risks that demand attention. Weak data privacy protections - especially in low-resource settings expose sensitive health information. Algorithms trained on biased or non-representative datasets risk deepening existing health disparities.

Opaque "black box" models can undermine trust and make accountability difficult. The absence of clear regulatory frameworks increases the chances of misuse or unintended harm. <sup>14 15</sup>

Many Al tools also ignore real-world constraints like poor internet connectivity, electricity outages, and workforce shortages, limiting their effectiveness and long-term sustainability. Meanwhile, excessive hype can lead to overpromising, pilot fatigue, and a shift in focus and funding - away from proven interventions. <sup>16</sup>

To mitigate these challenges, the global health community must prioritize equity, transparency, and human-centered design. Governance mechanisms, inclusive datasets, and context-appropriate implementation are essential to ensure AI enhances rather than hinders public health outcomes.

Above all, success depends on bridging the digital divide, where high data costs, connectivity gaps, and limited access to devices continue to leave many behind.

# Recommendations for scaling AI in the HIV response

Participants emphasized that it is time for HIV programs to adopt an AI mindset, expressing strong interest in leveraging AI to strengthen prevention efforts and improve outcomes. However, many implementers highlighted the steep learning curve and lack of clear guidance in evaluating AI tools.

The current landscape is complex and fragmented, making it difficult for program leads to identify technologies that are safe, effective, and appropriate for their settings. Building trust in Al solutions requires more than demonstrations—it demands rigorous validation, real time monitoring, real-world testing, and structured community feedback.

Governments and donors—including PEPFAR, the Global Fund, and others—are increasingly open to Al's potential.<sup>17</sup> Yet dedicated funding for Al development, integration, monitoring, and continued innovation in HIV programs across LMICs, particularly in Africa, remains limited. Participants underscored the need to move from broad interest to targeted, intentional, sustained investments in Al research, implementation, and capacity-building tailored to local challenges.

To unlock this potential, focused investment in governance, implementation support, the overall digital health enabling environment, and community-led innovation is essential. The following recommendations are designed to guide stakeholders in advancing AI in HIV prevention programs across LMICs.

#### For HIV Program Managers and Tool Developers

#### 01. Place Communities at the Center of AI Design for HIV:

To ensure AI tools for HIV prevention are effective, trusted, and contextually relevant, developers should meaningfully engage key populations and frontline implementers throughout the entire design and development lifecycle. While co-design is increasingly acknowledged in theory, the systematic inclusion of communities in the vetting and validation of AI tools remains insufficient in many formal processes. Prioritizing community input alongside technical validation is essential to addressing real-world barriers, fostering trust, and aligning with the growing emphasis on community-anchored program sustainability championed by major donors. This inclusive approach not only enhances the relevance and equity of AI-powered solutions but also extends the longevity and impact of associated investments.

#### **02.** Advance Digital and AI Literacy for Inclusive Participation:

Programs should prioritize AI literacy across key populations, health workers, civil society organizations (CSOs), and government stakeholders. Building the capacity of these groups to actively participate in the design, development, monitoring, and regulation of AI tools—and, critically, to select, use, and govern them—will be essential for sustainable, country-led integration of AI into health systems.

#### **03.** Strengthen Data Privacy and Consent Protocols:

Al-driven tools must adhere to robust consent protocols and stringent data protection standards—particularly when engaging with criminalized or marginalized populations.<sup>18</sup> Equally important is ensuring that individuals are clearly informed about how their data are collected, used, stored, and who has access to their personal information. Transparent communication and accountability are foundational. Adapting global data governance frameworks to local contexts is critical for fostering long-term trust and safeguarding rights.





## O4. Empower Frontline Workers with Al Support: Al should not only augment human decision-making, but also explicitly enhance the efficiency of frontline health workers and improve care delivery outcomes. Al tools for health should follow an iterative approach rooted in rapid evaluation and real-time course correction. Crucially, Al is meant to support—not replace—human judgment. For instance, automated risk assessments should be complemented by peer or provider verification to ensure that interventions remain contextually appropriate, responsive, and grounded in human understanding. O5. Integrate Al Seamlessly into Health Systems: Al solutions should align with national digital health architectures, be built on open standards, and remain adaptable across diverse country contexts. Transparent monitoring and reporting on Al performance and

Al solutions should align with national digital health architectures, be built on open standards, and remain adaptable across diverse country contexts. Transparent monitoring and reporting on Al performance and effectiveness—paired with targeted investment in high-impact tools and strengthened collaboration among Al developers—are essential to avoid fragmentation and ensure long-term sustainability.

#### **06.** Establish Systems for Sustained Data Integrity and Fact-Based Decision Making:

Al systems are only as trustworthy as the data they are built on. In an era of rising misinformation and politicized attacks on science, it is essential to protect the accuracy and reliability of data informing and being used to validate Al models. This includes investing in high-quality, community-informed datasets for both training and assessing Al, building auditability into algorithms, alignment on transparent reporting standards, and supporting public health institutions in defending evidence-based practices. Ongoing data quality assurance, including mechanisms to identify and correct bias, is critical to maintaining public trust. Programs must also proactively counter disinformation and support digital literacy as part of Al roll-out strategies.

#### For Governments, Donors, and Global Partners

#### 01. Developing Guidance for Safe AI Deployment:

Global health stakeholders should focus on developing context-specific guidance for the safe and effective use of AI in HIV and broader health programs. Establishing standards for ethics, procurement, community vetting, technical evaluation, and ongoing monitoring will enable responsible deployment and help ensure that all AI tools made available to communities are safe, trusted, and effective.<sup>19</sup> This approach will reduce costs, accelerate the scale-up of proven solutions, and speed up results—amplifying the impact and efficiency of donor investments.

#### 02. Coordinated Funding to Scale Al Solutions:

PEPFAR, the Global Fund, and other donors should coordinate funding to scale and replicate promising Al solutions, in line with country needs and strategies. This includes creating incentives for Al developers to collaborate on complementary, high-impact tools that demonstrate improved targeting, better health outcomes, or cost efficiencies. Examples include digital vulnerability screening for PrEP, tailored chatbots for self-care and adherence support, predictive models to prevent program dropout, and tools which monitor safe and effective Al use at scale.

#### **03.** Empowering CSOs to Lead AI Implementation:

Donors should provide sustained funding to local CSOs — not only to design, test, and evaluate Al interventions, but also to implement and scale them effectively. Rather than treating Al as a secondary component, programs should consider digital- or Al-first approaches that can accelerate progress toward health goals and serve as resilience mechanisms during times of resource constraint. By placing these organizations at the center of Al efforts, donors can ensure solutions are rooted in real-world challenges, community priorities, and human rights principles.





#### **15.** Update National Digital Health Strategies to Include AI for Ethical HIV Innovation:

Governments should include AI in their national digital health strategies that prioritize the ethical and equitable use of technology in HIV programs, aligning with national HIV goals and identifying priority areas where AI can enhance prevention, treatment, and care outcomes. Establishing clear regulatory frameworks that address data privacy, algorithmic transparency, and community consent will provide a secure foundation for AI deployment. To maximize impact, governments should facilitate multi-sector partnerships that bring together tech developers, global health stakeholders, and civil society to co-design AI solutions that are context-specific and responsive to community needs.

#### **06.** Invest in the Digital Health Enabling Environment:

Al tools rely on many of the same foundational building blocks that effective digital health interventions do, including strong leadership and governance, strategy and investment, standards and interoperability, and workforce capacity.<sup>20</sup> Investing in local capacity through workforce training and improved digital infrastructure is essential to sustain these efforts, while promoting data interoperability will ensure seamless integration of Al tools into existing health systems.

#### 07. Harmonize Global Guidance for AI in Health:

Donors, governments, and multilateral agencies such as WHO, UNAIDS, and UNICEF should work toward the development of aligned, practical standards and normative guidance for the ethical and effective use of AI in health programs. This includes establishing shared definitions, benchmarks for performance and safety, transparent reporting standards for AI models, and minimum ethical standards for community participation and non-discrimination. Ensuring global consistency—particularly across regulatory, procurement, and implementation frameworks—will reduce fragmentation and accelerate responsible uptake of AI across country contexts. Clear alignment across normative bodies also strengthens country capacity to assess and govern AI use in line with national goals and human rights commitments.

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