

90-90-90 and ending AIDS: necessary and feasible

More than three decades into the global HIV pandemic, there are still 2.1 million new infections each year and 36.7 million people are living with HIV.¹ By mid-2016, 18.2 million people were on antiretroviral treatment—about 50% of people living with HIV.¹ Yet in 2015, 15 million people living with HIV were estimated to be unaware of their status and 1.1 million died of AIDS-related complications, despite the fact that US\$19 billion was invested in HIV in low-income and middle-income countries.¹

Although its history is complex, the HIV pandemic can be characterised by three phases: devastation; discovery and action; and ending AIDS (figure). The initial response was defined by overwhelming devastation of marginalised individuals and their communities, the root causes of which were widespread denial, ignorance, stigma, fear, and neglect. It was a time when affected communities and beleaguered health-care providers struggled in isolation to

minister to the sick and dying while governments, experts, and other authorities exercised little if any political will to address a burgeoning health crisis or exacerbated the crisis through their policies.⁴ Out of this suffering emerged a determined community response that demanded leadership and resources from governments. The discovery and action phase resulted from the growing community, scientific, and political response that unravelled the secrets of HIV. Despite remarkable progress, the accepted wisdom was that ending AIDS was not feasible without a vaccine or cure. Without effective treatment, the focus was on prophylaxis and treatment of opportunistic illnesses, palliative care, ensuring human rights, tackling stigma and discrimination, community support for people with HIV, and prevention methods.⁵ The development of life-saving, triple drug therapy in 1996 gave hope along with the realisation that most of the people infected with HIV lived in low-income

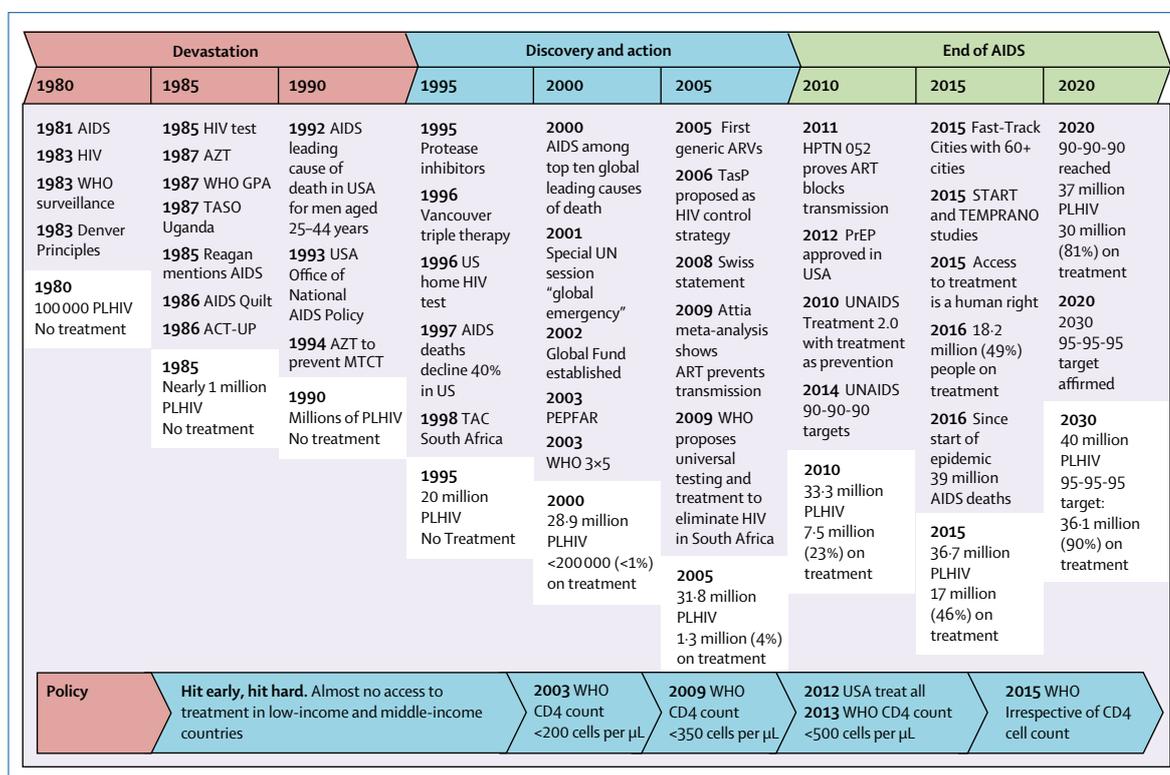


Figure: Key HIV epidemic milestones from 1980 to 2020

Sources for figure are AIDSinfo online² and the WHO progress report archive.³ ACT-UP=AIDS Coalition to Unleash Power. ART=antiretroviral treatment. ARV=antiretroviral. GPA=Global Programme on AIDS. MTCT=mother-to-child transmission of HIV. PLHIV=people living with HIV. PrEP=pre-exposure prophylaxis. TAC=Treatment Action Campaign. TasP=treatment as prevention. TASO=The AIDS Support Organization.

	Definition	Examples
End of AIDS (political)	Abstract political target of ending HIV as a major public health problem	Commonly used in political and public health discourse
End of AIDS (epidemiological)	Reduction of HIV incidence and AIDS to below one AIDS case per 1000 population ¹¹ The 90-90-90 and 95-95-95 targets are milestones on the way to the end of AIDS as they translate into 73% and 86% of people being on treatment and virally suppressed, respectively ¹² The Global Plan calls for the elimination of mother-to-child transmission of HIV to less than 5% transmission	Leadership in Cambodia, New York state, San Francisco, and Vancouver focuses on HIV control, ending AIDS, and getting to zero new infections
Epidemiological control	The point at which new HIV infections have decreased and fall below the number of AIDS-related deaths	PEPFAR 3.0
HIV control	The reduction of HIV disease incidence, prevalence, morbidity, or mortality to a locally acceptable level as the result of deliberate public health efforts; continued interventions will be needed to maintain the reduction and move towards elimination targets	San Francisco, Vancouver
HIV elimination	Reduction of HIV and AIDS in a defined geographical area to below one AIDS case per 1000 people living with HIV per year and a reduction of HIV incidence to one new case per 1000 population ¹¹ Continued intervention measures are required to maintain elimination	Cambodia
HIV eradication	Permanent reduction to zero of the worldwide incidence of HIV as a result of deliberate efforts Intervention measures are no longer needed	None
HIV extinction	The specific agent no longer exists in the laboratory or nature; interventions are no longer needed	None

Table: End of AIDS, HIV control, elimination, eradication, and extinction¹⁹

countries and it was morally unacceptable to deny them treatment.^{6,7} The creation of the Global Fund to Fight AIDS, Tuberculosis and Malaria in 2001 and the US President’s Emergency Plan for AIDS Relief (PEPFAR) in 2003, the Millennium Development Goals, and the launch of WHO’s 3 by 5 initiative, signalled the translation of discovery to action. In the face of considerable scepticism, antiretroviral treatment was delivered at scale and it was subsequently shown that ART leads to a near normal disease-free lifespan and virtually eliminates the risk of HIV transmission.⁸ By 2006, the old “test and wait” strategy of withholding antiretroviral treatment until people’s immune systems were severely compromised no longer made sense.⁹ These and other developments provided the foundation for the next phase of the HIV pandemic—ending AIDS.

This phase reflects the political shift from a struggle to contain the epidemic to the right to universal HIV treatment as part of a winnable public health battle—a goal embodied in Sustainable Development Goal 3 (table). Ending AIDS means providing treatment for at least 35 million people living with HIV for the rest of their lives or until a cure is developed. Elimination

is measured as incidence of less than one case per 1000 population per year.¹¹ HIV eradication (zero global incidence) is not feasible without deploying a cure or vaccine alongside treatment. Other prevention interventions—eg, behavioural change, pre-exposure prophylaxis, condoms, voluntary male circumcision, opioid substitution therapy, and needle and syringe programmes—will be necessary, but not sufficient on their own without universal treatment, to end AIDS in most settings.

UNAIDS, PEPFAR, national governments, and many cities have adopted the 90-90-90 target by 2020. This target calls for 90% of people living with HIV diagnosed, 90% of people diagnosed on sustained antiretroviral treatment, and, of those, 90% virally suppressed by 2020.¹² The 90-90-90 and the subsequent 95-95-95 by 2030 targets translate into 73% and 86% of people living with HIV being virally suppressed on antiretroviral treatment, respectively.¹² In late 2015, after the example of the USA (2012), France (2013), Brazil (2013), and seven other countries, WHO recommended starting antiretroviral treatment irrespective of CD4 cell count.¹³ As of July, 2017, 51 countries (73% of global HIV burden) have published test and treat guidelines.¹³

As part of the 90-90-90 efforts, the Fast-Track Cities Initiative is a partnership between the City of Paris, International Association of Providers of AIDS Care (IAPAC), UNAIDS, and the UN Human Settlements Programme, in collaboration with other stakeholders, and includes more than 75 cities focused on achieving the 90-90-90 target and zero stigma through the acceleration of local AIDS responses.¹⁴ Reaching the end of AIDS, as defined by low levels of HIV incidence and AIDS-related mortality, has already been achieved in some settings. However, to end AIDS globally will require continued effort and a near doubling of the number of people on treatment.

There remains controversy about the feasibility, cost, and epidemiological impact of the 90-90-90 target, with calls for increased prioritisation of other HIV prevention methods¹⁵ and other appeals for a 30% increase in annual funding to end AIDS as a public health threat by 2030.¹⁶ Using a conservative \$300 per person for antiretroviral treatment would result in an \$11 billion annual price tag for 36.7 million people living with HIV—far below the

current \$19 billion annually available resources and the UNAIDS \$26.1 billion resource needs estimate.¹⁶ Although the true cost is unknown, resources, time, and targets will probably stay fairly fixed and needs projections should explore a more efficient, evidence-based service delivery model that prioritises achieving the 90-90-90 target.

Four major innovations will accelerate progress towards 90-90-90 and the end of AIDS. First, reliable, easy-to-use, rapid HIV self-tests that, like pregnancy self-tests a generation ago, will democratise access to HIV testing.¹⁷ Second, safer and more effective integrase inhibitors-based antiretroviral treatment, together with same-day offer of treatment and reduction of follow-up clinic visits, will increase efficiency of antiretroviral treatment programmes;¹⁸ over time long-acting injectable antiretroviral treatment might be able to further accelerate this trend.¹⁹ Third, comprehensive integrated community HIV service delivery models for HIV and other health services will help reach the 90-90-90 target and beyond with the potential added value of destigmatising both HIV and HIV services. Fourth, the information technology revolution, mobile computing, crowd-sourcing, and cloud-based monitoring and evaluation software are already changing the way we do public health by providing near real-time information on programme progress, and more open data and transparency for improved community engagement.

Global public health security and human rights demand a focus on ending AIDS. Prioritising expanded access to HIV self-testing, delivering life-long treatment through community-based comprehensive HIV services, efficiently using limited resources, harnessing new information technology, and enabling meaningful community engagement will all be necessary. Although there are signs of cynicism and complacency, now is not the time to falter on the collective global HIV response. It is time to double down on investment and finish the job of ending AIDS.

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