What is the aim of HIV treatment programmes?

People who are diagnosed soon after HIV infection and begin antiretroviral treatment (ART) without delay are able to remain in good health for decades, with a life expectancy similar to that of people who don’t have HIV.1 2

In recent years, studies have also shown that adhering to ART, reduces the likelihood that someone will pass on HIV. In cases where an individual has achieved an undetectable viral load (whereby their viral load is below 50 copies/ml), the risk of them passing HIV on to their sexual or injecting partners is zero.3 4

Viral suppression has benefits both for the individual and for public health. HIV treatment and viral suppression serve to prevent poor health and AIDS-related death for the individual, while reducing new infections and HIV incidence at a public health level.

However, the benefits of treatment programmes can only be realised through a strong HIV care cascade. This means people must be able to access HIV testing, and be able to start treatment promptly if diagnosed. They must also be provided with effective HIV care, which includes being supported to adhere to treatment to suppress HIV in their body. Routine viral load monitoring is needed so that people who are virally suppressed remain so.

In 2015, the World Health Organization (WHO) began recommending countries adopt a ‘test and treat’ strategy. This means people who are diagnosed with HIV should be offered treatment immediately, regardless of the level of HIV in their body.5 Before this, people only began ART when HIV had reached a certain level in the body. As a result of test and treat, treatment programmes across the world have rapidly expanded in the past few years.
What are the global HIV treatment guidelines?

In December 2020, UNAIDS launched the ‘2025 AIDS Targets’, a new five-year plan replacing the ‘Fast-Track’ strategy, which ran from 2014 to the end of 2020. The 95-95-95 targets state that by 2030, 95% of all people living with HIV will know their status, 95% of those diagnosed will be on treatment, and 95% of those on treatment will be virally suppressed. 6

In 2015, WHO recommended that everybody living with HIV, of all ages and in all parts of the world, should receive ART immediately after diagnosis.7 This is commonly known as ‘test and treat’ or ‘treat all’. Initially, rapid ART initiation was defined as beginning treatment within 30 days. In 2017, WHO increased the urgency of treatment initiation by recommending that ART should be started within seven days, and where possible, on the same day that an HIV diagnosis is officially confirmed.8

The evidence surrounding the benefits of promptly beginning people on HIV treatment regardless of their level of infection has become overwhelming. Studies demonstrate conclusively that delaying HIV treatment 9 and taking breaks10 from treatment results in higher levels of illness and AIDS-related deaths. Research has also shown that effective HIV treatment prevents onward transmission to sexual partners 11 and unborn children. This is not the case for transmission via breastfeeding or injections, which still lack the evidence needed.

A number of treatment initiatives have acted as the precursor to the treat all approach, the most notable of which are those relating to preventing-mother-to-child transmission (PMTCT) and the 3 x 5 Initiative, which aimed to provide three million people living with HIV in low- and middle-income countries with ART by the end of 2005. The success of these programmes showed that it was possible to expand HIV treatment programmes on a large-scale in ways that were effective and affordable, even in extremely resource-poor and challenging settings.12

Although WHO’s treat-all guidelines mean that assessment of a person’s clinical stage or CD4 cell count is not required before HIV treatment begins, in situations where resources prevent full implementation of the guidelines, treatment should be prioritised for individuals with severe or advanced HIV (WHO clinical stage 3 or 4) and those with a CD4 cell count below 350 cells/mm³. This is to ensure that people who urgently need treatment are not displaced by people whose need is less pressing.13

The AIDSFree Guidance Database details current HIV testing and treatment guidelines for many countries around the world.14

As of mid-2018, 84% of low- and middle-income countries had adopted the treat all guidelines.15 This is compared to just 33% in 2016.16 However, real-world implementation of these guidelines has been slower. Around 66% of low- and middle-income countries have put the guidelines fully into practice, at all treatment sites, while 8% have implemented this policy in the majority of treatment sites (74% in total).17

What is the global status of HIV treatment uptake?

The number of people living with HIV receiving antiretroviral treatment has climbed dramatically in the past ten years. In 2019, 25.4 million people were on ART, more than triple the number of people in 2010. However, because the level of HIV testing among people who are HIV positive is not yet high
enough, this equates to 67% of all people living with HIV.\textsuperscript{18}

Progress on expanding treatment is uneven. Certain regions continue to lag behind including West
and Central Africa (where in 2019 only 58% of people diagnosed with HIV were on treatment), eastern
Europe and central Asia (44%) and the Middle East and North Africa (38%).\textsuperscript{19}

Furthermore, across different global regions, men are less likely than women to receive treatment. In
2017, only 53% of HIV positive men compared to 65% of HIV positive women were accessing ART.
Disparities between treatment coverage among men and women were greatest in West and Central
Africa. For example, in Togo only 39% of HIV positive men had access to ART compared to 72% of
their female counterparts.\textsuperscript{20}

Children and adolescents are all also often underserved. In 2017, only 941,000 children had
treatment access, equivalent to just over half of all HIV positive children (52%). As a result of poor
treatment access, 110,000 children died from AIDS-related illnesses that year.\textsuperscript{21}

Treatment coverage among people from groups most affected by HIV often also falls short of the
national average. For example, in South Africa only 28.1% of men who have sex with men have
access to ART compared to 61% of the general population, likewise in Senegal only 19.7% of female
sex workers are on HIV treatment compared to a 62% national average. Trends such as these can be
seen worldwide.\textsuperscript{22,23}

Until fairly recently the impact of treat all on the uptake of ART has not been known. However, a
number of studies are now bringing this to light. Research published in 2019 investigated the impact
of national adoption of treat all guidelines in Burundi, Kenya, Malawi, Rwanda, Uganda and Zambia by
analysing more than 814,600 patient records. Across the six countries, 81.6% of people diagnosed
with HIV were starting ART within 30 days of confirming their test results. This was an almost 26% rise
on previous access levels before treat all was introduced. However, there were differences between
population groups, with young people and men less likely to start treatment promptly.\textsuperscript{24}
Challenges of treatment programming

HIV drug resistance

HIV drug resistance can occur when people are unable to adhere to ART, often because they are being offered sub-standard treatment, which can be the result of a number of things such as poor adherence support, drug stock-outs and being given lower-quality antiretrovirals (ARVs) that have more side effects or are more complicated to take than modern regimens.

As treatment coverage expands in many high prevalence countries, the number of people who have a form of HIV resistant to non-nucleoside reverse-transcriptase inhibitors (NNRTIs) is rising. These drugs have a particularly low genetic barrier to resistance. There is some suggestion that this rise in resistance could also be linked accelerated ART initiation. However, the evidence is highly disputed as to whether earlier ART initiation has long-term implications on retention, adherence, and therefore drug resistance, making this area a key focus of current and future research.25

A analysis conducted by WHO found 10% of people starting ART in six out of 11 countries it surveyed had drug resistant HIV.26 It recommends that countries consider using an alternative first-line regimen that does not include NNRTI if national levels of HIV drug resistance in people initiating ART reach 10% or above.27
In 2018 WHO updated its treatment guidelines. It now recommends the integrase inhibitor dolutegravir (DTG) as the preferred regimen for nearly all people living with HIV, with special guidance for women living with HIV of childbearing potential. This is due to benefits such as faster viral suppression, a higher genetic barrier to resistance, and fewer side effects.28

Treatment monitoring

Viral load monitoring is important for checking that HIV treatment is working, determining whether viral suppression has been achieved and sustained, and for diagnosing and confirming treatment failure. However, viral load testing is expensive, and is insufficiently available in many low-income and middle-income countries as a result. In 2017, one quarter of countries reporting data to UNAIDS indicated that less than half of people on treatment received an annual viral load test. Greater political will and funding are needed to address this issue.29

Funding

With the global burden of HIV concentrated in low and lower-middle income countries, funding from international donors has been essential to the scale-up of HIV treatment programmes. The contribution of the American government, primarily channelled through the President’s Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS, Tuberculosis and Malaria, has been particularly important.

A rapid scale-up of international funding from US$1.2 billion in 2002 to $7.8 billion in 2008 allowed many countries’ treatment programmes to expand in that period.30 But international donors have curtailed or capped their contributions since the 2008 financial crash. Between 2012 and 2016, international HIV funding stagnated, and although contributions increased in 2017 this trend is not expected to continue, with some forecasters predicting it could even decrease.31

As a result, funding from domestic governments has become increasingly important for HIV programmes in many low- and middle-income countries. In 2017, 56% of all spending on the global HIV response was funded domestically.32

Potential cuts in international support could have significant effect on treatment programmes, particularly in low-income countries. In too many countries, leaders are unwilling to fully support HIV programmes or they limit their support to specific elements. Provision for key affected populations such as sex workers or people who inject drugs is often seen as politically unpopular.

Drug prices and generics

While staffing and infrastructure costs are important, the biggest single element influencing the affordability of HIV treatment programmes is the price of antiretroviral drugs. In 2017, for the first time the average price of adult first line treatment fell below US$90 per patient per year, driven by the increase in generic ARVs.33 But if a person needs to switch to an alternative regimen, its price is likely to be much higher and third-line regimens (rarely available from generic manufacturers) may cost significantly more than the standard first-line regimen. Further patent restrictions and a weakening of competition from generic manufacturers could restrict access to newer medicines.

Moreover economic growth in many countries may move them into the middle-income bracket, meaning that they are no longer permitted to use generic drugs and may also become ineligible for international donor funding.
Weak healthcare systems

The effective scale-up of HIV treatment is made more challenging by weak health services and health systems in many countries. In places where health services are difficult to access, understaffed or poorly organised, uptake of testing and treatment is suboptimal, with too many people dropping out of care when faced with difficulties.

Poor health systems can result in a delay between someone being diagnosed with HIV and them starting treatment. A lack of support mechanisms also makes it difficult for people to adhere to treatment. This is particularly an issue for young people, men and those from stigmatised and criminalised groups such as sex workers, people who inject drugs and men who have sex with men.34

Drug procurement and supply

Good drug procurement and supply chain management systems to prevent ARV stock-outs are essential to strong treatment programmes. Although these systems have improved in many countries in the past decade, interrupted supplies still pose a challenge in a number of settings.35 Poor planning, forecasting and budgeting; delivery delays; and corruption are described as the most common reasons for stock-outs.36 If people are unable to access ARVs they may be forced to take a break from their treatment, and their risk of developing drug resistant HIV and experiencing treatment failure increase.

For example, research from Addis Ababa, Ethiopia found nearly three-quarters of health facilities regularly experienced a stock-out of one or more ARVs.37

Improving treatment programme delivery

Civil society

Civil society movements have been vital in placing HIV high up on the public health agenda and in finding solutions to challenging problems. Further pressure from civil society may be needed for the next scale-up of treatment to be achieved.

For instance, the International Treatment Preparedness Coalition’s (ITPC) Make Medicines Affordable campaign is working to bring down the price of HIV, TB and hepatitis C medicines in middle-income countries. In 2017, civil society actors working through the campaign were effective at challenging a number of intellectual property barriers that prevent the prices of patented ARVs from falling. They did this in a number of ways; by opposing unmerited patents in legal challenges, by strengthening national laws and patent examination processes to block poor patents and by working with governments to use regulatory flexibilities against patents known as Trade-Related Aspects of Intellectual Property (TRIPS). In 2017, ITPC estimated that these efforts had resulted in annual cost savings of US$472 million due to reduced drugs prices.38

Decentralisation, task-shifting and service integration

Activism has also spurred innovations in the health sector. For example, ‘task-shifting’ involves redistributing human resources so that, for example, a nurse rather than a doctor initiates patients on antiretroviral therapy. This means that shortages of qualified doctors do not stop people from receiving treatment as nurses can be trained for specific tasks and are less costly.
People living with HIV have also been involved in delivering care to their peers – sometimes as a counsellor, but sometimes with a more extensive role. For example rather than requiring patients to make a lengthy visit to the clinic each month, they may be seen in between clinic visits by a trained peer who assesses adherence and conducts basic health checks, referring patients to the clinic in the case of any abnormalities. In southern Africa, patients who are stable on therapy sometimes form groups in which members distribute medication to each other. An assessment of a peer-led treatment support programme in the country found 97% of participants were still in care after 40 months.

Such projects particularly respond to the challenge of an ever increasing number of people who are stable on HIV treatment and will need an ongoing supply of ARVs for the rest of their lives.

However, a study from Uganda where stand-alone HIV clinics remain common highlights the challenges that can exist around integrating-health services. These include a shortage of staff in more generalised settings who are trained to administer ART, a lack of laboratory space to enable HIV and non-HIV tests to be carried out alongside one another, and more stigmatising attitudes among healthcare providers who do not specialise in HIV.

Improving the efficiency of treatment services will mean that more patients can be treated for the same financial resources. Wide variations in the cost of providing treatment between facilities demonstrate that some facilities are less efficient whereas others may be benefiting from economies of scale (providing ART to more patients while fixed costs remain the same) or economies of scope (integrating ART delivery with other health services). Other efficiency gains are possible through improving procurement systems so as to lower the cost of commodities and introducing new technologies (such as point-of-care diagnostic tests).

### Addressing stigma and discrimination

Addressing the stigma and discrimination faced by people living with HIV – especially that which occurs in health services - may encourage more people to test and to start treatment. Many people living with HIV, especially those who belong to key populations such as people who use drugs or men who have sex with men, report stigmatising attitudes from health workers, which discourage them from using health services. Revising laws that discriminate against key populations, protecting the rights of people living with HIV and making legal services available so that people can seek redress may ultimately have an impact on the uptake of antiretroviral therapy.

### Improving retention in care

Numerous programmes now exist that are helping to increase the number of people staying in HIV care by providing adherence support that is person-centred, meaning that it responds to the needs of people in a more holistic way. Often these programmes are community-based and peer led.

For instance, in the Eastern Cape in South Africa, the STACK programme is combining a whole range of support to keep adolescents in HIV care. These include providing teenagers with enough money to travel safely to clinics, accompanying them to clinics, ensuring that clinics are stocked with medication, and ensuring that staff devote sufficient time to their consultations and show kindness and concern. Before any of these interventions were in place, in some clinics only around 3% of adolescents were being retained in care, when all five interventions were in place the retention rate reached 70% in some contexts.
Innovation

Innovation in many forms, be it technical, medial or approach-based, is helping to strengthen treatment programmes by enabling people to adhere to treatment and have their treatment monitored. For instance, there are now more drug options available in resource-constrained countries. As of September 2018, more than 20 lower- and middle-income countries had begun procuring a fixed dose combination ARV containing dolutegravir, known as TLD, with Kenya, Malawi, Nigeria, Uganda, and Zambia already receiving shipments.47

In addition, point-of-care viral load testing machines are widening access to more efficient viral load monitoring. Point-of-care assays are also reducing the time it takes to return infant HIV test results from weeks to hours, enabling newborns to start treatment before their immune systems become too weak.48 Innovations such as these will become increasingly important as ART programmes continue to expand, ensuring more people are able to receive effective treatment and the public health benefits of treatment programmes are fully utilised.

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4. AIDSMap ‘Viral load’ (accessed June 2019)


18. UNAIDS (2020) ‘Seizing the moment — Tackling entrenched inequalities to end epidemics’[pdf]

19. UNAIDS (2020) ‘Seizing the moment — Tackling entrenched inequalities to end epidemics’[pdf]


‘Decentralisation’ of HIV care to a wider range of health services can also make HIV treatment more accessible. HIV treatment may be integrated with services for tuberculosis, maternal and child health, hepatitis, or other health conditions. For example South Africa made ART available at virtually every public health facility in the country. World Health Organization (2015) ‘Global health response to HIV, 2000-2015, focus on innovations in Africa’ [pdf]
