MILES TO GO

CLOSING GAPS
BREAKING BARRIERS
RIGHTING INJUSTICES

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"AIDS is our number one enemy. This enemy can be defeated. Four principles—love, support, acceptance and care for those affected—can make us winners."

Nelson Mandela
1918–2013

UNAIDS dedicates this report to the memory of Madiba, whose courage and compassion continues to inspire us 100 years after his birth.

Foreword

The global AIDS response is at a precarious point—partial success in saving lives and stopping new HIV infections is giving way to complacency. At the halfway point to the 2020 targets, the pace of progress is not matching the global ambition. This report is a wake-up call—action now can still put us back on course to reach the 2020 targets.

The number of AIDS-related deaths is the lowest this century, with fewer than 1 million people dying each year from AIDS-related illnesses, thanks to sustained access to antiretroviral therapy. Three out of four people living with HIV now know their status—the first step to getting treatment. And now a record 21.7 million people are on treatment—a net increase of 2.3 million people since the end of 2016. The scale-up of access to treatment should not be taken for granted, though. In the next three years an additional 2.8 million people must be added each year, but there are no new commitments to increase resources, there is an acute shortage of health-care workers and there is continuing stigma and discrimination.

There is a prevention crisis. The success in saving lives has not been matched with equal success in reducing new HIV infections. New HIV infections are not falling fast enough. HIV prevention services are not being provided on an adequate scale and with sufficient intensity and are not reaching the people who need them the most. Acceptance of condoms, voluntary medical male circumcision, pre-exposure prophylaxis, cash transfers must be increased rapidly and not be secondary prevention tools. And I await the day when there is a functional cure and a vaccine against HIV.

Children are being left behind. The good news is that 1.4 million new HIV infections have been averted since 2010, but I am distressed by the fact that, in 2017, 180 000 children became infected with HIV, far from the 2018 target of eliminating new HIV infections among children. While the overall HIV treatment level is high, there is a huge injustice being committed against our children—only half of under-15s living with HIV were being treated last year.

Stigma and discrimination still has terrible consequences. The very people who are meant to be protecting, supporting and healing people living with HIV often discriminate against the people who should be in their care, denying access to critical HIV services, resulting in more HIV infections and more deaths. It is the responsibility of the state to protect everyone. Human rights are universal—no one is excluded, not sex workers, gay men and other men who have sex with men, people who inject drugs, transgender people, prisoners or migrants. Bad laws that criminalize HIV transmission, sex work, personal drug use and sexual orientation or hinder access to services must go, and go now.

Women and girls continue to be disproportionately affected. It is outrageous that one in three women worldwide has experienced physical or sexual violence. We must not let up in our efforts to address and root out harassment, abuse and violence, whether at home, in the community or in the workplace. UNAIDS stands firm in its commitment to act against harassment, abuse and violence, wherever they occur.

The upcoming United Nations High-Level Meeting on Tuberculosis is a huge opportunity to bring AIDS out of isolation and push for the integration of HIV and tuberculosis services. There have been major gains in treating and diagnosing HIV among people with tuberculosis, but still, decades into the HIV epidemic, three in five people starting HIV treatment are not screened, tested or treated for tuberculosis, the biggest killer of people living with HIV. Equally important is integration of HIV services with sexual and reproductive health services and developing strong links with services for noncommunicable diseases. Our goal must be to save lives holistically, not disease by disease, issue by issue, in isolation.

There is a funding crisis. I am heartened by the fact that resources for AIDS increased in 2017, but there is still a 20% shortfall between what is needed and what is available. And we cannot afford any cuts in international assistance to the AIDS response. A 20% cut in international funding will be catastrophic for the 44 countries that rely on international assistance for at least 75% of their national AIDS responses. A fully funded AIDS response is non-negotiable, as is funding for universal health coverage.

AIDS is not over, but it can be. At the halfway point to the 2020 targets, we must recommit ourselves to achieve them. The successes in HIV treatment show what can be done when we put our minds to it. People living with HIV are leading longer, healthier lives. But we still have miles to go. We have promises to keep.

Michel Sidibé

UNAIDS Executive Director

1. Introduction and summary

STOPPING BY WOODS ON A SNOWY EVENING

By Robert Frost

Whose woods these are I think I know.
His house is in the village though;
He will not see me stopping here
To watch his woods fill up with snow.

My little horse must think it queer
To stop without a farmhouse near
Between the woods and frozen lake
The darkest evening of the year.

He gives his harness bells a shake
To ask if there is some mistake.
The only other sound's the sweep
Of easy wind and downy flake.

The woods are lovely, dark and deep,
But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep.

Time is running out

Stopping by woods on a snowy evening, the iconic poem by Robert Frost, describes a solemn pause and moment of reflection in the middle of a long winter journey. The traveller gazes upon the silent, snow-covered forest with reverence, and he appears satisfied with his progress. The traveller's horse, however, is agitated. The dark and cold are real and growing threats. Satisfaction must not devolve into complacency. There are miles to go before the end of the journey.

The scene is an apt metaphor for the global AIDS response in 2018.

In 2016, the United Nations General Assembly agreed to embark on an ambitious journey—to front-load investment, remove structural barriers and embark on a Fast-Track expansion of critical HIV services to reach the vast majority in need by 2020. If successful, HIV infections and deaths from AIDS-related illness should decline by 75%, creating the momentum necessary to end the AIDS epidemic as a public health threat by 2030.

This progress report has been issued at the midpoint of the Fast-Track phase of the global AIDS response. The latest data from countries show that the Fast-Track approach is a winning strategy: the communities, cities and countries that have achieved high levels of coverage of evidence-informed combination prevention, testing and treatment services are making steady progress towards the 2020 targets and milestones.

But such energy and determination are not widespread. Entire regions are falling far behind. And in all countries—whether they are high-income, middle-income or low-income—a common pattern has emerged: gains on HIV,

health and development have overlooked the people in greatest need. Society's most vulnerable—children, adolescent girls and young women, indigenous peoples, migrants, the poor and uneducated, and key populations at highest risk of HIV infection—are being left behind.

As we reflect on our progress, some satisfaction is warranted. But on balance, the world is slipping off track. The promises made to society's most vulnerable individuals are not being kept. There are miles to go in the journey to end the AIDS epidemic. Time is running out.

SOME PROGRESS TO BE PROUD OF

Strong aggregate gains against HIV have been achieved in eastern and southern Africa, a region that is home to more than half (53%) of the world's 36.9 million [31.1–43.9 million] people living with HIV. The region's response to the epidemic exemplifies the concept of shared responsibility to achieve a global development goal. Steady increases in both domestic and international funding have fueled cutting-edge research and a massive expansion of evidence-informed programmes over the past decade. The impact has been equally dramatic: a 42% reduction in deaths from AIDS-related illness and a 30% reduction in new HIV infections between 2010 and 2017 has the region steadily moving towards the Fast-Track milestones (Figure 1.1). Further efficiency gains could see these milestones met in the region most affected by HIV.

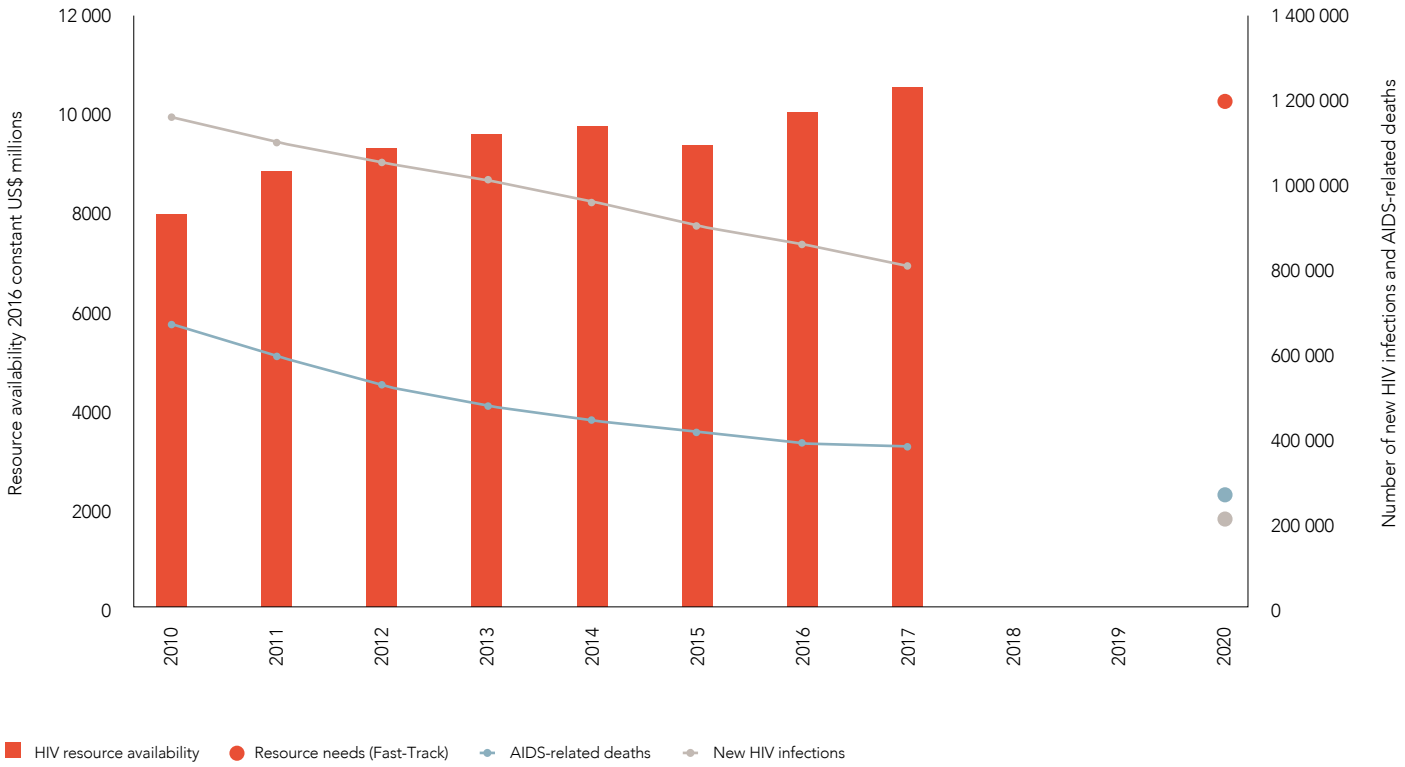
Globally, steady scale-up of antiretroviral therapy continues: an estimated 21.7 million [19.1–22.6 million] people were accessing treatment at the end of 2017, five and a half times more than just a decade ago. Progress towards the 90–90–90 targets is also steady. Three quarters of people living with HIV globally—an estimated 75% [55–92%]—knew their HIV status at the end of 2017. Among those who knew their HIV status, 79% [59– >95%] were accessing antiretroviral therapy, and 81% [61– >95%] of people accessing treatment had suppressed viral loads. Among all people living with HIV globally, 59% [44–73%] were on treatment and 47% [35–58%] had suppressed viral loads.

Expanding treatment coverage drove a 34% reduction in deaths from AIDS-related illness between 2010 and 2017. The number of AIDS-related deaths is the lowest this century—fewer than 1 million people died of AIDS-related illnesses in 2017. Antiretroviral therapy for the prevention of mother-to-child transmission has also greatly reduced new HIV infections among children. Globally, 1.4 milllion [880 000–2 100 000] new child infections have been averted since 2010.

Continued on page 12

FIGURE 1.1 **Investment and innovation driving strong gains in eastern and southern Africa**

Annual new HIV infections, AIDS-related deaths, resource availability and 2020 resource needs and impact targets for eastern and southern Africa, constant 2016 US dollars, 2010–2017 and 2020 targets



*Resource availability and resource needs in constant 2016 US dollars.

Source: UNAIDS 2018 estimates; GAM/GARPR reports 2005–2018; UNAIDS–Kaiser Family Foundation collaborative project on international assistance disbursements from donor governments in 2017; Fast-Track update on investments needed in the AIDS response, 2016–2030. Geneva: UNAIDS; 2016.

EMERGING EVIDENCE AND INNOVATIONS

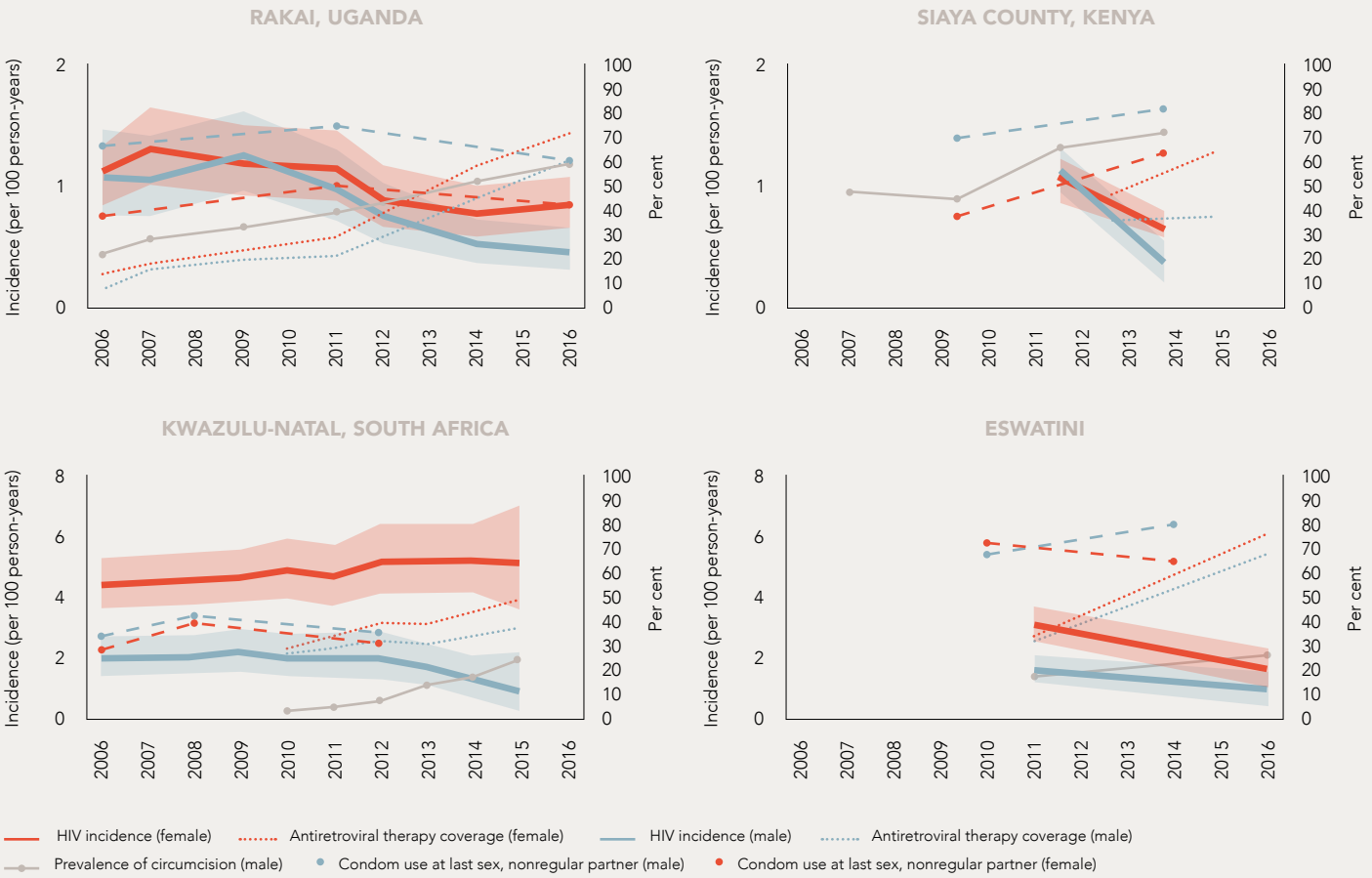
Combination approaches making a population-level impact

Accelerating progress on the prevention of HIV infections sits at the top of the global AIDS response agenda. No single method is fully protective against HIV, but when they are used in combination—and supported by structural changes that improve human rights protections, gender equality and socioeconomic conditions—they can be remarkably effective.

The powerful impact of combination prevention in settings with high HIV prevalence has recently been measured in four studies conducted in eastern and southern Africa. These analyses, which measured trends in the incidence of HIV among men and women alongside the scale-up of HIV services, reinforce the validity of a combination approach. They also revealed some surprising details.

FIGURE 1.2 **Men getting the short-term benefit of combination prevention**

Coverage of HIV services and HIV incidence, by sex, four locations in eastern and southern Africa, 2006–2017



Sources: Grabowski MK, Serwadda DM, Gray RH, Nakigozi G, Kigozi G, Kagaayi J et al. HIV prevention efforts and incidence of HIV in Uganda. N Engl J Med, 2017;377:2154–66; Uganda Demographic and Health Survey, 2006, 2011, 2016; Vandormael A, Akullian AN, Dobra A, de Oliveira T, Tanser F. Sharp decline in male HIV incidence in a rural South African population (2004–2015). Abstract 46. Conference on Retroviruses and Opportunistic Infections (CROI), Boston (MA), 4–7 March 2018; Vandormael A. Personal Communications. May 2018; South African National HIV Prevalence, HIV Incidence, Behaviour and Communication Survey, 2005, 2008; South African National HIV Prevalence, Incidence and Behaviour Survey, 2012; Nkambule R, Nuwagaba-Biribonwoha H, Mnisi Z, Ao, TT, Ginindza C, Duong YT et al. Substantial progress in confronting the HIV epidemic in Swaziland: first evidence of national impact. Abstract MOAX0204LB. International AIDS Society Conference, Paris, 23–26 July 2017; Swaziland HIV Incidence Measurement Survey, descriptive data tables, 2014; Justman J, Reed JB, Bicego G, Donnell D, Li K, Bock N et al. Swaziland HIV Incidence Measurement Survey (SHIMS): a prospective national cohort study. Lancet HIV. 2017 Feb;4(2):e83–92; Swaziland HIV Incidence Measurement Surveys, 2016, preliminary findings; Multiple Indicator Cluster Survey, 2010, 2014; Borgdorff MW, Kwaro D, Obor D, Otieno G, Kamire V, Odongo F et al. HIV incidence in western Kenya during scale-up of antiretroviral therapy and voluntary medical male circumcision: a population-based cohort analysis. Lancet HIV. 2018;5(5):e241–9; Kenya Demographic and Health Survey, 2008–2009, and, 2014; National AIDS Control Council, Kenya HIV country profiles, 2016; Spectrum 2018.

In a longitudinal study among almost 34 000 people in Rakai, Uganda, researchers analysed the association of long-term trends in HIV incidence with the scale-up of antiretroviral therapy, voluntary medical male circumcision (VMMC), population-level viral load suppression and sexual behaviour changes. Self-reported use of HIV treatment among people living with HIV increased from 12% in 2006 to 69% in mid-2016, and coverage of VMMC among men increased from 15% to 59%. The results showed that HIV incidence among adults (aged 15–49 years) declined by 42% (32% in women and 54% in men) as these combination prevention services were scaled up *(3)*.

Increased availability and uptake of antiretroviral therapy and VMMC appeared to have the greatest impact on HIV incidence. Declines in new infections were sharpest among circumcised men, but HIV incidence also fell significantly among women and uncircumcised men, which appears to reflect the population-level impact of increasing antiretroviral therapy coverage and adherence. The impact of behaviour change interventions appears to have been modest; levels of condom use with non-regular partners remained largely unchanged over time *(3)*.

Data from Gem, an area within Siaya county in western Kenya, also show a steep drop in HIV incidence as access to antiretroviral therapy and uptake of VMMC increased. HIV incidence among a cohort of adults (aged 15–64 years) fell from 1.11 per 100 person-years in 2011–2012 to 0.57 during 2012–2016 (1.09 to 0.66 among women and 1.14 to 0.38 among men). Male circumcision was protective not only for circumcised men and boys in the study, but also for women and girls, presumably due to the lower HIV prevalence of their male partners. The protective effect of antiretroviral therapy during the study period appeared to be limited by late initiation of treatment by a large proportion of people living with HIV; many may have transmitted the virus before starting treatment (4). Population-based surveys conducted in the former province that contained Siaya county show that condom use during last sex with a non-regular partner increased in both men and women (aged 15–49 years) between 2009 and 2014 *(5)*.

Data from Eswatini show similar progress. Results from the 2011 and 2016 rounds of the Swaziland HIV Incidence Measurement Survey (SHIMS)—a nationally representative population-based survey—show that incidence of HIV infection declined from 3.1 to 1.7 infections per 100 person-years among women, and from 1.7 to 1.0 infections per 100 person-years among men *(6)*.[1] These gains coincided with antiretroviral therapy coverage increasing from 34.0% to 77.0% among adult women (aged 18–49 years in 2011 and aged 15 years and older in 2016) and from 33.0% to 68.7% among adult men (aged 18–49 years in 2011 and aged 15 years and older in 2016). Prevalence of circumcision among men increased from 17.9% to only 26.7% *(6)*.

A large, ongoing population-based cohort study in South Africa's KwaZulu-Natal province found that population-level HIV incidence declined substantially between 2012 and 2015 among men, but that there was no decrease among women. Among young men (aged 15–24 years), the incidence of HIV declined from 1.7 infections per 100 person-years in 2012 to 0.6 infections per 100 person-years in 2015. Among men aged 25–54 years, the incidence declined from 3.3 to 1.9 infections per 100 person-years for the same period. The incidence of HIV among women during that time was relatively stable: between 6.3 infections and 6.7 infections per 100 person-years among young women aged 15–25 years, and between 4.1 and 5.0 infections per 100 person-years among women aged 25–49 years *(7)*. Antiretroviral therapy coverage and viral suppression rates were higher among women over this period, while the prevalence of circumcision among the men (aged 15 years and older) rose from 4% in 2010 to 25% in 2015 *(8, 9)*. Population-based surveys show that condom use during high-risk sex and the percentage of men and women with multiple sexual partners in KwaZulu-Natal was relatively stable between 2006 and 2012 *(10)*.

In all four studies, treatment coverage was higher among women than men, reflecting regional and global trends, and declines in HIV incidence were more pronounced among men (Figure 1.2).[2] Male circumcision partially prevents female-to-male transmission of HIV but has not been shown to directly prevent male-to-female transmission. Lower coverage of treatment among men indicates that their viral suppression rates are considerably lower, increasing the risk of transmission to their female partners.

These analyses show that combination prevention is successfully reducing new HIV infections at the population level—impact that could have been even greater if coverage of VMMC and other services had been higher. The data also suggest that the combined effects of VMMC and the higher uptake of antiretroviral therapy among women has differentially benefited men. These findings highlight the need for intensified efforts to deliver an array of HIV prevention options for women in high-prevalence settings, including the provision of pre-exposure prophylaxis (PrEP), and to reach far more men with condoms, VMMC, and HIV testing and treatment.

[1] The age ranges for incidence of HIV among adults was 18–49 years in SHIMS 2011 and 15–49 years in SHIMS 2017.

[2] Unpublished sex-disaggregated HIV incidence data were provided to UNAIDS by the Siaya study authors.

Continued from page 9

Antiretroviral therapy is also a powerful tool for HIV prevention. Suppression of viral load to undetectable levels prevents both AIDS-related illness and onward transmission of HIV. However, large percentages of people living with HIV are diagnosed with advanced disease, often years after they acquire the virus. The preventative effect of antiretroviral therapy is insufficient on its own. Recent evidence from eastern and southern Africa has demonstrated that the use of a combination of proven HIV prevention options—including male and female condoms, VMMC, PrEP, and antiretroviral therapy—delivers population-level impact. In places with substantial populations of people who inject drugs, the provision of harm reduction has been shown to greatly reduce HIV infections and have a major public health impact.

Oral PrEP is among the most promising recent additions to combination prevention for people at high risk of HIV infection. Its enormous potential is already evident in North America, western Europe and Australia, where the addition of PrEP to areas with high coverage of antiretroviral therapy is contributing to declines in new diagnoses of HIV infection among gay men and other men who have sex with men. In San Francisco, PrEP scale-up and quicker achievement of viral suppression among people living with HIV has been attributed to a 43% decline in new diagnoses in just three years *(1)*. In the Australian state of New South Wales, there was a 35% decline in new HIV diagnoses over two years that corresponded with the rapid introduction of PrEP *(2)*.

Failing the people in greatest need

Unfortunately, examples of intensive delivery of combination prevention packages are few and far between, limited almost exclusively to a handful of high-income cities and the districts within eastern and southern Africa that have served as innovation incubators for researchers, national programmes and international donors. Insufficient global attention to primary prevention over the last decade has had an all-too-predictable effect: the global rate of new HIV infections is not falling fast enough to reach the 2020 milestone. Little progress has been achieved outside of sub-Saharan Africa, and in eastern Europe and central Asia, the annual number of new HIV infections has approximately doubled since 2000. Globally, new HIV infections have declined by just 18% since 2010, far less than the 75% reduction that must be achieved by 2020. A new epidemic transition metric, the incidence:prevalence ratio, confirms this HIV prevention crisis; the overall progress made against HIV to date has not reached the 0.03 benchmark that signals whether the world is on track to end of AIDS as a public health threat (Figure 1.3).[3]

FIGURE 1.3 **Slow global progress**

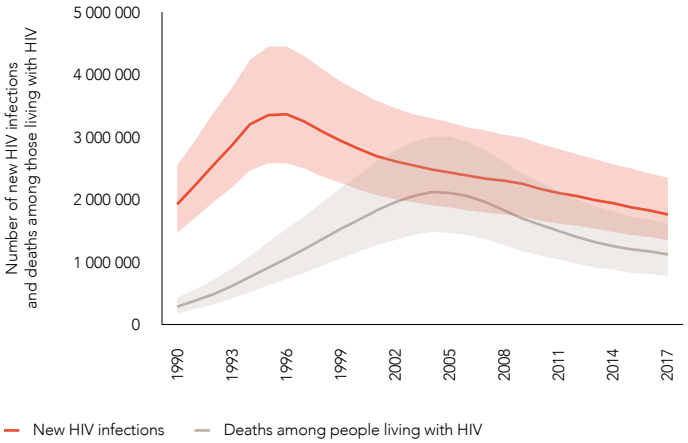
Number of AIDS-related deaths, number of new HIV infections and incidence:prevalence ratio, global, 2000–2017 and 2020 targets

Source: UNAIDS 2018 estimates.

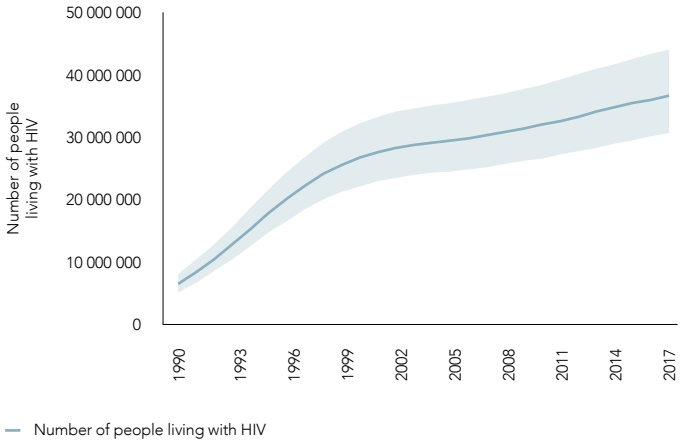
[3] The incidence:prevalence ratio compares the number of new HIV infections to the number of people living with HIV within a population. A full description of this epidemic transition metric is in Chapter 2.

FIGURE 1.4 Rising numbers of people living with HIV

Number of new HIV infections and deaths among the HIV population (all causes), global, 1990–2017



Number people living with HIV, global, 1990–2017



Source: UNAIDS 2018 estimates.

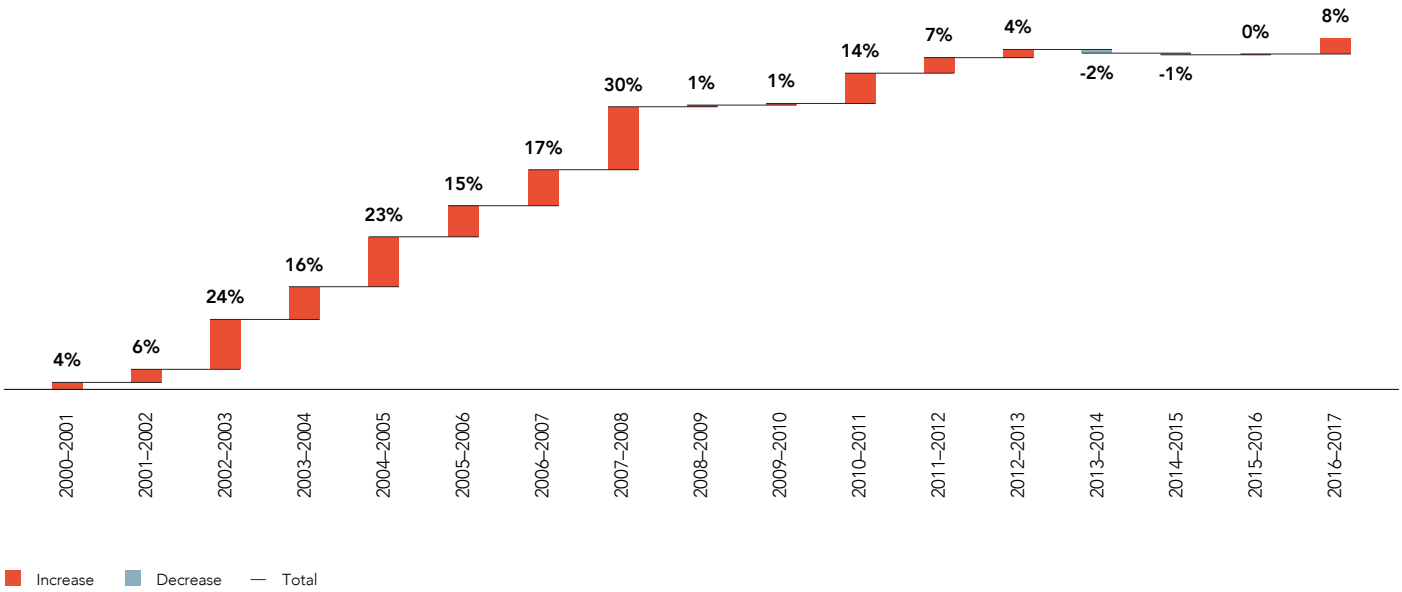
STRUGGLING TO GROW ON A FIXED INCOME

As efforts to prevent new HIV infections continue to lag behind progress on reducing AIDS-related deaths, the number of people in need of treatment continues to grow (Figure 1.4). Health systems must take on this additional burden, but the AIDS response has been on a fixed income for much of the last decade. The rate of treatment scale-up is already slowing. Additional funding will be needed to step up the pace, and a large increase in investment in effective HIV prevention measures is necessary to bring the rate of new infections under control.

Spending on AIDS responses in low- and middle-income countries increased by 8% between 2016 and 2017, driven by improved rates of donor fund expenditure and continued increases in domestic investments (Figure 1.5). An estimated US$ 20.6 billion (in constant 2016 US dollars) was available in 2017—about 80% of the 2020 target set by the United Nations General Assembly. This welcome news comes with a caveat: there were no new significant commitments from donors in 2017. As a result, this one-year rise in donor funding is not expected to continue, and it could even decrease. Even if increases in domestic public expenditures continue, reaching the 2020 investment target is at risk unless new donor commitments are made soon.

FIGURE 1.5 One-year rise in donor funding unlikely to continue

Annual percentage change in HIV resource availability from all sources (public and private), low- and middle-income countries, 2000–2017



Source: UNAIDS resource availability and needs estimates, 2018.

Insufficient investment is compounded by slow and sometimes static efforts to address the societal, legal and policy issues that decades of research show are formidable obstacles that stand between HIV services and the people who need them most. Stigma and discrimination faced by people living with HIV and key populations at higher risk of HIV infection persists globally. Children are underserved by health-care systems. Gender inequality, intimate partner violence, and parental and spousal consent laws leave women and girls vulnerable to HIV, other sexually transmitted infections, unwanted pregnancies and maternal mortality. Laws that criminalize key populations and the transmission of HIV exacerbate HIV risk. Rising income inequality and the marginalization of indigenous peoples, migrants and refugees expose them to poorer health outcomes, including higher rates of AIDS-related morbidity and mortality.

GENDER INEQUALITY AND DISEMPOWERMENT

In sub-Saharan Africa, adolescent girls and young women (aged 15–24 years) bear the brunt of HIV prevention shortcomings, accounting for one in four HIV infections in 2017 despite being just 10% of the population. Women represented 59% of new infections among adults (aged 15 and older) in the region. Increased vulnerability to HIV infection has been linked to intimate partner violence, which is more common among younger women and women who are economically dependent on their male partners *(11–14)* . Violence or the fear of violence can make it very difficult for women to insist on safer sex and to use and benefit from HIV and sexual and reproductive health services *(15–17)*. Women living with HIV who experienced intimate partner violence were significantly less likely to start or adhere to antiretroviral therapy, and they had worse clinical outcomes than other HIV-positive women *(18, 19)*.

Gender inequality and the disempowerment of women remain formidable barriers to progress against the epidemic. They also are barriers to the maternal and child health services that are instrumental in the prevention of mother-to-child transmission of HIV and early diagnosis and treatment initiation of infants who acquire HIV. But despite these barriers, women are more likely than men to take an HIV test and to initiate and adhere to HIV treatment. This translates to lower AIDS-related mortality in women compared to men, while also limiting the preventative benefits of treatment for women.

CHILDREN LIVING WITH HIV ARE UNDERSERVED

The ongoing decline in the number of children acquiring HIV is a major public health triumph. However, much remains to be done. Efforts to prevent mother-to-child transmission have been slowed by inconsistent treatment adherence among expectant and breastfeeding mothers living with HIV, and the significant numbers of pregnant and breastfeeding women with undiagnosed HIV. A high risk of HIV acquisition faced by women in Africa during pregnancy and breastfeeding has also been underappreciated *(20)*.

Low availability of the virological tests needed for newborns exposed to HIV leaves many undiagnosed throughout much of their childhood. As a result, as many as two thirds of HIV-positive children under two years of age in Africa, Asia and the Americas start antiretroviral therapy with advanced immunodeficiency *(21)*. Globally, coverage among children (aged 0–14 years) living with HIV was 52% [33–70%] in 2017, lower than treatment coverage among adults (59% [44–73%]). With 940 000 children receiving antiretroviral therapy, this is far short of the 1.6 million target set for 2018.

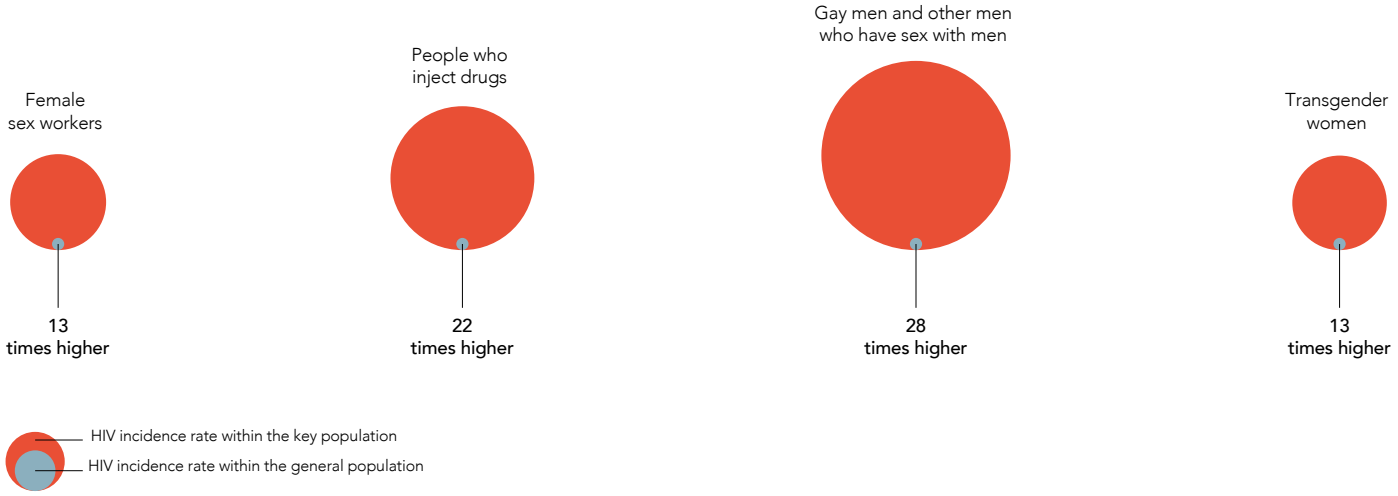
HIV remains among the top ten leading causes of death among adolescents (aged 10–19 years) *(22)*. Restrictive laws and policies—including age of consent laws and adult-oriented HIV services that are perceived as intimidating and of poor quality—discourage service uptake *(23)*. Once enrolled in care, young people aged 15–19 years are more likely than adults to drop out *(24, 25)*. There is a pressing need to develop strategies to improve adherence among this high-priority population.

KEY POPULATIONS LEFT BEHIND

Approximately 40% of new HIV infections globally in 2017 were among key populations and their sexual partners. Available data suggest that the risk of HIV acquisition among gay men and other men who have sex with men was 28 times higher in 2017 than it was among heterosexual men. Similarly, the risk of acquiring HIV for people who inject drugs was 22 times higher than for people who do not inject drugs, 13 times higher for female sex workers than adult women aged 15–49 years, and 13 times higher for transgender women than adults aged 15–49 years (Figure 1.6).

FIGURE 1.6 **Key populations at higher risk of infection**

Relative risk of HIV acquisition, by population group compared to the general population, global, 2017



Source: UNAIDS special analysis, 2018.

HIV risk and other health threats faced by key populations are exacerbated by societal stigma and discrimination that frequently takes the form of physical and emotional violence. Rates of sexual and physical violence are often high, sometimes affecting more than half of those surveyed *(26)*. Much of this violence is meted out with impunity, and some of it is carried out by the police themselves *(27)*. Laws and policies that criminalize same-sex sexual relationships, sex work and drug use give license to discrimination, harassment and violence, isolating key populations and hindering them from accessing vital HIV and health services.

VULNERABILITY, POVERTY AND MIGRATION

An increasingly globalized world brings opportunities for many of the world's poor to lift themselves from poverty, but it has had detrimental impacts for others. Indigenous peoples often struggle within more integrated economic, political and cultural landscapes *(28)*. Poorer access to health services, higher HIV prevalence and increased AIDS-related morbidity and mortality have been observed among indigenous peoples in Brazil, Canada, Indonesia and Venezuela *(29–34)*.

Migration is a central feature of globalization, but people who migrate for economic reasons—or because they are fleeing conflict, natural disasters and other humanitarian emergencies—are exposed to many risks and sometimes open hostility in their new homes. Migration itself is not a risk factor for HIV, but it can place people in situations that increase their risk of acquiring HIV *(35–37)*. Irregular immigration status, language and cultural barriers, user fees, a lack of migrant-inclusive health policies and inaccessible services prevent migrants from accessing the health services they need (38). Studies from Europe have shown that migrants diagnosed with HIV are more likely to present late for treatment and care than nationals *(39)*. Tight rationing of access to health care for refugees leads to delayed care and ultimately increases health expenditure per person *(40)*. Migrants in Europe with HIV–tuberculosis coinfection were especially prone to treatment failure, drug-resistant tuberculosis and premature death *(41, 42)*.

While globalization has likely had a positive impact on development, it is also a factor in increasing income inequality that is happening in all regions. As the rich get richer, the poor are left further behind. The links between poverty and HIV are complex. Insufficient access to nutritious food has been associated with increased HIV risk behaviours among women *(43, 44)*. Population-based surveys show that condom use is lower among people with less education and lower income, but these surveys do not show clear patterns between income level and HIV risk. There is, however, solid evidence that poor individuals living with HIV are disproportionally affected by the health, economic and social consequences of their infections. Among people living with HIV at lower income levels, food insecurity and the difficulties of affording transport and other expenses related to health care contribute to later treatment initiation, lower treatment adherence and higher rates of AIDS-related mortality *(43–45)*.

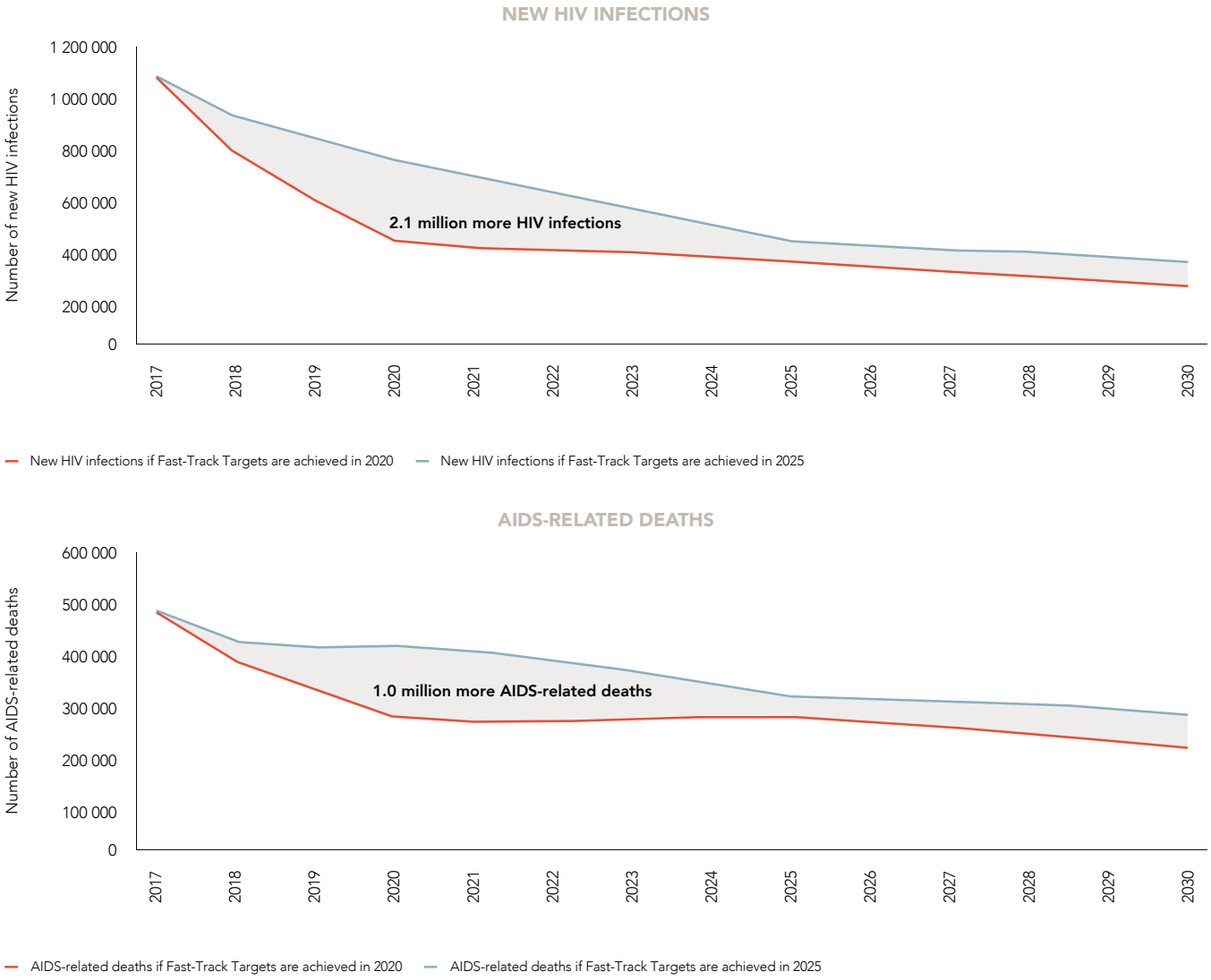
Being poor not only increases a person's chances of ill health; the cost of health care is more likely to push that person deeper into poverty. Universal health coverage programmes have been established in only a few low- and middle-income countries, and health insurance coverage among low-income individuals remains extremely low. Private out-of-pocket spending accounts for more than 60% of total health expenditure in some low- and middle-income countries *(46)*. User fees deter access to HIV services, increase inequities, impoverish entire households affected by HIV and increase AIDS-related morbidity and mortality *(47)*. Even if antiretroviral medicines are available free of charge, fees for diagnostic tests, consultations and medicines for opportunistic infection have a huge impact on lower-income individuals.

TUBERCULOSIS REMAINS A COMMON KILLER

Major gains in diagnosing and treating HIV among notified tuberculosis patients have been achieved over the last 12 years. Access to tuberculosis testing, treatment and preventative therapy among people living with HIV has also been expanded. However, HIV treatment coverage among notified tuberculosis patients who were living with HIV in 2016 varies greatly by country *(48)*. Globally, just 42% of people newly registered in HIV care were receiving tuberculosis preventive therapy. Among the 124 countries that reported data to UNAIDS in 2016, only 39% of the estimated number of people living with HIV who had incident tuberculosis received treatment for both HIV and tuberculosis. As a result,

FIGURE 1.7 **The cost in infections and lives of a five-year delay**

Projected new HIV infections and AIDS-related deaths, reaching Fast-Track Targets in 2020 vs reaching Fast-Track Targets in 2025, 10 countries with highest HIV burden, 2017–2030



Source: Avenir Health and UNAIDS. Unpublished analyses based on Fast-Track modelling, 2018.

tuberculosis remains the leading cause of hospital admission and mortality among people living with HIV. On average, a person living with HIV is 21 [16–27] times more likely to develop active tuberculosis than a person who is not HIV-positive *(48)*.

The overlapping epidemics of HIV, tuberculosis, viral hepatitis and human papillomavirus have similar challenges and features, including modes of transmission, diagnostic difficulties and affected populations that are hard to reach. Improved collaboration among individual infectious disease programmes can strengthen health systems and improve efficiency.

THE COST OF INACTION

The above challenges and many others are described in detail within this report. Slow global progress and backsliding in some regions and countries threaten to delay achievement of many Fast-Track programme targets set for 2020. Even a relatively short delay would come at great cost. If the 10 countries with the highest numbers of people living with HIV reach these targets five years late, it would translate into an additional 2.1 million people in those countries acquiring HIV and about 1.0 million more people dying of AIDS-related illness between 2017 and 2030 (Figure 1.7). If that were to occur, the 2030 target within the Agenda for Sustainable Development—a 90% reduction in HIV incidence and AIDS-related mortality, which would essentially end the AIDS epidemic as a public health threat—would be missed.

COMPREHENSIVE, COMPASSIONATE SERVICES BREAKING DOWN BARRIERS

The barriers can seem insurmountable and their impact disheartening. But for every challenge, there are also reasons to be hopeful. Multiple solutions exist for every challenge. This report catalogues the emerging evidence and innovative approaches that are driving these solutions, including the following:

- Progress in eastern and southern Africa shows that sufficient investment can produce the results promised in the UNAIDS Fast-Track strategy *(49)*. When combination HIV prevention—including VMMC and antiretroviral therapy—is pursued at scale, population-level declines in new infections are achieved.

- Oral PrEP is having an additional impact in cities where it is being delivered at scale. Following the lead of the United States of America, nationwide PrEP programmes are being pursued in Brazil, Kenya, South Africa, United Republic of Tanzania, Zimbabwe and several western European countries.

- The development of a vaginal ring that releases long-acting antiretroviral medicine could make adherence to PrEP easier and provide a discrete HIV prevention option that women can control.

- The collection of granular data can be used to focus the scale-up of services on the populations and geographic locations in greatest need. Geolocation of HIV seroconversions has revealed the importance of HIV hotspots in the transmission patterns of KwaZulu-Natal province, South Africa, GIS mapping has been used to saturate coverage of VMMC in two regions of Uganda, and district-level estimates of HIV incidence and prevalence are being used across sub-Saharan Africa to guide local HIV responses *(50, 51)*.

- Using VMMC as an entry point for both HIV prevention and broader health-seeking services can increase HIV testing uptake and link the men found to be HIV-positive to care and treatment *(52)*.

- Offering HIV testing services through a smartphone dating application used by gay men in China coincided with a 78% increase in the number of people tested for HIV at the clinics promoted by the app *(53)*.

- The introduction of HIV self-testing has increased the uptake of testing among sex workers in a variety of settings, including Malawi, Myanmar, the United Kingdom of Great Britain and Northern Ireland, and Zimbabwe *(54–56)*.

- Offering HIV testing and counselling to family members (including children), other members of the household and sexual partners of people diagnosed with HIV doubled the proportion of men in Kenya who took an HIV test during their partner's pregnancy *(57)*. In Malawi, it led to much higher yields of new diagnoses *(58)*.

- The introduction of rapid HIV and syphilis testing in remote areas of Brazil has increased diagnoses and treatment among indigenous peoples *(34)*.

- Removing legal and policy barriers for Shan migrants in northern Thailand and introducing measures to reduce discrimination in health-care settings and provide appropriate services led to 1.4 million new

enrolments in Thailand's Migrant Health Insurance plan in just one year *(59)*.

- Community-based or community-supported models of care, including task shifting to community health workers, improves retention in care and adherence to treatment, while at the same time reducing the burden on formal health systems *(60–62)*.

- Addressing stigma and discrimination and providing greater support—including accompanied clinic visits, money for transportation, and basic kindness and concern—greatly increases treatment adherence among adolescents (aged 10–19 years) living with HIV in Eastern Cape province, South Africa *(63)*.

- The integration of postnatal HIV treatment services into maternal, neonatal and child health services—combined with basic forms of peer and family support—markedly improves treatment outcomes among mothers living with HIV *(64)*.

- Decriminalization of sex work in Europe has been linked with reductions in the number of sex workers living with HIV, and decriminalization of drug use and scale-up of harm reduction in Portugal triggered a sharp decline in the incidence of HIV infection related to injecting drug use *(65, 66)*.

- Point-of-care early infant diagnosis reduces the waiting times for the return of test results from months to hours, improving access to early treatment for children living with HIV *(67, 68)*.

- Training health-care workers to deliver stigma- and discrimination-free services in Viet Nam has been shown to reduce unnecessary precautions, negative attitudes, and stigma and discrimination in health-care settings *(69)*.

- Community-based social interventions that include combined livelihood and training interventions have been shown to reduce intimate partner violence in Nicaragua, southern Africa and Uganda *(70–73)*.

- Keeping girls in school has been shown to have a high protective effect against HIV in Botswana, Malawi, South Africa and Uganda *(74–76)*.

- Comprehensive sexuality education programmes have been shown to contribute to delayed initiation of sexual intercourse, decreased frequency of sexual intercourse, decreased number of sexual partners, reduced risk taking, increased use of condoms and increased use of contraception among young people *(77)*.

- Social protection schemes have been shown to temper the social drivers of HIV risk. Cash transfers in particular have been effective at enabling girls to remain in school, and they have been linked to reductions in intimate partner violence and declines in early marriage and teenage pregnancy—outcomes that support general well-being and help reduce HIV vulnerability and risk *(78–82)*.

- The reduction or removal of user fees increased health service access in Malawi and reduced catastrophic health-care expenditure in Kenya *(83, 84)*. Broad consensus has been established among health policy-makers in sub-Saharan Africa that the removal of user fees is a crucial step to increasing access to health care and reducing the financial risks associated with ill health.

Empowerment and inclusion are at the core of the 2030 Agenda for Sustainable Development. The above examples show that empowerment and inclusion are not fuzzy social concepts—they are as real as technical innovations, and they deliver measurable results.

A common element among many innovations contained within the pages of this report is the engagement of communities. From townships in southern Africa to remote villages in the Amazon to mega-cities in Asia, collaboration between health systems and individual communities has been shown to reduce stigma and discrimination and to help deliver services to those in greatest need. But when this work is limited to a few visionary community activists, health professionals and researchers, their impact is diluted among the hundreds of millions of people who are in need of greater support.

It is the responsibility of political leaders, national governments and the international community to make sufficient financial investments and establish the legal and policy environments needed to bring the work of innovators to global scale. Doing so will create the momentum needed to reach the Fast-Track Targets by 2020 and end AIDS as a public health threat alongside achievement of the Sustainable Development Goals in 2030.

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PART I

PROGRESS TOWARDS FAST-TRACK COMMITMENTS

2. State of the epidemic

AT A GLANCE

1 Reductions in AIDS-related deaths continue at a pace that puts the 2020 milestone within reach.

2 The global rate of new HIV infections is not falling fast enough to reach the 2020 milestone.

3 As deaths decline faster than new HIV infections, the number of people living with HIV has grown to 36.9 million [31.1–43.9 million].

4 The collection and analysis of more granular data is needed to guide efforts to reach key populations with services.

5 New epidemic transition measures show whether countries and regions are on the path to ending the AIDS epidemic.

Progress and gaps

End the AIDS epidemic by 2030. United Nations Member States boldly included this objective in the 2030 Agenda for Sustainable Development. Billions of dollars of investment and the collective efforts of millions of health-care workers, social workers, community-based organizations and researchers are working towards this goal.

Is the world on track? Are regions and countries progressing at different rates? What about individual cities and communities? What are the best ways to measure progress?

The international community and national AIDS programmes have struggled with these questions since the first global targets for the AIDS response were set in 2001. The United Nations General Assembly most recently took up this issue in 2016 during a High-Level Meeting focused on what must be done to achieve the goal of ending AIDS by 2030. A panel of experts advised that "ending AIDS as a public health threat" can be interpreted quantitatively as a 90% reduction in new HIV infections and deaths from AIDS-related illness by 2030 (compared to 2010 baselines).

Country data reported to UNAIDS over more than two decades were used to estimate the levels of service coverage required to achieve these reductions. This model was the basis of the Fast-Track programme coverage targets for 2020 set by the United Nations General Assembly. Meeting those targets should result in the achievement of the following impact-level interim milestones: by 2020, a reduction of new HIV infections to fewer than 500 000 globally and a reduction in deaths from AIDS-related illness to fewer than 500 000 globally—approximately a 75% reduction in both measures since 2010 *(1)*.

AIDS-RELATED DEATHS

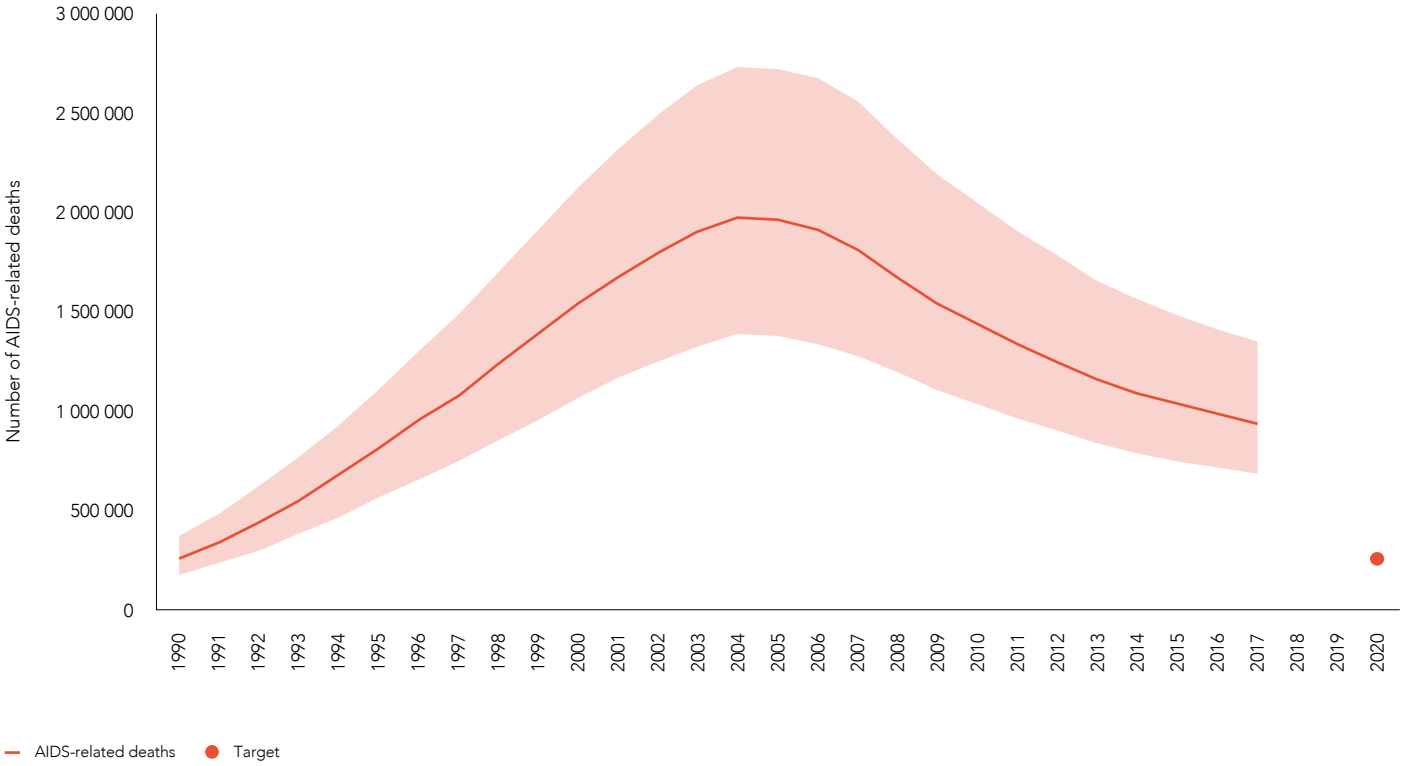
The latest data from countries show that reductions in deaths due to AIDS-related illness—largely driven by the steady scale-up of antiretroviral therapy—continue , but not quickly enough to reach the General Assembly's 2020 milestone. The annual number of global deaths from AIDS-related illness among people living with HIV (all ages) has declined from a peak of 1.9 million [1.4–2.7 million] in 2004 to 940 000 [670 000–1 300 000] in 2017. Since 2010, AIDS-related mortality has declined by 34%. Reaching the 2020 milestone will require further declines of nearly 150 000 deaths per year (Figure 2.1).

The global decline in deaths from AIDS-related illness has largely been driven by progress in sub-Saharan Africa (Figure 2.2), particularly eastern and southern Africa, which is home to 53% of the world's people living with HIV. AIDS-related mortality declined by 42% from 2010 to 2017 in eastern and southern Africa, reflecting the rapid pace of treatment scale-up in the region. In western and central Africa, declines were more modest (24% reduction). Over the same period, steady declines in deaths also continued in Asia and the Pacific (39% reduction), western and central Europe and North America (36% reduction) and the Caribbean (23% reduction). In Latin America, where antiretroviral therapy coverage has been relatively high and AIDS-related mortality relatively low for many years, the decline in deaths over the past seven years was 12%. There has been no reduction in AIDS-related mortality in eastern Europe and central Asia since 2010, and deaths from AIDS-related illness increased by 11% in the Middle East and North Africa.

Mortality reductions remain higher among women than men. This gender gap is particularly notable in sub-Saharan Africa, where 56% of people living with HIV are women. Despite the higher disease burden among women, more men living with HIV are dying *(2, 3)*. In 2017, an estimated 300 000 [220 000–410 000] men in sub-Saharan Africa died of AIDS-related illness compared to 270 000 [190 000–390 000] women. This reflects higher treatment coverage among women: in 2017, an estimated 75% of men living with HIV (aged 15 years and over) in eastern and southern Africa knew their HIV status, compared to 83% of women living with HIV of the same age.

FIGURE 2.1 **Approaching a 2020 milestone**

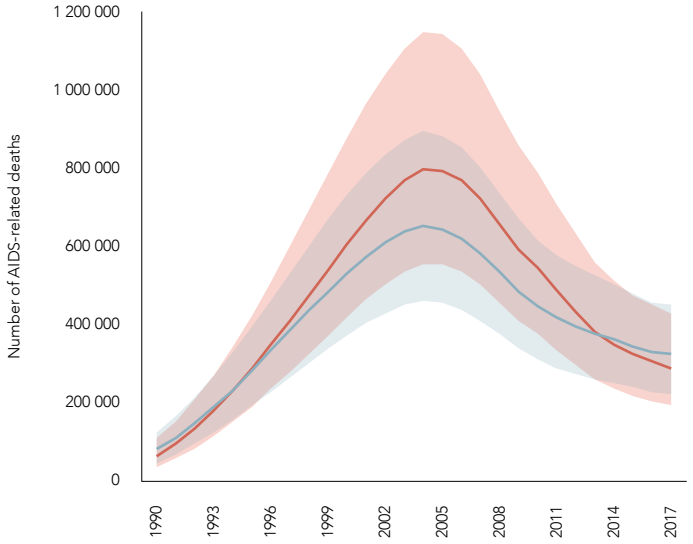
Number of AIDS-related deaths, global, 1990–2017 and 2020 target



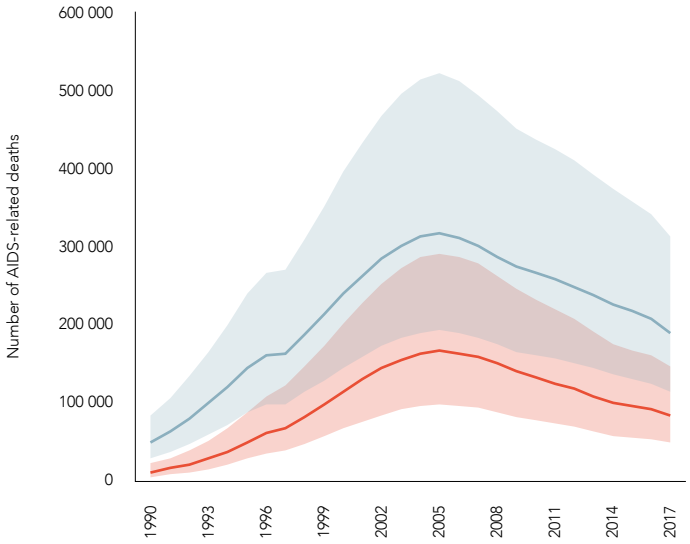
Source: UNAIDS 2018 estimates.

FIGURE 2.2 **Steep decline in deaths in sub-Saharan Africa**

Number of AIDS-related deaths, by sex, sub-Saharan Africa, 1990–2017



Number of AIDS-related deaths, by sex, regions outside sub-Saharan Africa, 1990–2017



Females Males

Source: UNAIDS 2018 estimates.

In other parts of the world, where the vast majority of epidemics are among predominantly male key populations (such as people who inject drugs and gay men and other men who have sex with men), HIV disease burden is higher among men. This higher burden, combined with lower treatment coverage among men, increases the gender disparity in AIDS-related mortality in these regions. Outside of sub-Saharan Africa, 69% deaths from AIDS-related illness were among men and boys.

NEW HIV INFECTIONS

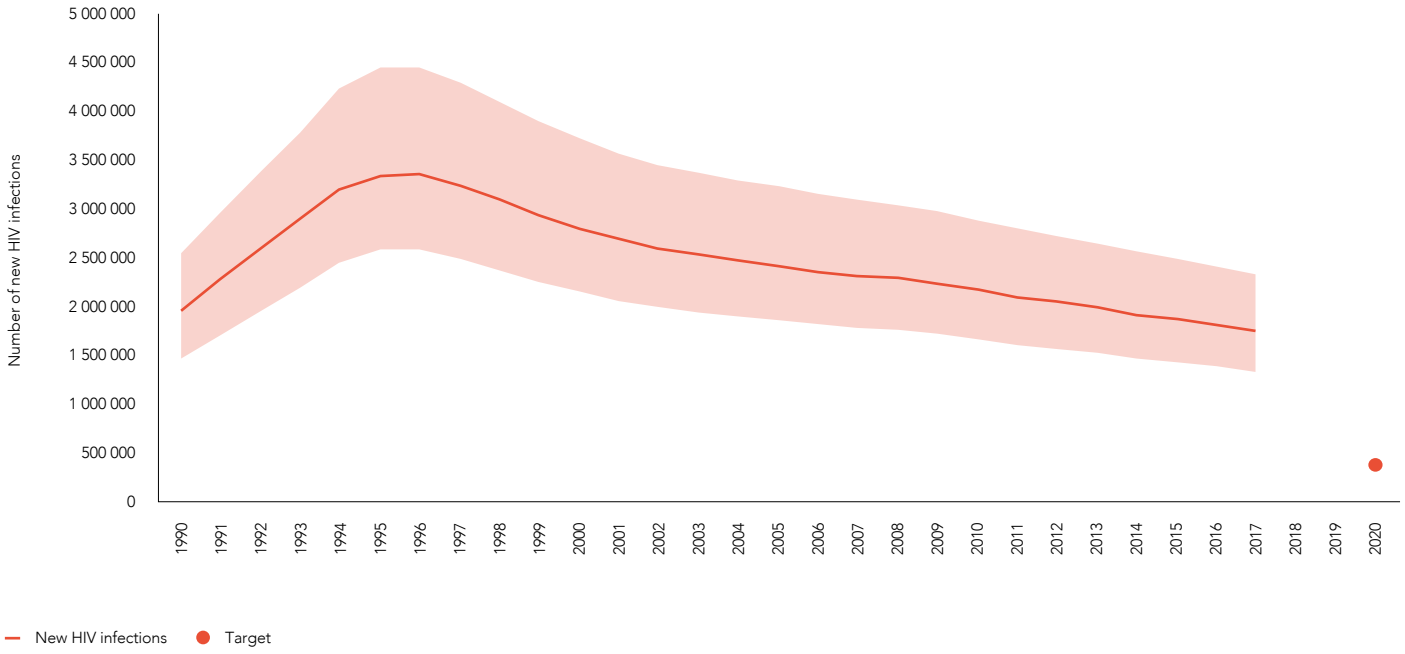
The number of new HIV infections globally continued to decline in 2017. Modelled estimates show that new infections (all ages) declined from a peak of 3.4 million [2.6–4.4 million] in 1996 to 1.8 million [1.4–2.4 million] in 2017. However, progress is far slower than what is required to reach the 2020 milestone of less than 500 000 new infections (Figure 2.3).

As is the case with AIDS-related mortality, the reduction in new HIV infections between 2010 and 2017 was strongest in sub-Saharan Africa (Figure 2.4) due to sharp reductions in eastern and southern Africa (30% decline). Important progress was also made in the Caribbean (18% decline), in Asia and the Pacific (14% decline), western and central Africa (8% decline) and western and central Europe and North America (8% decline). The trend was essentially stable in Latin America (1% decline). In the Middle East and North Africa and eastern Europe and central Asia, the annual number of new HIV infections has doubled in less than 20 years.

Women continue to account for a disproportionate percentage of new HIV infections among adults (aged 15 and older) in sub-Saharan Africa: they represented 59% of the 980 000 million [820 000–1 100 000] new adult HIV infections in 2017. In other parts of the world, men accounted for 63% of the 650 000 [590 000–750 000] new adult HIV infections in 2017. Globally, there were almost 90 000 more new HIV infections among men than women in 2017.

FIGURE 2.3 Insufficient progress on prevention

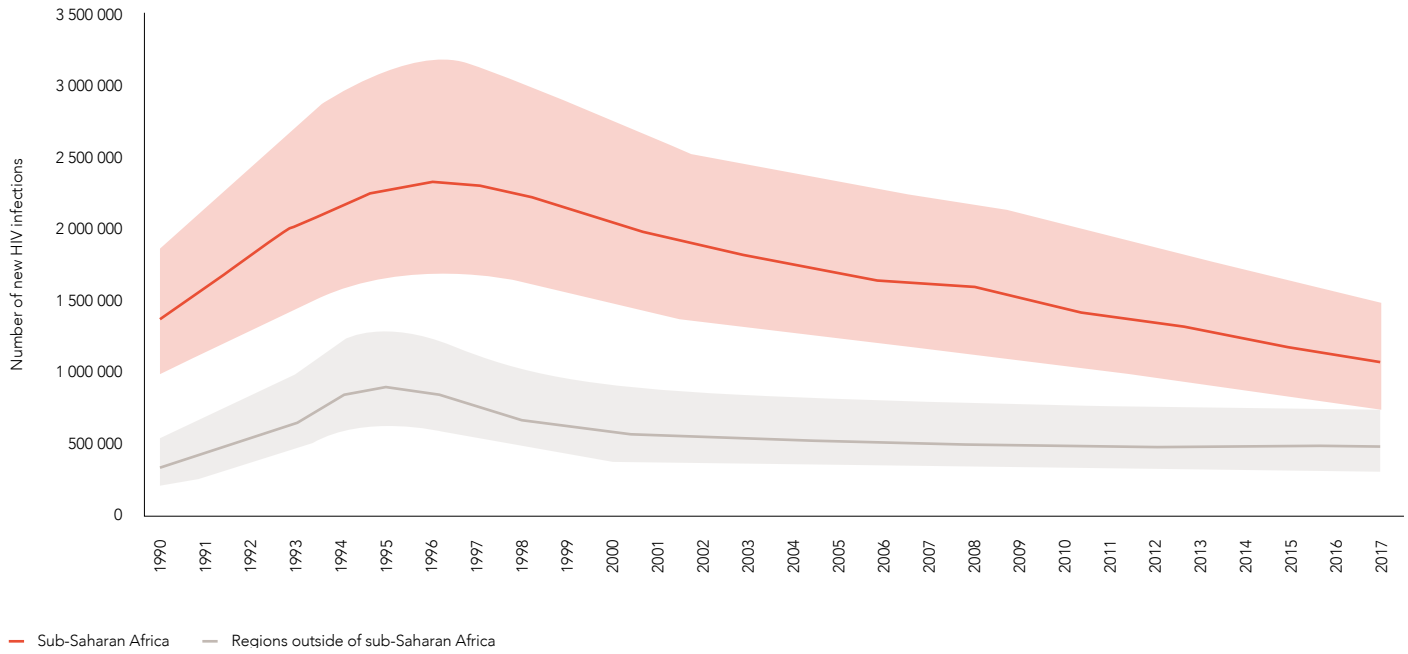
Number of new HIV infections, global, 1990–2017 and 2020 target



Source: UNAIDS 2018 estimates.

FIGURE 2.4 Little change in new HIV infections outside of sub-Saharan Africa

Number of new HIV infections, sub-Saharan Africa and regions outside sub-Saharan Africa, 1990–2017



Source: UNAIDS 2018 estimates.

KEY POPULATIONS

As the world continues on the path towards ending the AIDS epidemic, national epidemics will be increasingly concentrated among populations at higher risk of HIV infection.

As the need to focus HIV services on key populations increases, the utility of national-level metrics will diminish. Key populations make up a small proportion of the general population. They also are reluctant to identify themselves, especially in environments where their actions or identities are considered socially or religiously unacceptable, or they are punishable under local law. This makes it difficult to collect quality data on the location and size of these populations, their attitudes and practices, their access to HIV services, and the incidence and prevalence of HIV among them. This challenge exists both in settings with low HIV prevalence, where key populations account for the vast majority of new HIV infections, and in high-prevalence settings, where HIV risks are assumed to be more evenly distributed.

Available data—including special surveys of key populations using respondent-driven sampling methods—suggest that 47% of new HIV infections globally in 2017 were among key populations and their sexual partners.[1] This percentage varies by region (Figure 2.5). Key populations and their sexual partners accounted for more than 95% of new HIV infections in eastern Europe and central Asia and the Middle East and North Africa, 90% of new infections in western and central Europe and North America, 77% in Latin American and 84% in Asia and the Pacific and the Caribbean. In western and central Africa, 40% of new HIV infections are among key populations and their sexual partners.

Gay men and other men who have sex with men accounted for an estimated 57% of new HIV infections in western and central Europe and North America in 2017, an estimated 41% of new infections in Latin America, more than 25% of new HIV infections in Asia and the Pacific and the Caribbean, about 20% of new infections in eastern Europe and central Asia and the Middle East and North Africa, and an estimated 12% of new infections in western and central Africa. People who inject drugs accounted for more than one third of new HIV infections in eastern Europe and central Asia and in the Middle East and North Africa. Sex workers accounted for about one in 10 infections in eastern Europe and central Asia and the Middle East and North Africa.

EPIDEMIC TRANSITION METRICS

Tracking annual numbers of new HIV infections and deaths from AIDS-related illness has several advantages. Percentage reduction targets are simple, easily understood, applicable to all countries regardless of the size of their HIV epidemics, and scalable to subnational, national, regional and global levels. Data also are readily available: estimates are produced annually by countries and reported to UNAIDS, meaning that progress towards the targets can be measured annually.

However, achieving steep reductions in these measures is much more difficult in low-level epidemic settings. In addition, the 2010 baseline hides strong gains made by many countries before 2010 compared to countries that scaled up their HIV responses more recently. The two measures also are presented separately, which artificially disconnects the clear relationship between new HIV infections, mortality among people living with HIV and the prevalence of HIV within a population.

The UNAIDS Science Panel convened a meeting of experts from various stakeholder groups in October 2017 to consider complementary measures that countries could use to better track their progress towards ending AIDS as a public health threat.[2] One measure of note is the incidence:mortality ratio. Combining HIV incidence and mortality among people living with HIV from all causes in a ratio produces a dynamic measure of the annual change in the number of people living with HIV within a given population. The measure is useful for calculating how current investments in a country's HIV response will impact future resource needs *(4)*. When the ratio is greater than 1 (when there are more new infections than deaths within a year), there will be a net increase in the number of people living with HIV, which will likely increase the financial burden on the health system. Conversely, when the ratio is less than 1, there will be a net reduction in the number of people living with HIV, and the financial burden on the health system will likely decrease.

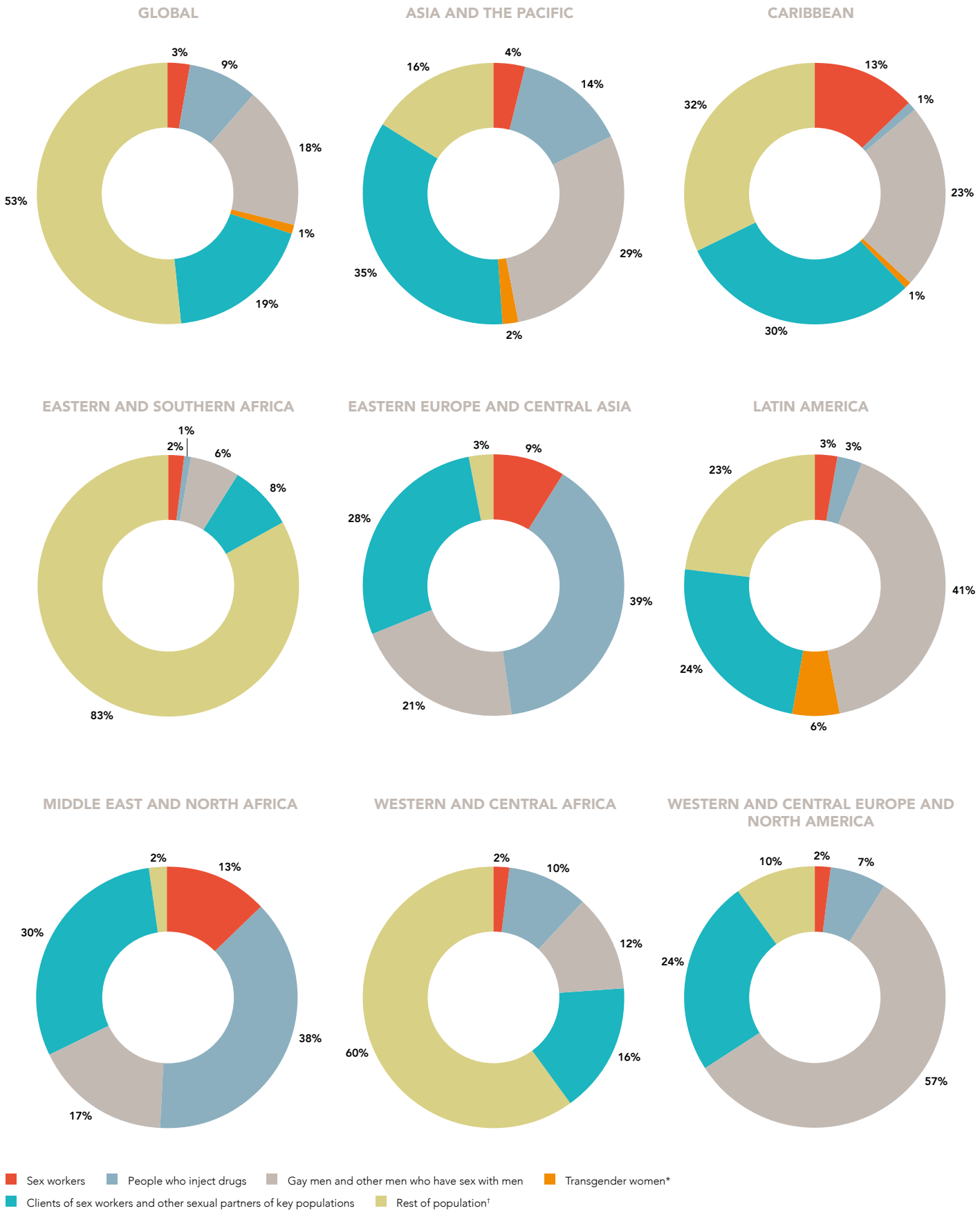
Continued on page 32

[1] Respondent-driven sampling relies on members of a hard-to-find population referring additional people within the population to the data collectors of the study. This "snowball" sample is then adjusted using a mathematical model that weights the sample to compensate for the fact that the sample was collected in a non-random way.

[2] The descriptions of epidemic transition metrics in this chapter are largely drawn from the report of the meeting convened by the UNAIDS Science Panel, Making the end of AIDS real: consensus building around what we mean by "epidemic control". The report is available at http://www.unaids.org/sites/default/files/media_asset/glion_oct2017_meeting_report_en.pdf.

FIGURE 2.5 **Key populations important in all epidemic settings**

Distribution of new HIV infections, by population group, global and by region, 2017



* Data are only available from Asia and the Pacific, Caribbean and Latin America. With rare exceptions, reported data are from transwomen who sell sex, but size estimates are increasingly all transgender women.

† Individuals in this category did not report any HIV-related risk behaviour.

Source: UNAIDS special analysis, 2018.

EMERGING EVIDENCE AND INNOVATIONS

Granular data in KwaZulu-Natal for a location–population approach

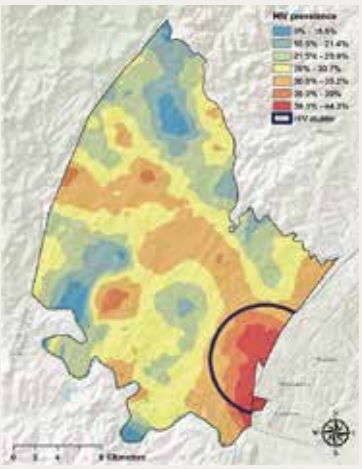
Global, regional and country data provide bird's-eye views that can obscure diversity at the local level. Recognition of the gains to be made through more precise allocation of resources to the people and places in greatest need has inspired a location–population approach to the HIV response *(5)*. Adopting this approach requires the collection of more granular data, down to neighbourhoods and individual service providers. It then needs geospatial analysis of those data to determine where new infections are occurring and where gaps in essential services exist, followed by the redistribution of resources to fill those gaps.

In South Africa, mapping of epidemiological data has revealed marked diversity in the distribution of HIV infections within a relatively small geographic area with a high overall rate of HIV. Researchers from the Africa Health Research Institute, Kwazulu-Natal Research Innovation and Sequencing, and University of Cincinnati geolocated individual seroconversions from 2010–2014 cohort survey data collected in KwaZulu-Natal province. This analysis reveals an "HIV hotspot" where 40.8% [39.5–42.1%] of adults (aged 15 years and older) are living with HIV (Figure 2.6) *(6)*. People within this geographic area have a 46% higher risk of HIV infection than those living outside of it, and the closer one lives to the hotspot, the higher one's risk of infection (Figure 2.6) *(6)*.

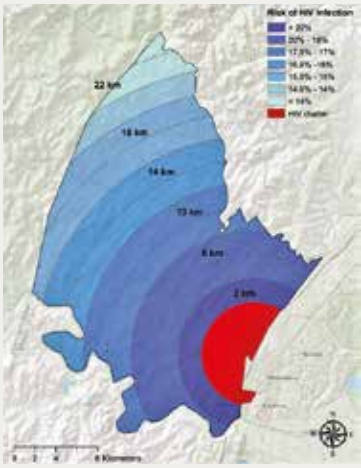
The KwaZulu-Natal data also show that hotspots play an important role in the spread of HIV in the areas surrounding them. A study of 351 HIV transmission links among adults (aged 15 years and older) found that 72.4% of the links included at least one individual within the HIV hotspot, whereas in 27.6% of the links, both individuals were located outside of the hotspot (Figure 2.6) *(6)*. A separate analysis of cohort survey data collected in rural areas of the province between 2004 and 2014 also found that new HIV infections are clustered in specific geographic locations, forming corridors of transmission, where the rate of new infections among adults (aged 15–54 years) was 70% higher than in neighbouring areas *(7)*. Intensifying comprehensive HIV prevention and treatment services within the HIV hotspot and transmission corridors could prove critical in efforts to reach Fast-Track Targets in KwaZulu-Natal.

FIGURE 2.6

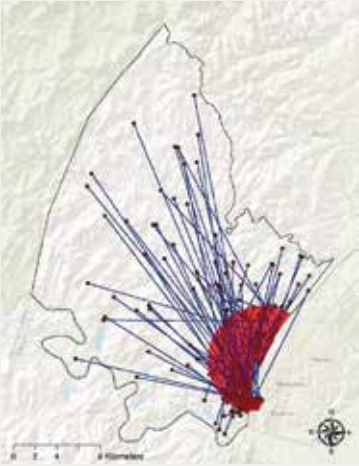
HIV spreads from hotspots



HIV prevalence among adults (aged 15 years and older), by geographic area, KwaZulu-Natal, South Africa, 2010–2014



Risk of HIV infection among adults (aged 15 years and older), by geographic area, KwaZulu-Natal, South Africa, 2010–2014



HIV transmission links among adults (aged 15 years and older), KwaZulu-Natal, South Africa, 2010–2014

Note: On the third map, an intentional random spatial error has been introduced to anonymize individuals' locations.

Source: Cuadros DF. Assessing the role of geographical HIV hot-spots in the spread of the epidemic. In: CROI 2018 [website]. Boston (MA); c2018 (http://www.croiwebcasts.org/console/player/37086?mediaType=slideVideo&&crd_fl=0&ssmsrq=1528958135518).

Improving estimates on key populations and HIV

The risk of acquiring HIV is unevenly distributed within countries, both geographically and among different subpopulations. There have been substantial improvements in recent years in the measurement of this risk differential. Recent large-scale investment in household surveys is improving measurement of the disease burden of HIV, expansion of HIV testing and treatment services, and viral suppression among people living with HIV. There have also been innovations in survey methodology focused on specific subpopulations, enabling HIV programmes to obtain more robust data on specific determinants of HIV acquisition, including estimates of the unmet HIV prevention and treatment needs among gay men and other men who have sex with men, sex workers, people who inject drugs, transgender women and incarcerated populations. Where available, these data have informed mathematical modelling exercises that consistently demonstrate that HIV prevention portfolios matched to the differing risks across populations and locations will accelerate reductions in new HIV infections and produce better value for money *(8–10)*.

There is a window of opportunity to strengthen the tools available and enable national HIV programmes to collect and analyse granular data, and to focus their limited resources on where they are most needed.

Motivated by the desire to sustain momentum towards eliminating new HIV infections, there is a window of opportunity to build on this progress and strengthen the tools available to national HIV programmes. This would enable them to collect and analyse granular data, and to focus limited resources on where they are most needed. The UNAIDS Reference Group on Estimates, Modelling and Projections[3] has identified a number of priorities for innovation:

1. **Develop improved metrics for understanding and communicating the contributions of key populations to ongoing HIV transmission across epidemic settings.** Current models may not fully represent the different HIV transmission risks to and from key populations and how they have contributed to the high incidence observed in many settings. Understanding these risks is critical to ending AIDS as a public health threat *(11, 12)*. New metrics are needed to better measure HIV transmission among key populations. HIV service provision varies across geography and population groups, and a better understanding of how this impacts the epidemic is required. Projections of how transmission patterns may evolve and lead to increased proportions of new infections among specific subpopulations are needed to maintain an efficient response.

2. **Make existing data about key populations more robust and accessible for HIV policy and planning purposes.** Substantial efforts have improved the collection, curation and synthesis of epidemiologic data about key populations. A coordinated effort to make these data and tools more accessible will support their more consistent and effective use in HIV strategic information and policy.

3. **Develop new tools that strengthen ownership of data on key populations within the national HIV estimates process, alongside core epidemiological indicators for the general population**. Country-owned HIV estimates, generated by national HIV programmes using the Spectrum model, are central to the HIV response. These estimates also are a key component of countries' regular reporting to UNAIDS on progress towards global targets. New modelling tools that facilitate the local creation of key population-focused strategic information through this same process will facilitate improved local understanding, ownership and effective use of these data to support an evidence-informed and human rights-affirming HIV policy and programmatic response.

[3] On 12 July 2018, the Reference Group lost Professor Basia Zaba, who had been a member since 1998 and made several critical contributions to HIV surveillance and modelling.

Continued from page 28

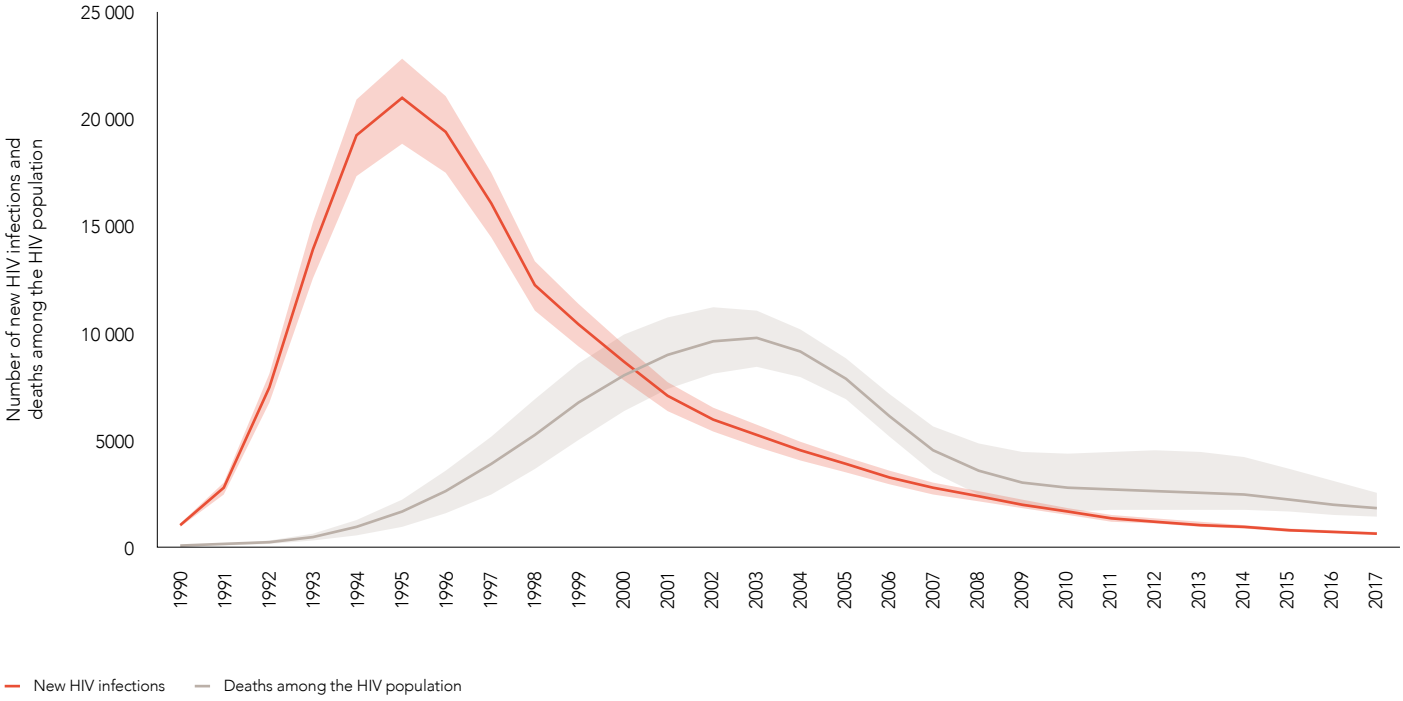
Globally, stronger reductions in AIDS-related mortality compared to new HIV infections has seen the total number of people living with HIV rise steadily in recent years.

However, use of the incidence:mortality ratio in isolation can be misleading. High AIDS-related mortality, as was the case before antiretroviral therapy was widely available, can push the incidence:mortality ratio below 1 and drive reductions in the number of people living with HIV within a population. This is clearly an undesirable situation. In recent years, steadily increasing coverage of antiretroviral therapy globally has lowered mortality among people living with HIV, while efforts to prevent HIV infections have been relatively less successful. As a result, the global incidence:mortality ratio has been greater than 1 for at least the last 25 years, and the number of people living with HIV globally continues to increase steadily.

This fundamental drawback of the incidence:mortality ratio can be dealt with by limiting its use to situations where antiretroviral therapy coverage exceeds 81% and viral suppression exceeds 73%, as called for in the 90–90–90 targets.[4] High rates of viral suppression should translate to most HIV-positive people living long and healthy lives. If HIV prevention efforts are sufficient, the ratio will decrease as the world strives to end the AIDS epidemic. At the end of 2017, only one country had achieved the 2020 treatment coverage target and had an incidence:mortality ratio under 1: Cambodia (Figure 2.7).

FIGURE 2.7 **Incidence:mortality ratio under 1 in Cambodia**

Number of new HIV infections and deaths among the HIV population (all causes), Cambodia, 1990–2017

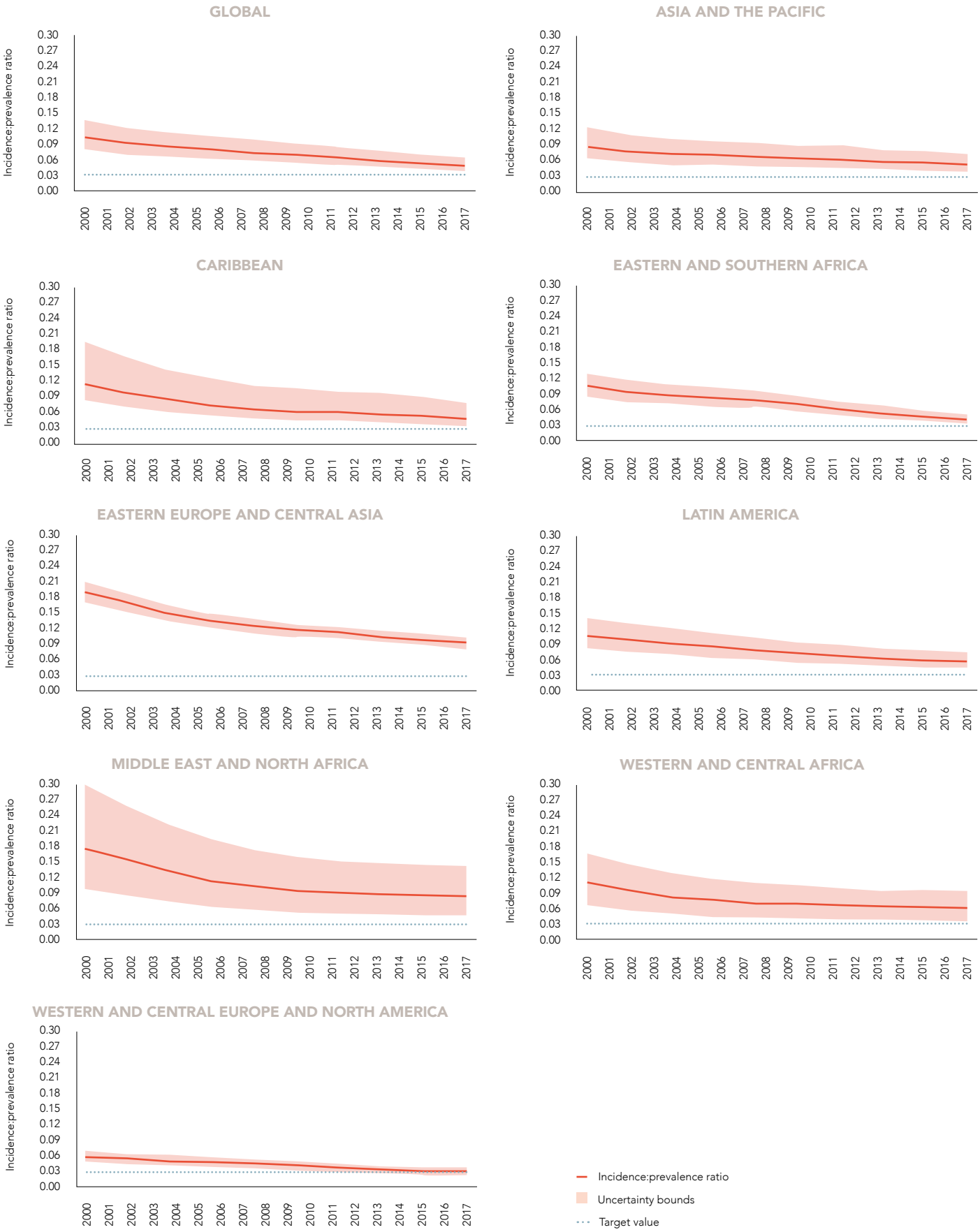


Source: UNAIDS 2018 estimates.

[4] In the strategy of the United States President's Plan for AIDS Relief (PEPFAR), use of the incidence:mortality ratio is limited to countries with antiretroviral therapy coverage of 70% or higher.

FIGURE 2.8 **Global progress towards ending the AIDS epidemic**

Incidence:prevalence ratio, global and by region, 1990–2017



Source: UNAIDS 2018 estimates.

INCIDENCE:PREVALENCE RATIO

A similar dynamic measure is the incidence:prevalence ratio. This ratio of the number of new HIV infections to the number of people living with HIV within a population produces the average duration of time a person lives with HIV in an epidemic that remains stable over many years (prevalence/incidence = duration). If a benchmark is set that corresponds to long life expectancy for people living with HIV, the ratio incorporates both impact-level objectives set by the United Nations General Assembly: preventing HIV infections and ensuring that HIV-positive people live long and healthy lives. UNAIDS has selected an epidemic transition benchmark of 0.03, which corresponds to an average life expectancy after infection of 30 years.[5] At this average life expectancy, the total population of people living with HIV will gradually fall if the number of new HIV infections is less than three per 100 people living with HIV per year. However, if the number of new infections per 100 people living with HIV per year is greater than three, the population of people living with HIV will grow over time.

The global incidence:prevalence ratio has been steadily declining since 1990, reaching 0.05 in 2017. All regions have had declining ratios since 2000, but the rates of decline and the 2017 ratios vary greatly (Figure 2.8). In western and central Europe and North America, low and declining incidence of HIV and mortality among people living with HIV over the last 17 years has seen the incidence:prevalence ratio fall from 0.06 in 2000 to 0.03 in 2017. Strong and steady reductions in new HIV infections and mortality among people living with HIV in eastern and southern Africa has pushed the ratio down from 0.11 in 2000 to 0.04 in 2017. Progress has been more gradual in Asia and the Pacific (0.05 in 2017), Latin America (0.06 in 2017), the Caribbean (0.05 in 2017) and western and central Africa (0.06 in 2017). The incidence:prevalence ratios of the Middle East and North Africa (0.08 in 2017) and eastern Europe and central Asia (0.09 in 2017) remain high, reflecting the rising incidence of HIV and relatively low treatment coverage in these regions.

Countries that have already achieved the 0.03 benchmark include Austria, Bahamas, Cambodia, Denmark, Ethiopia, France, Germany, Italy, Nepal, Netherlands, Portugal and Spain.

PUTTING IMPACT MEASURES INTO CONTEXT

HIV incidence, HIV prevalence and other epidemiological measures do not reflect the structural and social determinants that facilitate the spread of HIV or the substantial stigma and discrimination faced by people living with HIV and key populations. They also fail to capture the need to establish an enabling legal and policy environment to protect these individuals from rights violations and to change the attitudes and behaviours of the general population.

In recognition of this, UNAIDS consulted a group of civil society leaders and expert researchers. Their task was to review (a) the available measures of HIV-related stigma and discrimination and (b) the legal and policy environment for health service provision to and rights protection of people living with HIV and key populations at higher risk of HIV infection. The aim of this process was to establish one or more summary measures of the enabling environment of an effective HIV response. Such a process takes time: available measures do not cover all of the required facets of an enabling environment, and consultation with people living with HIV and key populations is critical. The expert group proposed to incorporate development of a summary measure into the ongoing efforts to forge a global compact to end all forms of HIV-related stigma and discrimination.

In the interim, it was agreed that UNAIDS will accompany its presentation of epidemic transition measures with an interim set of indicators that measure the drivers, facilitators, manifestations and outcomes of HIV-related stigma and discrimination (Table 2.1). Region and country data for these indicators are presented in the region chapters of this report, the accompanying *UNAIDS 2018 data book* and the AIDSinfo website.

[5] An individual's life expectancy after infection is highly dependent on the age at which they are infected. Global estimates show that most adult infections occur among men aged 25–29 years and among women aged 20–24 years. Children (aged 0–14 years) accounted for 11% of HIV infections in 2017.

TABLE 2.1 Putting epidemic transition into context

Interim set of indicators that measure the drivers, facilitators, manifestations and outcomes of HIV-related stigma and discrimination

DRIVERS AND FACILITATORS OF HIV-RELATED DISCRIMINATION

DISCRIMINATORY ATTITUDES

- Percentage of women and men aged 15–49 years who report discriminatory attitudes towards people living with HIV *(GAM/population-based surveys)*
- Percentage of health facility staff who hold stigmatizing views about people living with HIV *(health facility surveys)*

DISCRIMINATORY LAWS AND POLICIES *(NCPI/civil society databases)*

- Does your country have laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission?
- Are transgender people criminalized and/or prosecuted in your country?
- Is sex work criminalized in your country?
- Does your country have laws criminalizing same-sex sexual acts?
- Does your country retain the death penalty in law for people convicted of drug-related offences? Is drug use or possession for personal use an offence in your country?
- Does your country have laws or policies restricting the entry, stay and residence of people living with HIV?
- Is there a law, regulation or policy specifying that HIV testing is (a) solely performed on the basis of voluntary and informed consent, (b) mandatory before marriage, (c) mandatory to obtain a work or residence permit, or (d) mandatory for certain groups?
- Does your country have laws requiring parental consent for adolescents to access (a) sexual and reproductive health services, (b) HIV testing or (c) HIV treatment?
- Does your country have laws requiring spousal consent for married women to access (a) sexual and reproductive health services or (b) HIV testing?
- Is vertical transmission of HIV criminalized in your country?
- In your country what is the legal age of marriage? In your country is child marriage (a formal marriage or informal union before age 18) void or prohibited?
- Does your country have legislation on domestic violence? If yes, does this legislation cover explicit criminalization of marital rape?
- Does your country have legal protections for transgender people?
- Does your country have legal protections for sex workers?
- Does your country have any laws or other provisions specifying protections based on grounds of sexual orientation?
- Does your country have any specific anti-discrimination laws or other provisions that apply to people who use drugs?

SERVICES

- Coverage of HIV prevention programmes: Percentage of people in a key population reporting having received a combined set of HIV prevention interventions
- Are opioid substitution therapy programmes operational in your country? *(NCPI/GAM/civil society databases)*
- Are needle–syringe programmes operational in your country? *(NCPI/GAM/civil society databases)*
- Does your country have education policies that guide the delivery of life skills-based HIV and sexuality education according to international standards in (a) primary school, (b) secondary school or (c) teacher training? *(NCPI)*
- Does your country have training programmes for police and other law enforcement personnel/members of the judiciary/elected officials (lawmakers, parliamentarians)/health-care workers on human rights and non-discrimination legal frameworks as applicable to HIV? *(NCPI)*
- Does your country have accountability mechanisms in relation to discrimination and violations of human rights in health-care settings? *(NCPI)*

MANIFESTATIONS AND OUTCOMES OF HIV-RELATED DISCRIMINATION

VIOLENCE

- Proportion of ever-married or partnered women aged 15–49 years who experienced physical or sexual violence from a male intimate partner in the past 12 months (GAM/population-based surveys)
- Percentage of people living with HIV who have experienced verbal or physical harassment (People Living with HIV Stigma Index surveys)
- Percentage of key populations who have experienced verbal, physical or sexual violence *(integrated biological and behavioural surveys)*

EXPERIENCED DISCRIMINATION IN HEALTH CARE

- Percentage of people living with HIV who report experiences of HIV-related discrimination in health-care settings (GAM/People Living with HIV Stigma *Index surveys)*

AVOIDANCE OF HEALTH CARE BECAUSE OF STIGMA AND DISCRIMINATION

- Avoidance of health care among sex workers because of stigma and discrimination (GAM/integrated biological and behavioural surveys)
- Avoidance of health care among gay men and other men who have sex with men because of stigma and discrimination (GAM/integrated biological and behavioural surveys)
- Avoidance of health care among people who inject drugs because of stigma and discrimination (GAM/integrated biological and behavioural surveys)
- Avoidance of health care among transgender people because of stigma and discrimination (GAM/integrated biological and behavioural surveys)

EMPLOYMENT

- Have you ever been refused employment or a work opportunity because of your HIV status? Have you ever lost a source of income or job because of your HIV status? *(People Living with HIV Stigma Index surveys)*

LAW AND POLICY ENFORCEMENT *(NCPI/civil society databases)*

- Can possession of a needle/syringe without a prescription be used as evidence of drug use or cause for arrest in your country?
- Have transgender people in your country been arrested or prosecuted for manifestations of their gender identity in the past three years?
- Have sex workers in your country been arrested or prosecuted in relation to selling sex in the past three years?
- Have people in your country been arrested or prosecuted for consensual same-sex sexual acts in the past three years?

SERVICE COVERAGE

- Percentage of people who inject drugs receiving opioid substitution therapy (GAM)
- Number of needles and syringes distributed per person who injects drugs per year by needle–syringe programmes (GAM)

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3. Combination HIV prevention

AT A GLANCE

1 Primary HIV prevention services are still rarely provided on an adequate scale and with sufficient intensity. The Global HIV Prevention Coalition has been established to revive commitment and investment.

2 Too few adolescent girls and young women in high-prevalence settings are being reached with intensive combination prevention programmes.

3 Key populations require evidence- and human rights-based prevention services that respond to their needs.

4 Voluntary medical male circumcision has accelerated. In 2017, 4.0 million were performed in the 14 priority countries.

5 The enormous potential of PrEP is already evident in North America, western Europe and Australia, where it is contributing to declines in new HIV diagnoses among gay men and other men who have sex with men.

Progress and gaps

Progress on the prevention of HIV infections among adults has varied in recent years. Just three countries have achieved declines in new HIV infections among adults of 50% or more over since 2010, and another 17 have achieved decreases of at least 25%. Meanwhile, many have not made significant progress, and at least 50 countries have experienced troubling increases (Table 3.1). If current global trends continue, the HIV prevention target of a 75% reduction by 2020 (against a 2010 baseline) will not be reached.

The rapid and ongoing scale-up of HIV treatment is averting large numbers of new infections, but it is insufficient on its own. Primary HIV prevention services are still rarely provided on an adequate scale and with sufficient intensity, despite plenty of evidence showing which interventions work and the availability of a comprehensive body of programme guidance. This is especially the case for interventions that focus on young people and key populations. Four interrelated factors appear to be primarily responsible for the situation:

1. Lack of political commitment.
2. Insufficient investment in prevention.
3. Policy and structural barriers, which reflect reluctance among decision-makers to safeguard the health and other rights of girls and women and members of marginalized populations.
4. Failure to systematically implement proven programmes at scale.

TABLE 3.1 **Progress on prevention varies**

Trends in new HIV infections among adults (aged 15 years and older), by country, 2010–2017

Decrease of 50% or more	Cambodia, Mongolia*, Nepal.
Decrease of 25– <50%	Armenia, Austria, Bahamas, Eswatini, France, Kenya, Kyrgyzstan, Malawi, Mauritania, Myanmar, Netherlands, Portugal, Sierra Leone, South Africa, Trinidad and Tobago, Uganda, Zimbabwe.
Decrease of 5– <25%	Albania*, Barbados, Bulgaria, Cameroon, Central African Republic, Cuba, Democratic Republic of the Congo, Denmark, Dominican Republic, El Salvador, Estonia, Gambia, Georgia, Guatemala, Guinea-Bissau, Guyana, Haiti, Indonesia, Iran (Islamic Republic of), Jamaica, Lesotho, Morocco, Mozambique, Namibia, Nicaragua, Niger, Norway, Peru, Romania, Rwanda, Senegal, Serbia, Singapore, Somalia, Spain, Sri Lanka, Togo, Ukraine, United Republic of Tanzania, Uruguay, Zambia.
Change of +/- <5%	Angola, Bolivia, Brazil, Chad, Comoros*, Ecuador, Gabon, Ghana, Guinea, Italy, Japan, Nigeria, Paraguay, Republic of Moldova, South Sudan, Tajikistan.
Increase of 5– <25%	Argentina, Australia, Azerbaijan, Bahrain*, Bangladesh, Belize, Benin, Botswana, Cape Verde, Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Honduras, Liberia, Malaysia, Mali, Mexico, Panama, Papua, New Guinea, Slovenia*, Sudan, Tunisia.
Increase of 25– <49%	Algeria, Belarus, Burkina Faso, Burundi, Costa Rica, Cyprus*, Eritrea, Ethiopia, Greece, Hungary, Lithuania, Luxembourg*, Pakistan, Qatar*, Russian Federation, Suriname.
Increase of 50% or more	Chile, Czech Republic, Egypt, Kazakhstan, Kuwait*, Madagascar, Montenegro*, Philippines, Slovakia, The former Yugoslav Republic of Macedonia*, Uzbekistan.

* Countries with fewer than 100 new infections in the adult population.
Source: UNAIDS 2018 estimates.

THE GLOBAL HIV PREVENTION COALITION

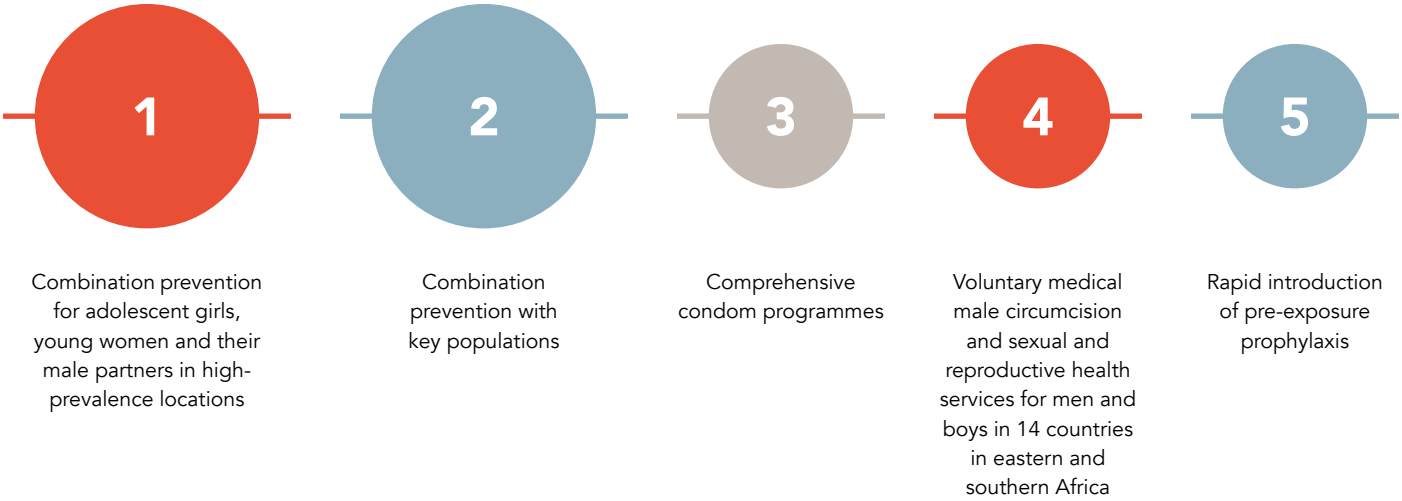
The Global HIV Prevention Coalition was established to revive commitment and investment for HIV prevention. The keystone of this initiative is the Prevention 2020 Road Map, which the Coalition endorsed at its inaugural meeting in October 2017 *(1)*. The Road Map requires countries to develop and implement 100-day action plans, including setting national and subnational prevention targets, and strengthening HIV primary prevention responses around five central pillars (Figure 3.1).

The Road Map also calls for removing legal and policy barriers, and for speeding up implementation of full-scale combination prevention services for adolescent girls and young women and members of key populations. Improving support for the vital contributions made by civil society organizations is also on the agenda.

While the Coalition itself is composed of 25 countries that account for almost 75% of new adult HIV infections, the Road Map—which was prepared through a consultative process that brought together more than 40 countries and organizations—is relevant for all low- and middle-income countries. It is centred on a 10-point action plan that lays out the immediate steps each country can take to revitalize HIV prevention (Figure 3.2).

FIGURE 3.1 **Prevention pillars**

Five pillars of combination prevention



Source: Prevention gap report. Geneva: UNAIDS; 2016.

Less than a year after the Coalition was formed, HIV prevention is back on national agendas, new national prevention coalitions are being established and national prevention strategies are being revamped to reflect the urgency and latest evidence. Among the steps taken thus far:

- Almost 20 countries have revisited their prevention targets or set new ones.
- Strategies are being drafted to bridge the financing gaps and move towards the systematic use of effective interventions.
- The national leaders of a growing number of African countries have personally committed to ensure that national prevention road maps are implemented and targets are reached.
- Countries are reviewing and revising laws and policies to establish more enabling environments for HIV prevention and health service provision. For example: Pakistan has passed new legislation protecting transgender people; South Africa has developed national plans for HIV service provision to sex workers and lesbian, gay, bisexual, transgender and intersex (LGBTI) people; and Kenya has implemented new prevention indicators and targets at the national and subnational levels.

Policy and legal change in Global HIV Prevention Coalition countries will need to accelerate to facilitate faster scale-up of services and more rapid reductions in HIV infections.

REDUCING HIV RISK AMONG YOUNG WOMEN

There has been increased focus on dedicated prevention programmes for adolescent girls and young women in high-incidence settings in eastern and southern Africa. For example, the DREAMS (Determined, Resilient, Empowered, AIDS-free, Mentored and Safe) initiative supported by the United States of America provides intensive combination prevention programme packages in communities with high HIV incidence in 15 countries. These packages include elements to empower young women, reduce risk involved in sexual partnerships, mobilize communities and strengthen family support systems. Countries have also invested national resources

FIGURE 3.2 **A step-by-step approach**

Ten-point plan for accelerating HIV prevention in countries

Source: HIV prevention 2020 road map: Accelerating HIV prevention to reduce new infections by 75%. Geneva: UNAIDS; 2017.

in similar service packages, and 13 countries have requested substantial support from the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) for prevention programmes focused on young women.

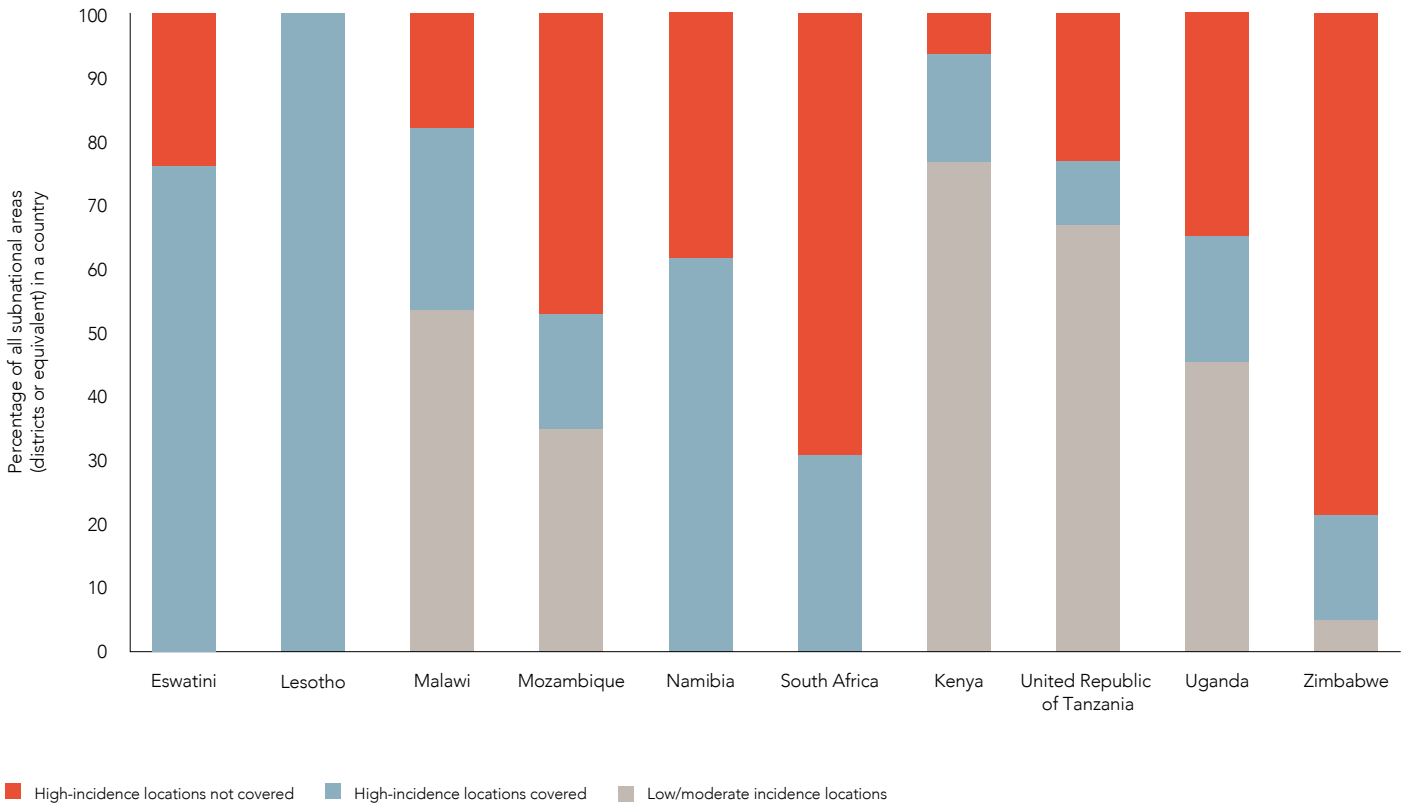
Measuring coverage of these programmes has been a challenge. Data are scarce, which is partially due to a lack of standard coverage indicators and inconsistently defined programmatic need. A UNAIDS analysis for the Global HIV Prevention Coalition used subnational estimates of HIV incidence in 10 countries in eastern and southern Africa to identify locations with extremely high HIV incidence (greater than two new infections per 100 person-years), very high incidence (between one and two new infections per 100 person-years) and high incidence (between 0.3 and 0.99 new infections per 100 person-years) among young women aged 15–24 years. These data were compared to the location of intensive combination prevention programmes supported by DREAMS and the Global Fund. In five of 10 countries (Mozambique, South Africa, Uganda, the United Republic of Tanzania and Zimbabwe), less than 50% of high-incidence locations were covered by these programmes (Figure 3.3). Even in countries with higher geographic coverage, available data suggest that not all young women are reached by these interventions. The conclusion of the analysis is that coverage gaps remain large, and that the services offered outside of DREAMS locations are not completely comprehensive.

UNAIDS has facilitated a dialogue around differentiated prevention packages for adolescent girls, young women and their male partners. These discussions have produced a scalable programme model (Table 3.2). In this approach, HIV prevention would be integrated into existing health and education programmes in all locations (including those with low and moderate incidence), while HIV prevention-specific investment would focus on intensified outreach of combination prevention programmes in locations with high HIV incidence.

Continued on page 47

FIGURE 3.3 **HIV prevention for adolescent girls and young women**

Estimated coverage of dedicated HIV prevention programmes for adolescent girls and young women in areas with high HIV incidence in 10 countries, 2016–2018



Notes: Low and moderate HIV incidence means fewer than 0.3 new HIV infections per 100 person-years. High-incidence locations are locations with extremely high HIV incidence (> 2 new infections per 100 person-years), very high incidence (> 1 per 100 person-years) and high incidence (> 0.3 per 100 person-years) among young women aged 15–24. A subnational area was considered to be covered if the DREAMS package of services is provided and a modified package of services is provided with Global Fund support. It should be noted that there is variation in the intensity of packages and the level of coverage within subnational areas. The fact that a subnational area is covered does not mean that all young women in need of programmes are reached.

Source: UNAIDS subnational estimates of HIV incidence; meeting reports of coverage of subnational areas by the United States President's Emergency Plan for AIDS Relief (PEPFAR), the Global Fund and other partners; and country reporting to the Global HIV Prevention Coalition.

TABLE 3.2 **A scalable programme model**

Differentiated HIV prevention packages for adolescent girls, young women and their male partners in high-HIV incidence settings

LOCATIONS	COMPONENTS	PRIORITY POPULATIONS
All locations, including low- and medium-incidence settings (0.0 –0.3 infections per 100 person-years)	Delivered on and integrated into existing facility-based, school-based and media platforms: ▪ **Access to sexual and reproductive health services** (including contraception, maternal health, gender-based violence and treatment for sexually transmitted infections). ▪ **Access to basic HIV services** (HIV testing, antiretroviral therapy, condoms, voluntary medical male circumcision and related counselling). ▪ **National-level HIV communications** (social and behaviour change communication, demand generation through information materials, social marketing, electronic and new media, and so on). ▪ **Youth-friendly health systems** to make health services accessible to adolescents and young people. ▪ **Access to primary and secondary education,** including comprehensive sexuality education. ▪ **Social support** to vulnerable adolescents. *HIV prevention budget contributes to integrating HIV prevention*	▪ Population of reproductive age ▪ People living with HIV and people who seek prevention services ▪ Defined priority populations for specific themes and services ▪ Young people ▪ Adolescents in-school and out-of-school
High incidence (0.3–1.0 infections per 100 person-years) ***(in addition to the above)***	Delivered through community and other non-health platforms: ▪ **Interpersonal HIV prevention** (structured interventions and demand generation for services). ▪ **Community outreach services** (condom distribution, very focused PrEP, and HIV testing services, including prevention counselling). ▪ **Selected additional social support** (for things such as keeping girls in schools or economic empowerment). *Mostly funded from HIV prevention budget (except social support)*	Analyse risk profiles and focus on adolescent girls, young women and male partners at high risk
Very high incidence (1.0–2.0 infections per 100 person-years)	Same as above	Same as above, but with expanded coverage
Extremely high incidence (2.0+ infections per 100 person-years)	Same as above	All (or virtually all) adolescent girls, young women and male partners within the high-incidence location or district

REACHING PEOPLE IN NEED

She Conquers in South Africa

"There are still a lot of misconceptions about HIV among young people. Sex is not talked about openly. Young people are given knowledge about sexual and reproductive health, but they are not given knowledge on how to make a decision about sex."

When she was four years old, Selokela Molamodi's teacher asked the class what they wanted to be when they grew up. While her classmates volunteered more conventional professions, such as nurses, doctors and lawyers, Ms Molamodi's answer, given with a fiery determination, was, "I want to be Minister of Education."

Her love for education, and her characteristic fieriness, has stood 19-year-old Ms Molamodi in good stead. Last year she graduated top of her class, having been head girl in both primary school and high school. Armed with an unshakeable self-confidence and her core principles of transparency, honesty and humility, Ms Molamodi has avoided the fate of many young South African women—HIV infection, unintended pregnancy and an abandoned high school education.

She says she has had to deal with the same harsh realities as other young women—financial difficulties, crime, violence, peer pressure, the temptation of "blessers" [older men] and drug and alcohol abuse. Staying in school kept her focused, she explained.

"There are still a lot of misconceptions about HIV among young people. Sex is not talked about openly. Young people are given knowledge about sexual and reproductive health, but they are not given knowledge on how to make a decision about sex," she says.

In South Africa, 1500 young women and adolescent girls between the ages of 15 and 24 are infected with HIV every week. They accounted for 29% of all new HIV infections in the country in 2017. Research has shown that older men, generally five to eight years older, are mostly responsible for passing on HIV to younger women; once women reach their mid-twenties, they pass on the virus to men their own age.

"There is a perception among young women that we should have a high number of sexual partners when we are young because that is what it means to be free. Then, when we reach our mid-twenties we will leave that life behind and settle down. But girls don't understand that they don't have control over these sexual relationships, that their consent doesn't count," she says.

To start a dialogue about these and many other issues facing young women, Ms Molamodi started You for You while she was in her final year of school.

"I call it a movement, not an organization," says Ms Molamodi. "It is about accepting and loving yourself for you. While we can exist as a community and a collective, we must first love ourselves as individuals," she says.

Ms Molamodi, along with two friends who started the movement with her, have one-on-one mentoring sessions with other young women on issues such as self-esteem, body positivity, sexual and reproductive health and drug and alcohol abuse. She has also organized two events that focused on empowering young women as leaders "so we can rise as young women and stand up against discrimination, together."

She looks at DREAMS—the initiative led by the United States President's Emergency Plan for AIDS Relief—as the matriarch of a family of young women like her. In South Africa, DREAMS works closely with She Conquers, a government-led national campaign aimed at empowering young women and adolescent girls to take responsibility for their health.

"Yes, give girls access to discrimination-free HIV prevention and treatment services and family planning, but also ask for our feedback. Give us education and information and teach us that actions have consequences which are responsible for our progress or regress."

"DREAMS/She Conquers has provided us with a space to have natural conversations about things that affect us as young women with other young women. It gives us a voice and brings enlightenment to us. For instance, most of the girls I know have tested for HIV, but none of them ever got to talk about it, until DREAMS/She Conquers came to our school," she says.

"These are the kinds of initiatives that increase the effectiveness of what UNAIDS is trying to achieve," says Ms Molamodi. "Yes, give girls access to discrimination-free HIV prevention and treatment services and family planning, but also ask for our feedback. Give us education and information and teach us that actions have consequences which are responsible for our progress or regress."

She says she would like to see conversations about HIV prevention and sexual and reproductive health being brought together more often with those about careers, empowerment and entrepreneurship.

As for her ambition for You for You, "I want to help grow a continent of young women who are confident enough to speak out; who are able to stand up for each other and empower each other. If I have someone say, "I did not give up" then I know I had a purpose; that I was someone's reason not to give up."

"There is a perception among young women that we should have a high number of sexual partners when we are young because that is what it means to be free. Then, when we reach our mid-twenties we will leave that life behind and settle down. But girls don't understand that they don't have control over these sexual relationships, that their consent doesn't count."

Updated United Nations guidance on sexuality education

Comprehensive sexuality education plays a central role in the preparation of adolescents and young people for a safe, productive and fulfilling life, and it is an important component of the HIV prevention package for young people. It provides opportunities to learn and acquire complete, accurate, evidence-informed and age-appropriate knowledge on sexuality and sexual and reproductive health issues.

A 2015 review of 48 countries found that a majority have put in place policies that support sexuality education. However, there was a significant gap between these policies and implementation of good-quality comprehensive sexuality education in schools. Curricula content and teacher training in many of the countries fell short of global standards *(2)*.

United Nations development organizations have updated their joint International Technical Guidance on Sexuality Education to assist education, health and other relevant authorities in the development and implementation of school-based and out-of-school comprehensive sexuality education programmes and materials.[1] The update of the original technical guidance, published in 2009, was informed by 22 systematic reviews and 77 randomized controlled trials in a broad range of countries and contexts—more than half of which were situated in low- and middle-income countries. This body of research reaffirmed that curriculum-based sexuality education programmes contribute to the following outcomes: delayed initiation of sexual intercourse; decreased frequency of sexual intercourse; decreased number of sexual partners; reduced risk taking; increased use of condoms; and increased use of contraception *(3)*.

Evidence also demonstrates that comprehensive sexuality education contributes to other critical outcomes, including gender equitable attitudes, confidence and self-identity *(3)*.

The update echoes research from the original technical guidance and the wider scientific and practice literature that emphasizes how sexuality education—in or out of schools—does not increase sexual activity, sexual risk-taking behaviour or infection rates for HIV or sexually transmitted infections *(3)*. By contrast, abstinence-only programmes have been found to be ineffective and potentially harmful to the sexual and reproductive health and rights of young people *(3)*.

The updated guidance emphasizes the need for programmes that are informed by evidence, adapted to the local context and logically designed to measure and address factors such as beliefs, values, attitudes and skills which, in turn, may affect health and well-being in relation to sexuality *(3)*.

The participation of young people in policy and programme development is critical to ensuring that comprehensive sexuality education is based on the real needs of young people in a given setting. Young people's advocacy is supported through the Global Online Hub for Advocacy on Comprehensive Sexuality Education (http://www.advocates4cse.com/). This UNFPA-supported website serves as a platform for strategic communication among comprehensive sexuality education advocates and experts, as well as for collaboration, capacity-building, monitoring and sharing of good practices on comprehensive sexuality education at the global, regional, national and local levels.

[1] The joint guidance was co-authored by the United Nations Children's Fund (UNICEF), United Nations Population Fund (UNFPA), United Nations Entity for Gender Equality and the Empowerment of Women (UN Women), United Nations Educational, Scientific and Cultural Organization (UNESCO), World Health Organization (WHO) and UNAIDS.

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PREVENTION SERVICES FOCUSED ON KEY POPULATIONS

The exceptionally high HIV infection rates that continue to be observed among key populations make it essential to ensure they can access and use evidence- and human rights-based services that respond to their needs.

Sex workers bear a disproportionately large burden of HIV in virtually all epidemic settings. When implemented at sufficient scale, prevention programmes among sex workers and their clients can have a dramatic impact, as shown in Cambodia and Thailand (Figure 3.4) *(4)*. In eastern and southern Africa, HIV prevalence among female sex workers is often extremely high; more than half are living with HIV in Eswatini, Lesotho, Malawi, South Africa and Zimbabwe (Figure 3.5).

Very high condom use rates during paid sex—approximately 80% to 90%, according to studies from Africa and Asia—are needed to bring about major and sustained reductions in new HIV infections *(5–7)*. However, just nine of 38 countries with recent data from population-based surveys achieved at least 80% condom use among men at last paid sex. In some high-prevalence settings in sub-Saharan Africa, high reported condom use does not seem sufficient to stem the epidemic. Reasons for this are not yet well established, but they may include high background prevalence among clients, high incidence among young sex workers who are unable to negotiate safe sex, high rates of violence and rape, and other factors. More research is needed, as are increased efforts to scale up and intensify existing programmes to reach young sex workers and provide additional prevention options (such as PrEP). Community-based and community-led initiatives that empower sex workers, improve their working conditions and widen access to comprehensive HIV and reproductive health services are highly effective and need to be taken to scale *(8–11)*.

Receptive anal intercourse is more likely to transmit HIV than any other sexual act, which underscores that high levels of condom use are needed among gay men and other men who have sex with men to prevent the spread of HIV at the population level. Unfortunately, prevention services for gay men and other men who have sex with men are not keeping pace with the epidemic in several regions. In Africa, the Middle East, eastern Europe and central Asia, government-sponsored HIV services for gay men and other men who have sex with men remain scarce, with limited funding and discriminatory laws and practices impeding prevention efforts. Hostile conditions make it difficult, even dangerous, for nongovernmental organizations in many countries to provide services for this population group. In 33 of the 87countries that reported data to UNAIDS in 2018, less than 60% of gay men and other men who have sex with men said they used a condom the last time they had anal sex, and just 15 countries reported 80% or greater condom use at last anal sex among this population. As a result, HIV incidence in this key population appears to be rising in several countries.

The needs and rights of transgender people are increasingly in the public eye, and national plans, policies and laws are starting to focus on this key population. These changes are expected to have a gradual positive impact on the health and lives of transgender people. In the meantime, however, the excessively high HIV prevalence within this key population reflects both high rates of unprotected high-risk sex and poor access to prevention services and commodities for this key population. Among 16 countries that reported data to UNAIDS in 2018, condom use reported by transgender people at last sexual intercourse (including anal sex) ranged between 8.5% in Vanuatu and 93.9% in Panama. Transgender women are in particularly urgent need of prevention services, including PrEP, post-exposure prophylaxis (PEP), and tailored support and care. Instead, they experience severe stigma and social discrimination (not least in health-care settings), and they are frequent victims of violence *(14)*.

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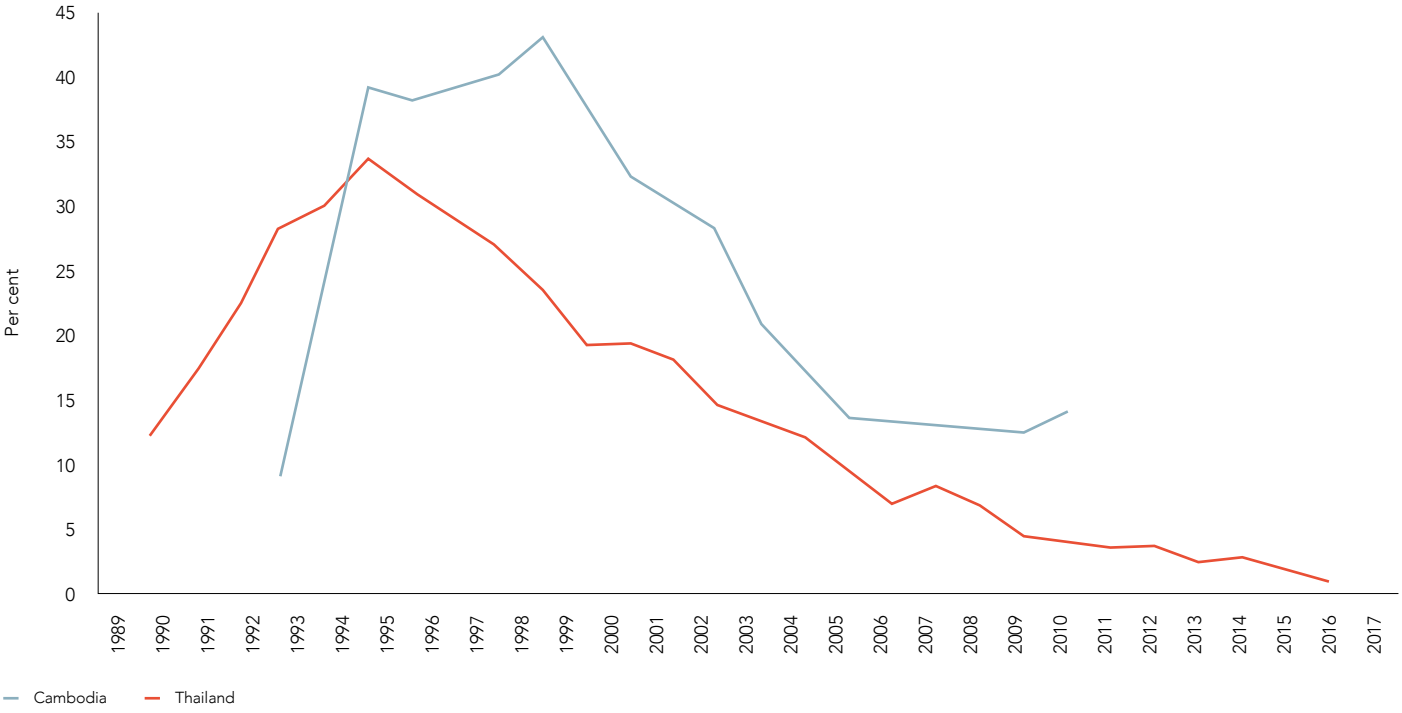
FIGURE 3.4 The results of prevention programmes delivered at scale

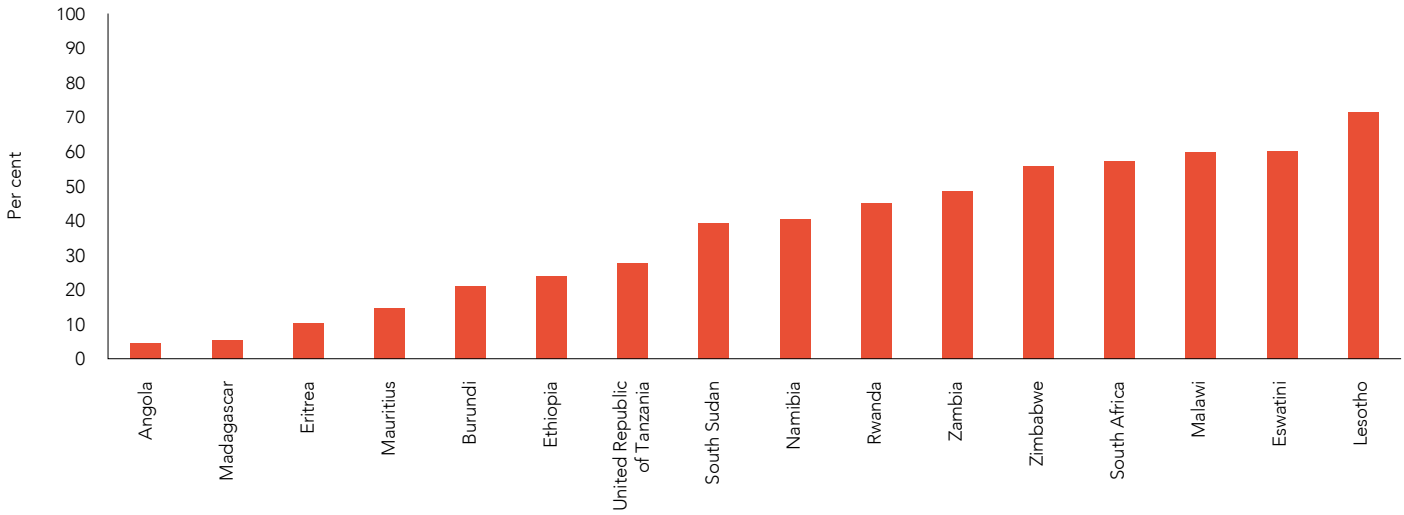
HIV prevalence among female sex workers, Cambodia and Thailand, 1989–2016



Source: Sentinel surveillance data extracted from Asia Epidemic Model, Cambodia and Thailand, 2018.

FIGURE 3.5 High HIV burden among sex workers in eastern and southern Africa

HIV prevalence among female sex workers, eastern and southern Africa, most recent data, 2014–2017



Source: 2018 Global AIDS Monitoring.

EMERGING EVIDENCE AND INNOVATIONS

China dating app increasing HIV testing among gay men and other men who have sex with men

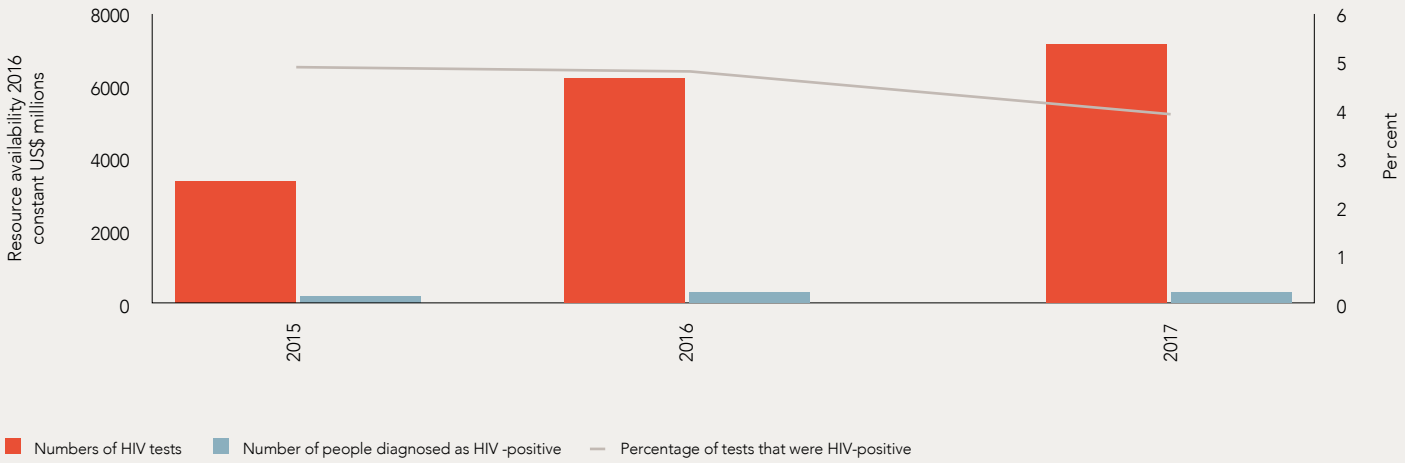
Smartphone dating applications, social media, websites, chat rooms and text messaging are increasingly being used to reach gay men and other men who have sex with men with sexual health and HIV information and services. China's Blued, among the world's largest dating apps for gay men with 40 million registered users worldwide, is a prime example. Blued has developed an online HIV testing booking system linked to more than 200 HIV testing sites operated by the government and community-based organizations. Clicking on the app's HIV testing button notifies users of the nearest sites; with a few more clicks, the user can make a booking, verify his informed consent to be tested and complete a short questionnaire *(12)*.

Blued began promoting HIV testing to its users in Beijing, Chengdu and Qingdao in 2016. Data from the three cities show that the number of people tested for HIV at sites promoted by Blued increased by 78% between 2015 and 2016, and that 65% of the people who tested in 2016 were referred to clinics by the Blued app *(12)*. Results were particularly impressive at four HIV testing sites in Beijing operated by Danlan Public Welfare, a sister company of Blued: an 84% increase in HIV testing in 2016 was followed by a 15% increase the following year, and the number of positive HIV diagnoses at these four clinics increased from 169 in 2015 to 305 in 2016 and 288 in 2017 (Figure 3.6) *(12)*.

A 2017 systematic review of the use of new information and communication technology on HIV-related behaviour and service uptake among gay men and other men who have sex with men supports broad application of these approaches. Programmes that utilized information and communication technology specifically for the purposes of behaviour change and service uptake had a positive impact, including increases in condom use and HIV testing *(13)*. More specifically, interventions that employed video-based or interactive multimedia for the delivery of HIV prevention content and messaging were significantly more likely to result in men having less unprotected anal intercourse and undergoing more frequent HIV testing. In studies that employed information and communication technology as part of a randomized control trial, use of social media and other online resources resulted in an increase of service uptake of between 66% and 99%. The review also found that gay men and other men who have sex with men find online forums and smartphone apps to be highly acceptable for this purpose, and that app users tend to be younger, better educated and single.

FIGURE 3.6 **Blued app use linked to increased HIV testing**

Number of people tested for HIV and diagnosed as HIV-positive, four Beijing clinics, 2015–2017



Source: Danlan Public Welfare, unpublished analysis, June 2018.

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In studies among people who inject drugs, condom use appears to be low *(15–17)*. Condoms and lubricants are insufficiently available in prisons, even though their provision in closed settings is a simple, feasible and necessary intervention. Out of 110 countries that reported data in 2018, 41 said that condoms and lubricants are distributed in at least some prisons.

Several studies have suggested that among key populations, younger age is associated with more frequent unprotected sex *(18)*. Young people generally tend to underestimate the risks they take. Young members of key populations also may be less able than their older peers to negotiate condom use, and they may be more vulnerable to being forced to have sex without a condom *(19)*. A study among adolescent female sex workers in Kunming, China, for example, found that one quarter of the women had never used a condom or other modern contraceptive method *(20)*.

UNFPA and the International Planned Parenthood Federation are using a new tool to support the development of HIV and sexual and reproductive health and rights programmes for young key populations in eastern Europe and central Asia. Intended for use by public health officials, programme managers, nongovernmental organizations (including community-based organizations) and health workers, the tool does the following:

- Promotes community empowerment, participation and rights.
- Describes the legal context, stigma, discrimination and violence that can block service delivery.
- Lays out in detail the minimum package of comprehensive HIV and sexual and reproductive health and rights services for young key populations.
- Highlights issues concerning effective service delivery *(21)*.

Condom programmes for key populations are most effective when supported with structural changes that make it easier to access and use condoms. For example, creating safer working conditions for sex workers and engaging them closely in the design and implementation of programmes makes a huge difference. The Avahan programme in Karnataka and other states in India remains a sterling example of the impact of combining condom programming with community empowerment and structural improvements that tackle stigma, violence and unsafe working environments *(22, 23)*.

HARM REDUCTION

People who inject drugs and their sexual partners account for about 25% of people newly infected with HIV outside of sub-Saharan Africa. At least 90% of people who inject drugs need to be reached with a combination of HIV prevention and harm reduction services by 2020 in order to achieve the reductions in new HIV infections called for by the United Nations General Assembly. There is strong evidence that high coverage of needle–syringe programmes and opioid substitution therapy services—closely linked to condom programming, HIV testing and antiretroviral therapy—can have a major public health impact in places with substantial populations of people who inject drugs *(24–31)*.[2] This is especially the case when those services are backed with structural interventions, such as positive changes in laws and law enforcement practices *(24, 32–34)*.[3] Opioid substitution therapy has been found to improve access and adherence to antiretroviral therapy, reduce instances of overdosing and associated mortality, and lessen criminal activity *(35)*.

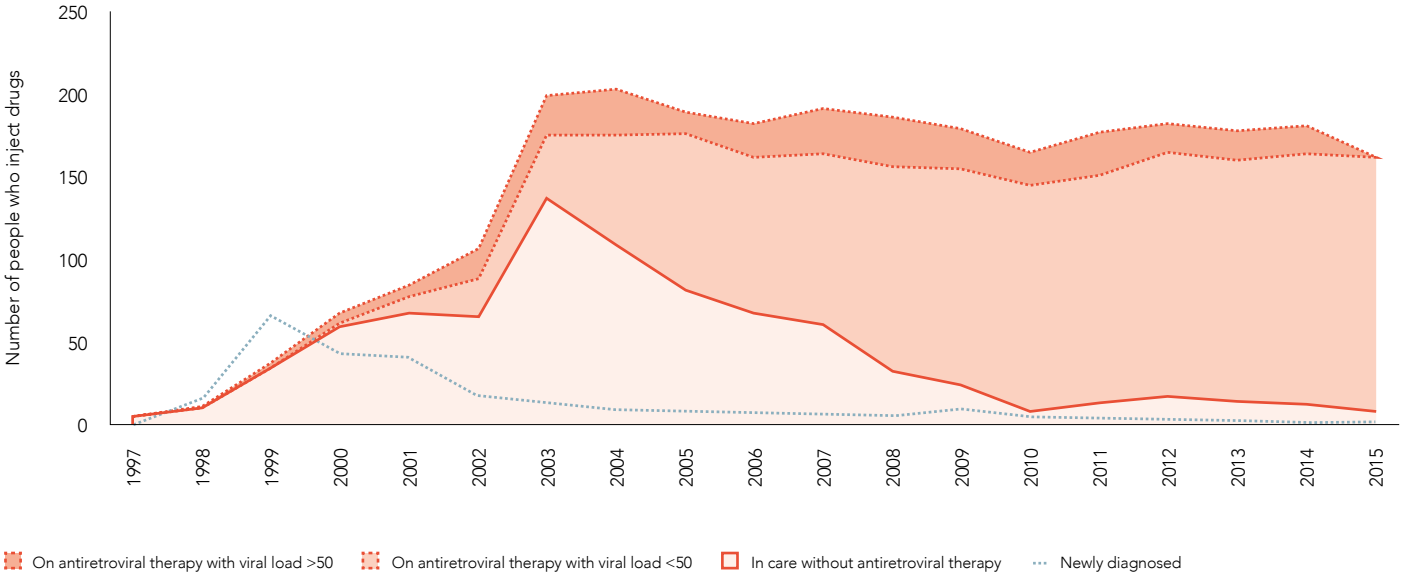
The individual and public health benefits of these interventions are well-documented. Australia, China, Czechia, Portugal, Switzerland and the United Kingdom are among the countries where harm reduction initiatives have played a major role in drastic reductions in the number of new HIV infections among people who inject drugs. Such interventions often occur at the city level. In Finland's capital, Helsinki, comprehensive harm reduction, HIV testing and treatment services, and consistent linkage of people who inject drugs to HIV testing and treatment led to a steep drop in new HIV infections and high rates of viral suppression among people who inject drugs. The focus has been on the overall needs of people rather than strictly

[2] Opioid substitution therapy involves replacing an illegal opiate (such as heroin) with a prescribed medicine, such as methadone or buprenorphine, which is typically administered under medical supervision.

[3] A review of 15 studies of such interventions found that significant public health benefits can be obtained, even with comparatively low coverage, such as when more than 50% of the injecting population in a community receive at least 10 or more sterile syringes per year *(24)*.

FIGURE 3.7 **The impact of comprehensive harm reduction, HIV testing and treatment**

Number of people who inject drugs who were diagnosed with HIV, receiving care and achieving viral suppression in Helsinki, Finland, 1997–2015



Source: Personal communication, Aurora Day Centre, Helsinki, Finland, 20 June 2018.

medical concerns. Widened service coverage has been key: in 2000, about half of the people who inject drugs diagnosed with HIV were receiving care, and within three years, 90% of HIV-positive people who inject drugs in Helsinki were being retained in care and accessing antiretroviral therapy. By 2014, the number of patients with suppressed viral loads had soared, and the number new HIV diagnoses in this key population decreased from more than 60 in 1999 to almost zero in 2014 (see Figure 3.7) *(36)*. Other cities in Finland have since followed suit: in 2016, only five people died of HIV-related causes in Finland, and only six people who inject drugs were newly diagnosed with HIV infection *(37)*.

Elsewhere, a recent modelling study from British Columbia, Canada, estimated that more than 3200 [2402–4589] HIV infections were averted between 1996 and 2013 as a result of the expansion of harm reduction services and antiretroviral therapy coverage in that province *(38)*. Even though testing rates rose, the number of new HIV diagnoses among people who inject drugs plummeted from 352 in 1996 to 25 in 2013 *(38, 39)*. Similarly, a meta-analysis of studies conducted in North America, Europe and Asia found that opioid substitution therapy was associated with a 54% reduction in risk in HIV infection among people who inject drugs *(29)*.

Despite the evidence, harm reduction services are too often rejected or undermined by politicians and governments that prefer punitive approaches to drug use. Criminalization of drug use drives people who inject drugs away from health and HIV services and limits HIV prevention and treatment outcomes *(32, 40)*. Even in countries where people who inject drugs constitute large proportions of people living with HIV, the role of harm reduction in preventing HIV infection is not even acknowledged in national HIV plans. Among the 108 countries that reported data to UNAIDS in 2017, only 53 countries reported explicit supportive reference to harm reduction in national policies.

As a result, harm reduction services in many countries are either not available at all or are provided on such a small scale that their impact is limited. Among 140 countries that reported data to UNAIDS in 2018, 86 said that needle–syringe programmes were operational. Forty-four of 177 reporting countries said that opioid substitution therapy programmes were operational, but even when they are available, harm reduction services

Continued on page 54

REACHING PEOPLE IN NEED

Learning from Aristotle: focused screening and rapid response help to reduce HIV outbreak in Athens

"It's not just about HIV interventions, it's the soft approaches, like food and care, that made this outreach so successful."

Greece experienced a large increase in 2011 in the number of new HIV infections among people who inject drugs. The number of new diagnoses in Athens usually hovered around 11 per year, but shot up to 266. For the first time, injecting drug use and sharing needles became the main source of new HIV infections in Greece, according to the Medical School of the National and Kapodistrian University of Athens.

In response, the university, along with the Greek Organisation against Drugs and other nongovernmental organizations, launched a programme to "seek, test, treat and retain", under the name Aristotle, in order to put a halt to the outbreak.

Their first challenge was finding people who inject drugs and identifying if they were HIV-positive.

"Many lived on the streets, some had been in prison and in many instances they were migrants with no knowledge of Greek," said Vana Sypsa, Assistant Professor of Epidemiology and Preventive Medicine at the National and

Kapodistrian University of Athens and a lead on Aristotle, along with Angelos Hatzakis, Meni Malliori and Dimitrios Paraskevis.

She explained that because of the economic recession, people lost their jobs and shared injecting equipment with other people, and homelessness crept up. In addition, she added, sterile syringes were hard to come by and opioid substitution therapy centres had long waiting lists. The Aristotle programme used a coupon system so that peers could recruit people to come in for an HIV test in return for a stipend.

Ms Sypsa explained that the centre provided food, as well as condoms and syringes. Positive Voice, an association of people living with HIV, helped with HIV counselling, while Praksis focused on facilitating language services and on obtaining identity papers for migrants.

"We guided them through the maze, which increased the retention of people. For many, HIV was a wake-up call to dealing with their drug addiction."

Nikos Dedes, the head of Positive Voice, said that it played an active role during the diagnosis and referral part of the programme. "We guided them through the maze, which increased the retention of people," he said. Mr Dedes believes that Aristotle contributed to raising awareness of HIV among people who inject drugs. "For many, HIV was a wake-up call to dealing with their drug addiction," he said.

The programme had five rounds of recruitment in 2012 and 2013, with some participants taking part in more than one round. Aristotle's services were provided to more than 3000 people. About 16% of the participants tested positive for HIV and had the opportunity of immediate access to antiretroviral therapy, with social workers arranging appointments. They also had priority access to opioid substitution therapy.

Ms Sypsa said that even before the end of the programme, there was a 78% decline in new HIV infections in Athens.

"Aristotle averted 2000 new HIV infections and we noted a decrease in high-risk behaviour among people injecting drugs at least once a day," Ms Sypsa said.

She added that aside from containing an outbreak, all those involved in the programme were proud to have changed the lives of many people, linking them to HIV care and treatment.

The programme's success drew a lot of attention. After the end of the programme, "People kept stopping by the site, looking for Aristotle employees. We had become a reference point for them," she said.

UNAIDS Senior Science Adviser Peter Godfrey-Faussett said that you cannot underestimate the impact of a holistic approach.

"It's not just about HIV interventions, it's the soft approaches, like food and care, that made this outreach so successful," he said. "Antiretroviral therapy coverage among people living with HIV who inject drugs suggests that in most settings service uptake is much lower than among other people living with HIV."

Five years later a new programme is being started, but this time with an aim to increase care and treatment for HIV and hepatitis C for people who inject drugs.

And Mr Dedes is ecstatic, because this time Positive Voice is an integral part of the programme, with a budget. A new partner has also joined—the liver patient association Prometheus will spearhead the response to hepatitis.

Continued from page 51

often operate in the context of punitive drug laws, aggressive law enforcement and severe stigma that greatly limit access to those services *(41)*. Ten countries reported in 2017 that possession of a needle or syringe without a prescription could be used as evidence of drug use or cause for arrest.

Harm reduction services, including needle–syringe programmes and opioid substitution therapy, should be implemented more widely and scaled up where they do exist. That requires supportive changes in the legal and institutional environments of countries, including reconsidering punitive laws and practices directed at drug users, and the support of law enforcement agencies and officers.

Community pharmacists can also play valuable roles in making harm reduction services more widely available, including selling condoms, providing counselling on safer sex practices, selling clean needles and syringes, and dispensing oral methadone for opioid dependence *(42)*.

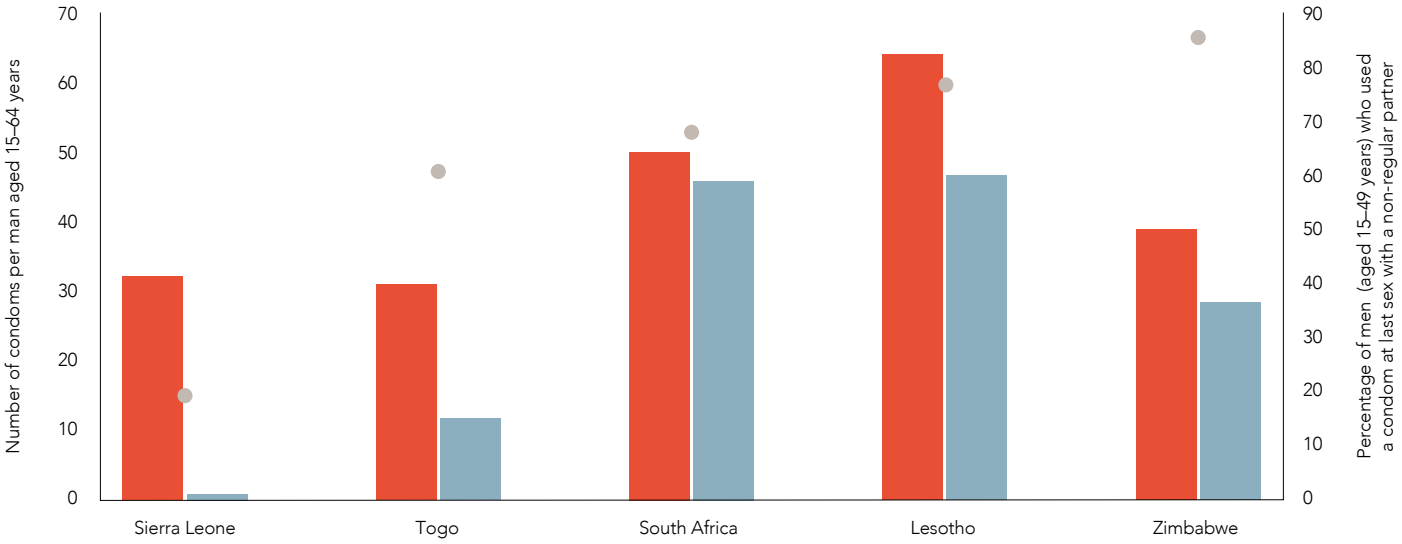
CONDOMS

Condoms, if easily available and used consistently and correctly, are one of the most effective and inexpensive methods available to reduce the sexual transmission of HIV and other sexually transmitted infections and to prevent unintended pregnancy. Despite this, condoms are still not sufficiently available to those who need them in many countries with a high burden of HIV. Insufficient condom availability appears to contribute to low levels of condom use; conversely, countries with condom distribution that approaches the estimated need have relatively higher levels of condom use (Figure 3.8).

Of the 27 countries in sub-Saharan Africa with available population-based survey data within the last five years, reported condom use among men at last sex with non-regular partners was lower than 60% in half of the countries. Reported condom use among women was even lower: less than 40% in half of the countries. Globally, levels of condom use at last sex with a non-

FIGURE 3.8 Condom availability and use

Per capita condom needs and distribution, men (aged 15–64 years); condom use with a non-regular, non-cohabitating partner, men (aged 15–49 years), five countries with available data, 2013–2016

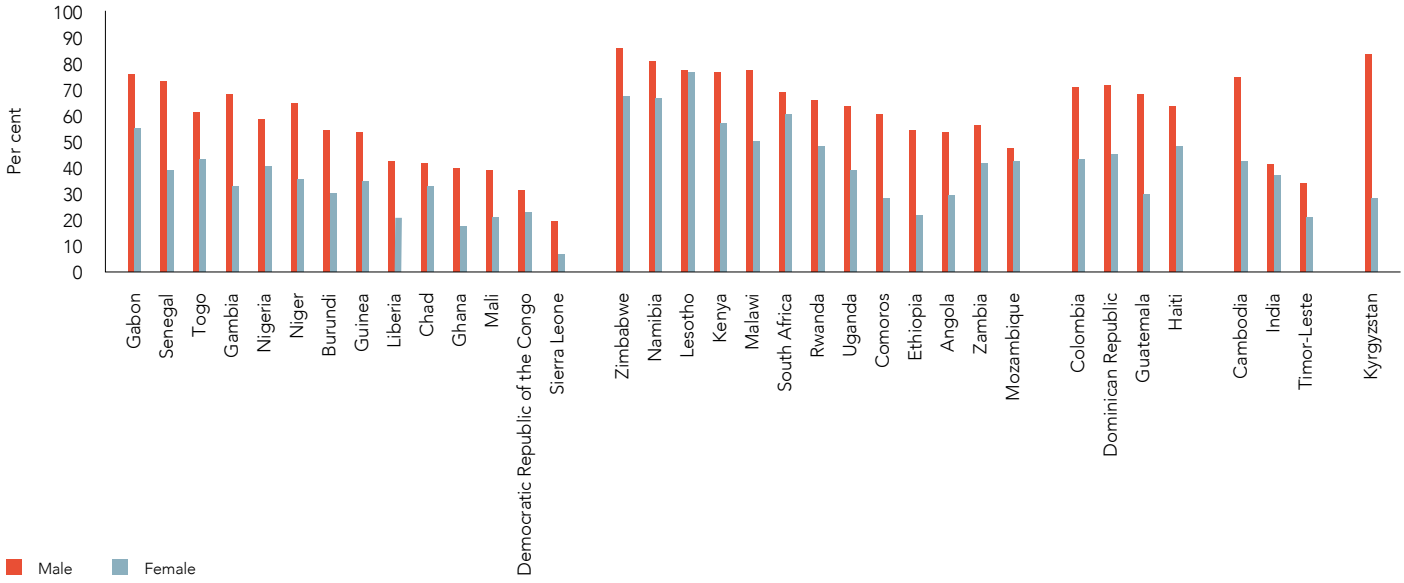


Condoms needed per man aged 15–64 years Condoms distributed per man aged 15–64 years Condom use among men (aged 15–49 years) with non-regular partner

Sources: Condom use data from Demographic and Health Surveys, 2013–2016; condom needs estimates from the UNAIDS Condom Fast-Track tool and national targets (South Africa); condom distribution data as per country reporting for the GAM and the Global Prevention Coalition Score card (South Africa). All estimates of condom need should be seen as only a rough guide, as they are informed by reported behaviours and population size estimates, both being subject to bias and uncertainty.

FIGURE 3.9 **Insufficient condom use during risky sex**

Percentage of men and women (aged 15–49 years) reporting use of a condom at last high-risk sex in the past 12 months, countries with available data, 2012–2017



Source: Population-based surveys, 2012–2017.

regular partner range from 8% among women in Sierra Leone to 85% among men in Zimbabwe. Countries have committed to reaching a target of 90% (Figure 3.9).

Population-based surveys show that condom use is lower among people with less education and lower income (Figure 3.10). Combined with generally lower reported condom use among women, these patterns translate to very low condom use during high-risk sex by women in the lowest quintile of wealth (about 25% use), and extremely low condom use during high-risk sex by women with no formal education (about 17% use). By contrast, about three quarters of wealthy, well-educated men report condom use during their last sexual intercourse with a non-regular partner. These data suggest that condom and behaviour-change programmes in high-prevalence settings are doing a poor job of ensuring equity in knowledge, condom access and condom use, and that they are struggling to reach the women who need them most.

Condom promotion and distribution strategies and approaches need to be tailored to the context and needs of different communities. High and equitable use of condoms can be achieved efficiently when the public, social marketing and commercial sectors work together to deliver condoms to all population segments. This total market approach seeks to maximize market efficiency, equity and sustainability. Sustainability is a particular issue in low- and middle-income countries that rely heavily on donor assistance.

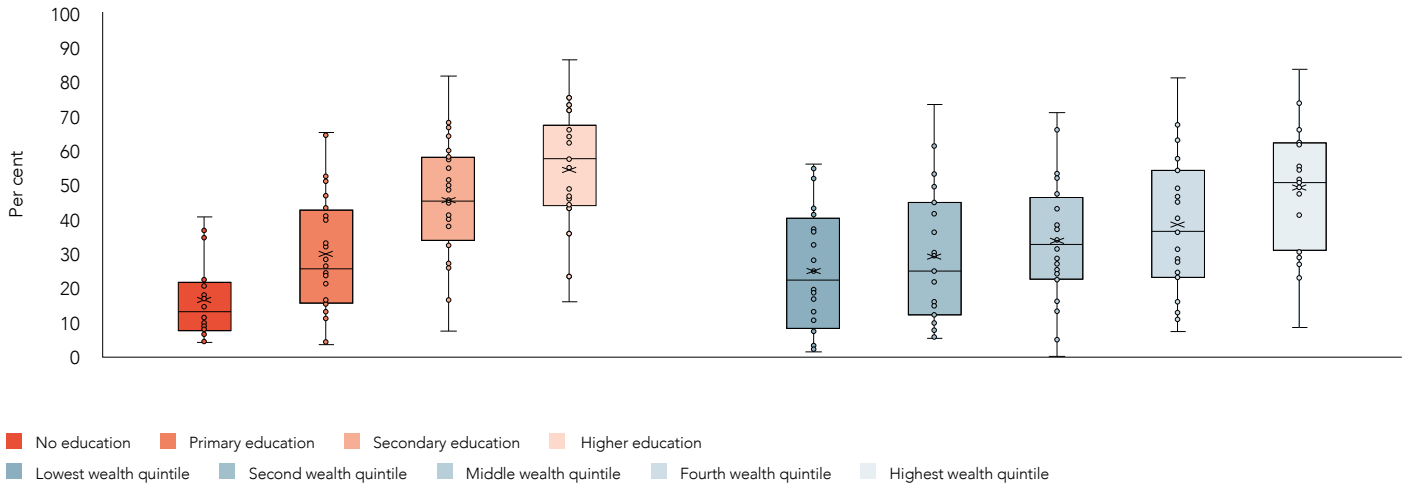
VOLUNTARY MEDICAL MALE CIRCUMCISION

Voluntary medical male circumcision (VMMC) remains the only once-off tool for reducing the risk of HIV infection. The procedure provides lifelong partial protection against female-to-male HIV transmission and should be used as part of wider sexual and reproductive health service provision for boys and men *(43)*. Scaling up VMMC in combination with condom promotion, PrEP, HIV testing and prompt initiation of antiretroviral therapy can have a major impact on the HIV epidemics in high-prevalence settings. In 2016, the United Nations General Assembly set a target of voluntarily circumcising an additional 25 million men in high-incidence countries by 2020, or 5 million men per year.

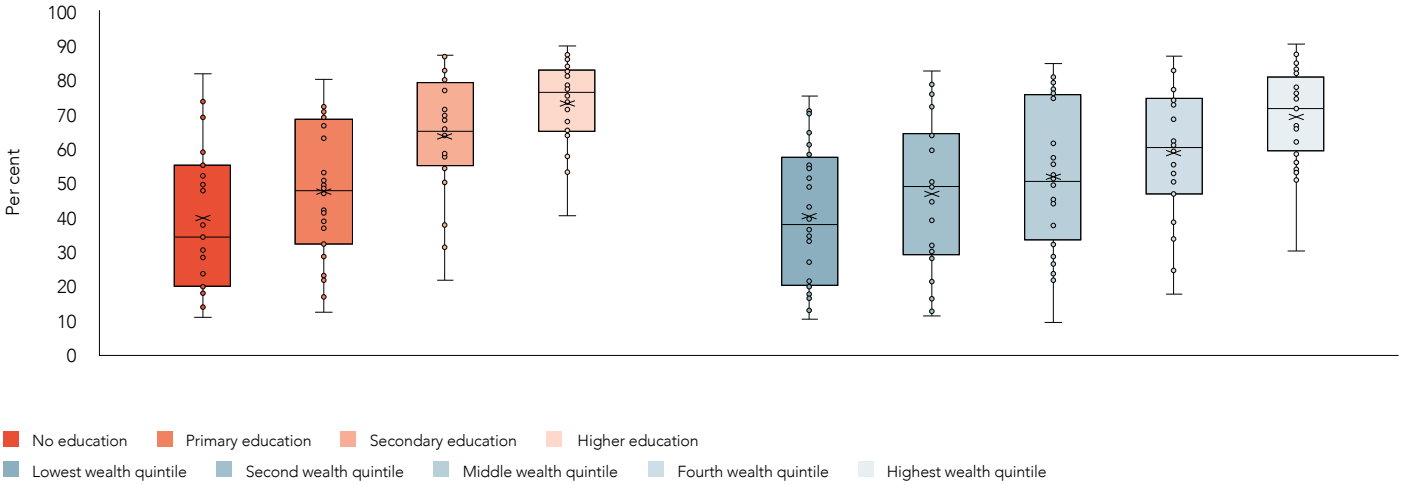
Efforts to voluntarily circumcise adolescent boys and men in 14 priority countries in eastern and southern

FIGURE 3.10 **Condom use lowest among poor, uneducated women**

Percentage of women (aged 15–49 years) who reported using a condom at last high-risk sex in the past 12 months, 24 countries, sub-Saharan Africa, 2012–2017



Percentage of men (aged 15–49 years) who reported using a condom at last high-risk sex in the past 12 months, 24 countries, sub-Saharan Africa, 2012–2017



Source: Population-based surveys, 2012–2017.

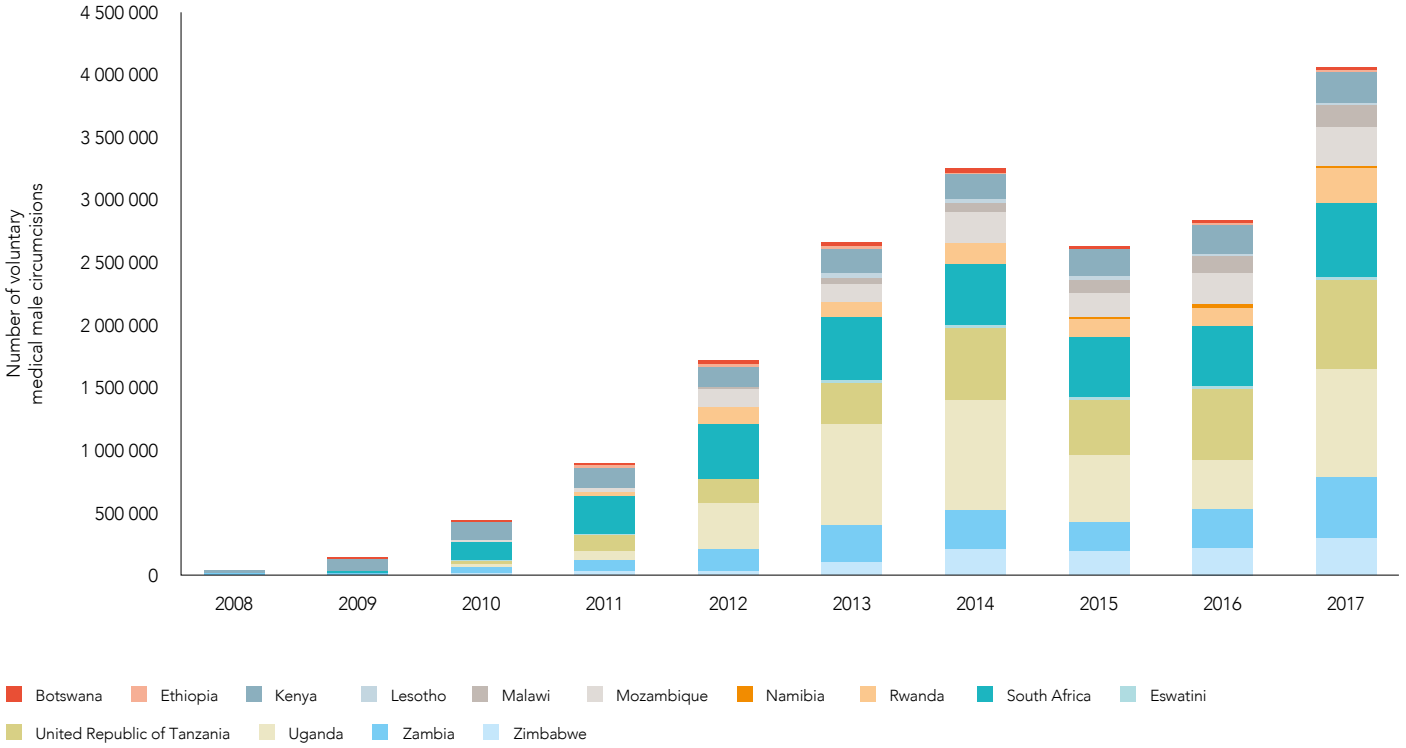
Africa expanded rapidly from 2008 to 2014, reaching 3.2 million circumcisions per year. However, progress slowed, and the number of circumcisions decreased to less than 3 million annually in 2015 and 2016. The adoption of innovative approaches to address barriers to VMMC uptake—including through the use of Geographic Information System (GIS) mapping, improved target setting, intensified demand creation, efficiency measures and increased staffing capacity and training—has accelerated annual progress *(44)*. In 2017, there were 4.0 million VMMCs performed for HIV prevention in the 14 priority countries (Figure 3.11).

Maintaining this new momentum is needed to reach the 25 million target by 2020 and to achieve high rates of male circumcision within the 14 priority countries. The most recent data from population-based surveys show that less than one third of adult men are circumcised in Botswana, Eswatini, Malawi, Namibia, Rwanda, Zambia and Zimbabwe. (Figure 3.12).

Continued on page 59

FIGURE 3.11 VMMC performance has rebounded…

Annual number of voluntary medical male circumcisions, 14 priority countries, 2008–2017

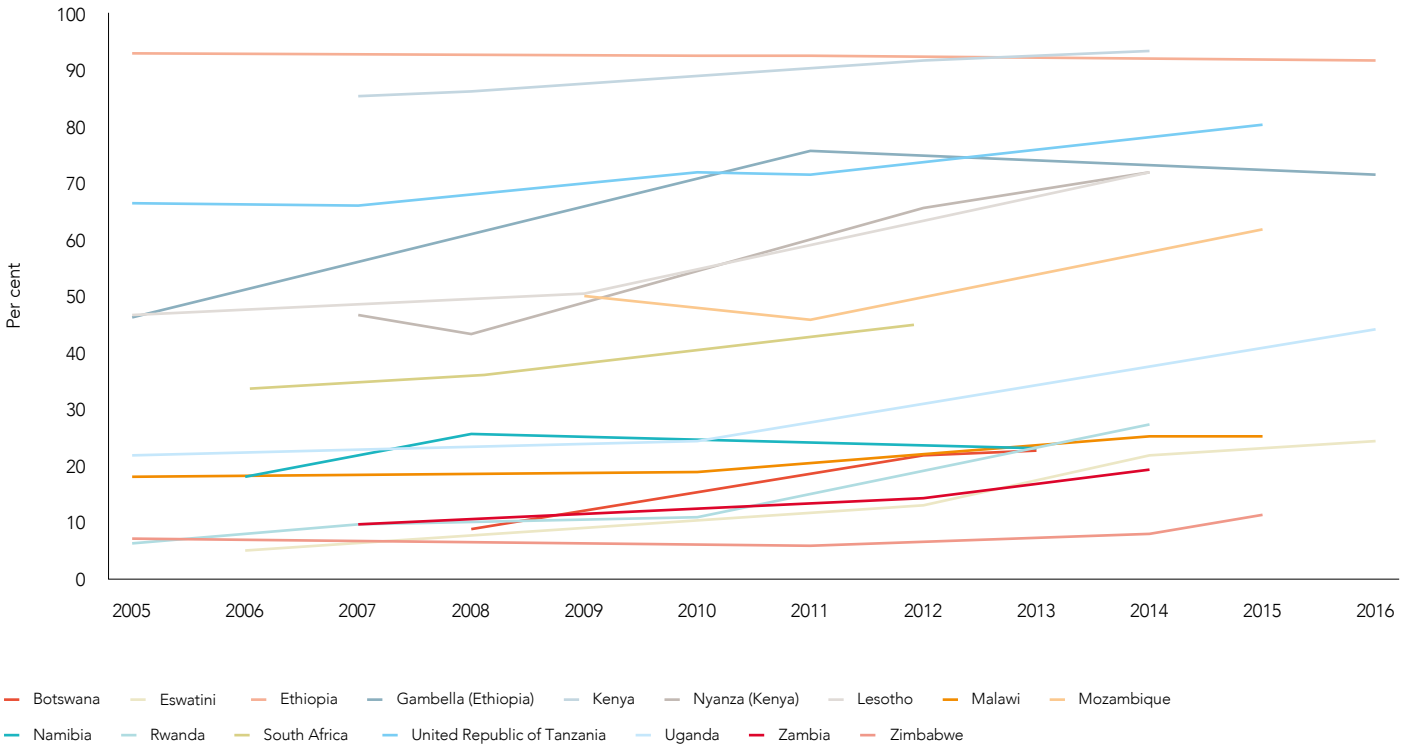


*South Sudan was added in 2016–17 as a priority country for VMMC and has not yet started to report data.

Source: Global AIDS Monitoring, 2018.

FIGURE 3.12 …but prevalence of circumcision still low in places

Prevalence of male circumcision (aged 15–49 years), 14 priority countries, 2005–2016



Source: Population-based surveys, 2005–2016.

Stand-out approaches to voluntary medical male circumcision

The identification and scale-up of innovative approaches has reinvigorated efforts to reach global targets for VMMC. In Mozambique, a tool funded by the United States President's Emergency Plan for AIDS Relief (PEPFAR) was shown to optimize site utilization, matching demand for VMMC with staff capacity. Paired with GIS mapping, the tool boosted uptake in the provinces where it was used. These methodologies are now being shared throughout PEPFAR-supported VMMC programmes *(44)*. For example, outreach campaigns in the United Republic of Tanzania were guided by GIS to achieve saturation coverage of VMMC among men aged 15–24 years in the Iringa and Njombe regions, two traditionally non-circumcising areas *(45)*.

In nine districts of eastern and central Uganda, the USAID-funded STAR-EC project used several creative approaches to increase uptake of VMMC and other HIV services *(46)*. The project, which ran during 2009–2016, engaged village health teams, peer educators, civil society organizations and "satisfied clients" to promote the intervention at public events such as fairs, market days and football competitions and through couples testing and counselling weeks. Services were offered at temporary facilities that were set up in neighbourhoods on weekends and public holidays. The project also engaged couples and encouraged women to participate in the decisions of their spouses regarding circumcision, an approach that helped increase acceptability and demand in a region where the procedure had not been common *(46)*.

By the end of 2016, more than 400 000 adolescent boys and men had been circumcised, increasing coverage in the area from 37% in 2009 to 57% and preventing an estimated 21 000 new HIV infections. Satisfaction with the quality of the services helped drive demand. Close cooperation between health workers and communities—and the use of linkage facilitators to support outreach events—were also key to that success. Other lessons included ensuring there are enough service providers to meet demand, tightening supply management to avoid stock-outs of circumcision kits and arranging off-site medical waste disposal services *(46)*.

VMMC support to the region was continued through the USAID Regional Health Integration to Enhance Services in East Central Uganda Activity (RHITES-EC). The five-year project links VMMC delivery to other needed services, including the following: maternal, newborn and child health; reproductive health; family planning; water and sanitation; and prevention and treatment of tuberculosis and malaria. Strategies include: focused service delivery mechanisms to reach marginalized, vulnerable and under-served populations; effective linkages and referrals at all levels of care; and local capacity development for sustainability *(47)*. During its first year, RHITES-EC circumcised 74 006 men *(48)*.

Lesotho is using VMMC to engage men in both HIV prevention and broader health-seeking services, and to increase HIV testing uptake and link the men found to be HIV-positive to care and treatment *(49)*.

Most demand generation efforts to date have focused almost exclusively on persuading boys to undergo the procedure. However, new research in South Africa, the United Republic of Tanzania and Zimbabwe suggests that the opinions of women and girls may be an under-appreciated factor in service uptake. Researchers found that adolescent girls preferred partners to be circumcised, and that their encouragement was an important motivating factor for boys to seek VMMC services *(50)*.

The partnering approach of the Centre for HIV and AIDS Prevention Studies (CHAPS) in South Africa has continued to reap benefits. Set up in 2010, CHAPS has linked with selected private sector health providers in targeted areas to deliver free VMMC with support from the National Department of Health. By 2017, CHAPS had partnered with 70 clinics, trained more than 4000 health-care workers on VMMC and conducted 325 000 circumcisions *(51)*. It has launched a similar programme in Eswatini.

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PRE-EXPOSURE PROPHYLAXIS

Oral pre-exposure prophylaxis (PrEP) is among the most promising recent additions to combination prevention for people at high risk of HIV infection. PrEP enables individuals to control their HIV risk by taking regular doses of antiretroviral medicines. The more than 15 trials of oral PrEP that have been conducted in different populations have confirmed its effectiveness when taken; they also demonstrated that (a) there was very low risk of drug resistance if PrEP use is preceded by a negative HIV test, (b) that there is little evidence of risk compensation and (c) that PrEP has high acceptability among users *(52, 53)*.

PrEP's enormous potential is already evident in North America, western Europe and Australia, where the addition of PrEP to areas with high coverage of antiretroviral therapy is contributing to declines in new diagnoses of HIV infection among gay men and other men who have sex with men. For instance, as part of San Francisco's Getting to Zero campaign, PrEP was added to city programmes that also include HIV testing, rapid linkages to antiretroviral therapy and boosted support for retention in care *(54)*. The proportion of PrEP-eligible gay men and other men who have sex with men reporting PrEP use in the city increased from 10% in 2014 to 38–42% in 2016 *(55)*. Between 2013 and the end of 2016, there was a 43% decrease in new HIV diagnoses in the city (from 392 to 223), and that decline is being attributed to both quicker achievement of viral suppression among people who test HIV-positive and to increased uptake of PrEP.

In the Australian state of New South Wales, annual new HIV diagnoses had been stable for about a decade despite substantial increases in HIV testing and treatment since 2012. A population-wide study of the rapid introduction of PrEP was launched in 2016 for persons at high risk of HIV infection. Over the next year, only one HIV seroconversion occurred among the study participants, who numbered close to 7000 by late 2017. Across the entire state—which includes areas beyond the geographical locations where PrEP was provided—there were 101 new HIV diagnoses in the first half of 2017 compared with 156 in the latter half of 2015, before the study commenced—a decline of 35% *(56)*. The study attributes these gains to high uptake and adherence to PrEP among the participants.

The impact of PrEP on a broader population within a high-prevalence setting remains to be seen, as large-scale PrEP programmes in eastern and southern Africa are in the early stages. A recent modelling study from Zimbabwe suggests that PrEP will have a population-level impact, but one that is less marked than what was seen in Australia. In this simulation, oral PrEP was provided over a five-year period to 40% of female sex workers and young women (aged 18–24 years) with multiple sexual partners. For every infection directly averted by providing oral PrEP to a female sex worker, the model predicted that 1.3 additional infections would be indirectly averted in the community over five years; for every infection directly averted by providing oral PrEP to a young woman with multiple sexual partners, one additional infection would be indirectly averted in the community over five years *(57)*.

PrEP is being incorporated into national primary prevention activities. Nearly 40 countries have included PrEP within their HIV policies, a 40% increase from the previous year. PrEP is being rolled out nationally in 10 countries, and smaller-scale PrEP projects are active in a further 30 countries, mainly exploring service delivery options, cost and acceptability of PrEP in preparation for roll-out. Faster regulatory approval by national authorities of the antiretroviral combination used for PrEP—and sufficient financing for well-focused and integrated programmes—are needed to broaden access to this important intervention. Experiences from Brazil, the United States and other early adopters show that partnerships between health providers and community groups from the start of programme planning is important to create demand and knowledge about PrEP and to strengthen adherence, especially in low- and middle-income countries, where awareness of PrEP is still low *(58, 59)*.

The United Nations General Assembly target is to have 3 million people on PrEP worldwide by 2020. Progress towards this target is slow. The estimated number of people who have ever started PrEP is about 350 000, with two thirds of these in the United States *(60)*. The number of people on PrEP at the end of 2017 was likely lower, as many people who start PrEP do so only for a short period.[4] There is evidence that a significant but unquantified number of additional people are accessing PrEP through private health providers and online suppliers of the antiretroviral medication.[5] The potentially large number of people accessing PrEP

[4] Reasons people stop taking PrEP can include the following: (a) they no longer need it; (b) they lose access to the medication; (c) they can no longer afford the medication; (d) they experience side-effects; or (e) they experience discrimination.

[5] An example is the I Want PrEP Now website (https://www.iwantprepnow.co.uk/buy-prep-now/), which offers delivery of generic PrEP medications without a prescription to 12 countries on four continents.

outside the public health system suggests high demand for this HIV prevention option, but it also gives cause for concern that a growing number of users may not be receiving the necessary clinical and adherence support. High prices and health insurance barriers will need to be addressed to facilitate access to the medication; in the United States, for example, PrEP can cost more than US$ 1000 per month *(61)*. Generic formulations, however, are available for as little as US$ 5 per month in low-income countries and US$ 25 per month by internet purchase from approved suppliers *(62)*.

Disparities in access must also be addressed. National data from the United States indicate that white Americans are more likely to be accessing PrEP, even though the need for PrEP is highest for African Americans *(63)*. Similarly, data from San Francisco show that increases in the uptake of PrEP have been slowest among African Americans, even though HIV diagnosis rates have been highest in that population group *(55)*.

As scale-up continues, providing PrEP to subpopulations at highest risk of infection will maximize impact. A modelling study has found that focusing the provision of PrEP on young gay men and other men who have sex with men (aged under 25 years) in the United Kingdom of Great Britain and Northern Ireland would avert four times more HIV infections over five years than providing the intervention generally to gay men and other men who have sex with men of all ages *(64)*.

EMERGING EVIDENCE AND INNOVATIONS

The dapivirine ring: a prevention method women can control

A challenge of oral PrEP is its adherence requirements—the medication must be taken daily to maximize its preventative benefit. Efforts to develop a vaginal ring that releases long-acting antiretroviral medicine could make adherence easier and provide a discrete HIV prevention option that women can control.

The dapivirine ring, which releases medicine over a one-month period before needing replacement, has been tested in placebo-controlled trials. The initial results from these trials (called ASPIRE and RING) showed only modest effectiveness: overall reductions of new HIV infections were around 30% compared to the placebo arm, and no impact was seen among the youngest women. However, adherence to the product was not as strong as anticipated, and there seemed to be a greater effect in those who used the ring more faithfully.

Preliminary results from the HOPE and DREAM open label trials (in which women know that they are receiving the active rings) are more encouraging. The HOPE trial, conducted among 1299 women in Malawi, South Africa, Uganda and Zimbabwe, found a 54% reduction in HIV risk for dapivirine ring users compared to what would have been expected if the women were infected at the same rate as had been estimated in the original placebo-controlled study *(71)*. Similarly, the DREAM trial, which enrolled 900 women in South Africa and Uganda, showed a 54% reduction in HIV incidence (again compared to a mathematically constructed comparison) *(72)*. This was the first time that efficacy of more than 50% has been observed in HIV prevention trials involving only women. In both studies, about 90% of the women appeared to use the ring at least some of the time. More detailed findings regarding efficacy and adherence levels are pending. The final results from both studies are expected in 2019.

Another trial, the REACH study MTN 034, will explore the acceptability and safety among adolescent girls and young women (aged 16–21 years) of using oral PrEP along with the vaginal ring. This Phase II trial was due to commence in mid-2018 at five sites in Kenya, Uganda, South Africa and Zimbabwe *(73)*.

EMERGING EVIDENCE AND INNOVATIONS

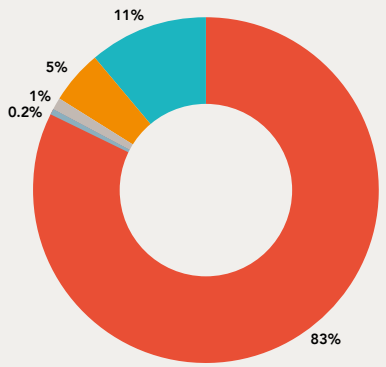
Brazil a leader among countries rolling out PrEP nationwide

In Brazil, PrEP is now available free of charge to priority populations through its Unified Health System, and national coverage is expected by the end of 2018.

The roll-out began in 2013, when the Ministry of Health cofinanced demonstration projects that showed PrEP was both feasible and effective, retaining high numbers of participants and achieving high levels of adherence without risk compensation *(65)*. Assessments of the projects and public consultations shaped the national PrEP guidelines, which were drafted in 2017. Key stakeholders from civil society were invited to participate in the development of the PrEP national implementation plan and to provide input on communication materials to potential PrEP users. Online public consultation of the *Clinical protocol and therapeutic guidelines for PrEP* involved more than 3500 contributions from health professionals, health managers and representatives of the scientific academy and civil society. A cost-effectiveness study concluded that PrEP would be cost-effective in Brazil among transgender women and gay men and other men who have sex with men who are at high risk of HIV infection. In addition, municipalities and states were brought together to discuss local strategies to implement PrEP across the country.

FIGURE 3.13 **Gay men in Brazil are using PrEP**

PrEP users by population, Brazil, January–March 2018



Gay men and other men who have sex with men
Transgender women
Heterosexual women
Transgender men
Heterosexual men

Source: Department of Surveillance, Prevention and Control of Sexually Transmitted Infections, HIV/AIDS and Viral Hepatitis, Ministry of Health, Brazil, 2018.

PrEP was incorporated into the national health system in December 2017, with the priority groups being gay men and other men who have sex with men, transgender people, sex workers and serodiscordant couples. It is offered free of charge at HIV reference centres that already assist key populations *(66)*. Within six months, it was available at 36 health facilities in 11 states; the remaining 16 states of the country are on track to begin offering PrEP in 2018. A total of 65 health facilities are expected to be offering PrEP by the end of 2018.

Data from January to May 2018 show that of the total 2159 PrEP users, 78% were gay men and other men who have sex with men, 12% were women, 8% were heterosexual men and 2% were transgender women. More than half (56%) of the transgender women, 11% of the other women and 8% of the gay men and other men who have sex with men identified themselves as sex workers (Figure 3.13) *(66)*.

Adherence levels have been high, with only 8% of users reporting missing five or more tablets during the previous 30 days *(66)*. Early experience suggests that offering PrEP free of charge at the point of care can retain large numbers of users and achieve high levels of adherence.

Elsewhere, Kenya is proceeding with a major roll-out of PrEP to priority populations, including adolescent girls and young women, and it expects to have half a million people on PrEP by 2022 *(67)*. The United Republic of Tanzania is adopting a phased approach, with PrEP studies underway or planned in 14 provinces. The initial aim is to reach at least 12 000 people at high risk of HIV infection with PrEP by the end of 2018 *(68)*. South Africa has also begun providing PrEP to adolescent girls and young women in line with its current national strategic plan. The initial aim is to have at least 8000 adolescent girls and young women on PrEP by 2022 *(69)*. Zimbabwe have initiated a phased roll-out of PrEP with the aim of providing it to 10 500 people by 2020 *(70)*.

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4. 90–90–90

AT A GLANCE

1 Remarkable recent progress on HIV testing and treatment has been driven by strong and growing global commitment to achieve the 90–90–90 targets by 2020.

2 Three quarters of people living with HIV globally knew their HIV status at the end of 2017.

3 An estimated 21.7 million [19.1 -22.6 million] people globally were receiving antiretroviral therapy at the end of 2017, five and a half times more than just a decade ago.

4 Treatment coverage among children (aged 0–14 years) living with HIV remains lower than treatment coverage among adults, and it is far short of the 1.6 million target set for 2018.

5 Young people and key populations are often underserved by HIV testing and treatment programmes.

Progress and gaps

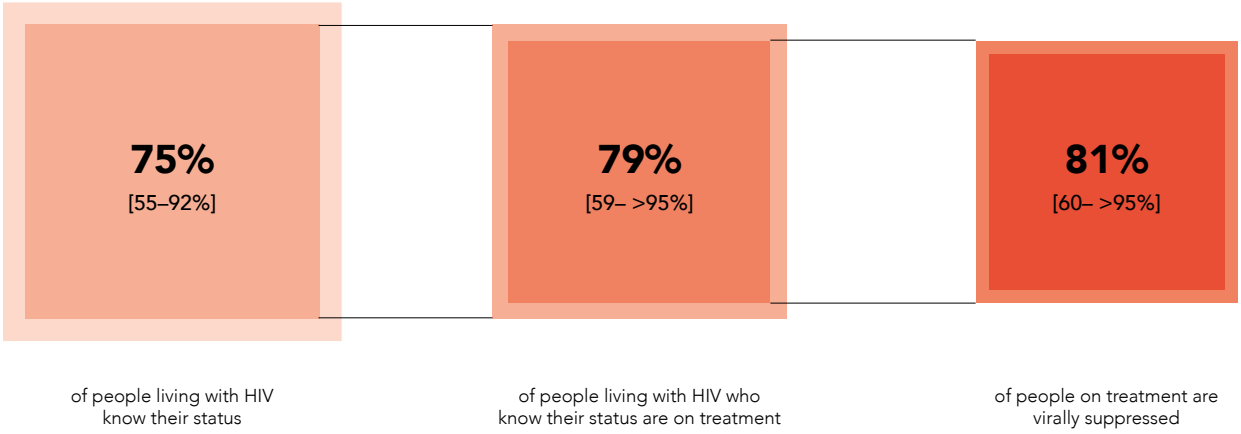
An estimated 21.7 million [19.1–22.6 million] people globally were receiving antiretroviral therapy at the end of 2017, five and a half times more than just a decade ago. The remarkable recent progress on HIV testing and treatment has been driven by strong and growing global commitment to achieve the 90–90–90 targets by 2020: 90% of people living with HIV know their HIV status, 90% of people who know their HIV-positive status are accessing treatment and 90% of people on treatment have suppressed viral loads. This translates to 81% of all people living with HIV accessing antiretroviral therapy, and 73% of all people with HIV achieving an undetectable viral load. An undetectable viral load prevents both AIDS-related illness and onward transmission of HIV.

GLOBAL PROGRESS

Three quarters of people living with HIV globally—an estimated 75% [55–92%]—knew their HIV status at the end of 2017. Among them, 79% [59– >95%] were accessing antiretroviral therapy, and 81% [60– >95%] of people accessing treatment had suppressed viral loads. The largest gap remains at the first 90, suggesting that increasing the number of people living with HIV who know their status will be particularly important as countries strive to reach the 2020 target over the next two years. When these data are presented across the continuum of testing and treatment services for all 36.9 million [31.1–43.9 million] people living with HIV globally, 59% [44–73%] were on treatment and 47% [35–59%] had suppressed viral loads in 2017. The gap to full achievement of the third 90 (73% of all people living with HIV) was 9.6 million people with viral loads greater than 1000 copies/mL (Figure 4.1).

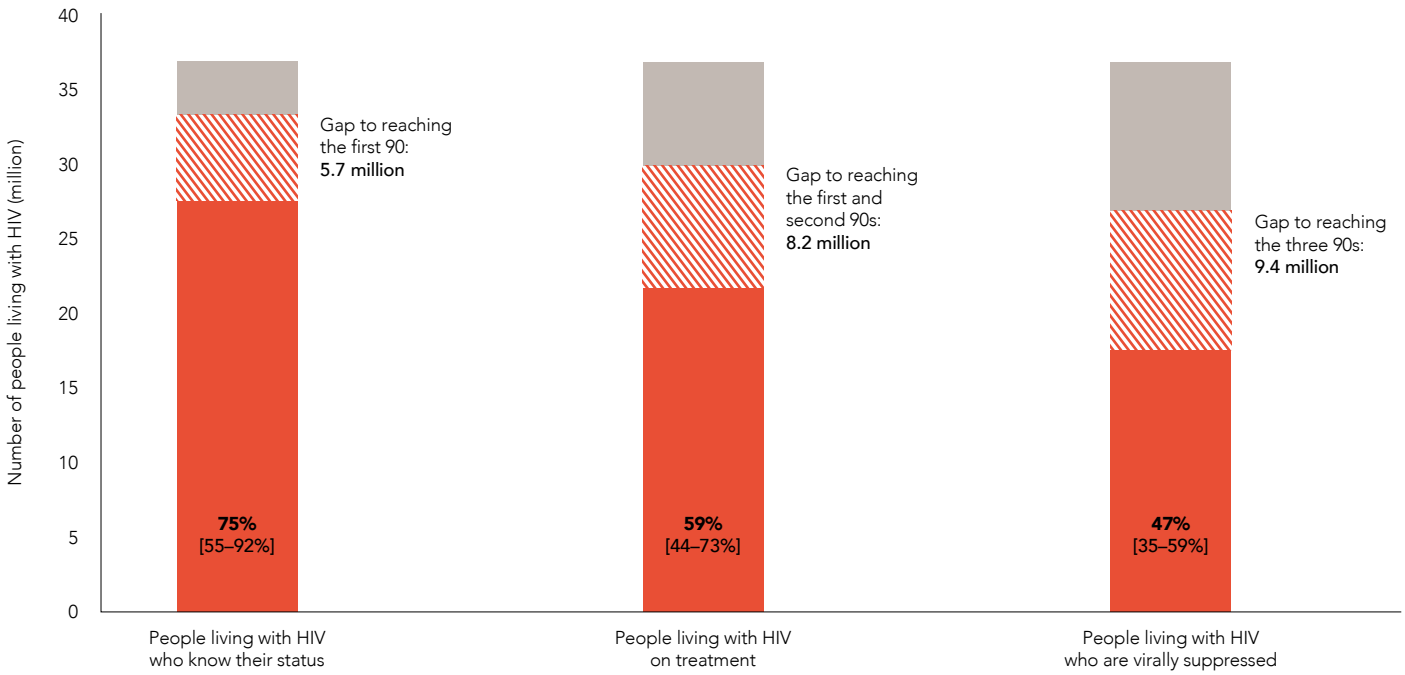
FIGURE 4.1 Remarkable progress on HIV testing and treatment

Progress towards 90–90–90, global, 2017



Source: UNAIDS special analysis, 2018; see annex on methods for more details.

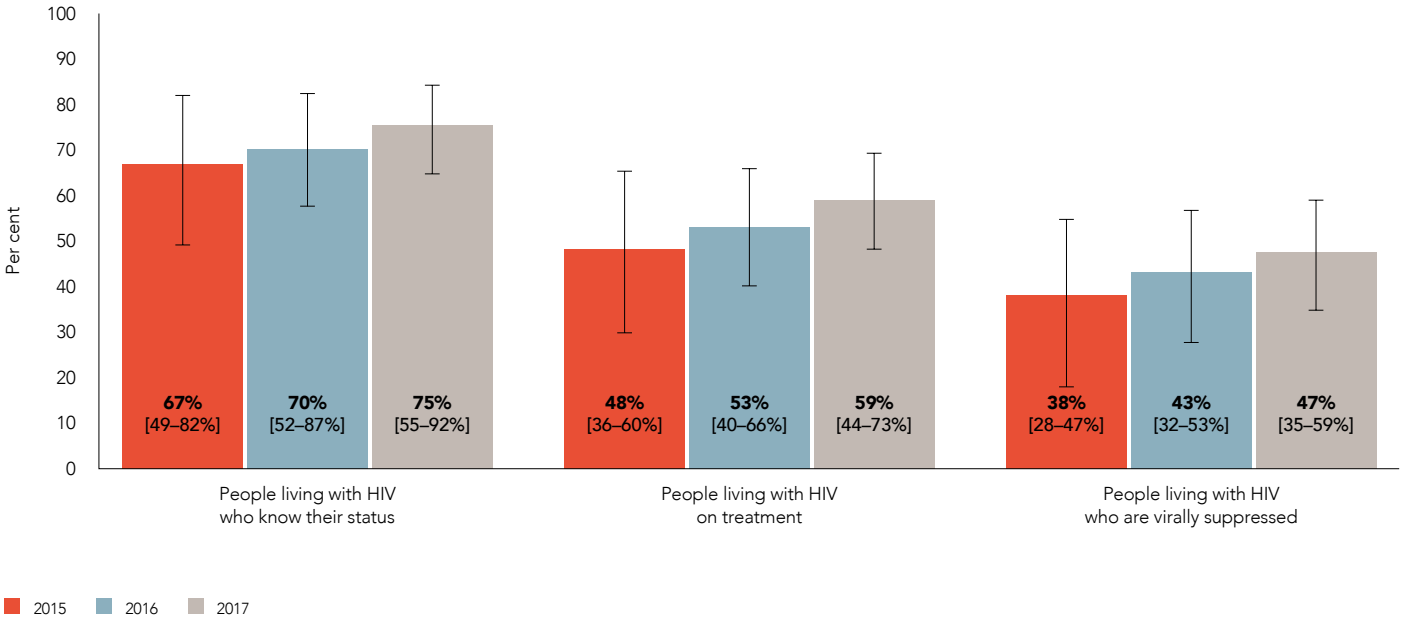
HIV testing and treatment cascade, global, 2017



Source: UNAIDS special analysis, 2018; see annex on methods for more details

FIGURE 4.2 Moving towards global targets

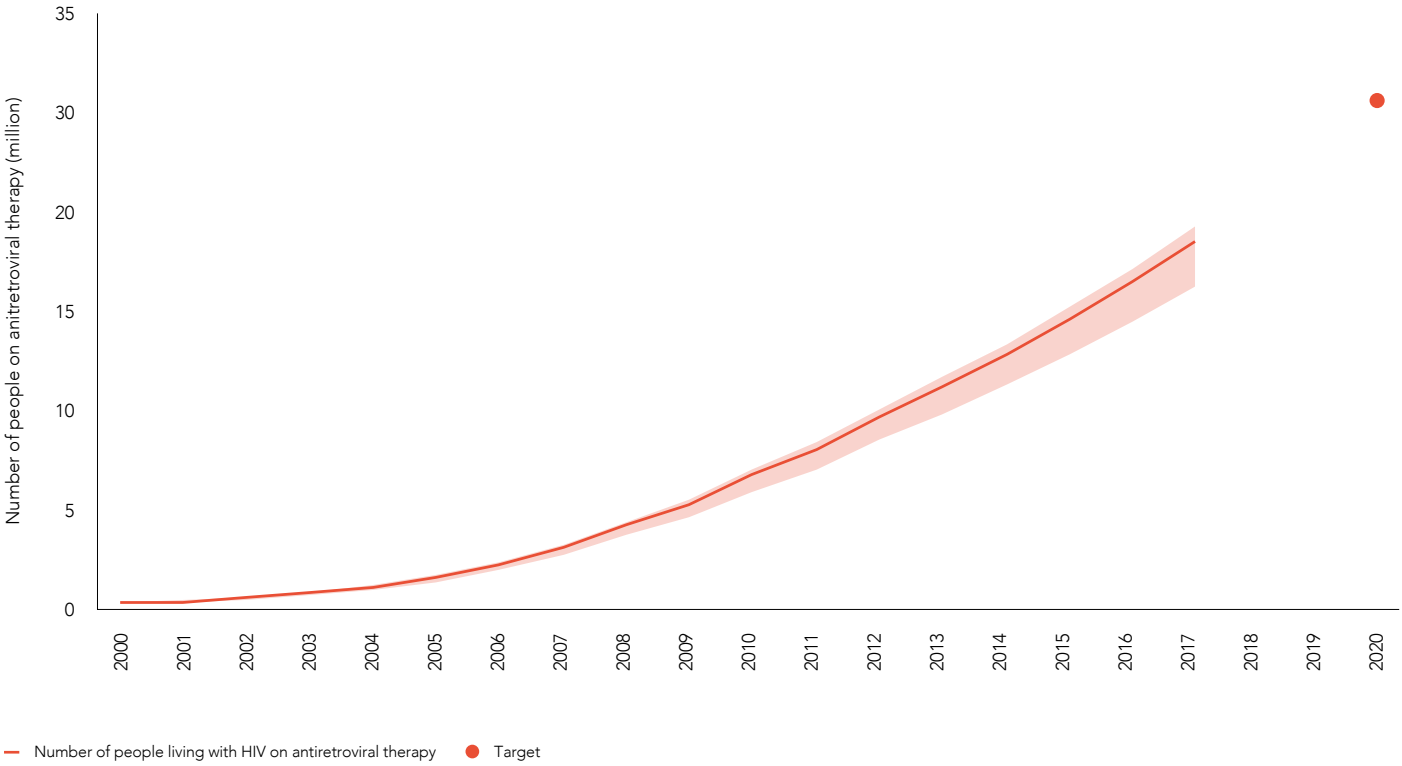
HIV testing and treatment cascade, global, 2015–2017



Source: UNAIDS special analysis, 2018; see annex on methods for more details.

FIGURE 4.3 Aiming for the 2020 treatment target

Number of people living with HIV accessing antiretroviral therapy, global, 2000–2017 and 2020 target



Source: UNAIDS 2018 estimates; Global AIDS Monitoring, 2018.

Trend data show steady progress across the cascade since 2015 (Figure 4.2). However, the rate of treatment scale-up is insufficient (Figure 4.3). The number of people on treatment increased by an estimated 1.9 million in 2014, 2.1 million in 2015, 2.2 million in 2016 and 2.3 million people in 2017. Reaching the 2020 target of 30 million people on treatment will require annual increases of nearly 2.8 million per year.

REGION AND COUNTRY PROGRESS

Progress across the HIV testing and treatment continuum varies by region (Figure 4.4). In eastern and southern Africa, the region hardest hit by the epidemic, a combination of strong domestic leadership and unwavering international support is driving continued gains in knowledge of status, linkages to care and viral suppression. The high-income region of western and central Europe and North America has nearly reached the targets; Latin America also appears on track to achieve the global viral suppression target of 73%, although gains in knowledge of status have slowed. Asia and the Pacific and the Caribbean regions will need to accelerate their testing and treatment programmes to get on track to reach the 90–90–90 targets by 2020. Modest gains in regions where treatment coverage is relatively low—eastern Europe and central Asia, the Middle East and North Africa and western and central Africa—leave those regions considerably off track.

Testing coverage remains a particular challenge in several regions, notably western and central Africa, where only an estimated 48% [31–66%] of people living with HIV knew their HIV status in 2017. The treatment coverage and viral suppression gaps were largest in the Middle East and North Africa, where just 29% [17–43%] of all people living with HIV were accessing antiretroviral therapy and just 22% [13–32%] of all people living with HIV were virally suppressed.

High rates of viral load suppression can be achieved; indeed, the 90–90–90 targets are within reach for a large number of countries, including some with high burdens of HIV. By the end of 2017, six countries had achieved the target of 73% of people living with HIV having suppressed viral load, and another seven countries had achieved viral suppression among at least 65% of all people living with HIV (Table 4.1).

For example, Lesotho, a country with limited resources, is making significant progress towards the 90–90–90 targets,

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EMERGING EVIDENCE AND INNOVATIONS

Diagnosing more people living with HIV through index case finding

Index case finding is one of the most efficient ways of diagnosing people with HIV, especially the male partners of women who have been diagnosed through antenatal services. It involves offering HIV testing and counselling to family members (including children), other members of the household and sexual partners of people diagnosed with HIV. The benefits of index case finding include mutual support within a household to access prevention, treatment and care services, as well as improved adherence and retention in treatment and prevention of mother-to-child transmission programmes *(1)*. According to a meta-analysis from 2017, the percentage of newly diagnosed individuals linked to care—including children and young people—also appears to be higher for index case finding than standard testing approaches *(2, 3)*.

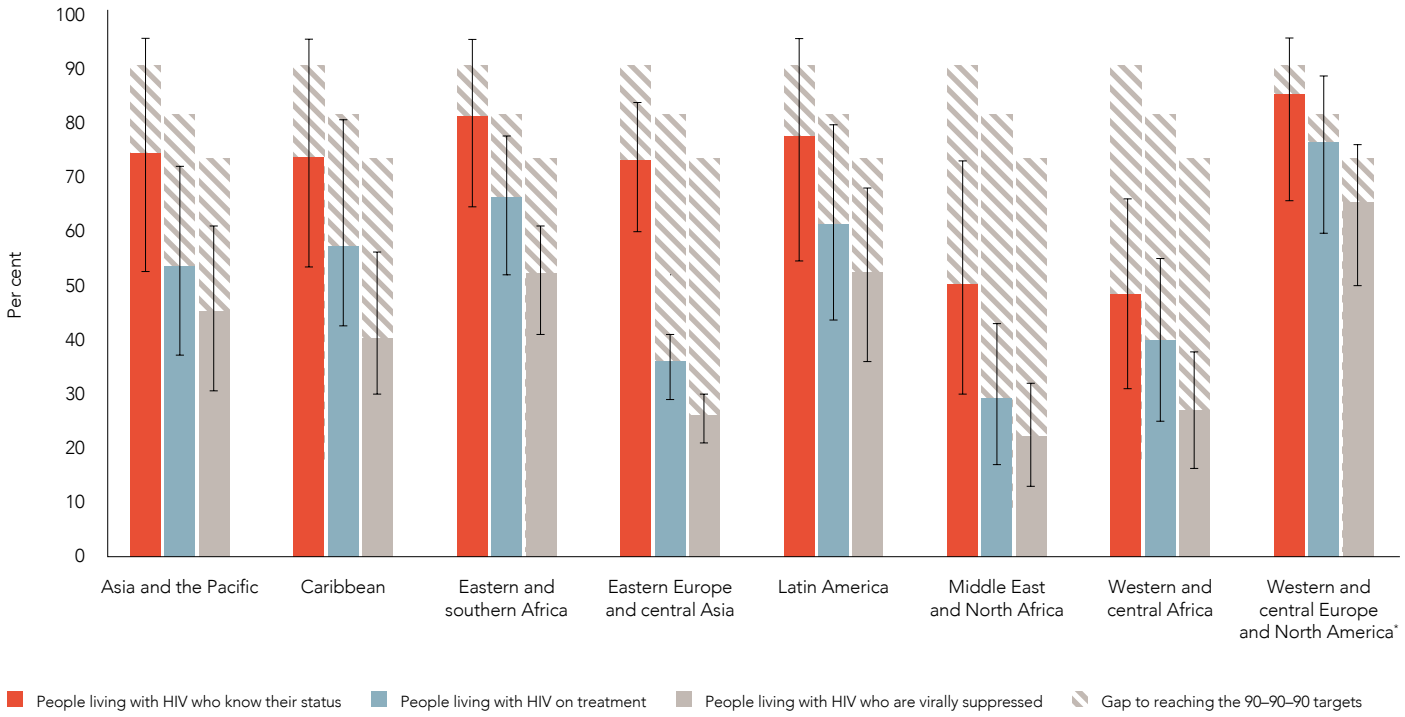
Malawi introduced index case finding in June 2016. Patients attending antiretroviral therapy clinics are encouraged to bring their family members for HIV testing during family testing days that are organized at health facilities in six districts. Within 13 months of the introduction of index case finding, 25 572 adults and children had taken an HIV test, and 22% of them had tested HIV-positive. That amounts to a much higher yield of new HIV diagnoses than Malawi's national average of 4% for HIV-positive diagnoses among people tested for HIV *(4)*.

Various supportive elements can be added to index case finding. In a study in Kenya, for example, index case finding included home visits by community health workers and partner education. This contributed to a doubling (87% versus 39%) of the proportion of men who took an HIV test during their partner's pregnancy *(5)*.

Concerns about possible abuse and violence resulting from disclosure of an HIV diagnosis to spouses or sexual partners caused some reluctance in the past about using this approach more widely. However, in studies from Cameroon, Kenya and the United Republic of Tanzania, there were no reported cases of domestic violence linked to index or partner testing *(6–8)*.

FIGURE 4.4 Progress varies by region

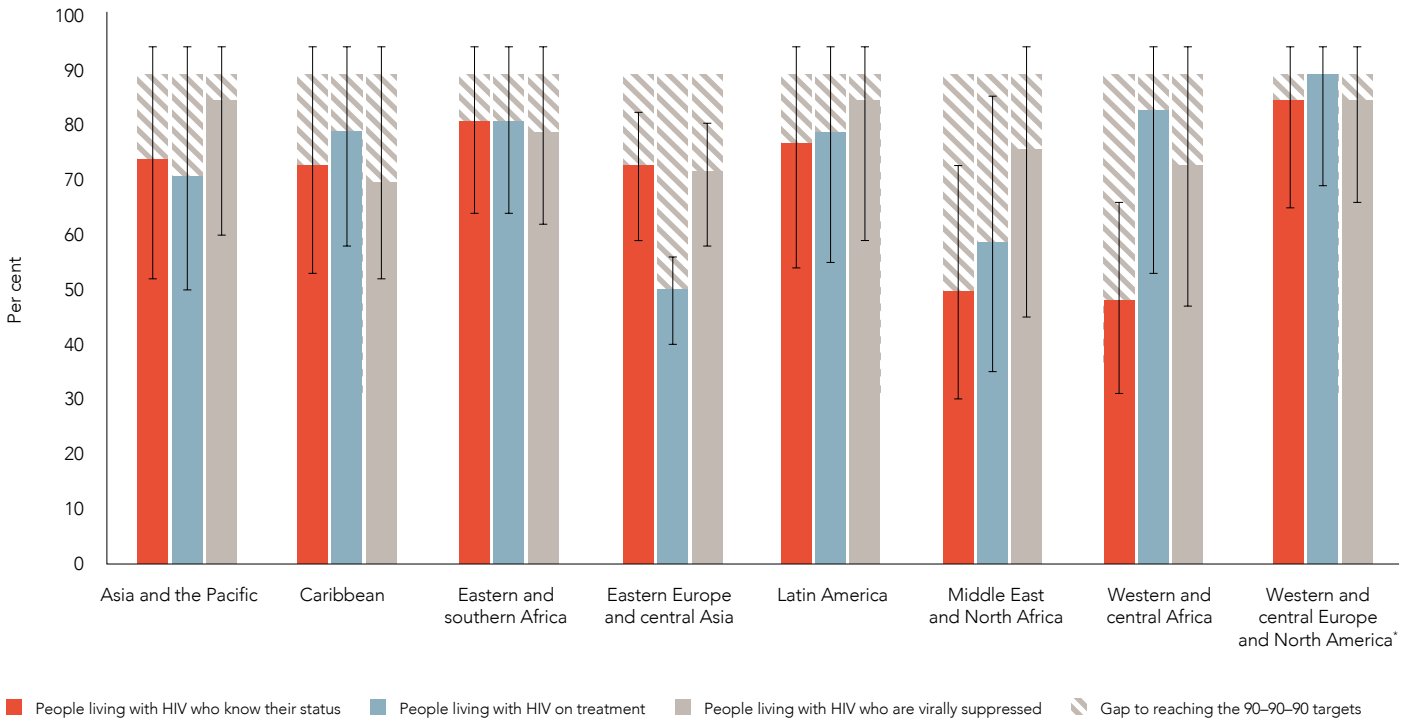
Knowledge of HIV status, treatment coverage and viral load suppression among people living with HIV, 2017[1]



* Cascade for western and central Europe and North America region is for 2016.

Source: UNAIDS special analysis, 2018; see annex on methods for more details.

Progress towards 90–90–90 targets, by region, 2017[1]



* Progress towards 90–90–90 for western and central Europe and North America region is for 2016.

Source: UNAIDS special analysis, 2018; see annex on methods for more details.

More effort needed to reach targets in the western and central Africa catch-up plan

Reaching global HIV testing and treatment targets will depend a great deal upon efforts to address the huge coverage gaps in western and central Africa. Although the region is home to just 6% of the global population, it accounts for a third (34%) of the estimated 9.4 million undiagnosed people living with HIV and nearly a quarter (22%) of the 19.4 million people living with HIV who were not virally suppressed in 2017.

Insufficient domestic funding, weak health systems, user fees for health care, humanitarian situations and high levels of stigma and discrimination have undermined efforts to scale up HIV testing and treatment in the region. A growing number of countries in the region have signed on to the western and central Africa catch-up plan, a compact between countries and the international community that supports individual country strategies and plans to address bottlenecks to scale-up, accelerate their respective national responses and reach a trajectory to achieve the 90–90–90 targets by 2020 *(9)*. The 15 participating countries aim to achieve the following objectives by mid-2018 (compared to a 2015 baseline):

- A 65% reduction in the number of people who know their HIV status but have not yet accessed antiretroviral therapy.
- A 45% increase in the number of people diagnosed with HIV who are accessing antiretroviral therapy.
- A 50% increase in the number of HIV-positive pregnant women accessing antiretroviral medicines to prevent mother-to-child transmission of HIV.

Western and central Africa is home to just 6% of the global population, but it accounted for a third (34%) of the world's undiagnosed people living with HIV and nearly a quarter (23%) of all people living with HIV who were not virally suppressed in 2017.

Since the finalization of the catch-up plan, countries have engaged in considerable planning, action and innovation to address the well-documented challenges they face. Important momentum has been achieved in a number of countries. Knowledge of HIV status among people living with HIV in 2017 exceeded 70% in at least five countries: Burkina Faso, Burundi, Cameroon, Gabon and Senegal. Since 2015, the number of people living with HIV accessing treatment rose by 76% in the Democratic Republic of the Congo, 67% in Sierra Leone and 51% in Cameroon.

A regional catch-up plan serves as a compact between countries and the international community to address bottlenecks to scale-up, accelerate national responses and reach a trajectory to achieve the 90–90–90 targets by 2020.

Regional estimates suggest that between 2015 and 2017, the number of people diagnosed with HIV increased by 27%, and that the number of people living with HIV accessing treatment increased by 34%. The number of HIV-positive pregnant women in the region accessing antiretroviral medicines to prevent mother-to-child transmission of HIV was stable over the same two-year period.

Further progress towards the catch-up plan targets will require the expansion of community-based HIV testing services, steady removal of user fees for HIV and health services, strengthening of procurement and supply chain management systems to prevent stock-outs, and the implementation of differentiated health-care service delivery, including task shifting from doctors to nurses, and from nurses to community health workers, to account for the low level of human resources for health in the region. Stronger patient and case reporting systems are also required to document progress towards the catch-up plan targets.

Enhancing treatment adherence

Community-based or community-supported models of care are among the most effective ways of improving retention in care and adherence to treatment, while at the same time reducing the burden on formal health systems *(14–16)*. Task shifting to community health workers is vital for managing the increasing numbers of people on HIV treatment in low-resource settings. A review of studies from sub-Saharan Africa concluded that the quality of care provided by adequately trained and supported nurses or community health workers was comparable to that provided by doctors *(14, 17)*. Some treatment adherence clubs also have shown better retention in care than standard facility-based models, including in Cape Town, South Africa, where this approach led to high rates of treatment retention and viral suppression *(18, 19)*.

Task shifting to community health workers is vital for managing the increasing numbers of people on HIV treatment in low-resource settings.

Community-based care should be pursued alongside other strategies that have been shown to increase adherence and retention in care, such as reducing the frequency of clinic visits and medication pick-ups for patients who are stable on antiretroviral therapy. Dispensing antiretroviral medicines in communities—not just at clinics and hospitals, but also at pharmacies—is also effective, especially for retaining men in treatment *(20)*. Improved patient and case reporting systems and mechanisms to trace and re-engage patients who have missed appointments or medicine pick-ups can further strengthen retention in care *(21–24)*.

Text messaging and electronic reminders also have resulted in improved adherence in some studies, especially when used along with adherence counselling *(25–27)*. Text messaging is being used successfully to improve the management of several chronic diseases, not just HIV *(28, 29)*. The ENGAGE4HEALTH study in Mozambique found that both linkages to care and retention in care were higher when people were offered immediate antiretroviral therapy and sent phone message reminders: 70% remained in care after 12 months versus 46% in the control arm *(30)*. In the LINK4HEALTH study in Eswatini, a similar approach also led to high rates of retention in care *(31)*.

In some studies, eHealth interventions (such as text messaging, instant messages and the use of social media) have shown promise for improving uptake of HIV testing among key populations *(32, 33)*. However, a recent systematic review found no evidence that simple text messaging strengthens treatment adherence among adolescents *(34)*. This suggests that specific eHealth methods need to be tailored for that particular population.

Routine viral load monitoring is increasingly vital for achieving the best possible treatment adherence and outcomes, and for acting as an indicator of potential antiretroviral treatment resistance. It is also a powerful HIV prevention tool: knowing that one has reached an undetectable viral load and therefore cannot transmit HIV to anyone else can help motivate continued adherence to treatment *(35)*.

Community-based care should be pursued alongside other strategies that have been shown to increase adherence and retention in care, such as reducing the frequency of clinic visits and medication pick-ups for patients who are stable on antiretroviral therapy.

TABLE 4.1 Progress towards 90–90–90, by country, 2017

*Countries that have achieved the 90–90–90 targets or are near to achieving them, most recent country data**

	First 90	Second 90	Third 90		Viral load suppression among all people living with HIV
Achieved (90% or greater)	Czechia Eswatini Greece Lithuania Malawi Namibia Portugal Romania Serbia Singapore South Africa Thailand	Algeria Austria Botswana Burundi Cambodia Comoros Congo Democratic Republic of the Congo Denmark Eswatini Ethiopia Italy Lesotho Luxembourg Maldives Mauritania Mexico Mozambique Namibia Netherlands Niger Rwanda Saudi Arabia Zimbabwe	Botswana Brazil Cambodia Chile Czechia Denmark Germany Hungary Ireland Kuwait Lao People's Democratic Republic Lesotho Luxembourg Malaysia Montenegro Myanmar Nepal Netherlands Pakistan Portugal Saudi Arabia Serbia Singapore Slovenia Sri Lanka	**Achieved (73% or greater)**	Botswana Cambodia Denmark Eswatini Namibia Netherlands
Nearly achieved (85–89%)	Austria Botswana Bulgaria Burkina Faso Cambodia Denmark Germany Ireland Italy Luxembourg Netherlands Slovakia Zimbabwe	Argentina Croatia Germany Kuwait Mongolia Nigeria Portugal Singapore Slovakia Togo Uganda	Armenia Croatia Eswatini Georgia Honduras Malawi Namibia Suriname Thailand The former Yugoslav Republic of Macedonia Viet Nam	**Nearly achieved (65–72%)**	Germany Ireland Italy Lesotho Luxembourg Portugal Singapore

* Data are for 2017, except as as follows. 2016: Austria, Czechia, Denmark, Germany, Italy, Luxembourg, Netherlands, Portugal, Serbia, Slovenia. 2015: Croatia and Hungary. Estimates are for citizens of the country only for Kuwait and Saudi Arabia.

Source: UNAIDS special analysis, 2018; see annex on methods for more details.

Continued from page 69

as shown in the countrywide 2016 Lesotho Population-based HIV Impact Assessment. HIV prevalence was very high in Lesotho: it was 24% among those aged 15–49 years (30% in women and 19% in men). Despite this, 68% of people living with HIV (71% for women and 63% for men) were virally suppressed *(10)*.

While rates of viral suppression are improving in most regions, significant proportions of people on antiretroviral therapy experience treatment disruptions or drop out of care before achieving sustained viral suppression. A study of antiretroviral therapy patient data in four provinces of Zambia from 2013 to 2015—including tracing of a random sample of patients lost to follow-up—showed high and sustained mortality rates and under-reporting of AIDS-related mortality within the national HIV programme *(11)*. A systematic review of more than 100 studies has found that poor adherence to treatment was especially associated with stigma and discrimination, dissatisfaction with the attitudes and behaviours of health-care workers, a lack of social support and alcohol use *(12)*. Alcohol use is a typically overlooked factor that affects treatment retention and adherence, and it requires greater attention *(13)*.

Complications stemming from late initiation of treatment, poor adherence to treatment and substandard monitoring of treatment are increasing the risks of drug resistance and the costs of care. This, in turn, reduces the preventative impact of antiretroviral therapy, resulting in considerable and avoidable AIDS-related morbidity and mortality.

EMERGING EVIDENCE AND INNOVATIONS

Leveraging communities in Botswana for viral suppression

Botswana, where HIV prevalence is among the highest in the world, is one of the few countries that has nearly achieved the 90–90–90 targets. However, late initiation of antiretroviral therapy remains a challenge. The Botswana Combination Prevention Project, a cluster-randomized trial evaluating the impact of a combination prevention package on HIV incidence, tested 44 233 people in 30 rural and semi-urban communities from 2013 to 2016: 23% were found to be living with HIV and referred to care. Of the 2569 who had a point-of-care CD4 test, 20% had advanced HIV disease (CD4 ≤ 200 cells/μL).

The project used home-based and mobile testing of adult residents (aged 16–64 years) in the 15 intervention communities. Newly-identified and known HIV-positive persons not on treatment were given appointments and SMS (text) reminders for treatment initiation at local clinics. Linkages to care support were provided to referred individuals who did not register at the HIV clinic. In total, the project referred more than 3500 people living with HIV to antiretroviral therapy from 2013 to 2017. Of those who were referred, 79% started treatment; among the 2000 individuals who had a viral load test, 98% were virally suppressed after six months *(36)*.

The project has demonstrated that substantial increases in uptake and coverage of treatment can be achieved through a combination of community- and clinic-based interventions. Community models of service delivery appear particularly important for persons unable or unwilling to attend facilities due to work, stigma, privacy or other issues. However, despite specific efforts to reach young people and men, rates of linkages to care were lower for men (88%) than women (94%), as was treatment initiation (78% for men and 84% for women). Young people (aged 16–24 years) were less likely to link to care or start treatment than those who were 25 years or older *(36)*. Moving forward, additional interventions are needed that encourage and support young people to start and remain on treatment.

DISPARITIES BETWEEN WOMEN AND MEN

Across different geographic and epidemic settings, men are less likely than women to take an HIV test and to initiate and adhere to HIV treatment, resulting in poorer clinical outcomes *(37–40)*. The trend is evident in recent population-based HIV impact assessments supported by the United States President's Emergency Plan for AIDS Relief (PEPFAR) in Eswatini, Lesotho, Malawi, the United Republic of Tanzania, Zambia and Zimbabwe, and in a study conducted in South Africa's North West province *(41, 42)*.

Globally in 2017, antiretroviral therapy coverage among men living with HIV (aged 15 years and older) was 53% [38–66%], compared with 65% [49–80%] among women (Figure 4.5). The disparity was greatest in western and central Africa, although there also were large disparities in Asia and the Pacific, the Caribbean, and eastern and southern Africa.

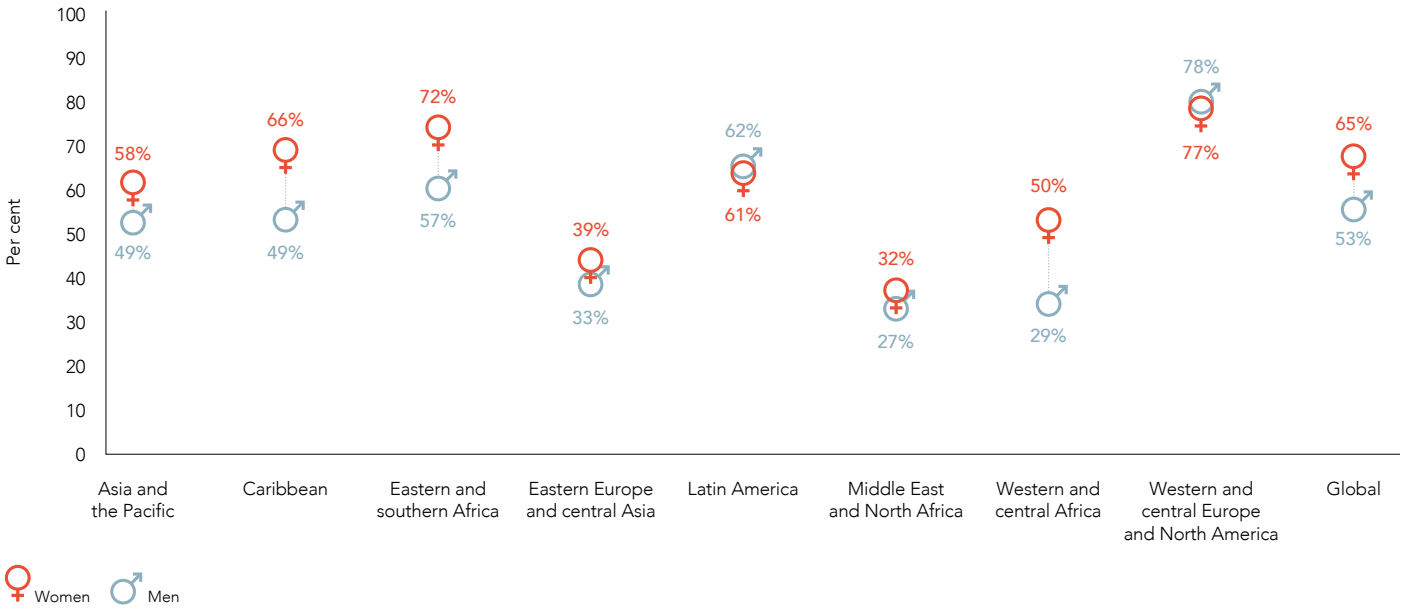
TREATING CHILDREN LIVING WITH HIV

Although far fewer children are acquiring HIV, diagnosing and treating children who do acquire the virus remains a challenge. HIV treatment services are usually designed for adults and tend to lack consideration of the specific needs of younger people *(43)*. Treatment coverage among children (aged 0–14 years) living with HIV remains lower than treatment coverage among adults, and it is far short of the 1.6 million target set for 2018 (Figure 4.6). At the end of 2017, 941 000 [828 000–979 000] children living with HIV were accessing antiretroviral therapy, which equates to a coverage of 52% [33–70%].

There are large differences in paediatric treatment coverage by region. In eastern and southern Africa, an estimated 59% [40–77%] of children (aged 0–14 years) were accessing antiretroviral therapy in 2017, compared with just 26% [15–38%] in western and central Africa.

FIGURE 4.5 Lower treatment coverage among men

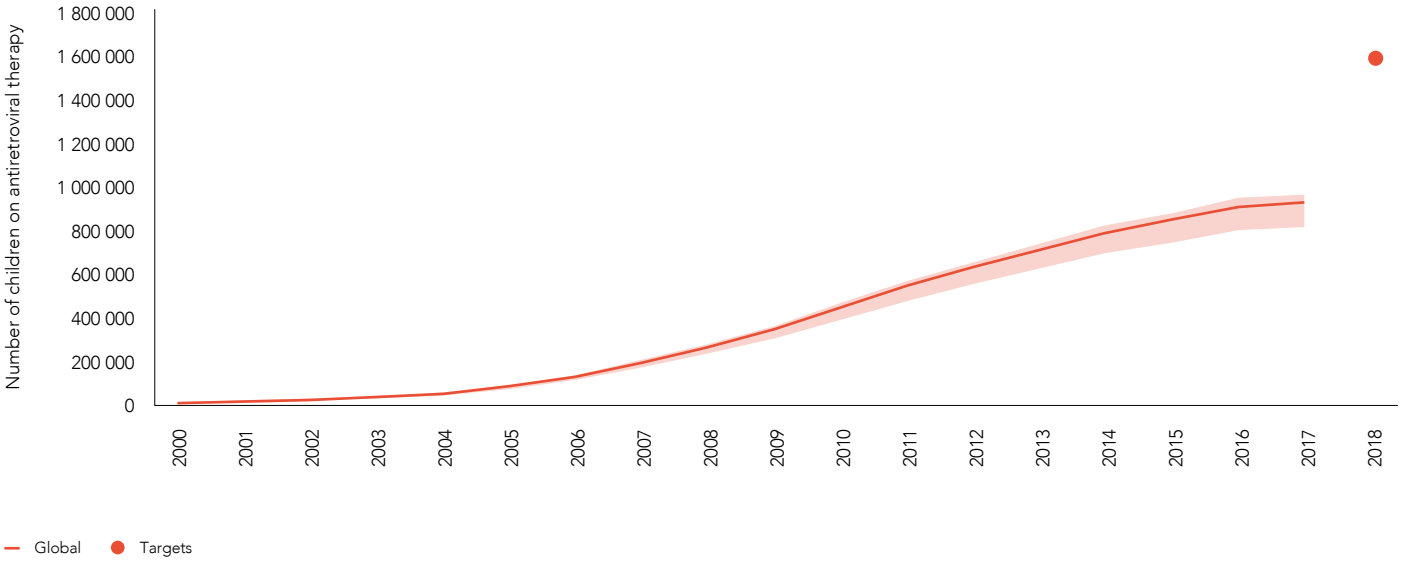
Coverage of antiretroviral therapy by sex, global and regional, 2017



Source: UNAIDS 2018 estimates; Global AIDS Monitoring, 2018.

FIGURE 4.6 Far short of the target for children on treatment

Number of children (aged 0–14 years) accessing antiretroviral therapy, global 2000–2017 and 2018 target



Source: UNAIDS 2018 estimates; Global AIDS Monitoring, 2018.

There is a pressing need for age-appropriate paediatric formulations of antiretroviral medicines. In November 2017, leaders of major pharmaceutical and medical technology companies came together with governments, multilateral organizations, donors and organizations providing services and support to children living with HIV to establish a joint Action Plan for Scaling Up Early Diagnosis and Treatment of Children and Adolescents. Increased attention and support to children living with HIV is needed, including scaling up early infant diagnosis and providing HIV tests to children who present for illness or malnutrition at health facilities. As children are reliant on their parents or caregivers for their needs, information and support to caregivers is vital to ensuring lifesaving treatment is received.

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EMERGING EVIDENCE AND INNOVATIONS

STACKing the odds in favour of adolescents and young people living with HIV

When stigma and discrimination is addressed and greater support is provided, strong treatment adherence is possible among adolescents and young people.

A new study from Eastern Cape province shows that dramatic improvements can be achieved by combining specific forms of support: (a) providing adolescents with enough cash to travel safely to clinics; (b) accompanying them to clinics; (c) ensuring that clinics are stocked with medication; and (d) ensuring that staff devote sufficient time to their consultations and show kindness and concern towards the adolescents *(50)*. The rates of treatment adherence among adolescents living with HIV (aged 10–19 years) ranged from 3.3% when none of the protective interventions were present to 70% when all five interventions were combined.[1] Dubbed the "STACK" approach, each of the interventions was associated with an incremental increase in retention (Figure 4.7).

There is growing awareness of the potential impact of the social protection plus approach, whereby social protection components are combined with: (a) standardized HIV case management, care and support; (b) various incentives; and (c) expanded access to health and social services. Other studies confirm that adolescents and young people are less likely to drop out of care when they attend clinics that have peer support groups, well-trained and supportive health workers, short waiting times, and sexual and reproductive health services (including condoms) *(47, 51–53)*. Also promising is a community cohort care model that offers adolescents a range of services in a group setting in the community. When tested in Haiti, this model led to much faster initiation of antiretroviral therapy and significantly improved retention in care over standard clinic-based care *(54)*.

FIGURE 4.7 **Supporting adolescents to adhere to treatment**

Predicted probabilities of full retention in care among adolescents (aged 10–19 years) by access to protective health service factors, Eastern Cape, South Africa, 2014–2015

Note: Adhering to antiretroviral therapy was defined as both no missed clinic visits over the past year and 90% adherence over the past week.

Source: Cluver LD, Pantelic M, Toska E, Orkin M et al. STACKing the odds for adolescent survival: health service factors associated with full retention in care and adherence amongst adolescents living with HIV in South Africa (in press).

[1] Adhering to antiretroviral therapy was defined as both no missed clinic visits over the past year and 90% adherence over the past week.

REACHING PEOPLE IN NEED

Removing barriers for young people living with HIV in Uganda

A year ago, Maria Kyatusiire could not shake off her cough. The teenager from Uganda took antibiotics, felt better and returned to her all-girls boarding school, but the cough would come back again and again. She eventually took a tuberculosis test. Her diagnosis came back negative for tuberculosis, but she learned that she was HIV-positive.

"I was bitter. I thought this cannot be," she said. A counsellor explained to her that it was likely that she had been born with HIV, but that initial testing had not caught it. The clinic gave her two weeks of antiretroviral medicine and she started her treatment the next day. "The fact that the cough disappeared and I gained weight made me accept my status," she explained. After two weeks, seeing that she regularly took her pills, the clinic gave her a month's worth of antiretroviral therapy.

Uganda's recent change in policy allowing HIV testing for 12-year-olds and above without parental consent has been important for young people to learn their HIV status and start treatment. Until 2016, a person had to be 18 years old to initiate an HIV test; if the person was under 18, the clinic asked to speak to a parent.

Reaching adolescents is a priority in the country. In 2016, Uganda expanded HIV treatment to all adolescents and adults diagnosed with HIV. Treatment can start within seven days of testing for children and 30 days for adults.

Twenty-two-year-old Helen Waiswa believes that involving younger people would help a lot. She described falling in love with an older man in her small village. Some of her friends had told her that he was sick, but she did not believe them, considering how strong and handsome he was. To prove them wrong, she went to a health clinic to get an HIV test.

The result came back positive. "It took me an hour to accept my status, and I just thought I have to get on with my life," she said. The health worker walked her through the treatment regimen and explained to her that with treatment she could have children born without HIV. She started treatment immediately.

"It was a very long day, but the health worker was supportive," Ms Waiswa said. "I just wish there had been a dedicated younger person to handle my case," she said.

In the last year she has become an HIV peer educator.

"Community health workers give us visual aids and condoms and other information that I distribute to various villages near my own," Ms Waiswa said. "People approach me now as a kind of expert," she added proudly.

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HIV TESTING AND TREATMENT FOR YOUNG PEOPLE

Adolescents and young adults are less likely to know their HIV status than older adults. Globally, HIV is among the top 10 leading causes of death among adolescents (aged 10–19 years), despite the availability of effective treatment *(44)*. More than 90% of deaths worldwide from AIDS-related illness within this age group occurred in sub-Saharan Africa. Studies in Kenya, Uganda and the United Republic of Tanzania indicate that young people aged 15–19 years are more likely to drop out of HIV care, both before and after starting antiretroviral therapy, compared with those aged 10–14 years or those older than 20 years. Stigma and discrimination, disclosure issues, and travel and wait times at clinics are among the reasons *(45–47)*. It seems especially difficult for pregnant teenagers to remain in care *(48)*.

Restrictive laws and policies—including age of consent laws and perceptions of HIV services as being intimidating and of poor quality—discourage service uptake *(1)*. A recent systematic review of efforts to improve treatment adherence found little evidence that strategies that have proved effective for adults were effective among adolescents, underscoring a pressing need to develop and test targeted intervention strategies to improve adherence among this high-priority population *(34)*. Clear and supportive legislation around age of consent and guardianship could also help increase access to HIV testing services for children and adolescents and uphold their right to make informed choices about their health *(49)*.

Outside sub-Saharan Africa, most young people and adolescents who acquire HIV or die of AIDS-related illness are sex workers, gay men and other men who have sex with men, people who inject drugs, transgender people or prisoners. Studies of treatment adherence among young key populations are sparse and have tended to focus on North America. Nevertheless, studies among young men who have sex with men and young people who inject drugs point to isolation from social and family networks, criminalizing laws and policies, and mental health difficulties as important barriers *(51, 55)*.

TESTING AND TREATMENT FOR KEY POPULATIONS

As coverage of HIV testing and treatment expands, an increasing proportion of the people being left behind belong to key populations, which face formidable difficulties accessing these services. Both the availability and acceptability of services are key factors, particularly where punitive laws and practices against key populations are in place and stigma and discrimination is common.

Surveys recently conducted in Asia and the Pacific suggest that less than half of female sex workers (47%) living with HIV were aware of their HIV status; slightly more than half (53%) of gay men and other men who have sex with men knew their HIV status *(56)*. Mandatory and coerced testing of key populations (including prisoners and migrants) is used in some countries, including in clinical settings *(57, 58)*. Testing must always respect personal choice and adhere to ethical and human rights principles, and the World Health Organization (WHO) and UNAIDS do not recommend mandatory, compulsory or coerced HIV testing of individuals on public health grounds *(59)*.

Comparison of treatment coverage data from surveys of key populations with national treatment coverage estimates show that access to antiretroviral therapy is often lower among key populations (Figure 4.8). Common exceptions are high-income countries and countries with epidemics predominantly among people who inject drugs that have comprehensive harm reduction programmes. These data reinforce the importance of enabling environments. When key populations are treated with dignity and services are tailored to their needs, treatment service can reach large proportions of people in need.

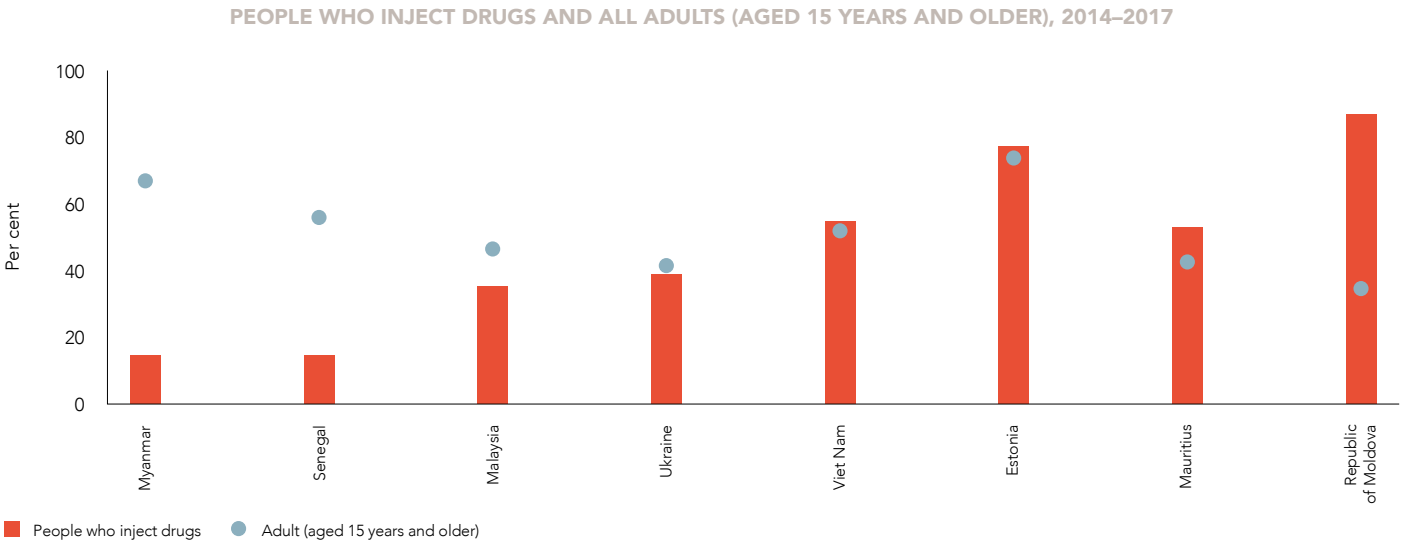
After they have been diagnosed and linked to care, adherence among key populations is often high. In Zimbabwe's Manicaland province, for example, adherence to treatment among female sex workers living with HIV was very high at 91% *(60)*. An integrated biological and behavioural survey conducted in three regions of Papua New Guinea found that less than half of sex workers living with HIV were aware of their infection *(61)*. Among those who were aware, however, treatment coverage and adherence were often high—up to 92% and 80%, respectively *(61)*.

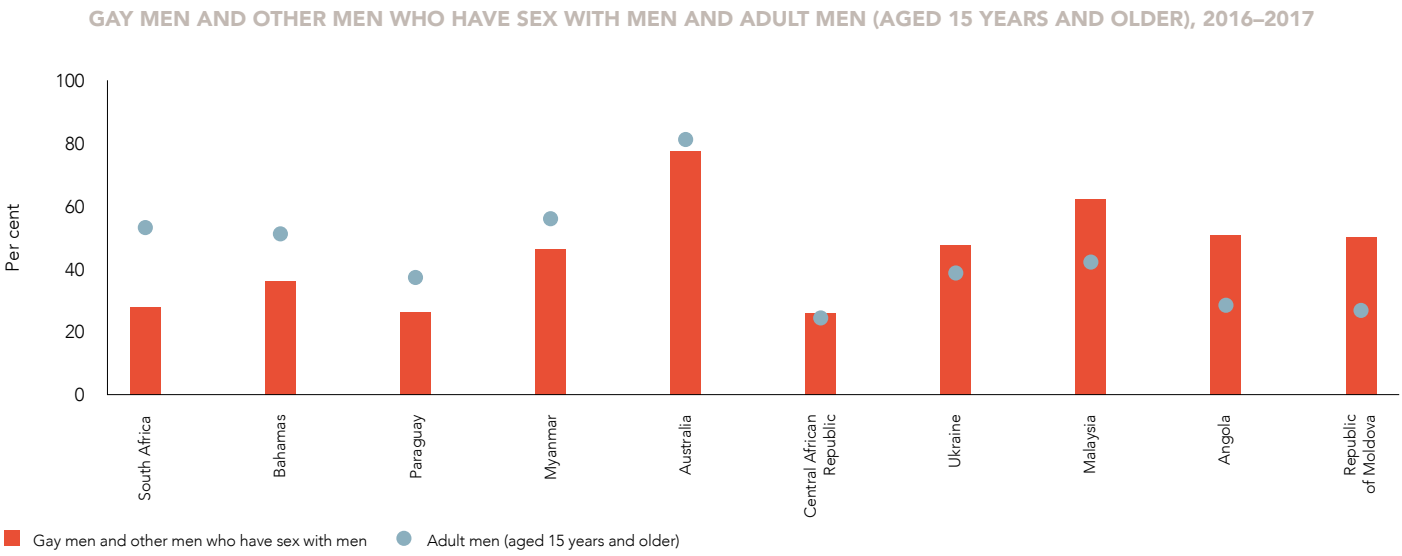
High levels of adherence to treatment among female sex workers also have been reported in Burkina Faso, Mozambique and South Africa *(62, 63)*. Services that are in relatively close proximity, include peer support and adherence counselling, and minimize the stigma and discrimination associated with sex work appear to be the most appealing to female sex workers *(62)*.

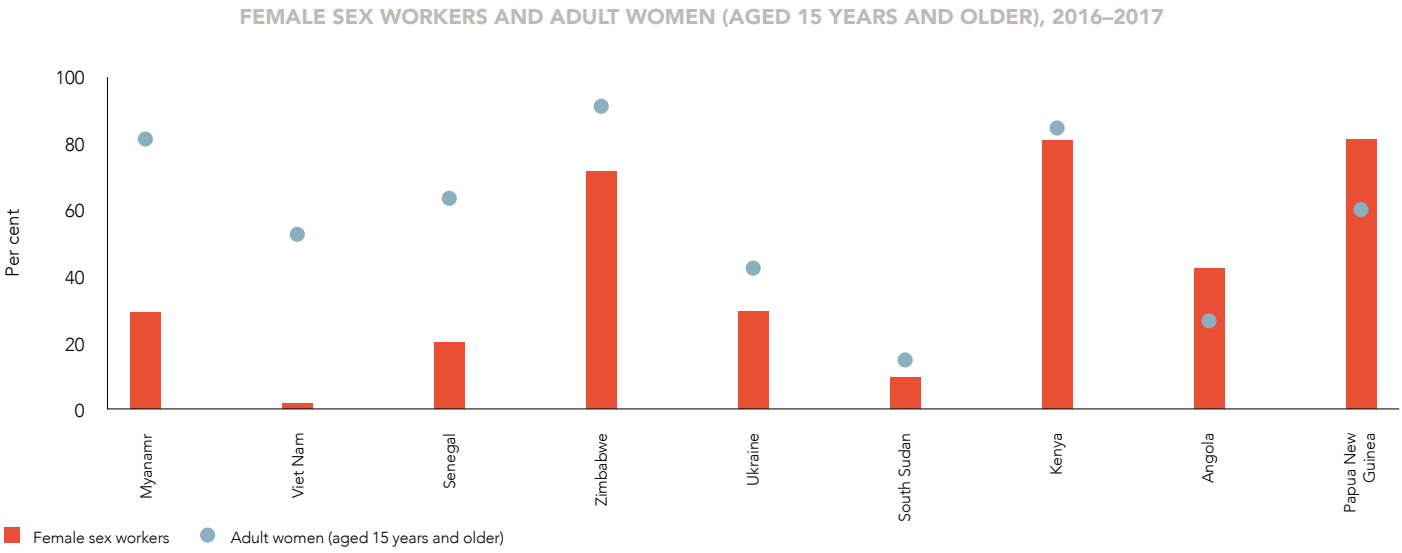
Data from South Africa show high viral suppression rates (84%) among gay men and other men who have sex with men living with HIV who received treatment. The major gap there, however, lay in linking the men diagnosed with HIV to treatment and care: about 68% of gay men and

FIGURE 4.8 **Treatment access often lower among key populations**

Antiretroviral therapy coverage, by population, select countries, 2014–2017



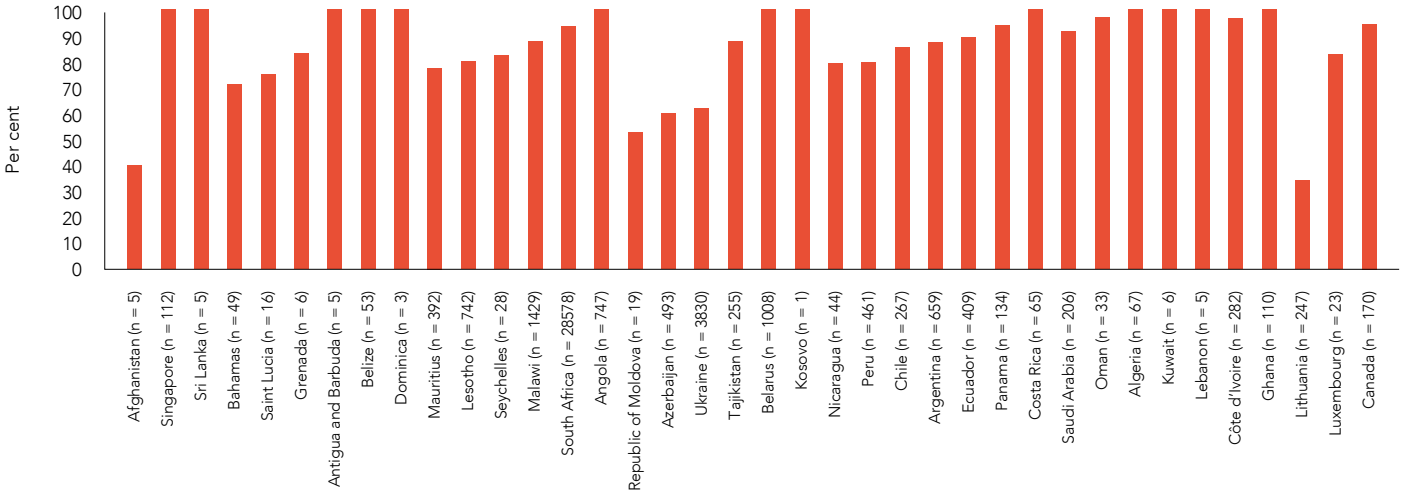




Source: Global AIDS Monitoring, 2018.

FIGURE 4.9 **Treatment coverage in prisons often high**

Antiretroviral therapy coverage among people living with HIV in prisons, countries with available data, 2016–2017



Source: 2018 Global AIDS Monitoring.

other men who have sex with men living with HIV knew their serostatus, but only 26% of those men were receiving antiretroviral therapy *(64)*.

When antiretroviral therapy is made available in places of incarceration, treatment coverage is often high (Figure 4.9). However, a minority of countries—very few of them with large epidemics—provide HIV treatment inside prisons *(65)*.

DRUG RESISTANCE

HIV's high mutation rate means that some degree of HIV drug resistance can be expected among people receiving treatment, even when appropriate regimens are provided and strong adherence is achieved *(76)*. HIV drug resistance is an important cause of persistent virologic failure among people on first-line antiretroviral therapy, as shown in a recent study in Uganda *(77)*. Similarly, a new analysis of data from Lusaka, Zambia, found that more than half of patients who failed first-line therapy with tenofovir had developed resistance to that antiretroviral medication *(78)*.

The prevalence of drug resistance has been increasing in low- and middle-income countries in several regions. The most rapid rise has been observed in eastern Africa and southern Africa, where the estimated annual increase of resistance to non-nucleoside reverse transcriptase inhibitor (NNRTI) drugs in 2016 reached 23% and 29%, respectively. In six of the 11 countries reporting nationally representative data for 2014–2016, more than one in 10 people who started HIV treatment developed resistance to efavirenz and/or nevirapine, the WHO-recommended antiretroviral medicines that are widely used for first-line therapy *(79)*.

Levels of drug-resistant HIV tend to be highest in people on first-line antiretroviral therapy who have had prior exposure to antiretroviral drugs: 22% among those with prior exposure compared with 8.3% among people without prior exposure. The former group is mainly comprised of women who had received antiretroviral drugs to prevent mother-to-child transmission of HIV or people who had interrupted earlier HIV treatment. Data for children are scarce, but they suggest high levels of HIV drug resistance, especially in those younger than 18 months, a trend that demands urgent action.

High levels of acquired HIV drug resistance—up to 28% in some countries—are also being observed among people who have been retained in care and on treatment. When virologic failure is detected, patients should be switched rapidly to a more tolerable and effective (second-line) antiretroviral regimen. However, less than 5% of people on HIV treatment are receiving second-line regimens, indicating a gap in identifying patients who are failing on first-line regimens *(79)*.

These data underscore the need for effective treatment adherence strategies and early detection of virologic failure, followed by a rapid change to more effective regimens. As more people without symptoms are treated with antiretroviral medicines, it is essential to monitor their progress with viral load testing to prevent the rise of HIV drug resistance and maximize treatment outcomes. WHO has developed a global action plan to help prevent and manage the emergence of HIV drug resistance *(80)*. It is also recommending that countries consider using an alternative first-line regimen that does not include NNRTI after national levels of HIV drug resistance in people initiating antiretroviral therapy reach 10% *(81)*.

Empowering key populations with HIV self-testing

HIV self-testing is a convenient and discreet approach that can enable people to sidestep some of the stigma-related barriers to knowing their HIV status. It is highly acceptable among different groups of users in diverse settings (including men, couples, young people and sex workers), and it has the potential to identify greater numbers of people living with HIV *(66–68)*. When combined with robust linkages to care, self-testing enables users from these different groups to access early treatment and care *(69)*.

HIV self-testing implementation research conducted among female sex workers in Malawi and Zimbabwe by the STAR Initiative showed that self-testing is highly acceptable and feasible, and that it increased uptake of HIV testing *(70)*. Researchers found that the clinical setting strongly affected self-testing practices and uptake of post-test services. When female sex workers were offered self-test kits from a dedicated and discreet clinic that also provided comprehensive services tailored to sex workers, onsite self-testing was by far the most common strategy; home and offsite testing were the dominant choices when kits were offered through peer-distribution models *(70)*.

HIV self-testing is a convenient and discreet approach that can enable people to sidestep some of the stigma-related barriers to knowing their HIV status.

A major advantage of clinic-based distribution was the near universal and prompt linkage to post-test services. Peer distribution, however, was able to reach female sex workers who were not previously receiving any clinical services. Sex workers reached by STAR were generally willing to discuss self-testing with their regular sexual partners and clients and to offer them self-test kits, although they did not consider that to be appropriate or practical with irregular or one-off clients.

A recent self-testing study in Myanmar among transgender women and gay men and other men who have sex with men also reported high levels of acceptability. The trial randomly assigned participants to either standard voluntary counselling and testing (VCT) conducted by community-based organizations or to self-testing. Participants who self-tested were more likely to agree that, overall, their testing method was easy to implement and understand; the majority (88.8%) of VCT-assigned participants indicated they would test regularly if they could access self-testing. Both self-testing and VCT-assigned participants favoured self-testing over VCT for their future HIV tests *(71)*.

Sex workers reached by STAR were generally willing to discuss self-testing with their regular sexual partners and clients and to offer them self-test kits, although they did not consider that to be appropriate or practical with irregular or one-off clients.

A creative method for providing low-cost self-test kits has been tried in a project in the United Kingdom of Great Britain and Northern Ireland. In that project, community members helped to design a vending machine to provide HIV self-test kits at various venues, including saunas, bars, clubs, pharmacies, university campuses and train stations. When a prototype was installed at a sauna in Brighton, for instance, uptake of HIV testing via the vending machine was eight times higher than testing conducted by community outreach workers at the same venue and during the same time period (95 versus 12) *(72)*.

HIV self-testing must be accompanied with appropriate advice and support to ensure that people understand the implication of positive or negative self-test results, and how and where to access prevention, treatment, care and support services. A positive self-test result needs to be confirmed with repeat testing by a qualified health professional who follows the national validated testing strategy. People already diagnosed with HIV and on treatment—or people who are taking pre-exposure prophylaxis (PrEP)—should not use self-testing.

REACHING PEOPLE IN NEED

Oral fluid HIV testing for gay men and other men who have sex with men in the Lao People's Democratic Republic

Only one third of gay men and other men who have sex with men know their HIV status in the Lao People's Democratic Republic, partly because stigma and discrimination remains a barrier for accessing HIV testing in public hospitals and clinics. Complicated protocols, uneven and at times judgemental treatment by health providers and non-confidentiality of testing results further impact on HIV testing.

"Many of our friends are scared of getting an HIV test because they think the testing steps are challenging and often unfriendly," said Phoulikhan Siphabouddy, a community-based supporter of LaoPHA, a Lao nongovernmental organization.

To address this, USAID supported the government and LaoPHA to pilot oral fluid screening in three provinces.

Most people assume that testing involves taking a blood sample. But oral fluid testing detects antibodies for HIV, not the virus itself. A test swab is gently wiped along a person's upper and lower gums once, then the swab is placed inside a test tube containing a reagent. The result is known within 20 minutes.

Members of the community, so-called peer educators, train volunteers for the oral fluid screening. The screening is fast, easy and can be done anywhere.

Around 82% of people reached agreed to have an HIV test through oral fluid screening, compared to only 17% of referrals to clinics, according to the Ministry of Health.

"The new approach dramatically exceeded Laos' HIV testing targets by more than 200%," said Bounpheng Philavong, Director of the Lao Centre for HIV/AIDS and STI.

He, along with LaoPHA, are convinced that community-led services provide an enabling environment for key populations to access HIV services in a non-discriminatory manner. Linkages to care and support for people living with HIV has also improved for people who test positive, with the same community volunteers providing support for referral to trusted clinics.

Expanding HIV testing and treatment among key populations using the PLACE method

Reaching people living with HIV who are unaware of their infection and linking them to care is one of the biggest challenges of the AIDS response. PLACE (Priorities for Local AIDS Control Efforts) is a location–population approach to meeting this challenge among key populations. Combining both qualitative and quantitative indicators, PLACE fills gaps often left by other outreach methods. It is premised on the fact that while the epidemic is global, it differs widely by country, region, city and village.

The full PLACE method includes estimating key population sizes and, HIV prevalence and HIV cascade indicators for key and other vulnerable populations. While the protocol is fundamentally results-based and action-oriented, it is designed to produce findings about programming gaps and HIV diagnostic yield that are reflective of the local epidemiology and on-the-ground challenges in outreach settings *(73)*. One notable aspect is its estimates of risk behaviours and prevalence of HIV and other sexually transmitted infections in different locations. It does this through new testing technologies that can be used in outreach settings, such as HIV and syphilis rapid tests, target amplification nucleic acid probe tests for gonorrhea and chlamydia, CD4 counts, and viral loads from dried blood spots *(74)*.

PLACE (Priorities for Local AIDS Control Efforts) is a location–population approach to reaching people living with HIV who are unaware of their infection and linking them to care. The full PLACE method includes estimating key population sizes and, HIV prevalence and HIV cascade indicators for key and other vulnerable populations.

Operating locally, PLACE actively engages key populations in data collection, assessment and design of programme coverage to address gaps, reaching those most likely to acquire and transmit HIV. PLACE efforts are increasingly focusing on finding people who have recently acquired HIV. In sub-Saharan Africa, there is persistent evidence that providing outreach HIV services at venues (or hotspots) where people meet new sex partners can decrease barriers to HIV testing services for key populations. HIV testing results are used to provide index cases for partner tracing and reaching previously unreached individuals who likely have been exposed to HIV *(74)*.

PLACE has been implemented in more than 100 settings in 33 countries throughout sub-Saharan Africa, Asia, eastern Europe, Latin America and the Caribbean *(74)*. In Angola, for example, PLACE was used between 2016 and 2017 to determine prevalence across five provinces among female sex workers, gay men and other men who have sex with men and transgender women *(75)*. Evidence of consistent anal sex among the latter two populations provided information to orient HIV prevention efforts, and the high prevalence of HIV and sexually transmitted infections among all three populations reinforced the need for integrated diagnosis and treatment.

EMERGING EVIDENCE AND INNOVATIONS

Scale-up of dolutegravir continues as concerns about side-effects emerge

The introduction of dolutegravir into first-line regimens is a significant recent development. Dolutegravir-based regimens are better tolerated and less likely to lead to treatment disruption than those based on efavirenz. Dolutegravir is also associated with more rapid viral suppression and a higher genetic resistance barrier *(82)*.

At least 20 countries have included dolutegravir as a first-line treatment option. By the end of 2017, approximately 300 000 people living with HIV were using dolutegravir in high-income countries, while about 150 000 people were using it in Botswana, Brazil and Kenya. More than 50 countries, collectively representing 40% of the current HIV global burden, have indicated that they plan to shift to dolutegravir-based regimens in 2018–2019 *(82)*.

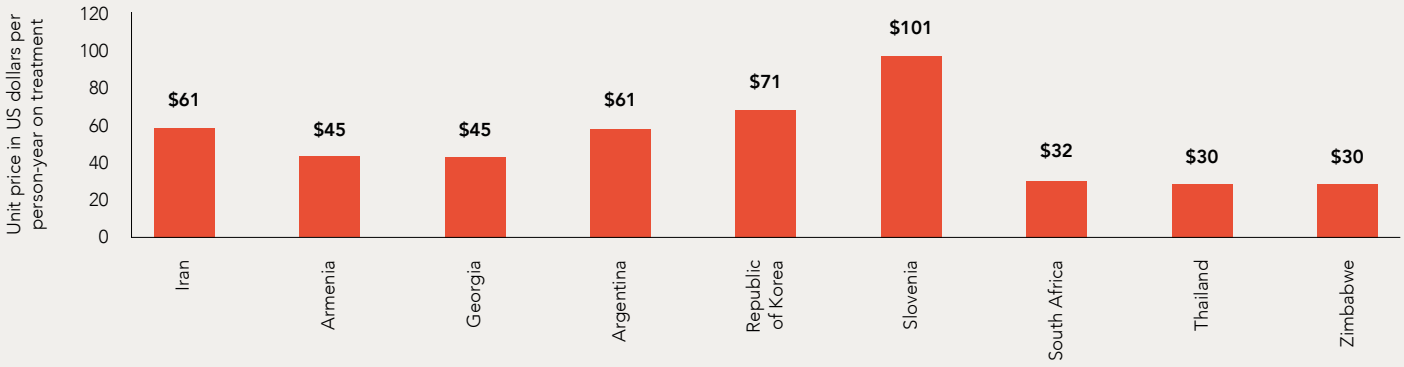
In Brazil, among 50 000 people who were receiving a first-line regimen of tenofovir/lamivudine (TDF/3TC) + dolutegravir at the end of 2017, more than 81% had an undetectable viral load (<50 copies/mL) within three months of treatment; this rose to 88% after 10–11 months of treatment. In Botswana, more than 90% of people receiving the same regimen as first-line treatment achieved full virologic suppression within six months *(82)*.

Of concern, however, are recent reports of serious possible side-effects when dolutegravir is used by women who become pregnant. Preliminary results from a study in Botswana have indicated an increased risk of neural tube defects in the fetuses of women who took dolutegravir during the first trimester of pregnancy: there were four cases out of 426 births, which is 9 to 10 times higher than the rate for HIV-negative women or women living with HIV who were taking antiretroviral regimens that do not contain dolutegravir *(83)*. WHO expects that additional data from other studies should be available by early 2019 to confirm the observation. In the meantime, WHO has advised that women who plan to become pregnant should not take dolutegravir, and that any woman starting dolutegravir should be advised about the importance of effective contraception *(84)*. Women who are taking dolutegravir and then learn they are pregnant should not stop their antiretroviral therapy and should consult their health providers for additional guidance *(83)*.

The cost of using dolutegravir as a first-line treatment option will be a big factor in the rate of scale-up. A UNAIDS assessment of purchase prices of dolutegravir (50 mg singles) in 2017 indicated that the price per person-year varied between US$ 101 in Slovenia to US$ 30 in Thailand and Zimbabwe (Figure 4.10). Use of generic medicines has contributed to a significant price reduction: the median unit price for dolutegravir 50 mg singles in low- and-middle-income countries with access to generics was US$ 60 per person-year of treatment. In countries without access to generics, the price is much higher: in Mexico and Saudi Arabia, for instance, the price for dolutegravir 50 mg singles is US$ 608 and US$ 703 per person-year, respectively *(85)*.

FIGURE 4.10 **Varying price of dolutegravir**

Price of dolutegravir (50mg) in US dollars, per person-year on treatment, 2017



*Unit prices for dolutegravir (50mg) are higher in countries where generic medications are inaccessible, such as Mexico ($608) and United Arab Emirates ($703).

Source: UNAIDS analysis of data from Government of India customs database, Global Fund to Fight AIDS, Tuberculosis and Malaria price and quality reporting and WHO Global Price Reporting Mechanism.

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5. Eliminating mother-to-child HIV transmission

AT A GLANCE

1 1.4 million infections among children (aged 0–14 years) have been averted since 2010.

2 Recent gains have been particularly impressive in eastern and southern Africa, where an estimated 93% [73– >95%] of women living with HIV were started on antiretroviral therapy or were already on treatment during their pregnancy.

3 In western and central Africa, service coverage gaps are large, and the mother-to-child HIV transmission rate is 20.2%.

4 New data from Africa show that women have a threefold higher risk of HIV acquisition during pregnancy and breastfeeding than other HIV-negative women.

5 Only half of infants who are exposed to HIV are tested before eight weeks of age. Increased access to point-of-care technologies for early infant diagnosis is needed.

Progress towards global targets

HIV and complications related to pregnancy are two of the leading causes of death globally for women of reproductive age *(1)*.

Although access to high-quality maternal and child health care remains a critically important issue in most low-income (and many middle-income) countries, progress to date gives cause for optimism. Maternal mortality worldwide was reduced by about 44% between 1990 and 2015 *(1)*. Globally, 1.4 million [880 000–2 100 000] new child infections have been averted since 2010. It is an achievement that stems from the steep increase in the percentage of pregnant women living with HIV who receive antiretroviral medicines to prevent mother-to-child transmission (PMTCT) of HIV or as lifelong therapy: the rate has risen from 51% [38–62%] in 2010 to 80% [61– >95%] in 2017.

The ongoing decline in the number of children acquiring HIV is a major public health triumph. However, much remains to be done to reach the ambitious target set by the United Nations General Assembly: a 95% reduction in new HIV infections among children by 2020. The remaining gaps in treatment coverage, combined with inconsistent treatment adherence (especially during breastfeeding) and the significant numbers of pregnant and breastfeeding women with undiagnosed HIV, allow transmission of the virus to far too many newborns. In western and central

Africa, where coverage gaps are large, the mother-to-child HIV transmission rate is 20.2%, compared to 9.9% in eastern and southern Africa. As a result, approximately 180 000 [110 000–260 000] children acquired HIV during birth or breastfeeding in 2017 (Figure 5.1).

There also were an estimated 303 000 maternal deaths during pregnancy and childbirth in 2015 *(1)*. Almost all of these deaths occurred in low-resource settings, more than half of them in sub-Saharan Africa, the region most affected by HIV *(5)*. In addition, an estimated 2.6 million newborns died in 2017 and an additional 2.6 million were stillborn *(2, 3)*.

The vast majority of these deaths are preventable when women have access to (a) quality antenatal and postnatal care (including HIV services, as appropriate) and (b) safe delivery attended by skilled staff, with access to emergency obstetric care. There is a pressing need for strengthened maternal and child health services that efficiently integrate HIV prevention, testing and treatment.

ON THE ROAD TO ELIMINATION

HIV programmes are protecting hundreds of thousands of children each year from acquiring HIV, and they are improving survival among women of reproductive age. An increase in the number of pregnant women screened for syphilis and HIV and improved access to adequate treatment has also seen the incidence of congenital syphilis fall from an estimated 752 000 cases globally in 2012 to approximately 683 000 in 2016.[1]

United Nations Member States committed in 2016 to the dual elimination of mother-to-child transmission of HIV and congenital syphilis. Belarus, Cuba and Thailand have validated the elimination of mother-to-child transmission of HIV and syphilis; Armenia has eliminated vertical transmission of HIV only and the Republic of Moldova has eliminated vertical transmission of syphilis only. In addition, a number of island states and territories have eliminated vertical transmission of both HIV and syphilis, including Anguilla, Antigua and Barbuda, Bermuda, Cayman Islands, Montserrat and Saint Kitts and Nevis.

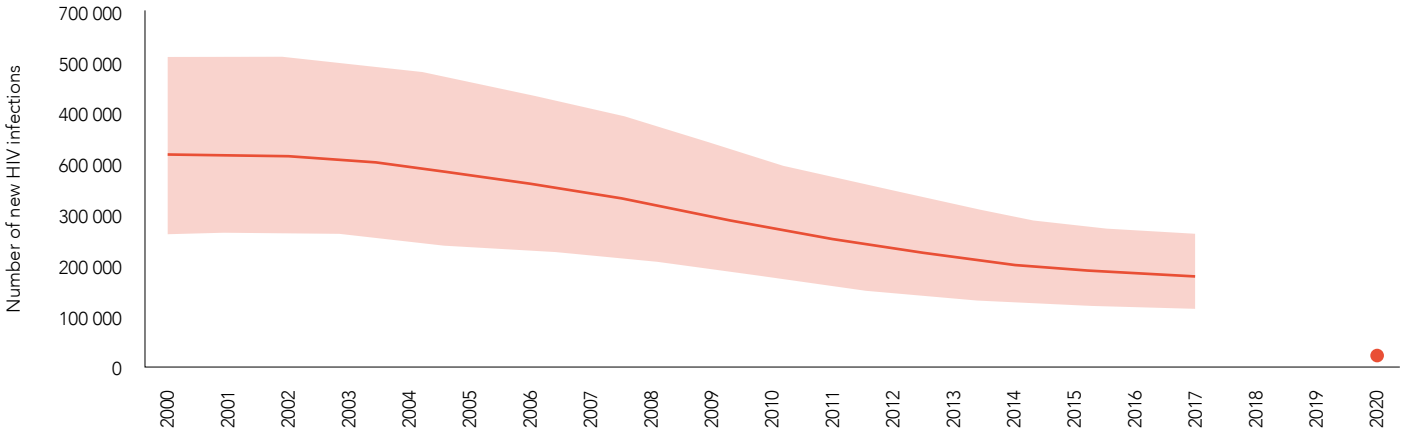
Recent gains have been particularly impressive in eastern and southern Africa, where 67% of births to women living with HIV occur. In 2017, an estimated 93% [73– >95%] of women living with HIV were started on antiretroviral therapy or were already on treatment during their pregnancy. As a result, the percentage of children in the region who acquired HIV from mothers living with the virus declined from 18.1% [14.5–22.2%] in 2010 to an estimated 9.9% [7.9–12.0%] in 2017.

Coverage of antiretroviral medications for pregnant women living with HIV was considerably lower in western and central Africa, with 48% [32–65%]. An alarming 20.2% [15.8–23.3%] of children born to mothers living with HIV in the region were infected during child birth or breastfeeding.[2] Approximately three quarters of pregnant women living with HIV in Latin America and the Caribbean received antiretroviral medications, while coverage was 56% [43–74%] in Asia and the Pacific and only 22% [15–32%] in the Middle East and North Africa.

Continued on page 91

FIGURE 5.1 **Additional progress needed to hit 2020 target**

New HIV infections among children (aged 0–14 years), global, 2000–2017 and 2020 target



Source: UNAIDS 2018 estimates.

[1] These World Health Organization estimates include 399 000 adverse birth outcomes in 2012 and 368 000 adverse birth outcomes in 2016.

[2] Previous estimates of mother-to-child transmission rates did not capture the retention on antiretroviral therapy of pregnant women and the ongoing high levels of incident infections among pregnant and breastfeeding women.

Progress towards the Start Free Stay Free AIDS Free targets

The Start Free Stay Free AIDS Free initiative builds on the achievements of the *Global Plan towards the elimination of new HIV infections among children by 2015 and keeping their mothers alive*. It promotes a range of policy and programmatic interventions aimed at reaching a series of targets set by the United Nations General Assembly (Table 5.1). At least nine of the initiative's 23 priority countries have reached or nearly reached the target of 95% of pregnant women living with HIV on lifelong antiretroviral therapy, and another six countries appear on track to do so (Figure 5.2). However, less progress has been made towards other targets.

TABLE 5.1 Start Free Stay Free AIDS Free targets and 2017 status

Target	Status in 2017
By 2018, reduce new HIV infections among children to less than 40 000 per year and to less than 20 000 by 2020.	180 000 [110 000–260 000]
By 2018, reach and sustain 95% of pregnant women living with HIV on lifelong antiretroviral therapy.	80% [61–95%] (Priority country progress in Figure 5.2.)
By 2020, reduce the number of new HIV infections among adolescents and young women to less than 100 000.	340 000 [200 000–490 000]
By 2020, provide voluntary medical male circumcision to an additional 25 million adolescent boys and men, with a focus on young men aged 15–29 years.	6.9 million
By 2020, provide antiretroviral to therapy to 90% of all children living with HIV and at least 1 million adolescents living with HIV.	52% [38–68%]

FIGURE 5.2 High coverage in high-prevalence countries

Proportions of pregnant HIV-positive women in priority countries receiving antiretroviral medicines to prevent mother-to-child transmission, 2017

90+%	70–89%	50–69%	<50%
Botswana	Burundi	Chad	Angola
Eswatini	Cameroon	Democratic Republic of the Congo	Indonesia
Lesotho	Côte d'Ivoire	Ethiopia	Nigeria
Malawi	Kenya	Ghana	
Namibia	Mozambique	India	
South Africa	United Republic of Tanzania		
Uganda			
Zambia			
Zimbabwe			

Source: UNAIDS 2018 estimates.

Continued from page 89

RETAINING PREGNANT WOMEN IN TREATMENT

Although a large proportion of pregnant women living with HIV access antiretroviral therapy before childbirth, retaining them on treatment is a challenge. A review of large studies in Kenya, South Africa, the United States of America and Zambia reported that 76% of pregnant women adhered to antiretroviral regimens during pregnancy, but only 53% did so during the postpartum period *(4–7)*.

Some pregnant mothers living with HIV are reluctant to take antiretroviral medicines, while others gradually stop taking them after giving birth, which compromises the mother's health and puts the infant at risk of acquiring HIV during breastfeeding *(8, 9)*. Concerns about disclosure and possible drug side-effects—along with various social and economic constraints (including stigma and pressure from partners)—influence reluctance to start or continue antiretroviral therapy among women *(10–13)*.

To maximize the benefits of lifelong antiretroviral therapy, more effective counselling and preparation of women is needed before they start antiretroviral therapy; appropriate support, especially community-based and peer support, is needed to help them adhere to treatment *(14, 15)*. Some of these improvements can be achieved through further integration of HIV services and maternal and child health services.

Some mothers living with HIV are lost to follow-up when they change health providers without the transfers being recorded in data systems. Developing and using longitudinal follow-up clinic registers would facilitate following and serving mother–baby pairs throughout pregnancy, delivery and breastfeeding *(16)*. Greater use of unique identifiers should also assist with tracking and monitoring the health of women who shift between different clinics.

HIV ACQUISITION DURING PREGNANCY AND BREASTFEEDING

Significant numbers of women acquire HIV during pregnancy and while breastfeeding without being diagnosed *(17)*. New data from Africa show that women have a threefold higher risk of HIV acquisition during pregnancy and breastfeeding than other HIV-negative women *(18)*.

Despite this elevated risk, many women are not accessing routine care or receiving support during those periods. They are not being retested for HIV, and they may be unaware of the need to take additional precautions to avoid acquiring HIV. This is a major concern in settings with high HIV prevalence.

Strategies to prevent HIV infection during pregnancy and breastfeeding deserve more attention. Partner testing can identify whether male partners are HIV-positive and may be putting women at risk, and condom use can be promoted more strongly. Pre-exposure prophylaxis (PrEP) for women during pregnancy and breastfeeding may be appropriate when the woman's risk of HIV acquisition is high. In addition, HIV testing services, including retesting, should be a standard part of the basic package of services for antenatal and postnatal care in places (and among populations) that have a high prevalence of HIV. Alternative approaches to HIV testing can also be used more widely, including self-testing *(19)*.

HARD-TO-REACH PREGNANT WOMEN

Pregnant adolescent girls and young women are less likely than older pregnant women to know their HIV status before starting antenatal care *(22, 23)*. Studies have found that pregnant adolescents and young women living with HIV were much less likely than their older peers to start antiretroviral prophylaxis, and there is evidence that they also have poorer outcomes along the cascade of PMTCT services *(24)*. Young women also face major challenges with adherence to lifelong antiretroviral therapy, including difficulties disclosing their HIV status to partners and families *(25)*. Young pregnant women living with HIV are in need of enhanced support; programmes must address the specific vulnerabilities and difficulties they face *(26)*.

As with other health services, reaching pregnant women within key populations with PMTCT services is challenging. Restrictive policy environments, stigma and discrimination in health-care settings, gender inequality and economic marginalization undermine access to services and the ability to achieve reproductive intentions safely. As a result, pregnant women from key populations experience high rates of unintended pregnancies, sexual violence, abortion, and unmet need for family planning and safer conception services *(27)*. For example, a study in Ukraine found that pregnant women who inject drugs were more likely than their non-injecting counterparts to be diagnosed during

Continued on page 93

Integrating HIV with maternal and child health care

Integrating antiretroviral therapy services for mothers with maternal and child health services is a simple and highly effective way of retaining mothers in care after they have given birth *(20)*. In a South African study, for example, the integration of postnatal HIV treatment services into maternal, neonatal and child health services markedly improved treatment outcomes. Fully 77% of the mothers who were offered antiretroviral therapy as part of maternal, neonatal and child health services achieved viral suppression, compared with 56% of the mothers who were referred to separate treatment services *(20)*.

Other research from South Africa has shown that the basic forms of support that often form part of maternal and child health services—such as mentoring, family support and organized peer support—can improve retention in care and reduce the stigma and stress experienced by mothers living with HIV *(15)*. Community engagement is important: when properly linked into PMTCT services, women's networks can help strengthen treatment adherence for both mothers and their children, while also supporting quality assurance and accountability.

Mentor mothers are playing important roles in helping retain mothers in care and supporting strong adherence to treatment, especially after women have given birth. Mentoring and peer support can strengthen retention in care and diminish the stigma and stress experienced by mothers living with HIV, and they should be provided more extensively *(20)*. An evaluation in nine districts of eastern and central Uganda, for example, found that facilities using the mentoring model had stronger retention in HIV care and higher uptake of early infant diagnosis compared with other services. The psychosocial well-being of the mothers receiving mentoring support was also better (Figure 5.3) *(21)*.

Greater involvement of male partners can also increase retention in care and adherence to treatment *(16)*. In fact, greater engagement of men is likely to improve results at every step of the PMTCT service cascade. The number of new infections in women, for example, cannot be reduced significantly without successfully engaging men to prevent HIV transmission. Similarly, the gaps in family planning are unlikely to be met without greater involvement of men. The perception of reproductive health as being primarily the domain of women needs to change, and there should be more emphasis on promoting and facilitating couples testing, whether the antenatal clinic attendees test HIV-positive or not.

FIGURE 5.3 **Mothers helping mothers**

Maternal and infant health outcomes, health facilities supported by mothers2mothers compared to health facilities with no mothers2mothers presence, 2014

	mothers2mothers-supported health facilities	Health facilities with no mothers2mothers presence
Retention in care of women living with HIV 12 months after being intiatied on antiretroviral therapy	90.9%	63.6%
Uptake of early infant diagnosis test for HIV 6–8 weeks after birth	71.5%	45.8%
Initiation of infants living with HIV on antiretroviral therapy	60.9%	27.8%
Mother-to-child HIV transmission rates 18 months after birth	6.8%	8.7%
Psychosocial well-being:		
Coping self-efficacy	86.6%	64.5%
Coping behaviour	69.4%	56.9%
HIV disclosure and safer sex self-efficacy	71.7%	50.7%
No symptoms of depression	83.3%	78.1%

Source: Zikusooka CM, Kibuuka-Musoke D, Bwanika JB, Akena D, Kwesiga B, Abewe C et al. External evaluation of the m2m mentor mother model as implemented under the STAR-EC Program in Uganda. Cape Town: Department of Programmes and Technical Support, mothers2mothers; 2015 (https://www.issuelab.org/resources/20894/20894.pdf).

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labour and to have more advanced HIV disease. They also were less likely to receive antiretroviral therapy. As a consequence, vertical transmission rates in this population were higher than in the general population *(28)*.

A recent literature review found insufficient evidence about the effective ways to meet the family planning and reproductive needs of women within key populations. This highlights a need for more rigorous evaluation of existing efforts. The reviewers called for advocacy efforts to sensitize community members and police on the legal, social and health barriers that marginalize key populations and restrict their access to needed health services *(27)*.

EARLY INFANT DIAGNOSIS

Large proportions of HIV-positive children under two years of age—as much as two thirds in a large collaborative study spanning Africa, Asia and the Americas—start antiretroviral therapy with advanced immunodeficiency *(29)*. Children who start treatment late are more likely to experience treatment failure, which underlines the need to identify and start HIV-positive children on treatment as early as possible. Doing so is challenging, however.

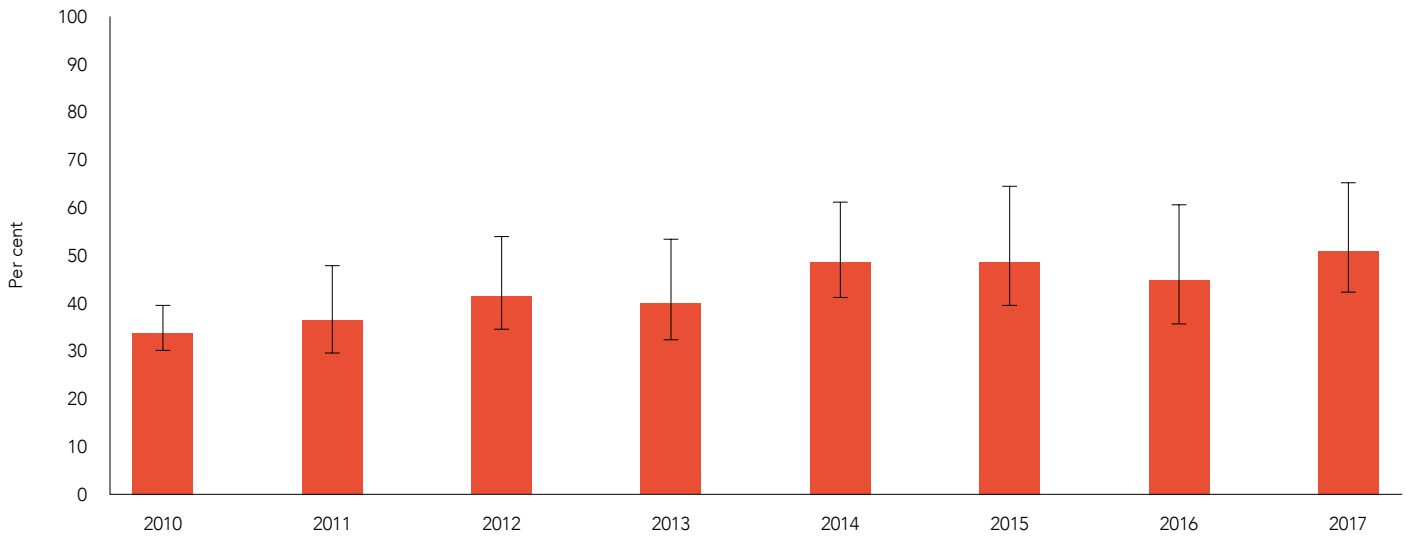
Children younger than 18 months of age who are born to HIV-positive mothers require virological testing, which is not consistently available in most low- and middle-income countries. When it is available, virological testing is often expensive and time-consuming, involving several clinic visits for mothers and infants, the transport of samples to centralized laboratories and potential delays in the return of results. Globally, only half of infants who are exposed to HIV are tested before eight weeks of age (Figure 5.4).

Increased access to point-of-care technologies for early infant diagnosis would make a massive difference. There is strong evidence that point-of-care technology significantly increases the timely diagnosis of infants living with HIV, improves their access to paediatric treatment, saves lives and is cost-effective *(30, 31)*. In studies in Malawi and Mozambique, for instance, infants who had been diagnosed using this technology were more likely to start antiretroviral therapy than infants whose test samples had to be sent to central laboratories *(32, 33)*. In a UNITAID-supported project, the routine use of point-of-care early infant diagnosis in sub-Saharan African countries has led to significantly improved health outcomes:

- Almost all test results were returned to caregivers within 60 days (99.5% versus 11.8% in the case of conventional testing methods).
- Median turnaround time for returning the results to the caregiver was reduced (the same day as the test was performed versus 122 days for conventional methods).
- A higher percentage of infants diagnosed with HIV were rapidly started on treatment (87% within 60 days versus 13% in conventional scenarios) (31).

FIGURE 5.4 **Only half of HIV-exposed infants tested before eight weeks of age**

Percentage of HIV-exposed children receiving a virological test by 8 weeks, global, 2010–2017



Source: UNAIDS 2018 estimates.

Point-of-care early infant diagnosis should not be regarded as a stand-alone solution; it should carefully be integrated into laboratory and clinical networks. Frameworks for integration have been developed to maximize the potential of this technology as it is rolled out *(34)*. For example, local point-of-care testing hubs can be established to serve nearby sites that lack the technology. Point-of-care early infant diagnosis is particularly important for high-yield entry points such as paediatric wards, where patients may be less likely to receive results from conventional testing that involves long turnaround times. Test results can then be returned quickly enough to ensure that newly diagnosed infants initiate treatment before being discharged.

Procurement of point-of-care technology is increasing, but these tests still represent a fraction of all HIV tests for infants. Nonetheless, until these platforms are more widely available, other creative improvements can be made. A tracking and notification system tested in Kenya, for example, sends algorithm-driven electronic alerts or automatic text messages to service providers, laboratories and mothers of HIV-positive infants at specified intervals in the service cascade. This significantly reduced the turnaround time for receiving test results and notifying mothers of the results. HIV-positive infants also started antiretroviral therapy more quickly after diagnosis than their counterparts in the control arms of the study *(35)*.

Other supplementary approaches include mapping the available capacity to run viral load tests on existing GeneXpert machines when they are not being fully utilized. More efficient systems for transporting blood samples to and from central laboratories would widen testing coverage and reduce delays between administering a test and receiving the results *(36)*.

Diagnosis at birth could also improve outcomes. Children who acquire HIV in utero fare worse than children who acquire HIV through breastfeeding, highlighting the need to provide treatment sooner *(37)*. South Africa is among the countries now conducting testing at birth and once the infant reaches 10 weeks.

It is also important to ensure that all adults in HIV care are explicitly offered testing for their children, and to offer testing for young children who present for immunization, malnutrition services and tuberculosis treatment, as well as those who present with illnesses. In South Africa, for example, identifying HIV-exposed infants at their six-week immunization visit and informing mothers clearly during antenatal care about infant testing has been shown to increase early infant diagnosis *(38)*.

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6. AIDS out of isolation

AT A GLANCE

1 Improved collaboration among individual infectious disease programmes can strengthen health systems and improve efficiency.

2 Poor and uneducated women are less likely to have their sexual and reproductive health needs met. Young women are also less likely to access the services they need.

3 Tuberculosis remains the leading cause of hospital admission and mortality among people living with HIV.

4 There were an estimated 71 million people living with hepatitis C infection in 2016, and the global treatment gap remains huge.

5 Women living with HIV face a fourfold to fivefold greater risk of invasive cervical cancer.

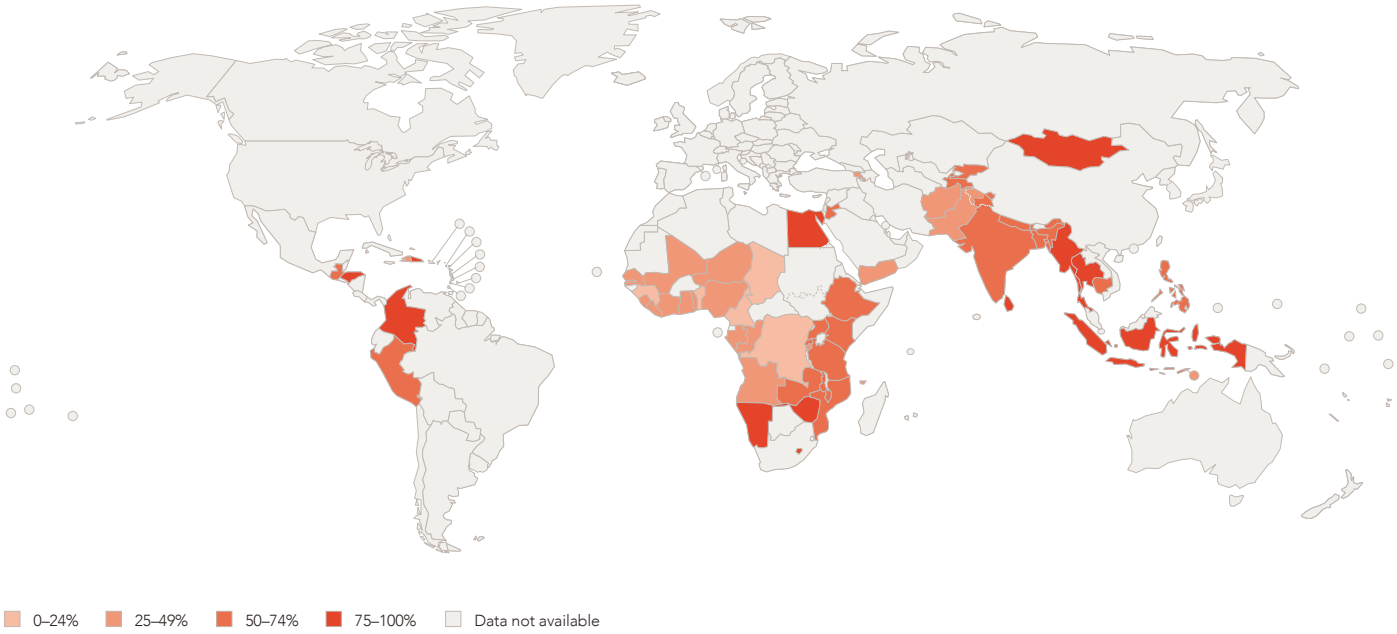
Progress and gaps

Ending the AIDS epidemic is an objective that sits within the global goal on good health and well-being, which in turn sits within the 2030 Agenda for Sustainable Development. This framework reflects the fact that the AIDS response does not exist in isolation: efforts to expand the delivery of HIV services to all in need both stimulates and relies upon efforts to strengthen health systems and other public services. Just as there is a fundamental need to integrate efforts to eliminate mother-to-child transmission of HIV with efforts to expand maternal and child health care (Chapter 5), preventing HIV infections among women and girls is inextricably linked to efforts to improve sexual and reproductive health and rights.

The overlapping epidemics of HIV, tuberculosis, viral hepatitis and human papillomavirus (HPV) have similar challenges and features, including modes of transmission, diagnostic difficulties and affected populations that are hard to reach. Improved collaboration among individual infectious disease programmes can strengthen health systems and improve efficiency. The United Nations General Assembly's 2016 Political Declaration on Ending AIDS explicitly recognizes these linkages, calls for national health systems to address co-infections and co-morbidities with integrated approaches, and includes commitments to dramatically reduce hepatitis B and C infections and increase treatment coverage for tuberculosis and hepatitis.

FIGURE 6.1 **Women are not having their family planning needs met**

Percentage of women (aged 15–49 years) who had their demand for family planning satisfied by modern methods, countries with available data, 2012–2017



Source: Population-based surveys, 2012–2017.

SEXUAL AND REPRODUCTIVE HEALTH AND RIGHTS

Sexual and reproductive health and rights are essential for sustainable development. They are central to gender equality and the well-being of women, and they have an important impact on maternal, newborn, child and adolescent health, including HIV prevention, treatment and care. While recent years have seen important progress in terms of access to sexual and reproductive health and rights, including family planning, there are still critical gaps. Every year in developing countries more than 200 million women want to avoid pregnancy but are not using modern methods of contraception, and more than 45 million women have inadequate or no antenatal care *(1)*. Worldwide, there were more than 350 million women and men in need of treatment for one of the four curable sexually transmitted infections (STIs): syphilis, gonorrhoea, chlamydia and trichomoniasis *(1)*.

Since 2000, the unmet need for family planning has declined in all regions, but the sharpest reductions have been in eastern and southern Africa, Latin America and the Caribbean *(2)*. In eastern and southern Africa, the percentage of women (aged 15–49 years) who had their demand for family planning satisfied by modern methods grew from 41% in 2000–2009 to 56% in 2008–2016 *(3)*.[1] In West and central Africa over the same period, those percentages increased from 28% in 2000–2009 to 35% in 2008–2016 *(3)*.[2]

United Nations Member States committed in the 2016 Political Declaration on Ending AIDS to ensure that by 2020, 90% of young people (a) have the knowledge, skills and capacity to protect themselves from HIV, and (b) have access to sexual and reproductive health services. The recent Guttmacher–Lancet Commission assessed the cost of the major components of sexual and reproductive health service, and it showed that the cost per capita for sexual and reproductive health and rights is modest and affordable for most low- and middle-income countries *(1)*. Sexual and reproductive health and rights information and services should therefore be accessible and affordable to all individuals who need them, regardless of age, marital status, socioeconomic status, race, ethnicity, HIV status, sexual orientation or gender identity.

[1] Data were available from 12 countries with multiple surveys.

[2] Data were available from 15 countries with multiple surveys.

FIGURE 6.2 Poor and uneducated women less likely to access family planning

Percentage of women (aged 15–49 years) who have their demand for family planning satisfied by modern methods, by education level and wealth quintile, eastern and southern Africa and western and central Africa, 2012–2017

Source: Population-based surveys, 2012–2017.

Despite this, many public health systems are not providing equitable access to sexual and reproductive health and rights information and services (Figure 6.1). For example, in the Democratic Republic of the Congo, the latest available survey data show that only 20% of women aged 15–49 years reported that their demand for family planning was satisfied with modern methods *(4)*. Data from sub-Saharan Africa also show that poor and uneducated women are less likely to have their sexual and reproductive health needs met (Figure 6.2). Conversely, higher educational attainment enhances the ability of women to access information and services and to exercise more control over their reproductive lives *(5)*.

Young women are also less likely to access the services they need. Across 41 of 56 countries with available data for 2012–2017, the percentage of young women (aged 15–19 years) who had their demand for family planning satisfied by modern methods was lower than the percentage of women aged 15–49 years who had their demand for family planning satisfied by modern methods *(3)*.

Several countries with a high prevalence of HIV are making concerted efforts to improve access to sexual and reproductive health and HIV services and to increase their use. In Kenya, for example, the use of a one-stop-shop approach to integrating family planning services into HIV clinics led to an increase in the use of effective contraceptive methods and a 30% reduction in the incidence of pregnancy among women living with HIV over two years *(6)*. Similarly, the Sexual and Reproductive Health and Rights and HIV Linkages project has been promoting integrated sexual and reproductive health and HIV services in 10 eastern and southern African countries. Results include increased use of family planning and HIV services, particularly in the number of newborns screened for HIV and an increased number of women and girls screened for cervical cancer *(7)*.

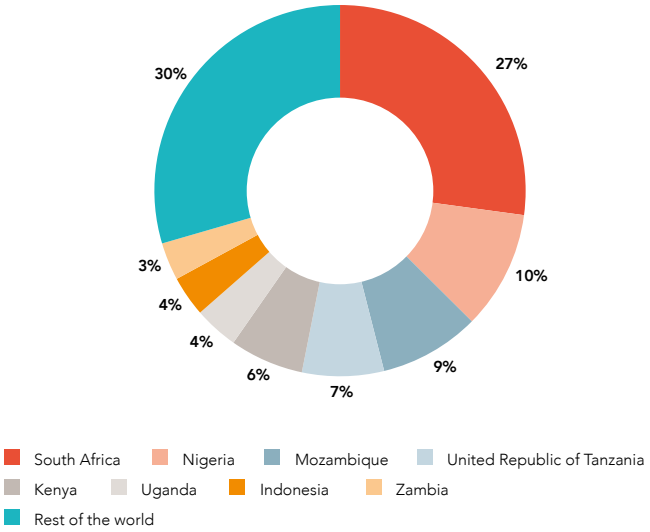
TUBERCULOSIS

Tuberculosis is the ninth leading cause of death worldwide, and it is the leading cause of death from an infectious disease *(8)*. Tuberculosis disproportionally affects people living and working in impoverished, overcrowded conditions. The following groups are all at higher risk of developing active tuberculosis: prisoners; people exposed to tuberculosis in the workplace (including health-care workers, prison officers and workers exposed to silica dust); people who use tobacco, alcohol or drugs; infants and young children; people with diabetes; and people with compromised immune systems *(9)*.

FIGURE 6.3

TB-related deaths among people living with HIV concentrated in eight countries

Distribution of tuberculosis-related deaths among people living with HIV, global, 2016



Source: Global tuberculosis report 2017. Geneva: World Health Organization; 2017.

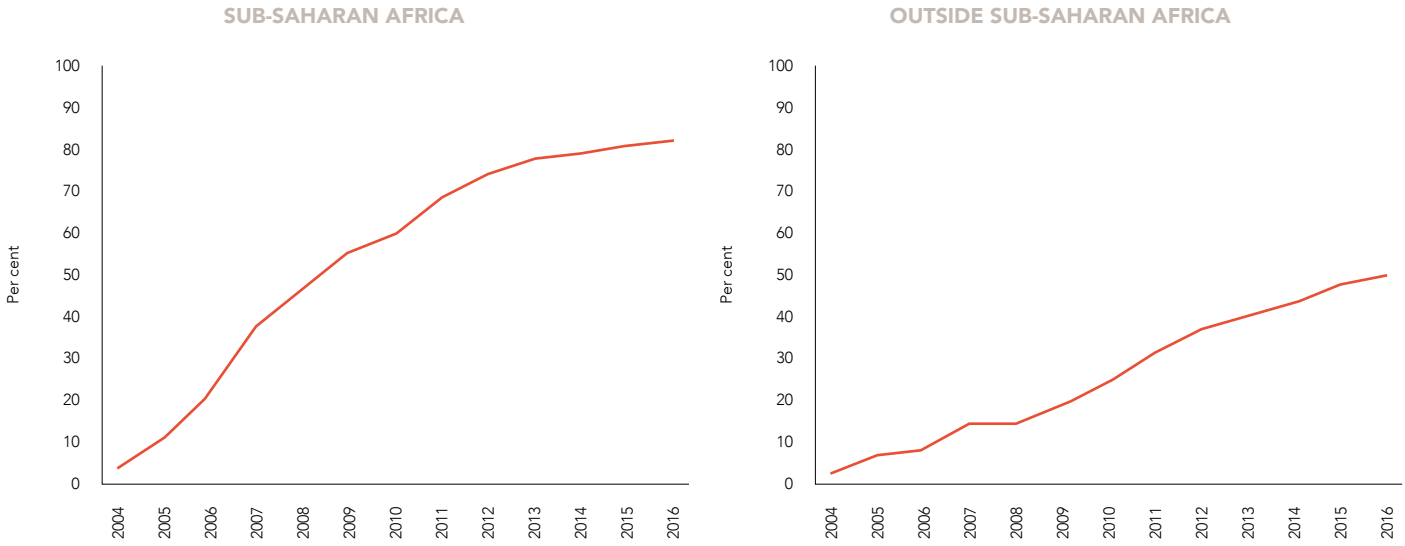
Tuberculosis remains the leading cause of hospital admission and mortality among people living with HIV. Seventy per cent of tuberculosis-related deaths among people living with HIV in 2016 occurred in just eight countries (Figure 6.3). On average, a person living with HIV is 21 [16–27] times more likely to develop active tuberculosis than a person who is not HIV-positive *(9)*.

Major gains in diagnosing and treating HIV among notified tuberculosis patients have been achieved over the last 12 years. In 2016, 3.6 million notified tuberculosis patients had a documented HIV test result—a 19 fold increase in testing uptake since 2004. Coverage of HIV testing in sub-Saharan Africa was 84% (Figure 6.4). In 116 countries and territories, at least 75% of notified tuberculosis patients in 2016 were aware of their HIV status *(9)*.

Antiretroviral therapy coverage among notified tuberculosis patients who were living with HIV in 2016 was 90% or higher in several countries with high burdens of tuberculosis and HIV. This includes Cameroon, Eswatini, India, Kenya, Malawi,

FIGURE 6.4 **Gains in diagnosing and treating HIV among notified tuberculosis patients**

Percentage of notified tuberculosis patients who had a documented HIV test result, sub-Saharan African countries and countries outside sub-Saharan Africa, 2004–2016



Source: Global tuberculosis database. Geneva: World Health Organization; 2018.

Mozambique, Namibia, Papua New Guinea, Uganda and the United Republic of Tanzania. However, coverage in Brazil, Congo, Ghana, Guinea-Bissau, Indonesia and Liberia was under 50% *(9)*. Wider access to antiretroviral therapy is also reducing tuberculosis case notifications, as seen in Malawi and Zimbabwe *(10, 11)*.

Those improvements have helped reduce tuberculosis-related deaths among people living with HIV by 37% globally, from a peak of 597 000 [514 000–685 000] in 2005 to 374 000 [325 000–427 000] in 2016 *(9, 12)*. Mirroring the targets outlined in the Stop TB Partnership Global Plan, the United Nations General Assembly committed in 2016 to reaching 90% of all people who need tuberculosis treatment (including 90% of populations at higher risk), to achieving at least 90% treatment success and to reducing tuberculosis-related deaths in people living with HIV by 75% by 2020 (against a 2010 baseline). Effective interventions to prevent and treat HIV-associated tuberculosis are readily available; when implemented at sufficient scale, those interventions can have an enormous impact.

People living with HIV who are newly enrolled on antiretroviral therapy should be screened for tuberculosis. If they have symptoms suggestive of tuberculosis, they should be fully investigated and treated. If they have no evidence of tuberculosis, they should receive tuberculosis preventive therapy, which lessens the risk of developing tuberculosis and can reduce death rates by almost 40% *(13)*.

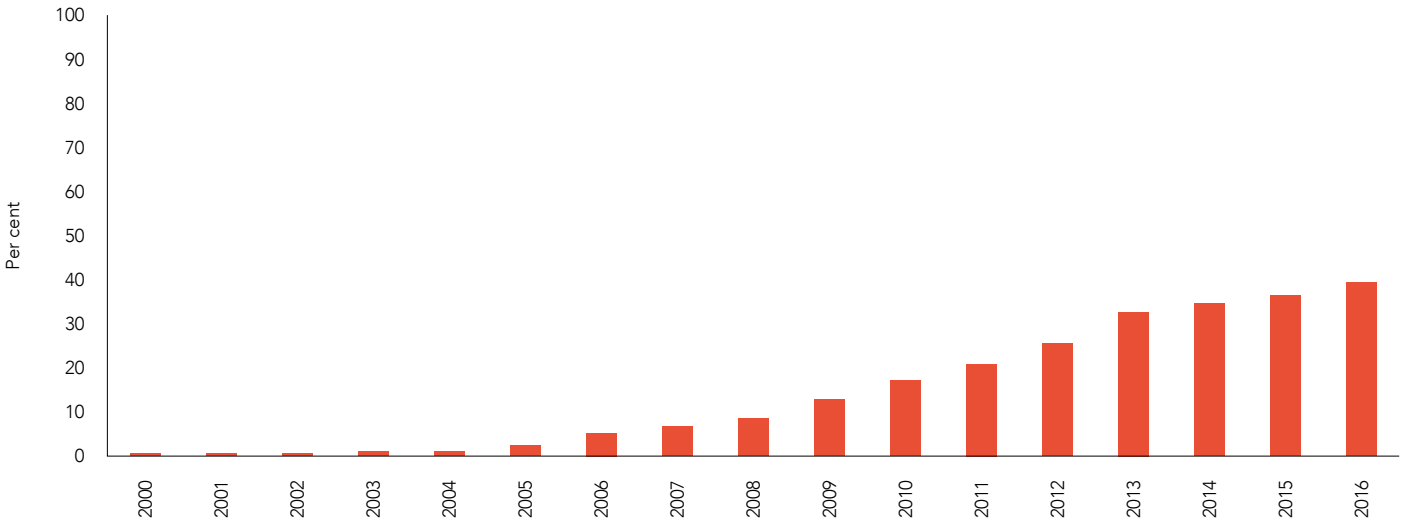
Access to these services among people living with HIV has expanded, although there remains room for improvement. Although close to 1 million people living with HIV who were newly enrolled in HIV care in 2016 received tuberculosis preventive treatment in 60 countries—up from just 12 000 people in only three countries in 2004—that translates into just 42% of people newly registered in HIV care receiving tuberculosis preventive therapy. Among the 124 countries that reported data to UNAIDS in 2016, only 39% of the estimated number of people living with HIV who had incident tuberculosis received treatment for both HIV and tuberculosis (Figure 6.5).

Several distinctive features shape the tuberculosis epidemic and response. Men are significantly more at risk of contracting and dying from tuberculosis than women *(9)*. Of the estimated 10.4 million [8.8–12.2 million] people who developed tuberculosis (incident cases) worldwide in 2016, about 65% were male *(9)*. Poor health-seeking behaviours among men mean that those with tuberculosis are more likely than women to be diagnosed late, delay treatment and fail to complete their treatment.

At the same time, women are more likely to experience stigma, have delayed diagnosis and have poor access to treatment services than men *(14, 15)*. Pregnant women living with HIV are up to 10 times more likely to develop tuberculosis disease than their HIV-negative counterparts *(15)*. Consequently, tuberculosis ranks among the top five causes of death for women aged 20–59 years globally *(16)*.

FIGURE 6.5 **Tuberculosis treatment for people living with HIV still low**

Percentage of people living with HIV with incident tuberculosis who received treatment for both tuberculosis and HIV, global, 2000–2016



Source: 2017 Global AIDS Monitoring; Global tuberculosis report, 2017. Geneva: World Health Organization; 2017.

Socioeconomic deprivation and poor living and working conditions have a profound effect on people's risk of tuberculosis infection, diagnosis and treatment *(17)*. Many of those factors also have an effect on HIV risk and limit access to HIV services. Miners living with HIV, for example, are five times more likely to develop active tuberculosis than miners who do not have HIV infection *(18)*.

Prisons and other closed settings often act as incubators of tuberculosis *(19)*. Data from eastern Europe and central Asia have shown a close association between rates of incarceration and of both tuberculosis and multidrug-resistant tuberculosis (MDR-TB) *(20)*. Other research indicates that the risk of acquiring tuberculosis is up to 23 times greater for incarcerated persons than for people in the general population *(21)*.

Migrant populations often bear a disproportionate burden of tuberculosis while also having poor access to health services. This can be seen along Thailand's north-western border with Myanmar, for example, where challenging conditions create barriers to TB control measures among migrant populations *(22)*. Similarly, a systematic review among migrants in Europe found that this population group was disproportionately vulnerable to HIV and tuberculosis co-infection and more likely to have poor access to health care *(23)*.

VIRAL HEPATITIS B AND C

The global prevalence of hepatitis B infection in the general population is 3.5%, but it is greater than 10% in some settings, particularly Asia and Africa *(24)*. The prevalence of hepatitis C can be especially high among key populations, reaching greater than 80% in some populations of people who inject drugs *(24)*. Hepatitis C infections in high-income countries occur primarily among people who inject drugs; while in low- and middle-income countries, most hepatitis C infections occur through unsafe injection practices and percutaneous medical procedures. Viral hepatitis caused more than 1.3 million deaths in 2015 *(24)*.

There is some overlap between the viral hepatitis and HIV epidemics due to the fact that the viruses can be transmitted in similar ways and affect some of the same populations, particularly people who inject drugs. Viral hepatitis is a significant cause of death among people living with HIV.

An estimated 2.7 million people living with HIV in 2015 had chronic hepatitis B infection, the majority of them living in sub-Saharan Africa *(25)*. An estimated 2.3 million had chronic hepatitis C; approximately 59% of them are injecting drug users *(25, 26)*. The estimated global prevalence of chronic hepatitis B infection among people living with HIV was 7.4%; the estimated prevalence of chronic hepatitis C infection was 6.2% *(26)*.[3]

[3] The most recent global estimates are for 2015. Updated estimates are expected later in 2018.

Hepatitis B infection is preventable through vaccination *(27)*. Three doses of the vaccine should be administered to infants (including HIV-exposed infants and infants living with HIV) as part of postnatal care *(24)*. The scale-up of hepatitis B vaccination in infancy has seen global coverage reach 84% in 2015, although coverage in sub-Saharan Africa was only 10% *(24)*.

There is no vaccine yet for hepatitis C, but effective methods exist for preventing infection, including harm reduction services for people who inject drugs *(28, 29)*. Mathematical modelling indicates that high coverage of harm reduction services for people who inject drugs will be essential for eliminating hepatitis C infection *(30)*. Access to harm reduction services, however, remains poor in most countries.

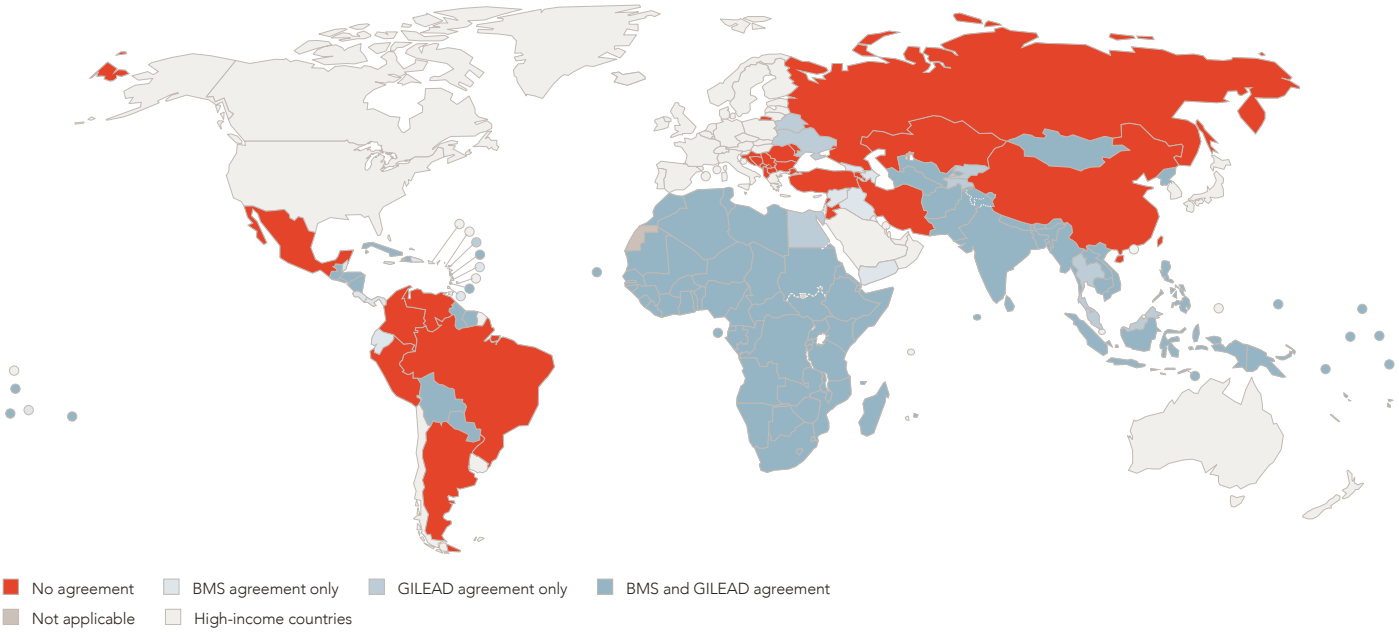
Treatment for hepatitis B is becoming less expensive, but treatment coverage is low. The World Health Organization (WHO) recommends entecavir and tenofovir to treat hepatitis B *(27)*. Tenofovir is also used for HIV and is available as a generic formulation costing approximately US$ 30 per year. The lowest reported price of entecavir in 2015 was US$ 427 per year of treatment *(31)*.

Globally, 1.8 million people received treatment for hepatitis C infection in 2016 *(32)*. A large majority of them (about 86%) received direct-acting antivirals, which have a cure rate of more than 90% among people living with HIV *(32)*.[4] Progress to date has been aided by steep price reductions for direct-acting antivirals, due principally to increased competition between manufacturers of generic medicines. New WHO survey data show that the most affordable direct-acting antivirals prices are available in countries where generic competition is strong. In 2016, 62% of people living with hepatitis C lived in countries that could procure generic medicines that can cost as little as US$ 150 for a regimen.

Despite this, the cost of treatment for hepatitis C infection remains a barrier in many settings *(33)*. Countries that lack access to generic regimens (almost exclusively in the upper-middle-income and high-income categories) are home to 38% of people living with hepatitis C globally *(32)* (Figure 6.6). Globally, there were an estimated 71 million people living with hepatitis C infection in 2016, and the global treatment gap remains huge (Figure 6.7) *(32)*.

FIGURE 6.6 **More than one third of people living with hepatitis C live in countries without access to generic medicines**

Availability of generic medicines that can cure hepatitis C, 2017

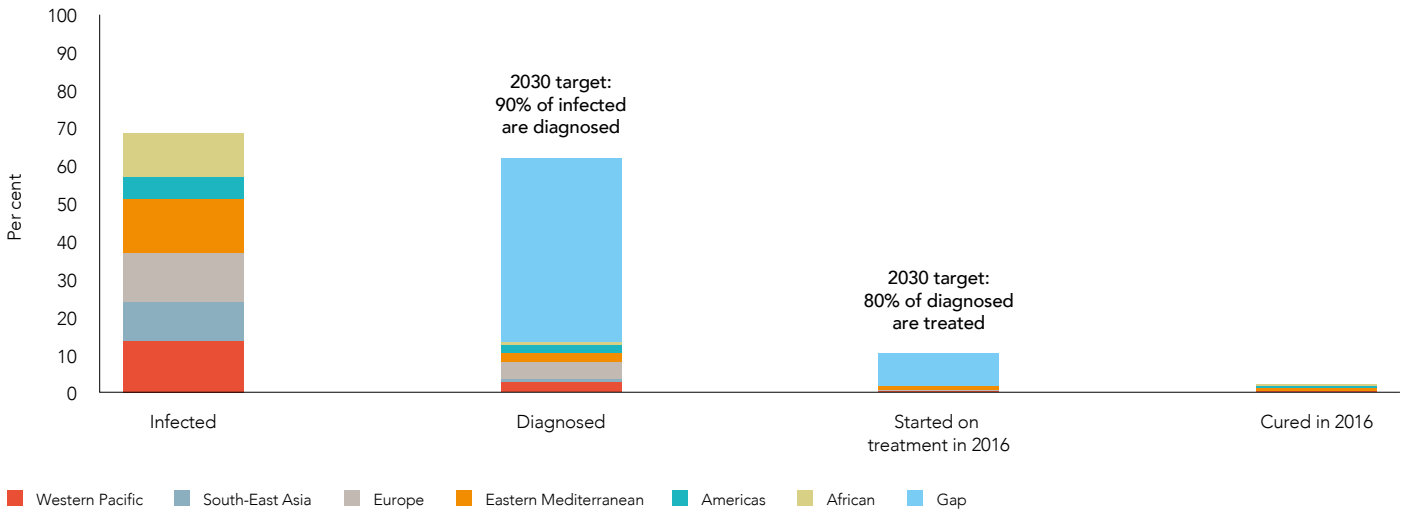


Source: Progress report on access to hepatitis C treatment: focus on overcoming barriers in low- and middle-income countries. Geneva: World Health Organization; March 2018

[4] Egypt and Pakistan accounted for about half of all people who started direct-acting antiviral treatment in 2016.

FIGURE 6.7 **Huge global treatment gap for hepatitis C**

Cascade of care for people living with hepatitis C virus infection, by WHO region, 2016



Source: Progress report on access to hepatitis C treatment: focus on overcoming barriers in low- and middle-income countries. Geneva: World Health Organization; March 2018.

Affordability is not the only barrier. The majority of people living with hepatitis C worldwide are still not diagnosed and therefore have not received treatment. Globally, only about one in five people living with hepatitis C in 2016 had been diagnosed. In low-income countries, less than 10% of people living with hepatitis C had been diagnosed, compared with over 40% in high-income countries *(24)*.

Within all countries, access to direct-acting antivirals appears to be particularly poor among certain populations that are at very high risk for hepatitis C, notably people who inject drugs. Globally, an estimated 8% of chronic hepatitis C infection and 23% of new infections are in persons who inject drugs, yet this population has very limited access to hepatitis C testing and treatment *(34)*. High incarceration rates of people who inject drugs also may account for the high prevalence of hepatitis C infection in prisoners and detainees *(35)*.

There is high prevalence of hepatitis B among indigenous peoples in many parts of the world, including Australia (aboriginal and Torres Strait Islander peoples), and in Europe (the Roma) *(36, 37)*. Some of these populations also have a high prevalence of hepatitis C *(38, 39)*. Poor access to health-care services due to discrimination or because of remote locations is a contributing factor. In a study from Canada, indigenous women who inject drugs were least likely to receive direct-acting antivirals, while people with low incomes were also unlikely to receive the treatment *(40)*.

In 2016, the World Health Assembly adopted ambitious targets to eliminate viral hepatitis as a public health threat by 2030 *(41)*. These include targets for prevention through hepatitis B vaccination, prevention of mother-to-child transmission of hepatitis B, blood and injection safety, harm reduction for people who inject drugs and increased access to testing and treatment for both hepatitis B and hepatitis C.

HIV AND CERVICAL CANCER

Women living with HIV face a fourfold to fivefold greater risk of invasive cervical cancer than women who are not infected with HIV *(42)*. This risk is linked to HPV, a common but preventable infection that women with compromised immune systems struggle to clear.

Cervical cancer diagnoses are on the increase in sub-Saharan Africa, with an estimated 75 000 new cases and almost 50 000 deaths per year. Globally, cervical cancer claims an estimated 270 000 lives each year. It is preventable with the HPV vaccine if it is provided at childhood, and it is curable with early detection and treatment. WHO forecasts that, without an effective response, cervical cancer will kill more than 440 000 women per year worldwide by 2030, nearly 90% of them in sub-Saharan Africa *(43)*.

A key strategy to preventing cervical cancer is the implementation of HPV immunization programmes that focus on adolescent girls before they are sexually active (44). To date, these programmes have been implemented almost exclusively in high-income countries *(45)*. In eastern and southern Africa, important progress is being made: countries with a HPV vaccination policy represent 55%

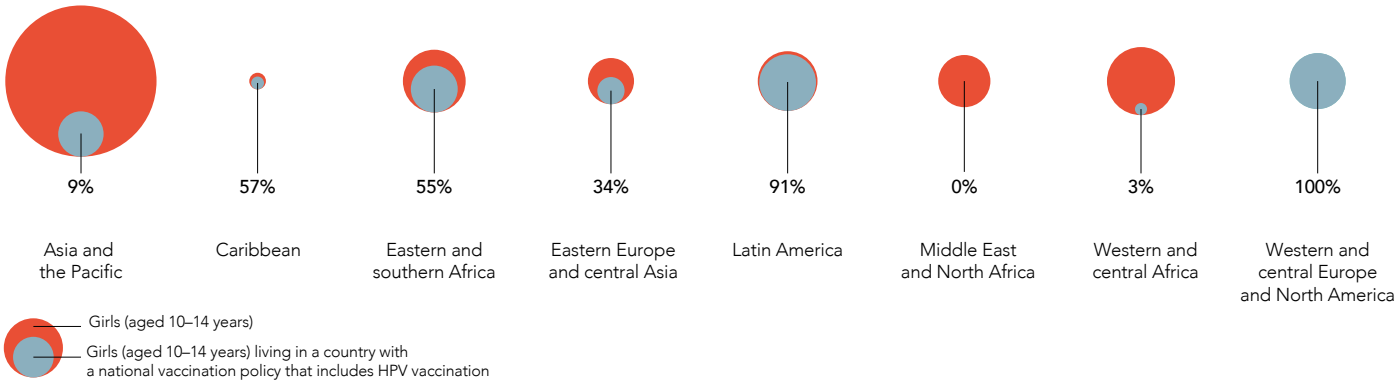
of the total population of girls aged 10–14 years in the region (Figure 6.8). Botswana, Lesotho, Mauritius, Rwanda, Seychelles, South Africa and Uganda had introduced HPV immunization by 2017; the United Republic of Tanzania and Zimbabwe introduced HPV vaccination for girls aged 9–14 years in their national immunization schedule in 2018. In the autumn of 2018, the vaccine will be introduced in Senegal—the first country in western and central Africa to do so—and in Ethiopia *(46)*. The United States President's Emergency Plan for AIDS Relief (PEPFAR) also has announced that it will support vaccination of all HIV-positive girls and women up to the age of 25 in Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, Zambia and Zimbabwe *(47)*.

All women living with HIV should be screened for cervical cancer. Globally, 74% of the 120 reporting countries recommend cervical cancer screening in their national HIV-treatment guidelines. Linking cervical cancer screening and HIV services is cost-effective and can be done at scale. In Zambia, service integration expanded cervical cancer screening to more than 100 000 women (28% of whom were living with HIV) within five years *(48)*. Although integrated cervical cancer screening is still most common in high-income countries, it is increasing in eastern and southern Africa, the Caribbean and Latin America (Figure 6.9).

Ensuring high uptake of antiretroviral therapy and adherence to it can also reduce the incidence of cervical cancer among women who have acquired HIV. A recent meta-analysis found that women living with HIV who receive antiretroviral therapy had a lower prevalence of high-risk HPV infection and invasive cervical cancer than women who were not receiving HIV treatment *(49)*.

FIGURE 6.8 HPV vaccination policies are critical to progress

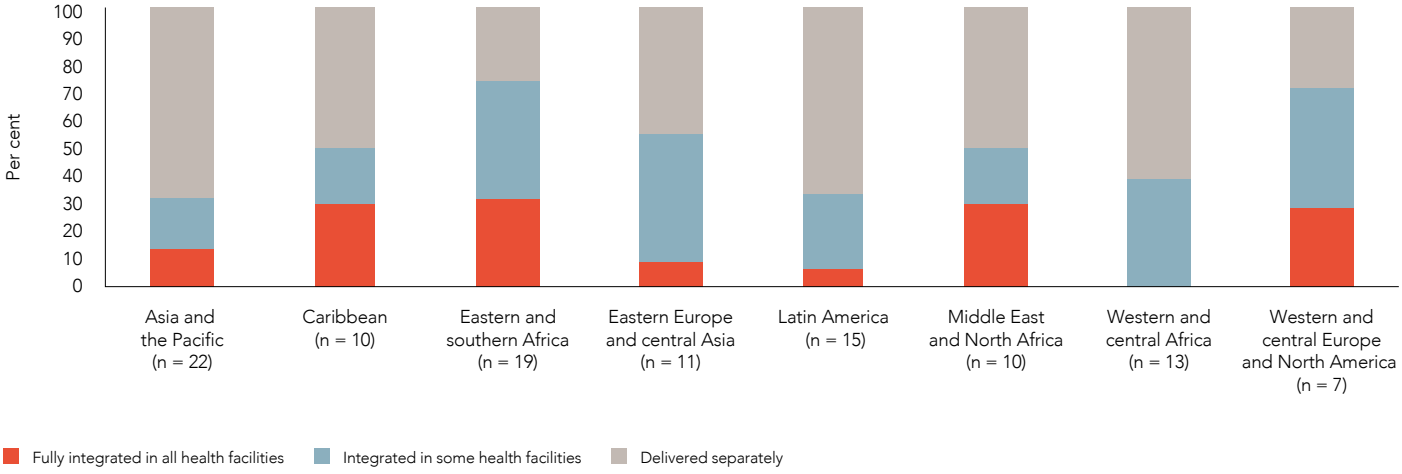
Percentage of girls (aged 10–14 years) living in a country with a national vaccination policy that includes HPV vaccination, by region, 2018



Source: 2017 World Population Prospects; 2018 HIV estimates; Immunization Vaccines and biologicals database, World Health Organization (as of 15 June 2018).

FIGURE 6.9 All women living with HIV should be screened for cervical cancer

Proportion of reporting countries that deliver cervical cancer screening integrated in HIV services, by region, 2016



Source: 2017 National Commitments and Policy Instrument.

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7. Investment

AT A GLANCE

1 Increased donor disbursements and continued increases in domestic investments drove an increase in spending on the AIDS responses of low- and middle-income countries to US$ 20.6 billion (in constant 2016 US dollars).

2 There were no new significant commitments from donors in 2017. The recent rise in donor funding is not expected to continue. The 2020 investment target could be missed.

3 Insufficient funding puts programmatic targets at risk. A five-year delay in achieving those targets would translate into an additional 2.1 million people acquiring HIV and about 1.0 million more people dying of AIDS-related illness between 2017 and 2030 in the 10 most-affected countries.

4 Domestic investment and ownership of HIV prevention programmes in low- and middle-income countries appears lower than for treatment programmes.

5 Potential cuts in international support could have a catastrophic effect on low-income countries with high HIV burden.

Progress and gaps

More than a decade of growth in funding for HIV responses in low- and middle-countries stalled in 2009 amid global economic turmoil. As financial markets stabilized and concern mounted that momentum against one of the world's greatest health threats could be lost, the United Nations General Assembly agreed to the expansion of investments in low- and middle-income countries, increasing to US$ 26 billion by 2020—an amount in line with the estimated costs for these countries to achieve the Fast-Track Targets.

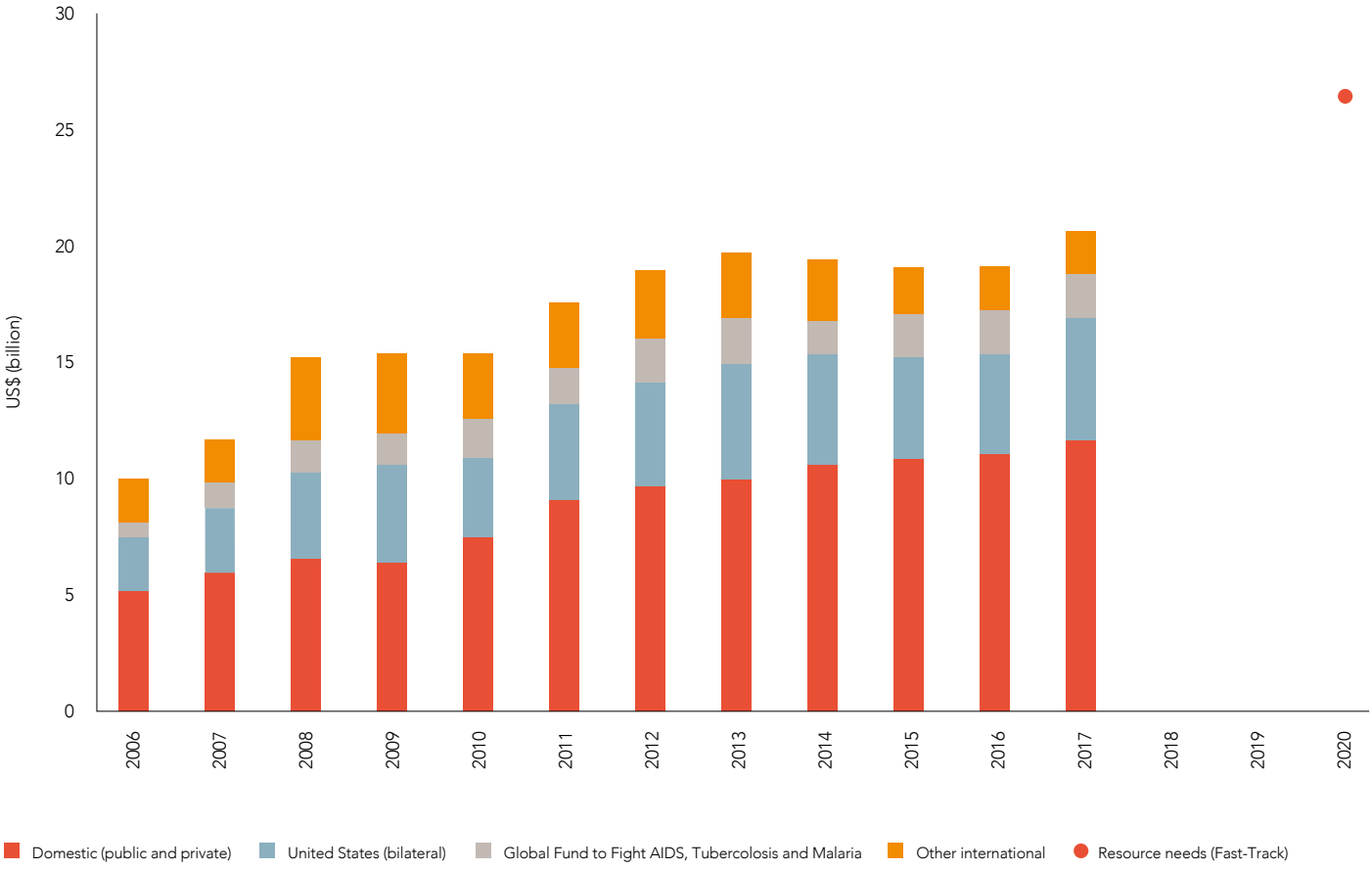
Converting this commitment into greater total investment has proven challenging. Annual investments remained flat between 2012 and 2016, but in 2017, increased donor disbursements and continued increases in domestic investments drove an increase in spending to US$ 20.6 billion (in constant 2016 US dollars)—about 80% of the 2020 target for low- and middle-income countries (Figure 7.1).[1]

This welcome news comes with a caveat: there were no new significant commitments from donors in 2017. As a result, this one-year rise in donor funding is not expected to continue, and it could even decrease. Even if steady increases in domestic public expenditures continue, reaching the 2020 investment target will likely not be possible unless new donor commitments are made soon.

[1] In this chapter, all financial amounts are expressed in constant 2016 US dollars to facilitate direct comparison with the United Nations General Assembly target.

FIGURE 7.1 **A modest increase in financial resources**

HIV resource availability in low- and middle-income countries (in constant 2016 US dollars), by source of funding, 2000–2017 and 2020 target



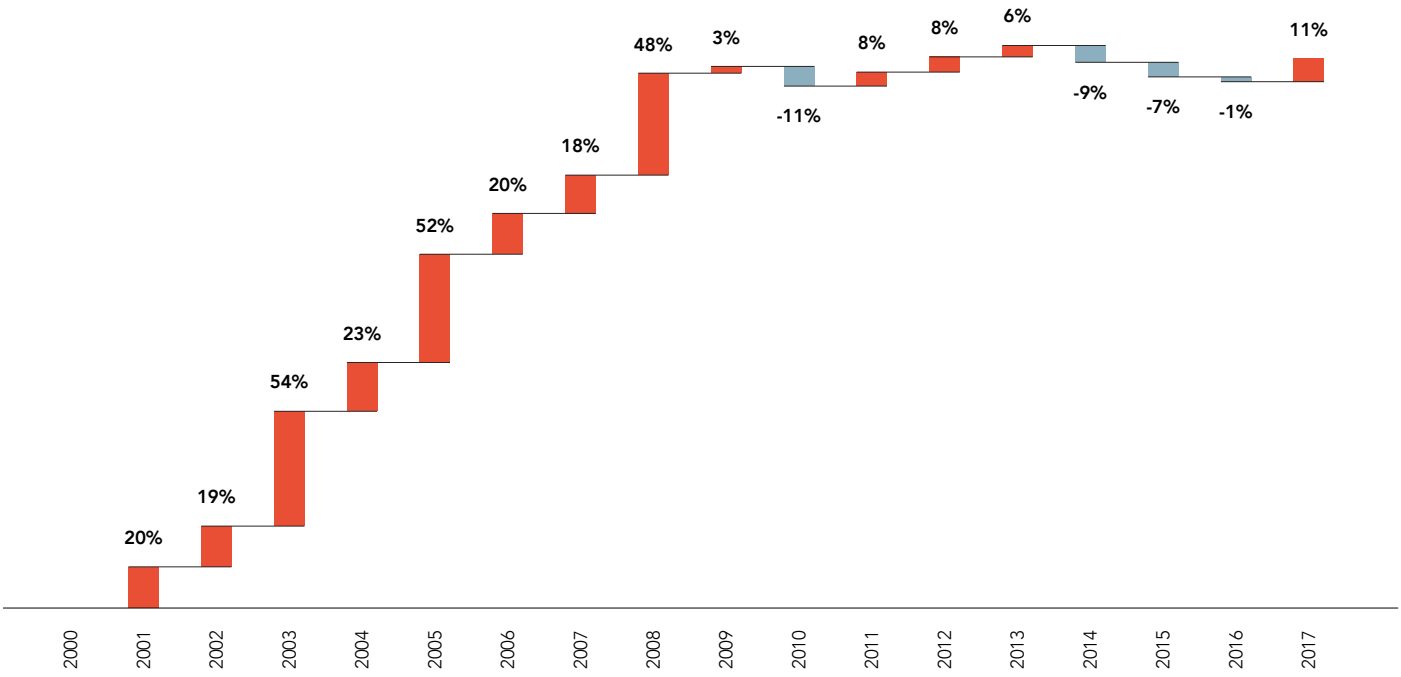
*Estimates for low- and middle-income countries per 2015 World Bank income level classification. All figures are expressed in constant 2016 US dollars.
Source: UNAIDS resource availability and needs estimates, 2018.

DOMESTIC INVESTMENTS CONTINUE TO INCREASE

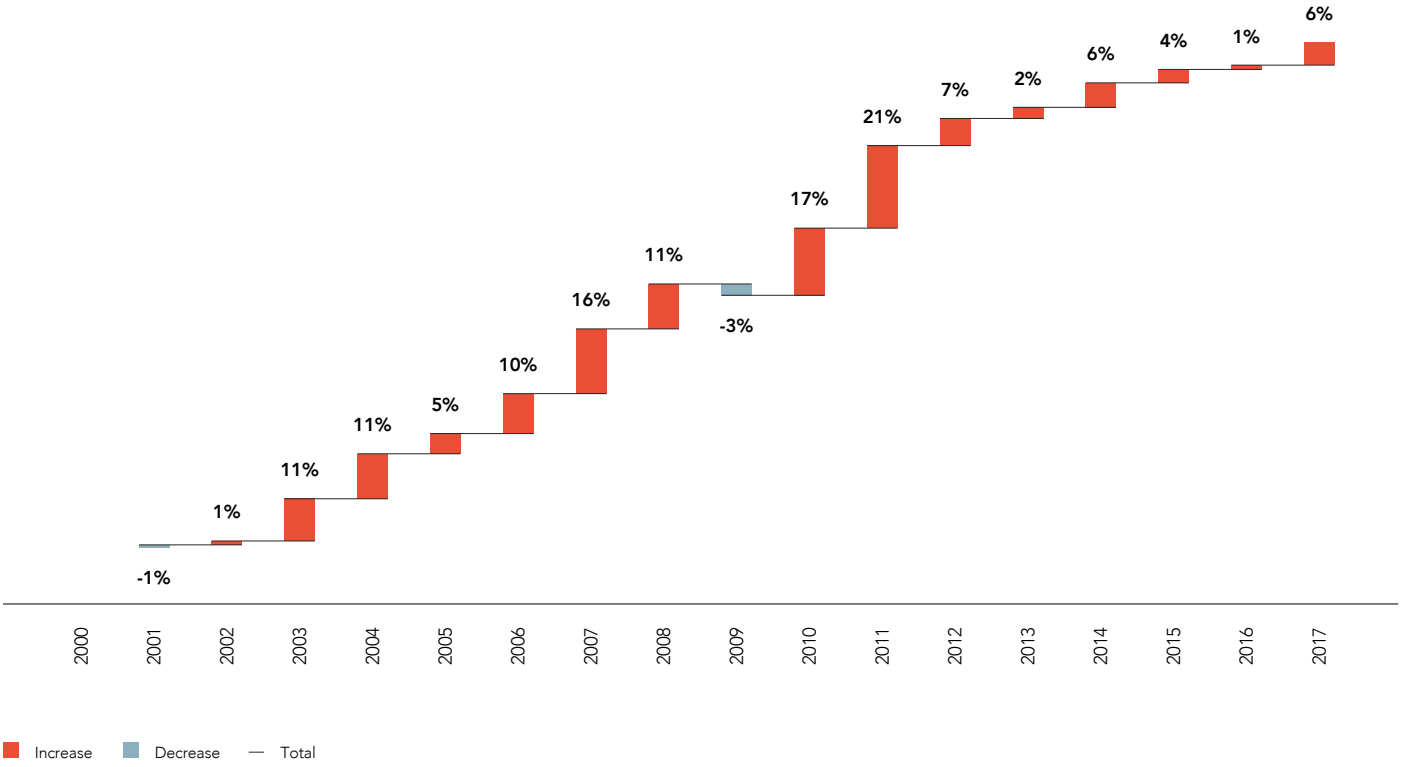
Before the global financial crisis, international funding had been the main source of growth in investments in the global HIV response. The bulk of those financing increases came from two sources: the United States President's Emergency Plan for AIDS Relief (PEPFAR) and the multilateral Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund). Since 2008, the level of international HIV funding has remained relatively stable. By contrast, domestic funding (public and private) by low- and middle-income countries surged during 2009–2011, and it has continued to steadily grow over the last six years (Figure 7.2). In 2017, domestic resources comprised 56% of total HIV investments worldwide.

FIGURE 7.2 More consistent growth in domestic investment

Annual percentage change in HIV resource availability from international sources, constant 2016 US dollars, low- and middle-income countries, 2000–2017



Annual percentage change in HIV resource availability from domestic sources (public and private), constant 2016 US dollars, low- and middle-income countries, 2000–2017



Source: UNAIDS resource availability and needs estimates, 2018.

THE FUTURE COST OF INSUFFICIENT INVESTMENT TODAY

The steadily increasing availability of financial resources after 2000 enabled HIV service expansion, steep reductions in AIDS-related mortality and declining (but still high) numbers of new HIV infections (Figure 7.3). In recent years, however, the aggregate level of investment has slipped below estimated resource needs. In addition, anticipated increases in programme efficiencies and effectiveness have not been widespread. As a result, the rates of decline in key impact measures—especially new HIV infections—have been slower than the estimated gains that could be achieved by a fully-funded response. If current investment trends continue, many Fast-Track programme targets and impact milestones for 2020 will most likely not be met.

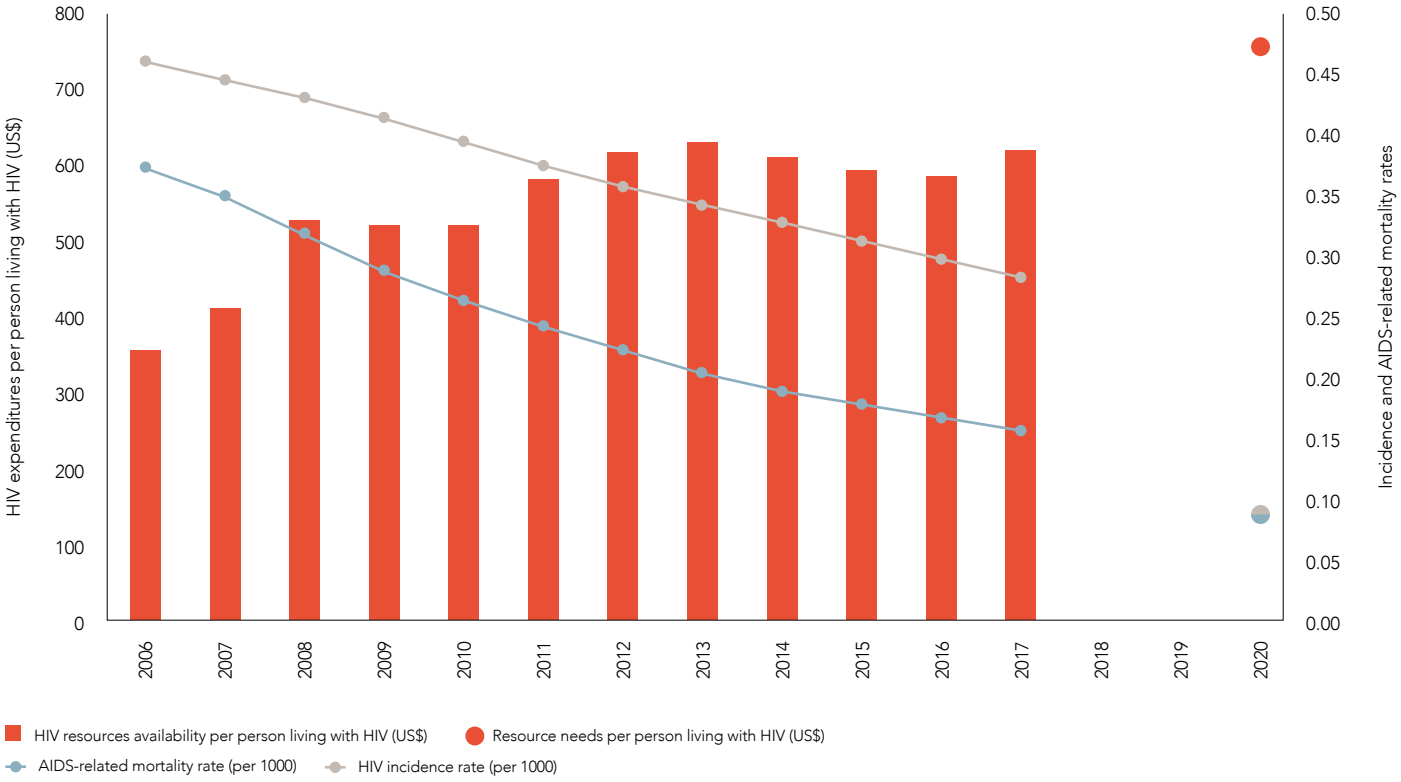
Even a relatively short delay in achieving the 2020 Fast-Track programmatic targets would come at great cost. A delay of five years in the 10 countries with the highest numbers of people living with HIV, for example, would translate into an additional 2.1 million people in those countries acquiring HIV and about 1.0 million more people dying of AIDS-related illness between 2017 and 2030. The 2030 target within the Agenda for Sustainable Development a 90% reduction in HIV incidence and AIDS-related mortality, which would essentially end the AIDS epidemic as a public health threat—would be missed.

TRENDS IN HIV INVESTMENTS BY REGION

Investment trends vary markedly by region (Figure 7.4). In eastern and southern Africa, strong increases in both domestic and international funding have enabled countries to expand their HIV responses massively over the past decade. About US$ 10.6 billion was available for HIV programmes in the region in 2017, with domestic investment accounting for 42% of total resources in 2017, which is their highest level to date. Per capita spending and declines in AIDS-related mortality are roughly on track to achieve the 2020 Fast-Track Targets. New HIV infections are also steadily declining, but not fast enough to reach the 2020 target, reflecting the need for further efficiency gains.

FIGURE 7.3 **Investment and impact trends**

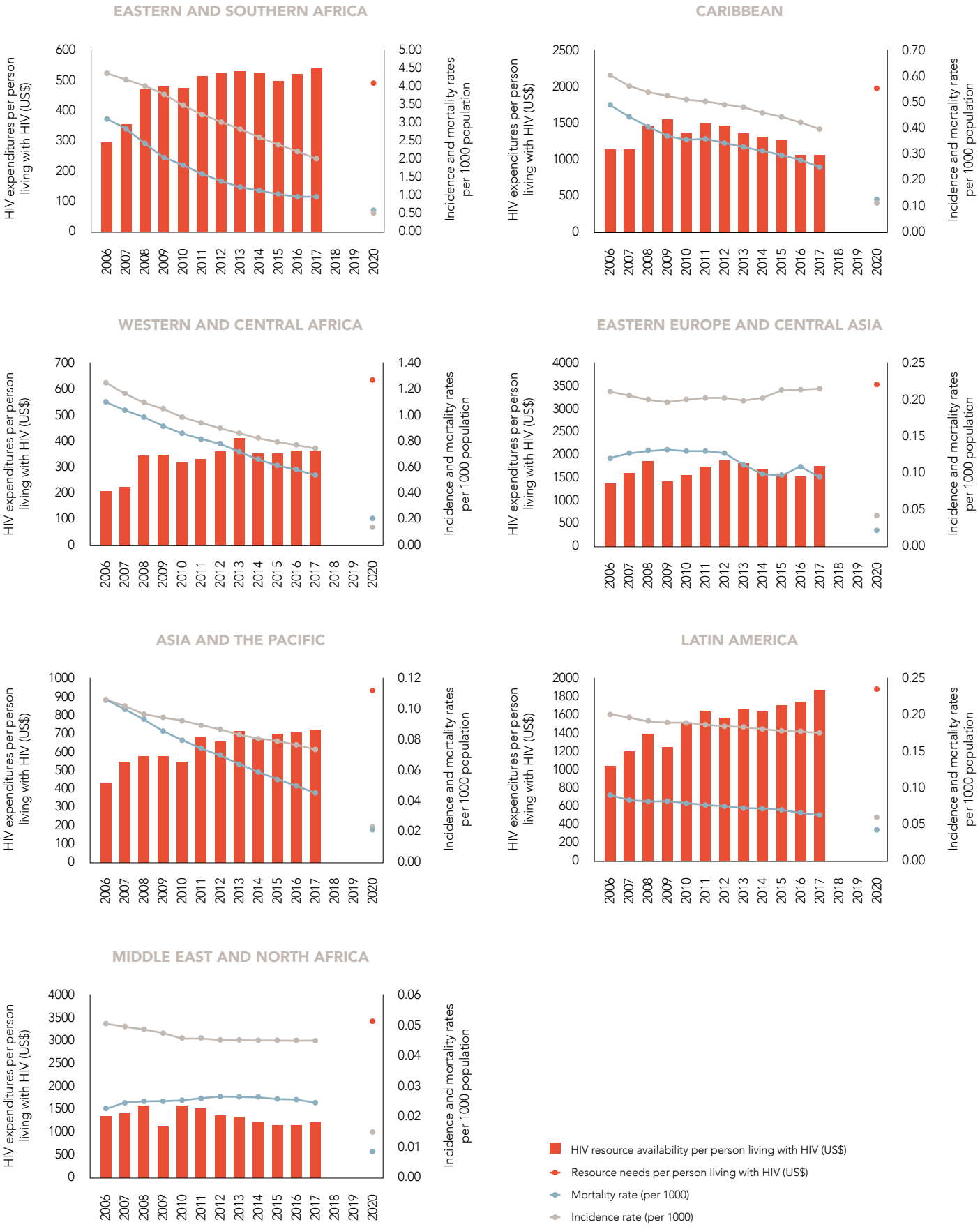
Per capita resource availability for HIV responses and HIV incidence and AIDS-related mortality rates, low- and middle-income countries, 2006–2017 and 2020 targets



Source: UNAIDS 2018 estimates; GAM/GARPR reports 2005–2018; UNAIDS–Kaiser Family Foundation collaborative project on international assistance disbursements from donor governments in 2017; Fast-Track update on investments needed in the AIDS response, 2016–2030. Geneva: UNAIDS; 2016.

FIGURE 7.4 Insufficient investment and impact in several regions

Per capita resource availability for HIV responses, HIV incidence and mortality rates, by region, 2006–2017 and 2020 targets



Source: UNAIDS 2018 estimates; GAM/GARPR reports 2005–2018; UNAIDS–Kaiser Family Foundation collaborative project on international assistance disbursements from donor governments in 2017; Fast-Track update on investments needed in the AIDS response, 2016–2030. Geneva: UNAIDS; 2016.

The situation in western and central Africa is quite different. Per capita resource availability for HIV responses has declined since 2013, and annual new HIV infections and AIDS-related mortality are declining at a rate that will leave the region well short of the 2020 Fast-Track Targets. Approximately US$ 2.1 billion was available for HIV in 2017, with domestic resources accounting for less than one third (31%) of the total. A big funding gap has opened: an additional US$ 1.8 billion is needed in this region by 2020, 81% more than was available in 2017.

Similarly large gaps in per capita resource availability exist in North Africa and the Middle East and eastern Europe and central Asia, two regions where effort to reduce new HIV infections and AIDS-related mortality are also far off track.

The situation in other regions is mixed. Per capita investment in Latin America and Asia and the Pacific are relatively high and rising, and declines in deaths from AIDS-related illness appear on track to achieve the 2020 targets in these regions. However, insufficient progress is being made on new HIV infections. Impact trends are similar in the Caribbean, despite a steady decline in per capita investment.

In all regions, there is a need to realize programme effectiveness and maximize efficiency gains to achieve impact goals at the lowest possible cost without compromising the quality of services.

INVESTMENTS IN EFFECTIVE HIV PREVENTION

The clear life-or-death need to provide antiretroviral therapy to people living with HIV has accounted for the lion's share of expansion in domestic and international expenditures for HIV over the last 15 years. Although the amount of funding needed for HIV prevention is much smaller, meeting investment targets for this area of the response has proved difficult. Linking programme inputs and outputs to impact is more difficult for HIV prevention, and there are often substantial political barriers to effective HIV prevention strategies. For example, some people and the politicians who represent them may oppose expenditure of public health funding on HIV prevention services that focus on key populations or the use of condoms. However, in the absence of a cure, failure to prevent HIV infections ultimately translates into higher future treatment costs and a higher burden for health-care budgets and systems.

Efforts to ring-fence funding for prevention led to a commitment by the United Nations General Assembly in 2016 to ensure that no less than a quarter of AIDS resources globally are spent on evidence-informed HIV prevention measures focused on the populations and locations in greatest need. This target proportion of total expenditures will vary country-by-country, based on HIV burden and the unit costs of various services. In general, countries with higher HIV prevalence will need to spend a larger percentage of their overall budget on antiretroviral therapy.

Efforts to measure progress on this commitment has proved challenging, as most low- and middle-income countries do not report sufficiently granular expenditure data. Among the countries that reported detailed data to UNAIDS in recent years, just one allocated a quarter of its HIV funding for the five pillars of effective HIV prevention.[2] Among the countries outside of sub-Saharan Africa with available data, the five prevention pillars accounted for 28% of total expenditure in Georgia, 15% in Malaysia, 10% in Ukraine, 7% in Mexico and less than 3% in Algeria. Within sub-Saharan Africa, Senegal spent about 12% of total HIV funding on these critical prevention programmes, Malawi about 9%, South Africa about 6%, Benin about 5% and Kenya less than 3% (Figure 7.5). Detailed data from more countries are needed to determine whether the global target of 25% spending on evidence-informed HIV prevention measures is being met.

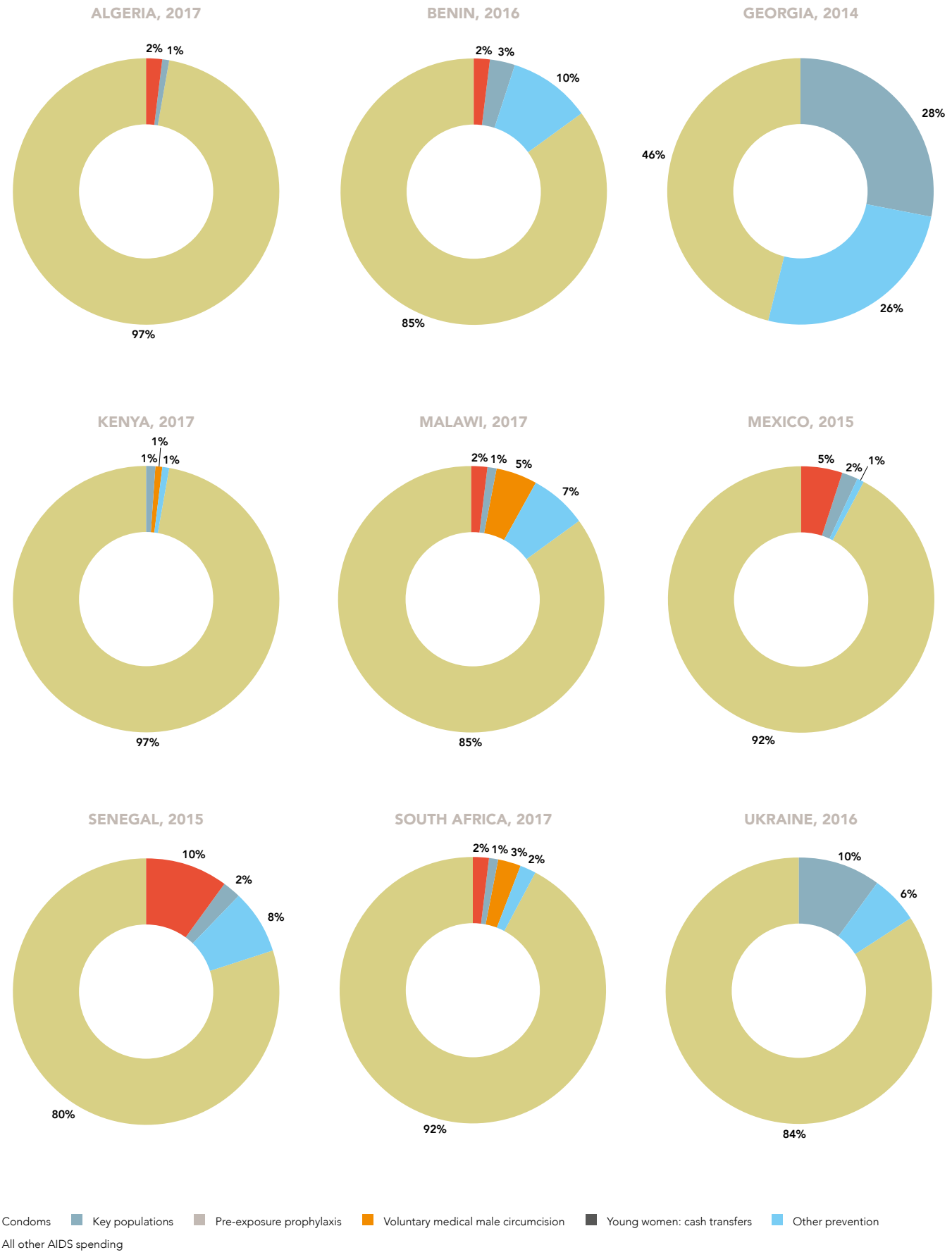
SHARED RESPONSIBILITY AND DONOR DEPENDENCY

Analysis of 2016 financing data reveals that dependency on external funding is lower when national income is higher: middle-income countries finance larger proportions of their AIDS responses than low-income countries. This correlation between per capita gross domestic product and the percentage of HIV response funding provided by donors remains strong, regardless of the prevalence of HIV in the recipient country. If the analysis is limited to HIV treatment programmes, the correlation remains, but it is weaker (Figure 7.6). Some low- and middle-income countries finance relatively larger shares of their HIV treatment programmes with domestic resources, suggesting that domestic investment and ownership of other parts of the HIV response—such as HIV prevention—may be lower.

[2] The five pillars of combination HIV prevention are condom promotion, programmes focused on key populations, pre-exposure prophylaxis (PrEP), voluntary medical male circumcision (VMMC) and combination prevention for adolescent girls and young women.

FIGURE 7.5 **Varying investment in prevention**

Allocations of HIV resources for the five pillars of prevention and all other prevention in selected countries, 2014–2017



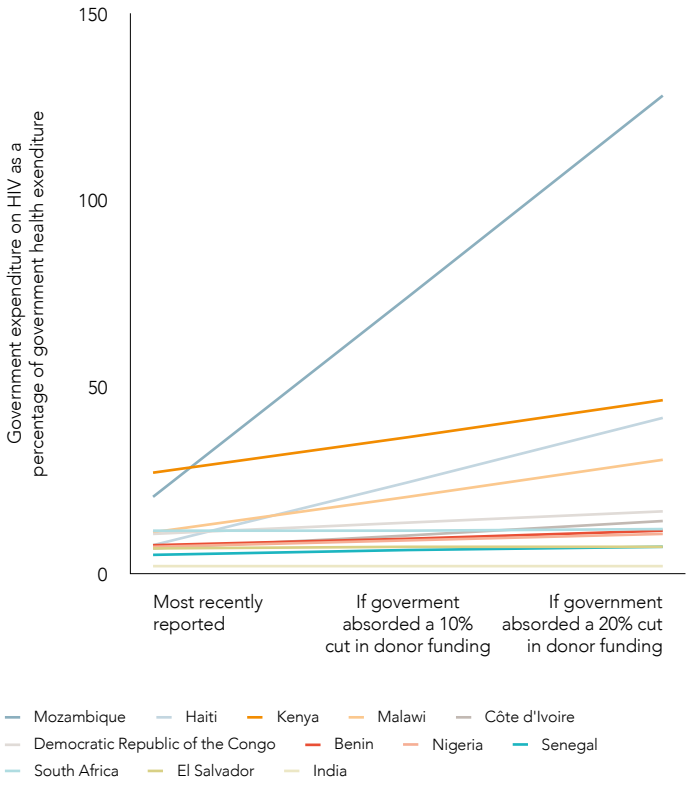
Source: UNAIDS resource availability and needs estimates, 2018; Global AIDS Monitoring reports, 2018.

An analysis of domestic public expenditures and international expenditures for health and HIV shows that hypothetical future cuts in international support could have a dramatic effect on the HIV responses of low-income countries, especially those with higher HIV burden. In Mozambique, for example, the HIV response accounted for 17% of its total domestic public health spending in 2017. If international donors cut their contributions to the HIV response by 20% and Mozambique replaced that funding with its own scarce public resources, 98% of the domestic public health budget would go to HIV. Such a large proportion of domestic public health spending for HIV is clearly unrealistic; Mozambique would not be able to absorb the cut. Its total spending on the HIV response would fall precipitously, threatening the lives of a large proportion of the 2.1 million [1.8–2.5 million] people living with HIV in the country and resulting in more HIV infections.

Among countries with sufficient data to run this analysis, Cambodia, Côte d' Ivoire, Haiti, Kenya, Lesotho and Malawi also would be unable to absorb the donor cut, and several others would clearly struggle (Figure 7.7). Of the 135 low- and middle-income countries for which recent data are available, 44 rely on international assistance for at least 75% of their national HIV responses. Extrapolating the above analysis to all of these countries suggests that the result of a 20% decrease in donor funding for HIV globally would be catastrophic.

FIGURE 7.7 Big impact of a 20% donor cut

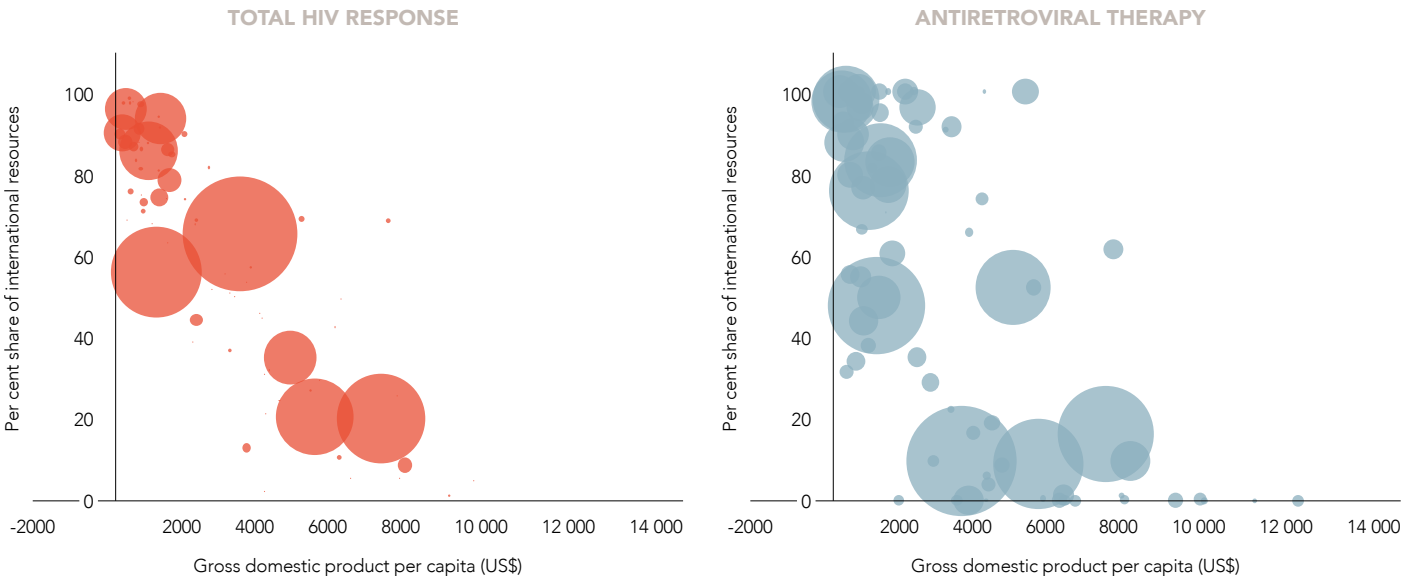
The impact of a cut in donor funding for HIV on the percentage of total public spending on HIV as a percentage of total public expenditure on health, selected countries, 2017



Source: UNAIDS resource availability and needs estimates, 2018.

FIGURE 7.6 Stronger country ownership of treatment programmes

Relationships between per capita gross domestic product and the percentage of HIV response funding provided by donors, total HIV response compared to treatment programmes, 2016



Source: GARPR/GAM reports, 2014–2017.

PART II

BARRIERS TO ENDING AIDS

8. Stigma and discrimination

AT A GLANCE

1 Declines in HIV-related stigma have been observed, but large proportions of people still hold discriminatory attitudes.

2 Stigma and discrimination at the hands of health-care providers is a distressingly regular experience for people living with HIV.

3 Key populations face particularly high levels of stigma and discrimination within health-care settings.

4 Gender inequalities and harmful gender norms increase HIV risk among young women in sub-Saharan Africa.

5 Prevailing gender norms in many cultures vilify sexual minorities and sanction stigma, discrimination and violence against lesbian, gay, bisexual, transgender and intersex (LGBTI) people.

Progress and gaps

United Nations (UN) Member States have endorsed, ratified or signed multiple resolutions, covenants and commitments aimed at promoting and safeguarding the rights and abilities of people to live dignified, healthy and fulfilling lives. Those initiatives have helped spur remarkable progress on human rights in recent decades. Nonetheless, in countries across the income spectrum, segments of society are subjected to routine harassment, insecurity and violence, and they are systematically deprived of basic rights and entitlements to gain an education, access health and other essential services, earn a decent living and be treated equally by the state and before the law.

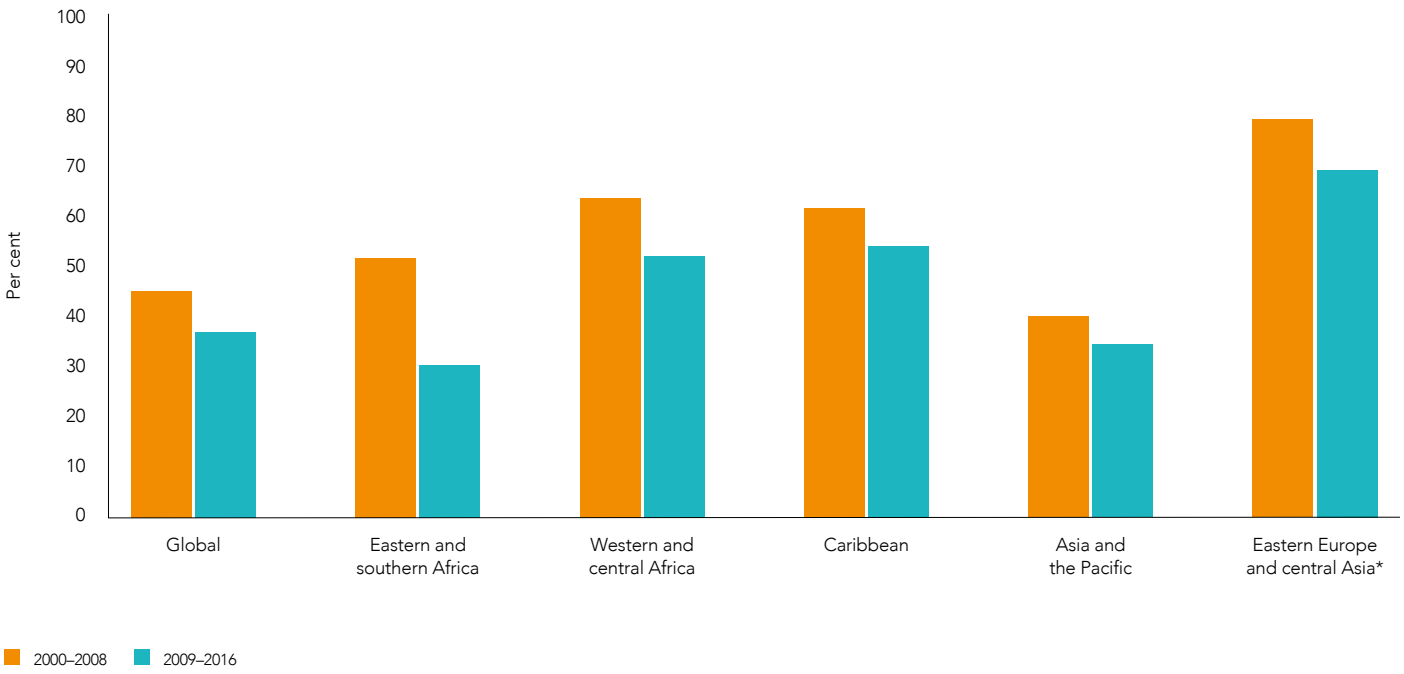
Stigmatizing attitudes may relate to a number of factors: gender; racial, ethnic, cultural or sexual identity; age; residency status; sexual behaviour; or even health status, such as being HIV-positive. Often these individual stigmas overlap and manifest in broad violations of human rights. For example, the stigma and discrimination faced by indigenous peoples and racial and ethnic minorities around the world leads to higher levels of poverty, ill health, arrest and incarceration. Migrants and refugees, especially those who lack residency status, are vulnerable to exploitation and harassment, lack access to basic entitlements and services (including health care), and seldom have recourse to legal protection when their rights are violated.

STIGMATIZING ATTITUDES

In the context of the HIV epidemic, the effects of stigma and discrimination are especially evident for people living with HIV, people in same-sex sexual relationships, sex workers, transgender people, people who inject

FIGURE 8.1 Stigma has declined…

Percentage of people who would not buy vegetables from a shopkeeper living with HIV, 2000–2008 compared to 2009–2016



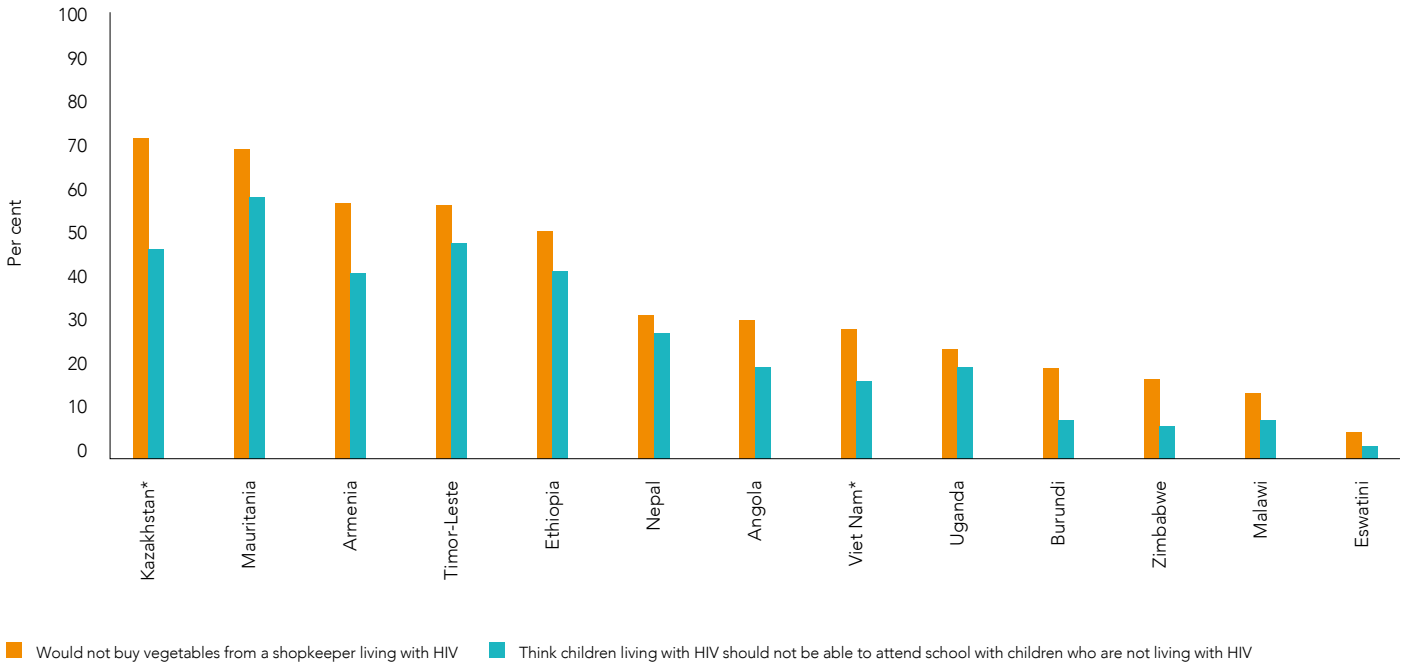
* Data for females respondents only.

Data coverage of regional aggregates: global: 45 countries, 28% 2017 population coverage; Asia and the Pacific: 7 countries, 29% 2017 population coverage; Eastern and southern Africa: 12 countries, 71% 2017 population coverage; Western and central Africa: 16 countries, 91% 2017 population coverage; Caribbean: 6 countries, 88% 2017 population coverage; Eastern Europe and central Asia: 9 countries, 32% 2017 population coverage. Aggregates for Latin America, the Middle East and North Africa and western and central Europe and North America are not shown as data were only available from 2 countries in the region or less.

Source: Population-based surveys, 2000–2016.

FIGURE 8.2 …but discriminatory attitudes persist globally

Percentage of men and women aged 15–49 years with discriminatory attitudes towards people living with HIV, countries with available data, 2013–2016



* Female respondents only.

Source: Population-based surveys, 2013–2016.

drugs and prisoners. Migrant populations, ethnic and racial minorities, and indigenous peoples face similar challenges. Pervasive stigma and discrimination and the threat of violence create barriers to the services they need to stay healthy and build sustainable livelihoods. Women who are the partners of men at increased risk of HIV infection also experience high levels of stigma and discrimination *(1)*.

Levels of stigma towards people living with HIV are measured through population-based surveys that are usually conducted in five-year intervals. Declines in HIV-related stigma have been observed in countries where multiple surveys have been conducted. In eastern and southern Africa, for example, the percentage of people who would not buy vegetables from a shopkeeper living with HIV declined from 50.7% in 2000–2008 to 29.5% in 2009–2016. In other regions, the decline in discriminatory attitudes has been less marked (Figure 8.1), and discriminatory attitudes persist globally. Approximately 38% of adults (aged 15–49 years) in the 53 countries where surveys were recently conducted among both men and women indicated that they would not buy vegetables from a shopkeeper living with HIV. In 14 countries with recent surveys, respondents were also asked if children living with HIV should be able to attend school with children who are HIV-negative. Despite the near-zero risk of HIV transmission among children in school settings, 2.7% to 66% (a median of 24.6%) of respondents said that children living with HIV should attend separate schools (Figure 8.2).

STIGMA AND DISCRIMINATION IN HEALTH-CARE SETTINGS

Despite universal recognition of the right to health, people continue to be deprived of quality, timely and affordable health care—routinely so, in the case of some population groups. Surveys of people living with HIV indicate that stigma and discrimination at the hands of health-care providers—including denial of care, poor-quality care, breach of confidentiality or coercion into accepting certain services—is a distressingly regular experience for people living with HIV and key populations at higher risk of HIV infection. This ill treatment is a major barrier to seeking HIV services and other potentially life-saving health services. Stigma delays treatment and makes it more difficult to adhere to antiretroviral therapy, as shown in systematic reviews of studies from sub-Saharan Africa *(4, 5)*.

Surveys of people living with HIV conducted across 19 countries show the following: about one in five people living with HIV reported having been denied health care

EMERGING EVIDENCE AND INNOVATIONS

Young people mobilizing to end stigma and discrimination

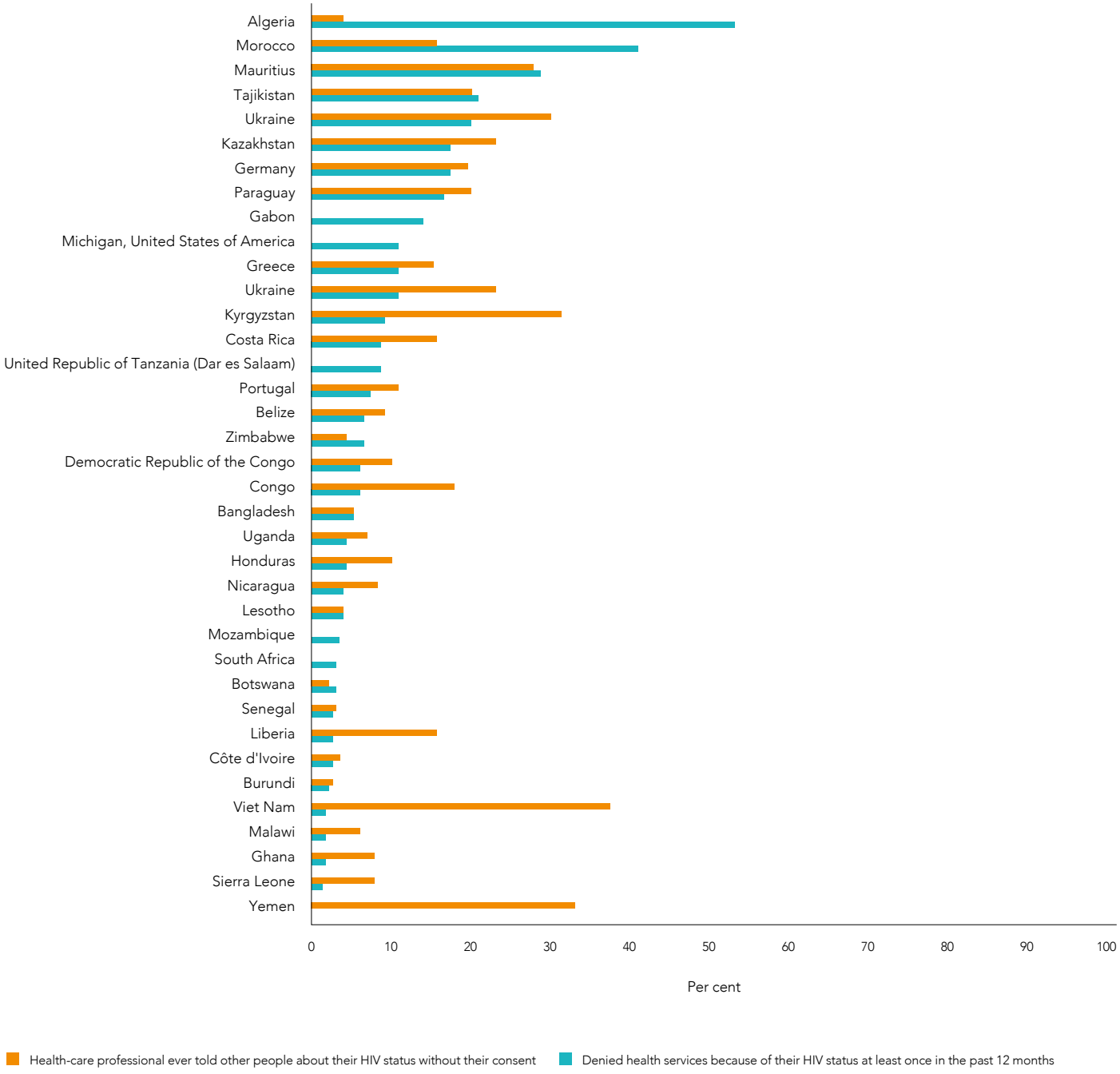
PACT, a coalition of more than 25 youth organizations and networks working on HIV, launched a youth-led political campaign in 2017 to reduce stigma and discrimination against young people with HIV. The campaign aims to increase understanding of the factors that jeopardize the health of young people and impede their access to HIV and sexual and reproductive health services. The campaign runs until the end of 2020 and focuses on three areas of action: challenging harmful legal and policy barriers; supporting youth participation in the HIV response; and strengthening innovative partnerships between networks of young people *(2)*.

The International Federation of Medical Students' Associations issued its Declaration of Commitment to Eliminate Discrimination in Health-care Settings at the 2016 World Health Assembly. As part of the #uproot agenda, the Federation entered into a memorandum of understanding with youth-led organizations and networks of young people living with HIV and young key populations. The memorandum defines joint activities aimed at the elimination of discrimination in health-care settings *(2)*. The Federation, one of the world's oldest and largest student-run organizations, represents and engages with a network of 1.3 million medical students from 136 national member organizations in 127 countries *(3)*.

due to their HIV status; one in five people living with HIV reported having avoided visiting a health facility for fear of stigma or discrimination related to their HIV status; one in four people living with HIV reported experiencing some form of discrimination when using health-care services;[1] and approximately one in three women living with HIV reported discrimination related to their sexual and reproductive health.[2] The prevalence of these rights violations and the disclosure of a patient's HIV status without their consent varies by country (Figure 8.3).

FIGURE 8.3 Discrimination within health care

Percentage of people living with HIV who experienced discrimination in health-care settings, countries with available data, 2012–2017



Source: People Living with HIV Stigma Index surveys, 2012–2017.

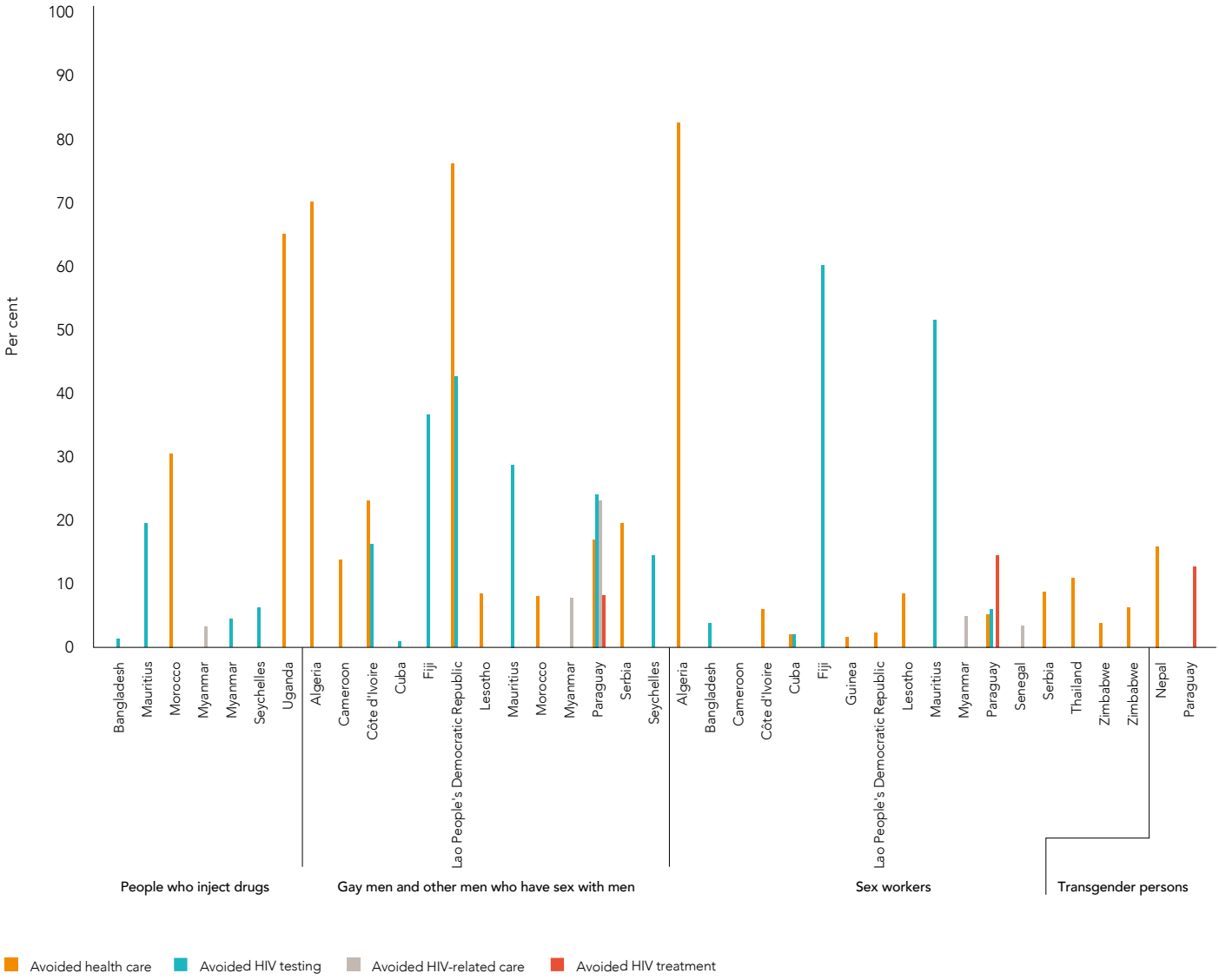
[1] Respondents had been denied health care in the previous 12 months due to the HIV status, forced to submit to a medical or health procedure in the previous 12 months due to their HIV status (including HIV testing) or had a health-care professional disclose their HIV status without consent.

[2] These women reported that a health-care professional had advised them not to have a child due to their HIV-positive status, that they had been told that access to antiretroviral treatment was conditional on the use of certain forms of contraception, or that they had been denied sexual and reproductive health services in the previous 12 months due to their HIV status.

Stigma and discrimination particularly affects women living with HIV. Studies show that anticipated or actual mistreatment and abuse from health-care workers prevents women living with HIV from linking to and staying engaged in HIV care services *(6, 7)*. Fears of mistreatment also make them reluctant to disclose their HIV status to partners, family and friends, which can delay initiation or lead to interruptions in antiretroviral therapy, harming the woman and increasing the risk of HIV transmission from a pregnant woman to her unborn children *(8, 9)*. A recent systematic review of studies from the United States of America showed that stigma, especially from health-care providers, was a common barrier to HIV treatment and care for African-American women living with HIV, as was a lack of social support and poor-quality health services *(10)*.

FIGURE 8.4 **An infringement of the right to health**

Percentage of key populations who reported having avoided health-care services in the past 12 months due to stigma and discrimination, countries with available data, most recent data, 2013–2017



Source: Integrated biological and behavioural surveys, 2013–2017.

Surveys of people living with HIV indicate that lack of confidentiality within health-care settings and the use of coercive methods by health-care workers—such as involuntary prenatal or postnatal HIV testing for pregnant women—erode their trust in treatment and care services and makes retention in care more difficult *(9)*. Some women living with HIV reached by these studies reported that they were subjected to involuntary sterilization or forced abortions *(11)*.

Key populations also face high levels of stigma and discrimination within health-care settings (Figure 8.4). While stigma and discrimination represents an infringement of their right to health and is detrimental to an individual's overall well-being, an unwillingness or inability to access health services means that people who are at high risk of HIV infection are less likely to be tested for HIV in a timely manner, and that they are more likely to initiate antiretroviral therapy extremely late and to interrupt their treatment. This increases the risk of AIDS-related morbidity and mortality and reduces the preventative benefit of treatment *(5, 12)*.

According to a review of the HIV treatment experiences of female sex workers in Africa, stigma and discrimination is among the main barriers to HIV testing, treatment and care services *(13)*. Almost one third of street-based female sex workers surveyed in Saint Petersburg, Russian Federation, said they had been refused medical care; more than half said they had avoided seeking care because of fear of ill-treatment *(14)*.

Similar experiences mark the lives of gay men and other men who have sex with men, transgender people and people who inject drugs. Many members of key populations therefore avoid seeking health assistance from doctors and nurses, instead relying on advice and care from peers *(15)*. For young gay men and other men who have sex with men and transgender women in Jamaica, for example, health-care provider discrimination and moral judgment has been a big hindrance. Many participants in a study in Kingston said they were afraid that health-care workers would disclose their HIV status and mistreat them if they tested HIV-positive *(16)*. A study of female, male and transgender sex workers in Kenya, South Africa, Uganda and Zimbabwe found that many had been denied treatment for injuries suffered during physical assault or rape; hostility from public sector health-care providers was a common experience *(17)*. Transgender women in Argentina who had experienced discrimination in health-care settings were three times more likely to avoid health services than peers who had been spared those experiences *(18)*.

Studies among key populations in India and Viet Nam report similar findings, and a study in Thailand found that people who inject drugs were almost seven times more likely to avoid HIV testing if health workers had previously refused them treatment or services *(19–21)*. In a survey in Fiji, almost one third of gay men and other men who have sex with men reported avoiding HIV testing due to fear of stigma from health-care providers *(22)*.

When surveyed, health-care providers are sometimes candid about discrimination against people living with HIV. Some admit to being unwilling to care for patients living with HIV, to providing substandard care or to disclosing the HIV status of patients without permission *(23)*. These behaviours sometimes reflect active prejudice, but they often stem from a lack of sufficient knowledge, skills or competencies to deal with the specific health and social needs of key populations and people living with HIV *(24)*. A basic remedy is the training of health-care workers to improve their understanding of the needs and realities of key and other marginalized populations and to provide services free of stigma and discrimination.

Social support for people living with HIV and key populations is vital to coping with these difficulties. In a recent systematic review focused on female sex workers, social support made a big difference in the decisions of women to take an HIV test: uptake was consistently higher among women who had been encouraged by peers and sex work managers to take a test *(25)*. An earlier review of studies on female sex workers in sub-Saharan Africa also highlighted the role of stigma and discrimination in poor linkages to care and late initiation of HIV treatment. Social support from male partners was found to help overcome those barriers *(13)*.

EMERGING EVIDENCE AND INNOVATIONS

Tackling stigma and discrimination in health-care settings

In Ho Chi Minh City, Viet Nam, a scheme to reduce HIV-related stigma and discrimination has been piloted in health-care settings. Survey tools, trainers' guides and practical experience from other countries in the region (including Thailand) were adapted to the local context. UNAIDS and the Viet Nam Administration for HIV/AIDS Control supported the Ho Chi Minh City Provincial AIDS Centre and the Viet Nam Network of People Living with HIV to adapt the survey tools and use them to monitor HIV-related stigma and discrimination in late 2016. The survey found that 73% of health-care workers reported fearing HIV acquisition, 69% used unnecessary precautions when caring for people living with HIV, 58% reported observing negative attitudes from other health-care workers towards people living with HIV and 25% said they had observed other health-care workers discriminate against people living with HIV *(26)*.

The survey results shaped the development of training manuals for health workers in selected health-care facilities. Training in providing stigma- and discrimination-free services was provided to 252 health-care workers responsible for the care of nearly 2300 people living with HIV *(23)*. An end-line survey suggested that unnecessary precautions, negative attitudes and stigma and discrimination declined within the participating health facilities *(26)*. The close involvement of the Viet Nam Network of People Living with HIV was vital to the success of the pilot.

In Kyiv, Ukraine, the RESPECT anti-stigma pilot project has shown excellent results in six pilot clinics where health workers were trained to provide stigma-free services. Confidentiality breaches were reduced from 47% to 25% following the intervention, and knowledge of HIV transmission among health-care workers increased. After further training in provider-initiated testing and provision of services, health workers in the RESPECT facilities linked 85% of people newly diagnosed with HIV to care (compared with an average of 35% in the city as a whole) *(27)*.

LINKAGES—a joint project of the United States President's Emergency Plan for AIDS Relief (PEPFAR) and USAID—uses SMS2, an SMS-based quality assurance and improvement method, to monitor and track stigma and discrimination experienced by members of key populations in health-care settings in Burundi, Côte d'Ivoire, the Democratic Republic of Congo, Malawi and other countries. SMS2 is used as part of existing community outreach activities, with trained outreach workers administering simple SMS-based assessments of facilities that individuals have visited. The information is shared with health workers, members of key populations, outreach workers and LINKAGES staff via SMS *(28)*.

GENDER INEQUALITY

Gender inequalities and harmful gender norms drive the systematic denial of women's rights and block the advancement and empowerment of women and girls. Harmful norms of masculinity can also encourage homophobia and sanction the harassment of transgender people and gay men and other men who have sex with men. These norms and inequalities are powerful factors in the HIV epidemic *(29)*. Eliminating gender inequalities and ending all forms of violence and discrimination against women and girls, people living with HIV and key populations is therefore among the core commitments for ending the AIDS epidemic as a public health threat by 2030 *(30)*.

In all regions, women and girls are subjected to behaviours, practices and rules that systematically place them at a disadvantage across the many spheres of life—from their intimate relationships with male partners to the realms of the household, workplace, community and society at large *(31)*. These inequalities are deeply

embedded in social and cultural norms, customary practices, rules and procedures of institutions, economic and political structures, and the law itself.

These unequal power relations profoundly influence the lives and well-being of women. Limited access to education, lack of economic autonomy and suppressed decision-making power in the home and wider society deny women control over their sexual and reproductive lives, exposing them to intimate partner and sexual violence *(32)*. The World Development Indicators show that women are at least twice as likely as men to perform unpaid family work or part-time work. About 60% percent of countries lack legislation that ensures equal opportunities in hiring practices and requires equal remuneration for work of equal value *(33)*. As a result, women are less likely to have independent economic security than men.

Along with their physiological vulnerability to acquiring HIV, women and girls experience gender inequalities that are powerful factors in the HIV epidemic *(29)*. In Botswana, for example, economic stress has been strongly associated with increased HIV-related risk behaviour among young women (aged 16–24 years) *(34)*. Gender-based violence limits the ability of women and girls to practice safer sex and benefit from HIV and sexual and reproductive health services; it also is associated with heightened HIV risk *(35–39)*. A systematic review of 41 studies has shown that in some regions, women who experience intimate partner violence are on average 1.5 times more likely to be living with HIV than women who have not experienced such violence *(40)*.

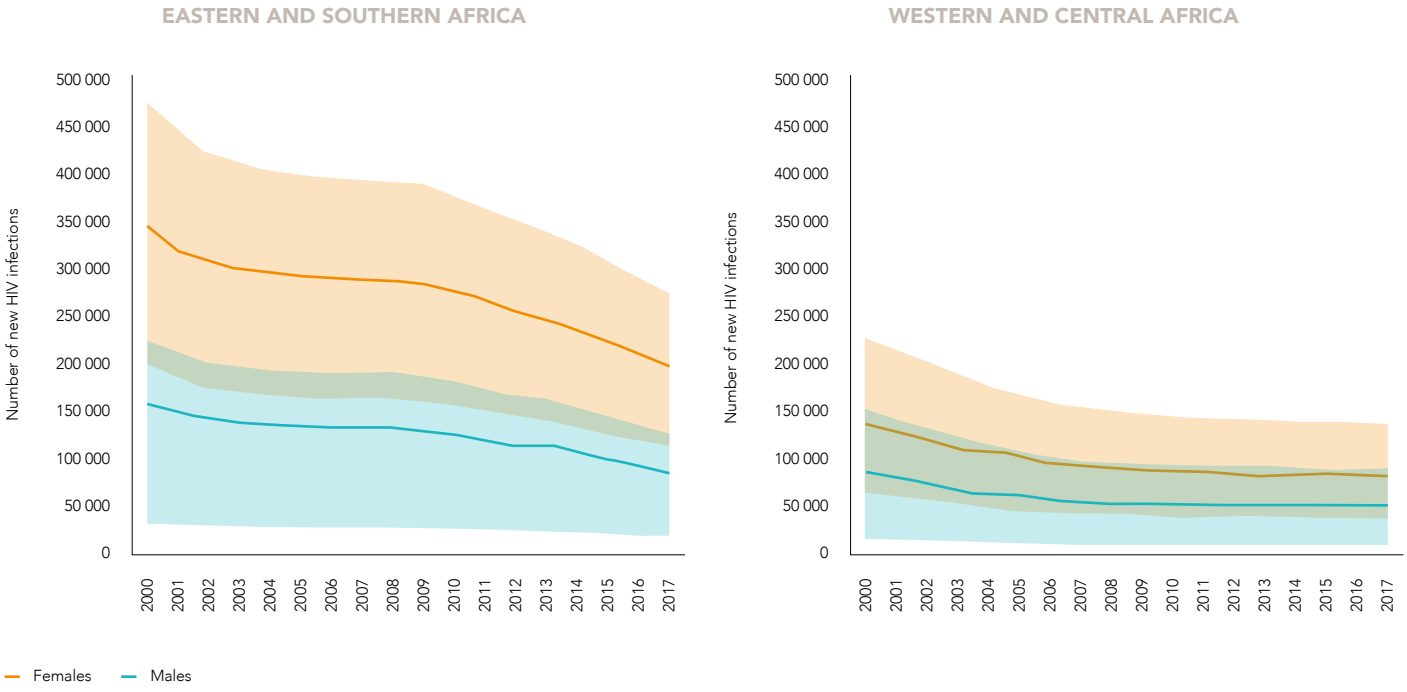
The effects are strikingly evident in sub-Saharan Africa, especially among young women. For every three new infections among young men (aged 15–24 years) in eastern and southern Africa, there were seven new infections among young women of the same age. In western and central Africa, for every three new infections among young men (aged 15–24 years), there were five new infections among young women of the same age (Figure 8.5).

In other regions, gender inequalities and violence systematically put women in harm's way. A study among women at high risk of HIV in four cities in the United States, for example, found financial insecurity played a fundamental role in fuelling their HIV risk, with economic need pushing some of the women into sex work *(41)*. A meta-analysis of studies from the United States and Haiti has suggested that intimate partner violence is associated with significantly lower adherence to treatment and lower levels of viral suppression *(42)*.

Continued on page 129

FIGURE 8.5 **Young women at high risk of HIV**

Number of new HIV infections among young people (aged 15–24 years), by sex, eastern and southern Africa and western and central Africa, 2000–2017



Source: UNAIDS 2018 estimates.

REACHING PEOPLE IN NEED

Féminas: helping transgender women find their path in Peru

As a transgender activist, Leyla Ariana Huerta doesn't use placards or protests as her principal method of fighting for the rights of transgender women in Peru—rather, she uses her empowerment and self-confidence.

Transgender people around the world endure high levels of stigma and discrimination that affects most aspects of their lives, including access to education, employment, housing and essential services. Statutory discrimination often underpins these discriminatory practices and attitudes, disenfranchising transgender people and aggravating their vulnerability to HIV and other health threats *(50, 51)*. Intolerance and discrimination often takes the form of outright abuse and violence *(52)*.

These challenges don't stop Ms Huerta. In fact, they motivate her.

"I do it because anger moves me, from seeing so much injustice committed against us and how easily society judges us without analysing the full picture. It's our turn to live, our turn to grow," she said.

Through this conviction, Ms Huerta founded the non-profit organization Féminas, which aims to help transgender women to respond to the challenges they face. Transgender women gather twice a week in the organization's building on a quiet residential street, where they laugh, cry and talk to one another in group therapy sessions. By speaking freely and openly about their hardships, Ms Huerta says they help one another to find solutions and strengthen themselves.

"The more transgender women are empowered, the more we can help society understand us and we can start to collectively change the way people think," says Ms Huerta. However, she explains that while Peruvian society may accept transgender people, there is no social or legal framework that protects them, which makes them vulnerable. "We have to make ourselves stronger in order to truly demand equal treatment from the government," she said.

Legal recognition through a gender identity law would allow transgender people to identify with their desired name and gender on official documents, such as identification cards, which is a huge step towards fair and equal treatment of transgender people in Peru. Although a gender identity bill was presented to Peru's Congress of the Republic in 2016, the likelihood of it passing is low.

"Everything is a challenge, because we have nothing, absolutely nothing," she said.

Ms Huerta has used her personal struggle to help other transgender women in their path towards self-confidence and self-realization. "Now they have clear concepts about what we are and what we are not," she said. "That's important, because it makes them love themselves more and demand their rights. We all feel we're building something."

Although Ms Huerta says it's only the beginning of a long fight for rights, she remains positive. She concluded, "what I hope for the future is to be able to live with full freedom, so we can realize our fullest potential and new generations have opportunities from a young age."

Continued from page 127

DISCRIMINATION BASED ON SEXUAL ORIENTATION AND GENDER IDENTITY

Prevailing gender norms in many cultures vilify sexual minorities and sanction, discrimination and violence against lesbian, gay, bisexual, transgender and intersex (LGBTI) people and men who have sex with men. As noted by the Office of the United Nations High Commissioner for Human Rights (OHCHR), people from the LGBTI community experience egregious violations of their human rights, including a proliferation of violence, discrimination and hate speech *(43, 44)*.

There is increasing evidence that many LGBTI people have lower education outcomes due to discrimination, bullying and violence. They also experience higher unemployment rates and often lack access to adequate housing and financial services. As a result, the World Bank estimates that LGBTI people are likely to be overrepresented in the poorest 40% of populations *(45)*. Recent research in Thailand, for example, shows that three quarters of transgender people, half of gay men and two thirds of lesbian respondents said their job applications were refused because of their sexual orientation or gender identity *(46)*.

In such a climate, access to HIV, sexual and other health services is difficult, augmenting an already high risk of HIV infection and blocking access to services. Surveys in Burkina Faso, Côte d'Ivoire, Eswatini and Lesotho show that 10–40% of gay men and other men who have sex with men who are living with HIV avoid or delay health care due to fear of stigma from health-care providers *(47)*.

Recent years have seen a groundswell of action on the rights of LGBTI people. The UN Human Rights Council has passed a series of resolutions on LGBTI rights, the most recent of which came in 2016 and called on all states to act forcefully to end violence and discrimination faced by people on the basis of their sexual orientation and gender identity *(48)*. Working with UNAIDS and the United Nations Development Programme (UNDP), the World Bank is developing a social inclusion index that reflects sexual orientation and gender identity *(49)*.

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9. Violence

AT A GLANCE

1 More than one third of women worldwide have experienced physical and/or sexual violence, often at the hands of their intimate partners.

2 Violence or the fear of violence can block women's access to HIV and sexual and reproductive health services.

3 Community-based social interventions that include combined livelihood and training interventions have been shown to reduce intimate partner violence.

4 Rates of sexual and physical violence experienced by key populations are often high, sometimes affecting more than half of those surveyed.

5 Violence inhibits the ability of sex workers to protect themselves against HIV and other health threats.

Progress and gaps

Violence pervades the lives of millions of people across the world. In 2016, interpersonal and collective violence claimed the lives of an estimated 560 000 people, about two thirds of whom were the victims of murder *(1)*. Tens of millions more people are left physically and emotionally scarred by violence. The costs weigh heavily on the victims and their families and on the communities and societies in which they live.

Gender-based violence is one of the most prevalent human rights violations in the world. This global phenomenon shapes the daily lives of women and girls and members of sexual minorities everywhere. It harms their health, robs them of their dignity and deprives them of their security and autonomy. It is also a major barrier to the benefits of essential health care and other services, including services for preventing and treating HIV infection.

Efforts to prevent violence against women and girls—and against members of sexual minorities—require a foundation of laws and policies to end the widespread impunity of perpetrators. They also demand specific interventions that protect sex workers and lesbian, gay, bisexual, transgender and intersex (LGBTI) people *(2)*. The effects of such changes are likely to be stronger and more sustained if they are supported by interventions that also change harmful norms of manhood and male entitlement, and that shift social norms around gender inequality and violence *(3)*.

VIOLENCE AGAINST WOMEN AND GIRLS

More than one third (35%) of women worldwide have experienced physical and/or sexual violence, often at the hands of their intimate partners *(4)*. Survey data from 74 countries show that 18% of ever-married or partnered women (aged 15–49 years) globally experienced physical and/or sexual violence by an intimate partner in the past 12 months *(5)*. Prevalence of recent intimate partner

violence ranged from 7% in western and central Europe and North America to 21% in Asia and the Pacific and eastern and southern Africa (Figure 9.1). Teenage girls are especially vulnerable: in 27 of the 45 countries with recent age-disaggregated data, young women aged 15–19 years reported a higher prevalence of recent intimate partner violence than women aged 15–49 years *(5)*.

The vulnerability of young women is strikingly evident in a recent study in Kenya among women aged 15–24 years. Almost one in five (19%) of these young women had been sexually assaulted or abused by an intimate partner in the previous 12 months, and almost one in four (24%) had suffered sexual violence at the hands of a non-intimate partner *(6)*. The findings underscore the need to screen for sexual violence history and provide post-violence care as part of HIV prevention programmes for young women.

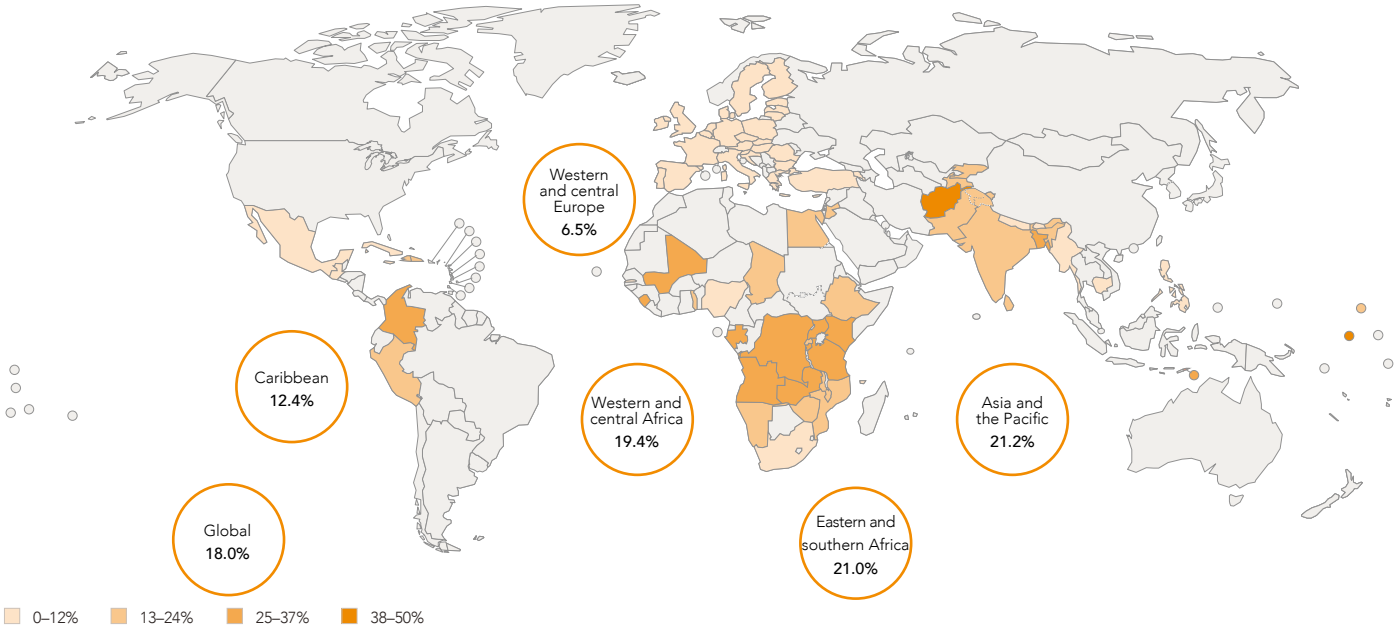
Women who have been physically or sexually abused by their partners report higher rates of several important health problems than other women: mental health issues (including depression and anxiety), higher use of alcohol and less control over sexual decision-making. A global review found women who have experienced violence are 16% more likely to have a baby with a low birth weight and almost twice as likely to experience depression. In some regions, they are 1.5 times more likely to acquire HIV than women who have not suffered partner violence *(4)*.

Violence also deters people from disclosing their HIV status to partners, family and health workers, which limits opportunities to receive vital support and care. Violence or the fear of violence can make it very difficult for women to insist on safer sex and to use and benefit from HIV and sexual and reproductive health services *(7–9)*. In some studies, women living with HIV who experienced intimate partner violence were significantly less likely to start or adhere to antiretroviral therapy, and they had worse clinical outcomes than other HIV-positive women *(10, 11)*. Women who experience violence also are less likely to adhere to both pre-exposure and post-exposure prophylaxis *(12, 13)*.

Violence against women is closely associated with gender norms that prize male dominance and virility, and that require women and girls to be submissive *(14, 15)*. Men continue to hold power and privilege over women, and many try to maintain those advantages by threatening or using violence. Despite this, experience also suggests that men are willing and able to reject harmful versions of masculinity and embrace alternative, gender-equitable norms. There are increasing efforts to engage men in promoting gender equality and improving the health of both men and women *(16)*. These tend to be small, intensive interventions, but some have shown promise for reducing gender-based violence and strengthening communication and mutual decision-making *(17, 18)*.

FIGURE 9.1 **Intimate partner violence: a global issue**

Percentage of ever-married or partnered women aged 15–49 years who experienced physical and/or sexual violence by an intimate partner in the past 12 months, 2012–2017



Source: Population-based surveys, 2012–2017. United Nations Statistics Division, SDG Indicators Global Database. Accessed 29 June 2018 (https://unstats.un.org/sdgs/indicators/database/).

Note: Data for all countries in western and central Europe except Turkey are for women aged 18–49 years. Data coverage of regional aggregates: Global: 74 countries, 49% of 2017 population; Asia and the Pacific: 11 countries, 47% of 2017 population; Eastern and southern Africa: 14 countries, 89% of 2017 population; Western and central Africa: 8 countries, 68% of 2017 population; Caribbean: 4 countries, 90% of 2017 population; Western and central Europe: 29 countries, 60% of 2017 population. Aggregates for eastern Europe and central Asia, Latin America, North America and the Middle East and North Africa are not shown as data available reflected less than 40% of the regional population in 2017.

EMERGING EVIDENCE AND INNOVATIONS

Does economic independence reduce intimate partner violence?

Evidence shows that social interventions—especially community-based ones—and combined livelihood and training interventions can help reduce intimate partner violence *(19)*.

Several types of community-based interventions have shown promise, including the Stepping Stones participatory learning projects in southern Africa *(20, 21)*, the SASA! community mobilization programme in Uganda *(22, 23)*, and Nicaragua's Somos Diferentes, Somos Iguales *(24)*. Reviews of these and similar interventions reveal some common elements of success.

Interventions that are multidisciplinary and multisectoral tend to be more effective, such as when they span the areas of education, social protection, health provision and legal redress. Similarly, the involvement of multiple stakeholders makes a difference, including community and/or local religious leaders, health-care workers and law enforcement officials.

Projects that include culturally-sensitive dialogue about harmful gender norms and the roots and effects of gender inequalities are more likely to help shift attitudes and recast norms, especially when they also support participants with fresh skills to avoid conflict and make healthy decisions.

Finally, sustained interventions of at least six months are more likely to have a lasting effect. It is important to build the capacity of implementing organizations, community groups and local authorities to sustain this kind of programme *(25)*.

GENDER-BASED VIOLENCE DURING CONFLICT

Violence against women and girls increases during periods of conflict, with rape and other forms of sexual violence a common practice of war *(26, 27)*. Very high prevalence of sexual violence during conflict has been reported—up to 40% in eastern Democratic Republic of the Congo *(28, 29)*. Sexual violence during conflict appears to have been less prevalent in El Salvador and Sri Lanka, however, suggesting that armed groups are capable of preventing the rape of civilians, and reinforcing that those who fail to do so must be held accountable *(30)*.

Forced sex is associated with increased genital trauma, abrasions and injuries, which facilitate HIV transmission *(31)*. In addition, a woman's ability to negotiate condom use in conflict situations is greatly reduced *(32)*. These patterns of violence against women and girls underscore the need for initiatives to respond explicitly to the full range of violence that women and girls experience in conflict and post-conflict settings, including their links to HIV.

Women and girls in refugee populations also are at increased risk of gender-based violence *(33)*. In addition to other harms caused, survivors of such violence face increased risk of depression, post-traumatic stress and a range of other health complications *(34, 35)*. Unfortunately, although guidelines for action have been developed, there is currently very little evidence of successful interventions to prevent gender-based violence during conflict or against refugee populations *(36–38)*.

Sexual violence is also used against men during conflict, although national laws in some countries can have the paradoxical effect of criminalizing the victims. Rape is specifically defined in some countries as a crime committed by men against women and girls; where laws criminalize sex between males, the male victims of rape may find themselves in violation of the law *(39)*.

VIOLENCE FACED BY KEY POPULATIONS

The stigma and discrimination directed at key populations frequently takes the form of physical and emotional violence. Data from surveys conducted since 2012 show that rates of sexual and physical violence experienced by key populations are often high, sometimes affecting more than half of those surveyed (Figure 9.2). This violence often is carried out with impunity. Those experiences and the climate of fear they generate greatly compound health risks, including risk of HIV infection, and they limit access to health services *(40–42)*.

Women who inject drugs have reported high rates of sexual violence from police and law enforcement agencies *(43)*. Sex workers are at high risk of violence from intimate partners, clients and law enforcement officials. Women and girls who have been coerced or trafficked into sex work are particularly exposed to intense violence, and they are more likely to be assaulted or mistreated and to not use condoms during sex than their non-trafficked peers *(44–46)*.

One systematic review estimated that 45–75% of female sex workers are assaulted or abused at least once in their lifetimes *(47)*. Other research findings include the following:

- In a study conducted in 10 Brazilian cities, 38% of female sex workers had been physically assaulted in the previous year, and those women were less likely to use condoms consistently than peers who had not been assaulted (48).

- Among female sex workers participating in a study in Santo Domingo, Dominican Republic, almost one in five (18%) had been assaulted by a sexual partner in the previous six months (49).

- In Zambia, 61% of 1000 female sex workers participating in a study said they had experienced intimate partner violence in the previous year, and three quarters of the women said they used condoms only sporadically with clients (50).

- In Soweto, South Africa, more than half (54%) of the female sex workers participating in a study had been physically or sexually assaulted by an intimate partner in the previous year. Almost half (47%) had been assaulted by clients, and nearly one in five (19%) had been assaulted by police officers (51).

Violence, actual or threatened, inhibits the ability of sex workers to protect themselves against HIV and other health threats *(52, 53)*. In a recent six country study in sub-Saharan Africa, HIV infection was significantly associated with having been ostracized by family and friends, avoiding health-care services and experiencing verbal abuse, physical violence and/or forced sex *(54)*. A large cross-sectional study among female sex workers in Burkina Faso and Togo found that having a history of forced sex was strongly linked to having unprotected sex with clients *(55)*. According to modelling studies from Canada and Kenya, elimination of violence by clients, police and strangers could avert 17–20% of new HIV infections among female sex workers and their clients within the next decade *(56)*.

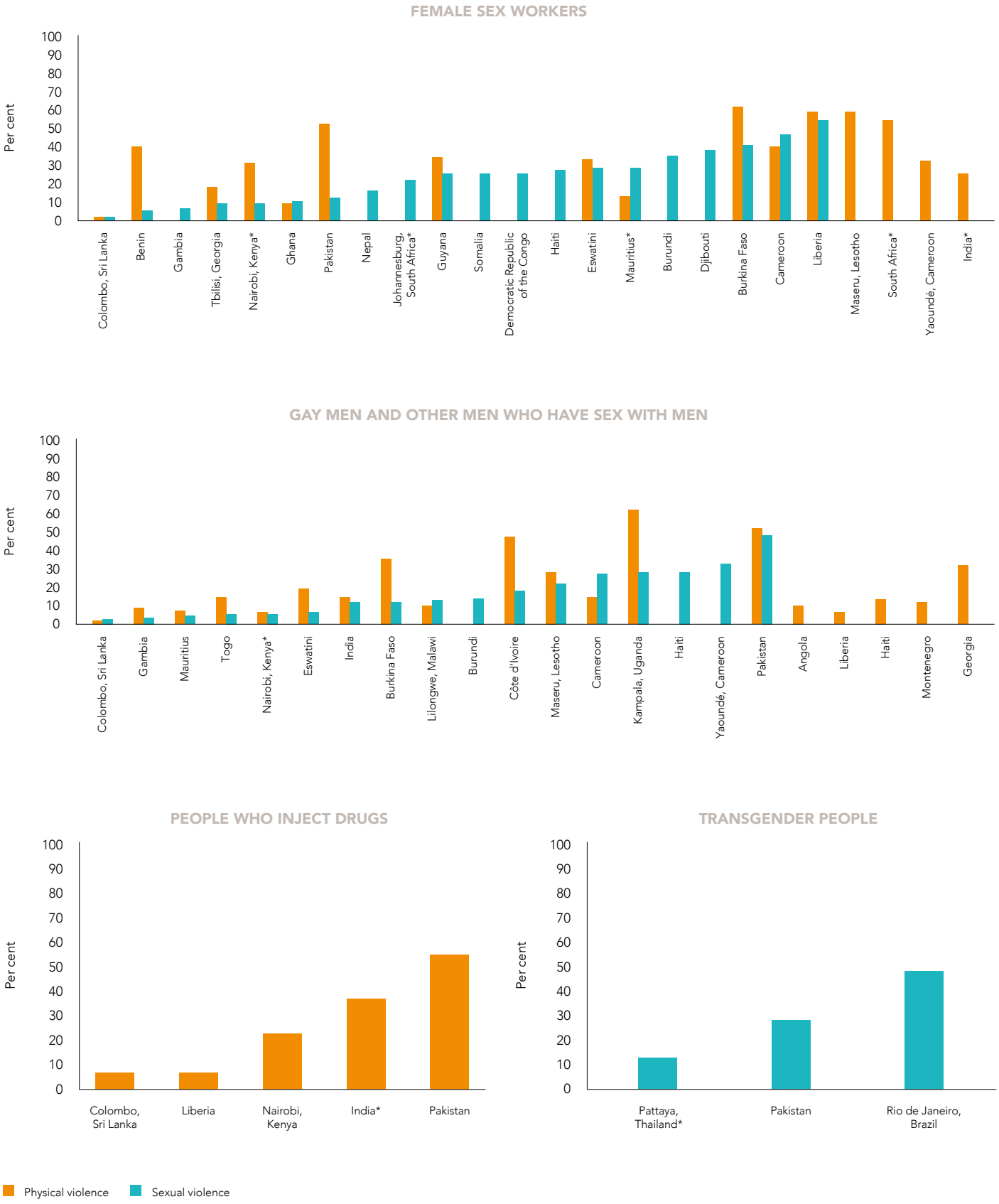
Violence against transgender people is widespread. In a study in eight sub-Saharan African countries, 33% of the transgender women surveyed said they had been physically attacked at some point in their lives, 28% had been raped and 27% said they were too afraid to use health-care services *(57)*.[2] In seven large cities in the United States of America, a survey found that one third of transgender people living with HIV had experienced sexual violence and that such experience was often associated with harmful drug use *(58)*. Other research from the United States has found that transgender women were four times more likely not to adhere to antiretroviral therapy if they had experienced recent trauma *(59)*.

Much of the violence against key populations is meted out with impunity, and some of it is carried out by the police themselves *(63)*. In a study from St Petersburg, Russian Federation, one in four (24%) women living with HIV who inject drugs stated that they had been sexually assaulted by a police officer. Injecting drug use was more frequent among survivors of violence than it was among women who had not experienced such assaults *(64)*. In 2017, only 41 countries that reported data to UNAIDS indicated they have specific legal provisions prohibiting violence against people living with HIV or people belonging to a key population.

[2] Burkina Faso, Côte d'Ivoire, Eswatini, Gambia, Lesotho, Malawi, Senegal and Togo.

FIGURE 9.2 **Frequent victims of violence**

Percentage of key populations who reported experiencing physical and sexual violence, countries with available data, 2012–2015



Source: Integrated biological and behavioural surveys, 2014–2015.

*Experienced in the past 12 months.

REACHING PEOPLE IN NEED

Supporting the rights of sex workers in Côte d'Ivoire

Singing "akouaba" (welcome), a group of young women crowded around Josiane Téty, the director of Bléty, a Côte d'Ivoire organization led by sex workers, as she arrived.

Located in Yopougon, a suburb of Abidjan, Ms Téty explained that in the centre one of the first things they do is give each other nicknames. Names such as Joy, Hope or Chance, because women, she said, often need a confidence boost and a sense of a new beginning.

"We take the time here to work on self-esteem, so that all the girls believe in themselves," she said.

Most of the women at Bléty are current or former sex workers who carry out peer outreach, ranging from HIV awareness-raising and education about HIV prevention to promoting sex workers' rights and continuing education.

"We seek to give young women opportunities and alternatives so that they are less vulnerable," Ms Téty said. Pointing towards a young woman, she said that Happiness had started beginner accounting classes.

Ms Téty and other sex workers founded Bléty in 2007 because they realized that they had little information regarding their health or their rights and hated feeling stigmatized.

"Getting an HIV test doesn't mean that you are living with HIV, but that is how we were perceived when we were seen leaving a clinic," she said.

They set out to correct that and have implanted themselves in the community.

Marie-Louise Sery came to Abidjan to work following her parents' death. She didn't have much schooling and finding a job was difficult, so she started sex work. The 30-year-old, wearing braided pigtails, admitted being completely clueless about the risks she took.

"Bléty got me out of that situation," Ms Sery said. This past year she became one of Bléty's peer educators.

Most of the time, she said, peer educators target bustling street corners to talk to sex workers, of which there are estimated to be more than 9000 in the country. Aside from handing out condoms, they also conduct rapid HIV tests and hand out cards with the contact details of Bléty's various focal points, who can be reached day and night in the event of an emergency.

"My work involves giving a lot of support and hand-holding," Ms Sery said.

Sex work is not illegal in Côte d'Ivoire, but the laws on it are vague. As a result, there is abuse and sex workers are vulnerable to violence. "We really stress to our friends out there that because they're sex workers, it doesn't mean people can take advantage of them," Ms Téty said. If they have been abused, they can call a Bléty peer educator and are accompanied to the police station or to the hospital.

Ms Téty said a recent victory had been to negotiate with doctors and health-care providers to provide a medical certificate free of charge, instead of for a US$ 35 fee. The law in the country requires a medical certificate in order to pursue a criminal case.

In its 10-year existence, Bléty has fended off pressure from the police and residents to change their attitudes towards sex work. Bléty has educated the police as well as sex workers in order to break the climate of mistrust between them.

"We have established good relationships with police, but there is a high turnover, so it can get frustrating to start all over again," Ms Téty said.

Overall, she remains optimistic. Testing for HIV and other sexually transmitted infections among sex workers is up, lawyers have stepped in to give legal advice and she sees her centre growing further.

EMERGING EVIDENCE AND INNOVATIONS

Addressing sexual violence experienced by sex workers in the Dominican Republic

Female sex workers in Santo Domingo, Dominican Republic, are exposed to high levels of violence and face high risk of HIV infection. The Abriendo Puertas pilot study was set up to help protect and support female sex workers living with HIV. About 250 women participated in the initial study, with another 90 joining in 2015–2016.

Among the women participating in the project, 18% had been sexually assaulted by a partner in the previous six months *(49)*. Rather than being perpetrated by clients, most of the violence was at the hands of boyfriends and other regular partners. In addition to the physical and emotional trauma, the violence had numerous negative HIV treatment and care outcomes. Stress and depression caused by the violence are particularly common reasons for poor retention in care and weak treatment adherence among the women.

Abriendo Puertas employs a set of multilevel interventions to support the health and well-being of the women who join the project. They include individual counselling, peer navigation, sensitivity training for health workers and community mobilization among the sex workers. Participants have reported a sense of improved well-being, self-esteem and resilience, which has enabled several of them to leave abusive relationships *(49)*.

Male members of key populations are not spared violence and abuse. Among gay men and other men who have sex with men surveyed across 17 countries, the percentage who had experienced physical violence in the previous 12 months ranged from 2.6% in Colombo, Sri Lanka, to 62% in Kampala, Uganda *(60)*. In the eight country study from Africa cited above, 22% of gay men and other men who have sex with men reported having been physically assaulted at some stage, 14% said they had been raped, 15% were too afraid to walk in public spaces and 20% were afraid to seek health care *(57)*. Other studies in Africa and Asia have yielded similar evidence *(61, 62)*. In Thailand, for instance, 18% of young male sex workers said they had been forced into sex, typically by someone they knew. The first assaults often had occurred during adolescence *(62)*.

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10. Marginalization

AT A GLANCE

1 Poorer access to health services, higher HIV prevalence and increased AIDS-related mortality have been observed among indigenous peoples in Brazil, Canada, Indonesia and Venezuela.

2 Migration itself is not a risk factor for HIV, but it can place people in situations that increase their risk of infection.

3 Studies from Europe have shown that migrants diagnosed with HIV are more likely to present late for treatment and care than nationals.

4 Refugees face huge challenges that can seriously affect their health and limit their access to HIV services.

5 Despite heightened HIV transmission risk in prisons, HIV prevention services appear to be rare.

Progress and gaps

Empowerment and inclusion are at the core of the 2030 Agenda for Sustainable Development, but moving from commitment to action has been a struggle. An increasingly globalized world brings opportunities for hundreds of millions of people to lift themselves from poverty, but it has had detrimental impacts for others. Indigenous peoples often struggle to maintain their cultures and sustainable livelihoods within more integrated economic, political and cultural landscapes *(1)*. Migration is a central feature of globalization, but people who migrate for economic reasons are exposed to many risks—and sometimes open hostility—in their new homes. Others migrate for more urgent reasons, fleeing conflict, natural disasters and other humanitarian emergencies that can leave them extremely vulnerable and in desperate need of assistance. Prisoners and detainees are deliberately marginalized and isolated by governments and other authorities—often for very good reasons—but they have basic rights, including a right to health, that must be upheld.

INDIGENOUS PEOPLES

Although incomplete, the existing data reveal alarming health disadvantages for indigenous peoples, even in wealthy nations. There are an estimated 370 million indigenous peoples living in approximately 90 countries around the world, the majority of them residing in Asia *(2)*. These peoples are often systematically marginalized and discriminated against.

Historically, indigenous peoples have suffered the ruinous impact of colonization and efforts to eradicate their cultures and languages through suppression or assimilation. These conditions—combined with disrupted livelihoods, material deprivation and limited access to essential services—restrict the life chances of indigenous peoples and increase their risks of poor health and poverty *(3)*. In particular, indigenous women and girls face layers of discrimination and hardship. Many communities struggle with high unemployment, poor housing and living conditions, alcoholism and drug use.

In recent decades, indigenous people in some regions have succeeded in obtaining greater recognition and increasing their political power. There have been significant advances in international recognition of and action on indigenous issues and rights, including the landmark adoption of the United Nations Declaration on the Rights of Indigenous Peoples in 2007. However, those gains generally have not yet translated into reduced poverty and improved health *(4)*.

Studies examining the health status of indigenous peoples routinely show that their health and well-being are substantially poorer than that of the general population, even in wealthy countries *(5)*. In contrast, disease and mortality rates among aboriginal peoples are typically much higher—and their nutrition status is much lower—than what is found among the general population *(3, 6)*.

In the United States of America, for example, health outcomes among the country's 5 million indigenous peoples are worse on average than for other Americans. Their average life expectancy is more than five years shorter than that of the overall population in the United States, and they have higher rates of injury, suicide, respiratory diseases and chronic liver disease *(7)*. Those outcomes appear to be associated with disproportionate poverty, inadequate education and poor access to health services *(7)*.

Similarly, indigenous peoples in Canada have a shorter life expectancy on average and bear a greater burden of chronic diseases (including communicable diseases) than the rest of the country's population. Indigenous peoples represent about 4.3% of Canada's total population, but they had 17% of the tuberculosis burden in 2015 and accounted for 21% of new HIV infections in 2016 *(8, 9)*. Injecting drug use is a major risk factor: it was associated with 60% of new HIV infections among indigenous peoples in 2016 *(9)*.

In studies from Canada, indigenous peoples living with HIV who are accessing antiretroviral therapy are consistently less likely to be virally suppressed than their non-indigenous counterparts. Analysis of data for people who had started treatment between 2000 and 2012 in three Canadian provinces (British Columbia, Ontario and Québec) showed that the treatment outcomes for indigenous patients were poorer than that of Caucasian patients, and that their mortality rates were higher *(10)*.

In Indonesia, researchers have found that Papuans living with HIV face dual discrimination from Indonesian health-care providers due to their HIV status and ethnicity. The remoteness of their highland communities also hinders access to treatment services, which are typically located in towns and cities *(11)*.

HIV studies among indigenous peoples elsewhere are scarce. Very high HIV prevalence (9.6%) has been reported among the Warao people in Venezuela, although it reached up to 35% in one male group, according to a 2013 study *(12)*. The Warao live in isolated villages in Venezuela's Orinoco Delta, a remote region with almost no access to formal medical care, including antiretroviral therapy. The communities experience major health, social and nutritional problems, and they have the highest prevalence of tuberculosis in the country *(13, 14)*. Worsening their predicament is the collapse of Venezuela's health system over the past few years amid falling government revenue, cuts to public health spending, and economic and social instability *(15)*.[1]

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[1] Health data from Venezuela are now rare, so it is unlikely that recent prevalence or mortality data will be available for the Warao people. Researchers speculate that same-sex sexual relations between men, especially before they are married, is an important route for HIV transmission among the Warao. The strain of HIV found among the Warao is particularly virulent and leads to the rapid development of HIV-related illnesses, including tuberculosis.

REACHING PEOPLE IN NEED

Traversing rivers and jungles to reach indigenous peoples in remote parts of Brazil

Brazil is home to almost 900 000 indigenous peoples, with indigenous lands representing more than 12% of the country. A groundbreaking project that brought HIV and syphilis services to the Amazonas and Roraima people inspired health policy change for indigenous peoples.

Indigenous health worker Jijuké Hukanaru Karajá works as a nurse in the Indigenous Health District of Araguaia, named after one of Brazil's major rivers located in the eastern Amazon basin. She has been working with indigenous peoples for many years and criss-crosses between Brazil's cities and indigenous villages to provide crucial health services. Ms Karajá feels very proud to be a part of the Brazilian indigenous public health system, having followed in her father's footsteps.

"I've worked in town and in my indigenous village with my own people, and it's extremely gratifying to help them in this way," she said.

Ms Karajá believes that being indigenous eases communication and cultural differences. HIV and syphilis prevalence remains low among indigenous peoples in Brazil, but she fears that growing interaction with nearby cities will change that.

Established in 2010, the indigenous health services deliver services to every indigenous community, regardless of their remoteness. An 800-strong team of doctors, nurses, health-care technicians, psychologists, advisers and indigenous health workers work tirelessly, covering huge distances. They carry out tests for HIV, syphilis and other sexually transmitted infections. According to Ms Karajá, indigenous communities welcome them.

"Testing always follows a series of talks and workshops in villages about prevention of HIV and other sexually transmitted infections, and so the whole process flows naturally," she said. If anyone tests positive for HIV, immediate counselling is available. Importantly, in the scope of this unique system, all HIV response efforts incorporate cultural beliefs.

"To help my people, I have to help them understand what health really means to them."

Over a decade ago, a groundbreaking project pioneered by Adele Benzaken, at the time a researcher at Fundação Alfredo da Matta in Manaus, received funding from the Bill & Melinda Gates Foundation to test more than 46 000 indigenous peoples within their own communities. Activities focused notably in Amazonas and Roraima, remote forested states that are home to more than half of the indigenous peoples in Brazil. Stopping gender-based violence and keeping children from being born with congenital syphilis and HIV were among their priorities.

"Before the project, this indigenous population had very little access to any kind of diagnosis, treatment and prevention," remembers Ms Benzaken, who today runs the national STI, AIDS and Viral Hepatitis Department of the Ministry of Health in Brazil. "They were vulnerable and didn't have access to programmes."

In 2012, rapid testing became a public policy for Brazil's indigenous and general population. In five years, rapid HIV test distribution to the 34 operating indigenous health districts almost tripled to 152 000 in 2017; syphilis rapid test distribution more than doubled to more than 65 000 in the same year.

By boat, road and foot, health workers travel across the vast territories to test, raise awareness and discuss preventive methods, such as condoms.

"Testing always follows a series of talks and workshops in villages about prevention of HIV and other sexually transmitted infections, and so the whole process flows naturally."

Brazil is home to almost 900 000 indigenous peoples, with indigenous lands representing more than 12% of the country. Altogether, the country has 305 ethnicities speaking 274 different languages. The largest ethic group among them are the Tikuna.

Vinicios Ancelmo Lizardo—or Pureenco, in his original Avaí indigenous name—works as a health worker mainly in the Amazon region. "To help my people, I have to help them understand what health really means to them," he said. Before explaining HIV prevention to a group of Tikuna in their own language, he speaks to them about love, sex and freedom, and he makes them laugh by teaching them—with the help of a lifelike dildo—how a male condom should be used.

Mr Lizardo admits that breaking cultural barriers and building bridges between science and tradition is challenging. But he knows that as most indigenous communities can no longer stay isolated, they cannot be left behind.

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ECONOMIC MIGRANTS

In a globalized world, many millions of people move within countries and across frontiers in search of work and economic opportunity. Their circumstances vary widely, but many encounter insecurity and precarious conditions that threaten their health *(16)*. Large numbers of migrants are undocumented, live on the margins of local communities and are excluded from health and social services. In Asia, for example, large numbers of migrants tend to settle on the peripheries of growing cities, where they face environmental and other threats to their health and well-being, threats that will intensify with climate change *(17)*.

The status of migrant workers as a vulnerable population is codified in the International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families, yet hardly any of the major importers of labour are among the 48 states that have ratified the Convention *(18)*. This exposes migrant workers to multiple predicaments, especially if their legal status disqualifies them from holding health insurance or accessing public health services in their host country *(19)*.

Migration itself is not a risk factor for HIV, but it can place people in situations that increase their risk of acquiring it. Poverty, exploitative working conditions, denied entitlements or a high background prevalence of infection at the origin or destination (or along the transit route taken) are among the factors that influence the risk of HIV, tuberculosis and other infections among migrants *(20)*. Studies from Europe have found that HIV and tuberculosis often disproportionately affect migrant populations compared to nationals, with prevalence highest among migrants from sub-Saharan Africa *(21, 22)*. Data from China indicate that migrants are at greater risk of HIV infection than the general population, with HIV prevalence highest among female migrants *(23)*.[2] Prevalence of other sexually transmitted infections and viral hepatitis was also higher among Chinese migrating from rural to urban areas than it was among the general population *(24)*.

Hardships faced after migration can increase the risk of HIV infection, as shown in a study among migrant women from sub-Saharan Africa living in Paris, France. Women who acquired HIV after migration were more likely to have been subjected to forced sex than their HIV-negative peers. Not having a residence permit and lacking stable housing were associated with higher HIV risk *(25)*. In Uganda's Rakai district, recently arrived migrants were found to have higher HIV risk than settled migrants: they had a 1.6% annual HIV incidence, compared to an incidence of 1.0% among long-term settled migrants *(26)*.

A host of factors can hinder migrant workers from accessing the health-care services they need, including irregular immigration status, language and cultural barriers, user fees, a lack of migrant-inclusive health policies and inaccessible services *(20)*. A review of the situation in Europe found that due to a range of formal and informal barriers, undocumented migrants mostly had access only to emergency care, even in countries where they were fully entitled to health care *(27)*. Other studies from Europe have shown that migrants diagnosed with HIV are more likely to present late for treatment and care than nationals *(22)*. Migrants in Europe with HIV–tuberculosis coinfection were especially prone to treatment failure, drug-resistant tuberculosis and premature death *(21, 28)*. In Chile, where an estimated one third of migrant workers are undocumented or socioeconomically vulnerable, undocumented workers have limited access to health care, and many appear to shun the health-care system for fear of arrest or deportation *(29, 30)*.

Such precariousness can be addressed, as shown in a review of 33 studies conducted in Europe. Access to health-care services for labour migrants—and the quality of those services—improved when the migrants were granted access to health insurance, were able to improve their socioeconomic status (including through membership in trade unions), could obtain requisite documentation and benefited from outreach and translation services *(31, 32)*.

[2] Based on 54 studies, prevalence was 0.7% for female migrants compared with 0.06% for the overall Chinese population.

EMERGING EVIDENCE AND INNOVATIONS

Improving access to health information among migrants in France

In France, nearly half (48%) of people living with HIV diagnosed in the past 10 years were born abroad. Migrants to France come from a range of countries with a wide variety of mother tongues. In January 2016, the French Government passed legislation under the Public Health Code that explicitly sets out steps to improve access to rights, prevention and care for people whose first language is not French *(32)*.

One of the innovations is telephone access to professional interpreters for people receiving an HIV, tuberculosis or viral hepatitis test, or those who are accessing infectious disease services at state health facilities. The Ministry of Health partnered with an association of interpreters who are available 24 hours a day, can provide nationwide services in more than 100 languages and dialects, are familiar with medical and public health terminology, and are bound by the rules of medical confidentiality. More than 5000 such calls are handled every year.

France has also established the State Medical Assistance scheme for undocumented immigrants, which covers the entire cost of medical care for people who have a passport or identity card and a home address, and who have been resident in the country for at least three months *(33)*. All service providers must accept the scheme's beneficiaries, and they are forbidden from charging user fees, although studies show that compliance may be uneven *(34)*.

REFUGEES AND INTERNALLY DISPLACED PERSONS

There were almost 66 million people around the world in 2016 who had been forced to abandon their homes and communities to seek refuge elsewhere. According to the Office of the United Nations High Commissioner for Refugees (UNHCR), this is the highest number ever recorded. About 40 million of those people were internally displaced persons, and nearly 22.5 million were refugees, more than half of whom were younger than 18 years *(35)*.

Refugees endure huge challenges. In addition to the stress of displacement, they have to cope with unfamiliar and unpredictable conditions that leave them vulnerable, marginalized and deprived of many basic necessities of life—all of which may seriously affect their health *(36)*. Depending on the context and community, displaced persons may have a high burden of malnutrition and anaemia, respiratory illnesses, and treatable but poorly managed noncommunicable and infectious diseases *(37)*. They also may have an acute need for mental health and psychosocial care *(36)*.

Many host governments and some humanitarian organizations provide or facilitate access to shelter, food and essential services for these groups. However, doing so is increasingly difficult, particularly in host countries that are already struggling with their own development challenges: the top five refugee-hosting countries in 2017 were all low- or middle-income countries *(38)*.[3]

Some countries limit access to basic services and entitlements among refugees; legal and administrative hurdles frustrate their access to health care in many countries. Even if refugees are entitled to access services, they may not be aware of their entitlements *(39)*. Practical barriers—such as language difficulties, unaffordability of services, cost of transport and distance to facilities—may compound the difficulties *(40, 41)*.

In some cases, forceful restrictions apply. Host countries may impose waiting periods before granting refugees access to health-care services, and asylum seekers may have restricted access to basic health care (such as emergency care, pregnancy and childbirth care, and immunization) *(39)*. Refugees who lack documented status may be denied access entirely *(36)*.

The unfairness of these situations is widely recognized, and important steps have been taken to universalize access to health care. Signatories to the Convention

[3] Ethiopia, the Islamic Republic of Iran, Lebanon, Pakistan and Turkey.

Relating to the Status of Refugees have endorsed the principle of equity that requires host countries to provide refugees with a standard of health care similar to that which is routinely available to host nationals.

Research from Europe suggests that tight rationing of access to health care for refugees leads to delayed care and ultimately increases health expenditure per person *(42)*. Instead, if adequate preventive care were available, it could generate savings for health-care systems by alleviating the need for costly curative care *(43)*. Increasingly, a Minimum Initial Services Package for Reproductive Health is being provided to refugees and displaced persons during the initial phases of emergencies. This package includes emergency obstetric care, management of sexual violence, condom provision and the continuation of HIV treatment *(44)*.

People living with HIV who are forced to flee their homes are in extreme danger of treatment disruption and AIDS-related morbidity. When appropriate support is provided, refugees and internally displaced persons living with HIV can sustain high levels of adherence to HIV treatment and viral suppression *(45, 46)*. One systematic review has found treatment adherence in humanitarian settings to be comparable to that in stable settings; it concluded that good clinical outcomes can be achieved even in disaster settings *(47)*. Strong social support appears to be a major factor, as shown in a study among refugees living with HIV in southwestern Uganda *(48)*. Flexible care becomes especially important in such challenging settings, including the use of simplified medical protocols, multimonth antiretroviral prescriptions and community-based approaches *(49)*.

EMERGING EVIDENCE AND INNOVATIONS

Providing health and HIV services to refugees in Uganda

Uganda hosts more refugees than any other country in sub-Saharan Africa: about 1.4 million people in 2017. About three quarters of the refugees are from South Sudan, with most of the remainder having fled from Burundi, Democratic Republic of the Congo and Somalia.

A network of health services for refugee settlement has been integrated into Uganda's district health systems. About 95 such health service points were operating in 2017, and 40% of them were accredited by the Ministry of Health to provide HIV and tuberculosis services.

On the eastern shore of Lake Albert in western Uganda, there were about 35 000 refugees living in Kyangwali Refugee Settlement in 2017. All arriving refugees receive a basic minimum initial service package that is intended to prevent maternal and infant morbidity and mortality, prevent and treat HIV and tuberculosis infection, and prevent and manage the consequences of sexual violence. The package also includes reproductive health services.

HIV and tuberculosis services are provided at a number of health posts and facilities, including clinics managed by Médicines Sans Frontières. In 2017, 9900 people in Kyangwali Refugee Settlement were tested for HIV, and 1092 people were accessing antiretroviral therapy. Intensive treatment counselling contributed to high patient retention (89% after 12 months), and 78% of people on treatment had a suppressed viral load (< 1000 copies/ml).

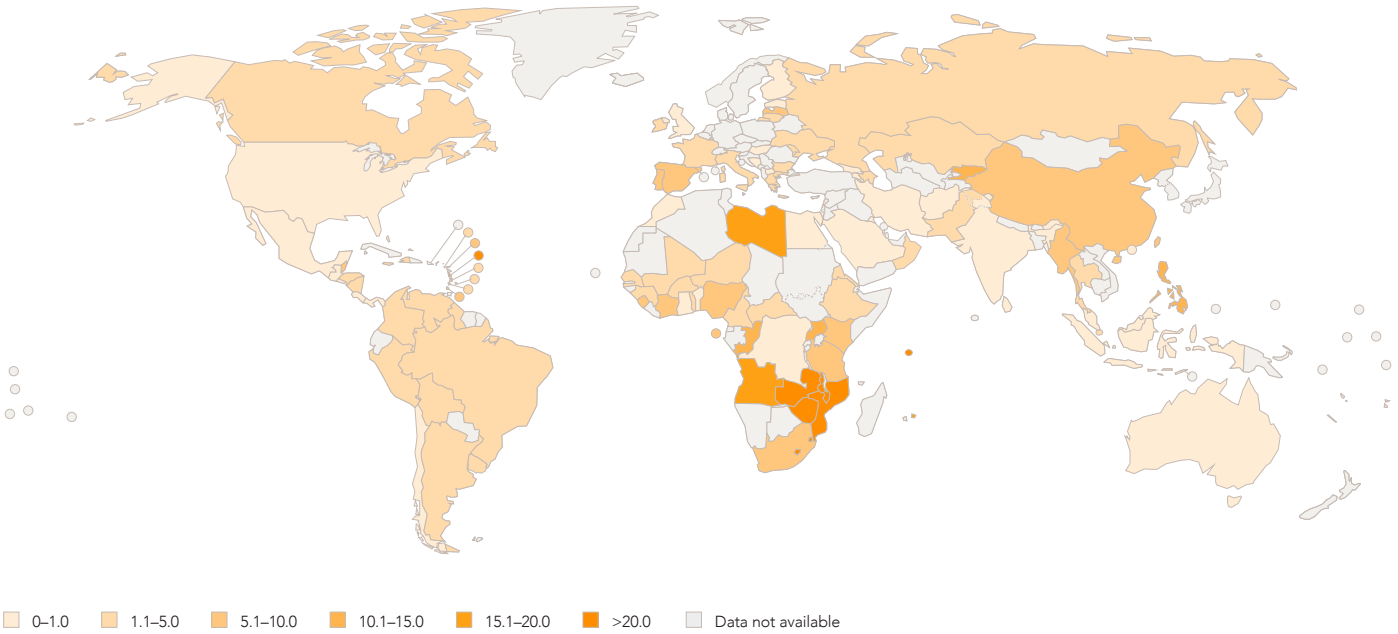
Services for eliminating mother-to-child transmission of HIV are also provided: 6487 pregnant women tested for HIV in 2017 during their first antenatal clinic visit, and antiretroviral therapy is available to all who test positive. Of the 223 infants born to mothers living with HIV, all were tested for HIV, and none were found to be living with HIV.

The population in Kyangwali Refugee Settlement keeps growing, however, and both the health staff and facilities are under pressure to maintain high levels of service coverage. Health infrastructure improvements and procurement of antiretroviral medicines and other health commodities have been a priority. As a result, there has been limited provision of primary HIV prevention services, an area that will be a focus for improvement during 2018 and beyond.

Data and information provided to UNAIDS by the Public Health Unit of the UNHCR, February 2018. Additional data taken from: Site report 2017, Kyangwali, Uganda. Kampala, Uganda: UNHCR; 2017 (http://twine.unhcr.org/ar2017/files/UG/Uganda_2017_Kyangwali.pdf).

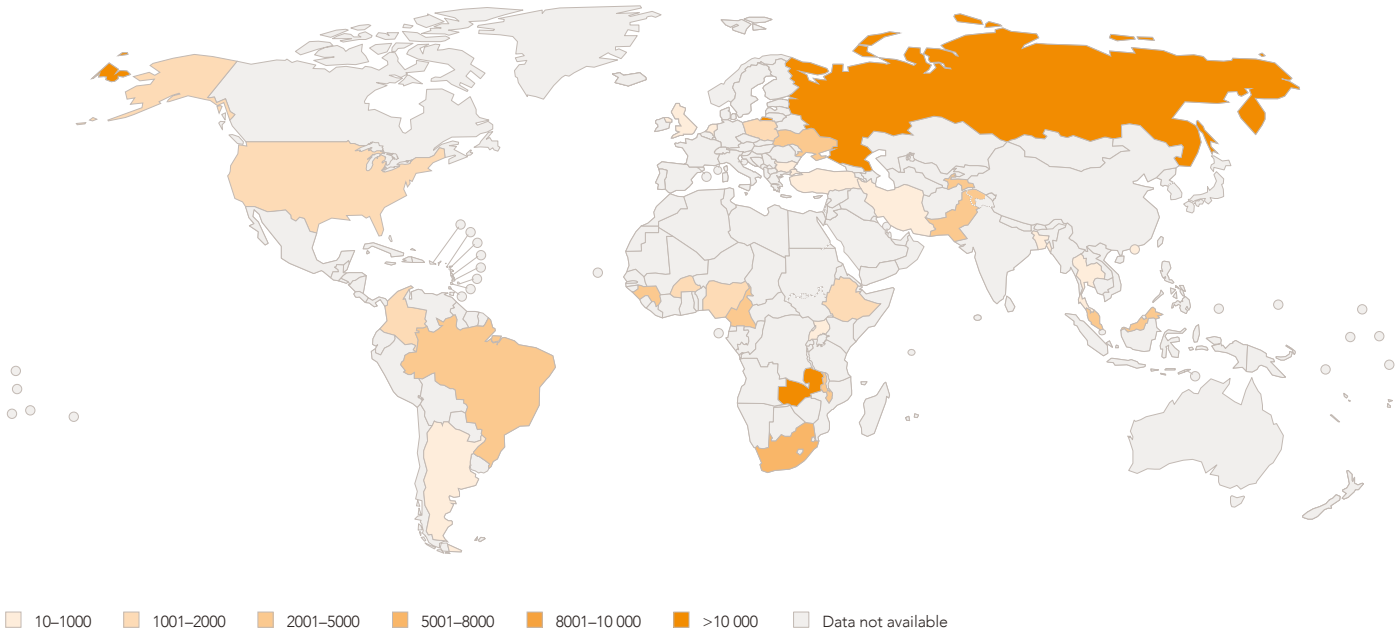
FIGURE 10.1 HIV and tuberculosis in prisons

Global and regional prevalence of HIV among prison inmates, data from 2005 to 2015



Source: Dolan K, Wirtz AL, Moazen B, Ndeffo-mbah M, Galvani A et al. Global burden of HIV, viral hepatitis, and tuberculosis in prisoners and detainees. The Lancet. 2016;388(10049):1089–1102; Global AIDS Monitoring, 2018.

Global and regional prevalence of active tuberculosis in prison inmates (per 100 000), data from 2005 to 2015



Source: Dolan K, Wirtz AL, Moazen B, Ndeffo-Mbah M, Galvani A, Kinner SA et al. Global burden of HIV, viral hepatitis, and tuberculosis in prisoners and detainees. Lancet. 2016;388(10049):1089–1102.

EMERGING EVIDENCE AND INNOVATIONS

Reaching Shan migrants in northern Thailand

Northern Thailand has been host to thousands of displaced people from the minority Shan ethnic group fleeing conflict in neighbouring Myanmar. Studies have indicated that these Shan communities are at increased risk of HIV infection, and that many individuals living with HIV were not being detected by Thailand's HIV surveillance systems *(50)*.

Researchers recently examined the factors blocking or facilitating access to antiretroviral therapy for Shan individuals living with HIV in Thailand's Chiang Mai province. The major barriers were pervasive fear of arrest and deportation, communication difficulties, social marginalization, limited knowledge about HIV and difficulty affording long-term treatment. Some of these hurdles were avoided when migrant registration services were offered in hospital settings and when outreach efforts were conducted, such as a Shan-inclusive HIV support group and Shan radio broadcasts publicizing HIV services *(51)*.

Recent policy improvements made by the Thailand Ministry of Public Health are improving service uptake. They include removing legal and policy barriers for migrants and introducing measures to reduce discrimination in health-care settings and provide appropriate services *(52)*. Migrants now have access to health insurance benefits through either the Social Security scheme or the Migrant Health Insurance plan, both of which cover HIV prevention, treatment and care services. The latter plan was extended to nonregistered migrants in 2013; within a year, 1.4 million new migrants had enrolled in the plan, which included antiretroviral therapy *(51)*.

The Migrant Health Insurance plan allows unregistered migrants to enroll in health insurance and become registered migrants simultaneously, an approach that has greatly facilitated antiretroviral therapy access for the Shan. As well as linking individuals to health care, the approach eases access to jobs, lessens anxieties about possible arrest or deportation, and reduces feelings of social marginalization *(51)*.

PRISONERS AND DETAINEES

Globally, there were more than 10.3 million people held in prisons on any given day in 2016 *(53)*. Like all people, prisoners have a right to enjoy the highest attainable standard of health, but incarceration frequently deprives individuals not only of their liberty, but also their dignity and health. Studies show that individuals with a history of incarceration are consistently more likely to acquire infectious disease and suffer from illnesses associated with stress *(54)*.

Overcrowding within prisons increases exposure to infectious diseases, such as tuberculosis and viral hepatitis, by facilitating violence and compromising nutrition and basic hygiene *(55, 56)*. Average tuberculosis incidence in prisons worldwide has been estimated at more than 20 times higher than in the general population *(57, 58)*.[4] High levels of multidrug resistant and extensively drug-resistant tuberculosis have also been reported from prisons *(59)*.

Unprotected sex, injecting drug use and the use of non-sterile tattooing instruments are common in prisons and other detention settings, heightening risk for the transmission of HIV and other infectious diseases among inmates *(55)*. In addition, some populations at high risk of HIV infection, such as sex workers and people who inject drugs, are disproportionately represented in prisons worldwide due to the existence in many countries of laws criminalizing their behaviours.

Rates of drug injection among prison inmates range from 2% to 38% in Europe, 34% in Canada and up to 55% in Australia *(60)*. In addition, incarcerated lesbian, gay, bisexual or transgender people face major risks of sexual and other violence and abuse from both other prisoners and prison staff *(62, 63)*.

[4] In the World Health Organization European Region, the only region to systematically collect data on tuberculosis in prisons, tuberculosis case notification rates are 4 to 180 higher than among the general population (61).

According to a recent systematic review, incarcerated people who inject drugs had six times the prevalence of HIV and eight times the prevalence of hepatitis C compared to non-injecting prison populations. HIV prevalence was also twice as high among imprisoned sex workers as among other prisoners *(64)*. Globally, prisoners and detainees are considerably more likely to be living with HIV, tuberculosis and/or viral hepatitis than non-incarcerated individuals (Figure 10.1) *(60)*. A major review of available data from 74 countries in all regions found that 3.8% of incarcerated people worldwide in 2014 were living with HIV, 15% had hepatitis C infection, 4.8% had chronic hepatitis B and 2.8% had active tuberculosis *(60)*.

Places of incarceration have both a public health and human rights obligation to provide necessary health services and help manage the HIV epidemic *(65)*. However, prison health-care services are often under-resourced and rights violations are more common; as a result, prisoners and detainees in many countries receive delayed and substandard health care *(66)*. Despite the heightened transmission risks, HIV prevention services appear to be rare. In Ukraine, for example, fewer than 10% of prisoners had access to information about HIV, the means for protecting themselves against infection (including access to condoms and sterile injecting equipment) and opportunities to voluntarily take an HIV test *(67)*.

Needle and syringe exchange services were available in prisons in only three of the 79 countries with data made available to UNAIDS in 2018: Kyrgyzstan, the Republic of Moldova and Tajikistan. Opioid substitution services were available in at least some prisons and detention facilities in 21 of the 79 reporting countries. Canada announced in May 2018 that it would implement a prison needle exchange programme at two penitentiaries as part of a phased roll-out of services *(68)*.

When antiretroviral therapy is made available within prisons and other closed settings, very high rates of viral suppression can be achieved in closed settings. According to data from Canada's Correctional Services department, 94% of prison inmates diagnosed with HIV received antiretroviral therapy in 2016–2017, and 91% of them were virally suppressed *(68)*.

EMERGING EVIDENCE AND INNOVATIONS

Reaching into prisons

The United Nations Office on Drugs and Crime (UNODC) has been supporting 10 countries in eastern and southern Africa (as well as the Republic of Moldova, Ukraine and Viet Nam) to increase access to a comprehensive package of 15 interventions for HIV in places of incarceration. These interventions are as follows:

1. Information, education and communication.
2. Condom programmes.
3. Prevention of sexual violence.
4. Drug dependence treatment, including opioid substitution therapy.
5. Needle and syringe programmes.
6. Prevention of transmission through medical or dental services.
7. Prevention of transmission through tattooing, piercing and other forms of skin penetration.
8. Post-exposure prophylaxis.
9. HIV testing and counselling.
10. HIV treatment, care and support.
11. Prevention, diagnosis and treatment of tuberculosis.
12. Prevention of mother-to-child transmission of HIV.
13. Prevention and treatment of sexually transmitted infections.
14. Vaccination, diagnosis and treatment of viral hepatitis.
15. Protecting staff from occupational hazards *(69)*.

With support from UNODC and partners, Viet Nam is scaling up opioid substitution therapy in prisons following a successful pilot programme at Phu Son Prison. The pilot project was launched in late 2015 on the recommendation of top prison officials following a study visit to prison-based methadone programmes in Spain. Among the lessons was the importance of prison leadership and close collaboration with community-based opioid substitution therapy service units when scaling up these interventions.

In 2017, UNODC provided technical support to 60 prisons and trained Vietnamese prison health-care workers to improve access to quality HIV counselling and testing services and to enhance continuity of HIV care and treatment for people in prisons. After assessing the capacity for monitoring and evaluating these services, UNODC also supported the development and launch of an electronic tool for monitoring the HIV epidemic and services in prisons, including hands-on training for prison health staff.

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11. Laws and policies

AT A GLANCE

1 Laws and policies aimed at discouraging behaviours deemed culturally or religiously inappropriate can legitimize stigma and give license to discrimination and harassment, isolating people who are at high risk of HIV infection and hindering them from accessing vital HIV and health services.

2 Among 100 countries that reported data to UNAIDS in 2017, 44 stated they had laws specifically criminalizing same-sex sexual intercourse.

3 About three quarters of reporting countries criminalize some aspect of sex work, and 87% criminalize drug use or possession of drugs.

4 Nearly half of reporting countries said they had laws that criminalize HIV transmission, non-disclosure or exposure.

5 More than two thirds of reporting countries require parental consent for a child under 18 years to access HIV testing, and more than half require parental consent for HIV treatment.

Progress and gaps

Rule of law is a powerful determinant of health, equity and sustainable development *(1, 2)*. Laws and policies that promote and protect human rights can improve people's well-being and health, reduce their vulnerability to the HIV epidemic and other major health threats, and enhance the reach, quality and effectiveness of important health services.

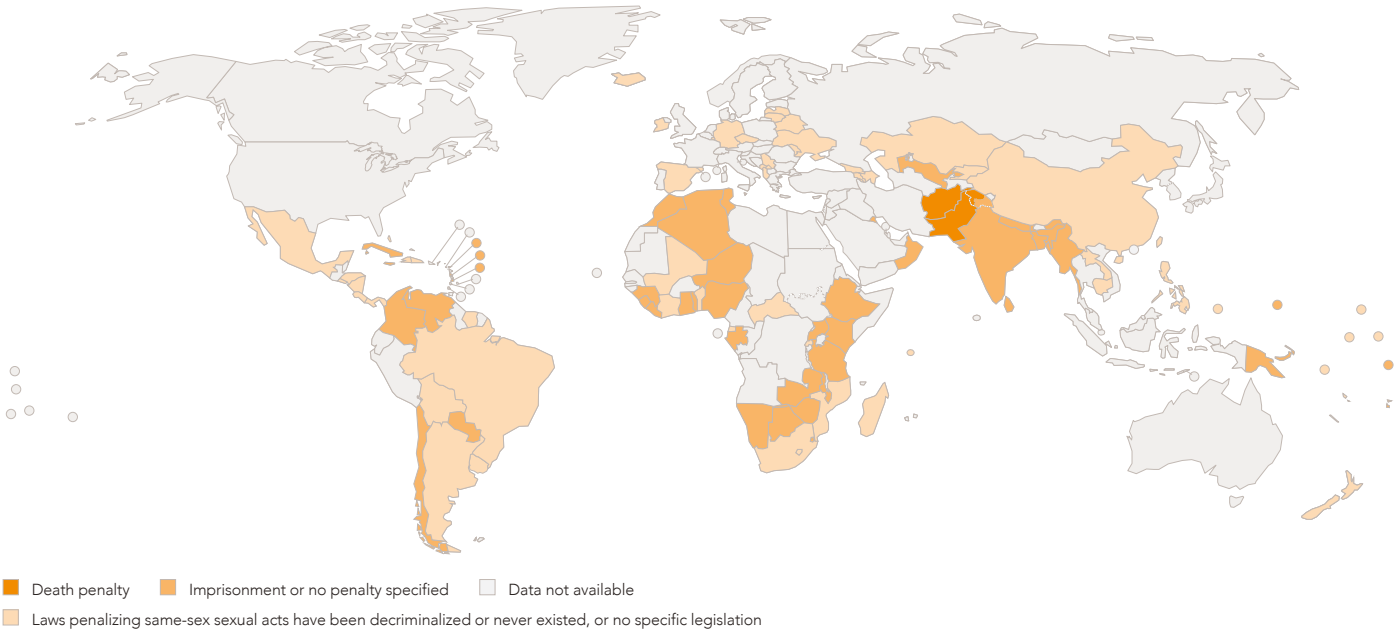
In its landmark 2012 report, *HIV and the law: risks, rights and health*, the Global Commission on HIV and the Law documented the enormous potential of law to improve the lives of people living with HIV. It also noted the harm that is done when legal systems fail to protect people from discrimination and other rights violations, and when the criminalization of certain behaviours puts people's health at risk *(3)*. Importantly, the Commission stressed that the existence of supportive laws and policies is not enough: they must be enforced, and people must have recourse to an accessible and effective legal system.

CRIMINALIZATION OF HIV RISK BEHAVIOURS

Laws and policies aimed at discouraging behaviours deemed culturally or religiously inappropriate can legitimize stigma and give license to discrimination and harassment, isolating people who are at high risk of HIV infection and hindering them from accessing vital HIV and health services. This, in turn, elevates their risk of HIV acquisition. Overly broad criminalization of HIV non-disclosure, exposure or transmission also deters people from seeking to know their HIV status or from accessing HIV services.

FIGURE 11.1 **Forcing gay men and other men who have sex with men into hiding**

Criminalization of same-sex sexual acts, global, 2017



Source: 2017 National Commitments and Policy Instrument.

Legislation that bans sexual intercourse between consenting adults of the same sex can derail efforts to provide HIV and health services to gay men and other men who have sex with men. Among 100 countries that reported data to UNAIDS in 2017, 44 stated they had laws specifically criminalizing same-sex sexual intercourse. The death penalty applied in two countries, 29 countries reported having criminalizing laws that specified imprisonment of up to 14 years and five countries had laws that specified imprisonment from 14 years to life (Figure 11.1).

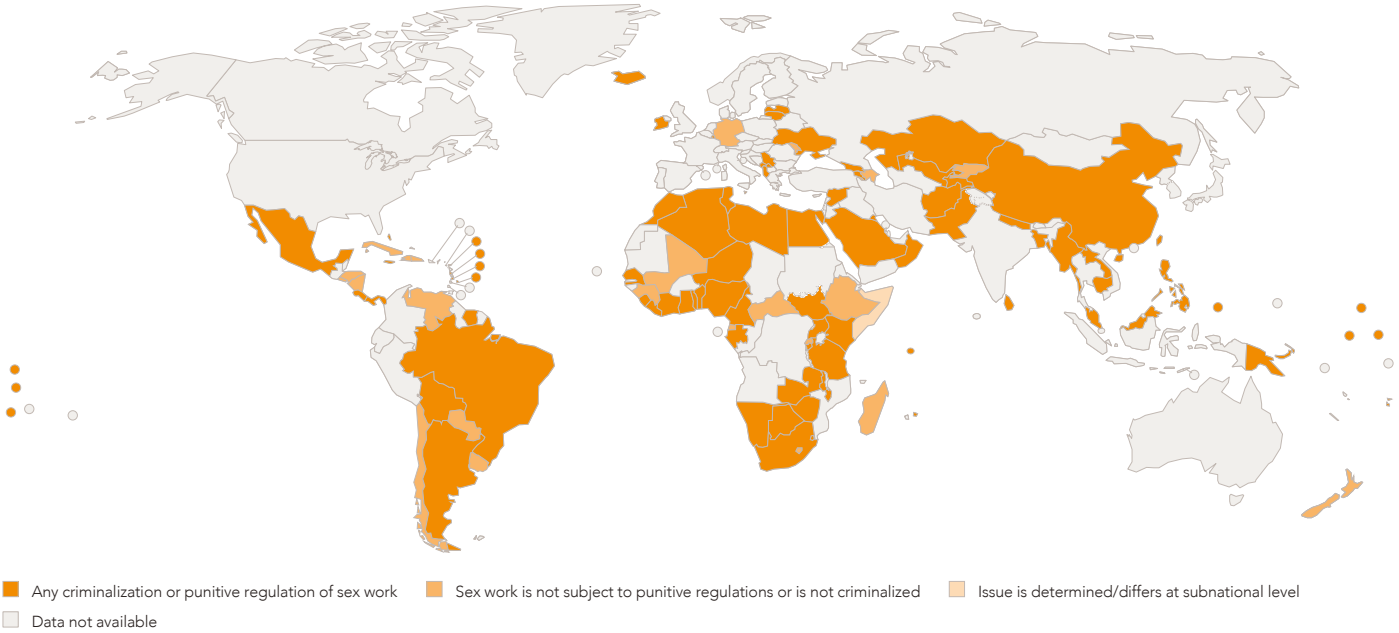
The impact of such laws on the HIV response has been shown in a study from Nigeria, where the Same-Sex Marriage Prohibition Act was passed in January 2014. After the law went into effect, fear of seeking health care and avoidance of health care increased among all participants, and the number of people living with HIV who dropped out of treatment increased *(4)*. In a Ugandan study, gay men and other men who have sex with men who experienced homophobic abuse were five times more likely to be living with HIV than peers who had escaped such treatment *(5)*.

Several countries—including Belize, Cape Verde, Fiji, Lesotho, Mozambique, Sao Tome and Principe, and Seychelles—have taken measures since 2010 to decriminalize or effectively decriminalize same-sex sexual relationships *(6)*. However, over the same period, other countries have reinforced or enacted new anti-gay legislation, including the Islamic Republic of Iran, Maldives, Nigeria and Samoa *(6)*. In Indonesia, proposed changes to the penal code would outlaw both same-sex sexual relations and sex outside of marriage *(7)*.

Sex work and other transactional sex is criminalized or otherwise punished through a variety of laws in most countries globally. About three quarters of countries reporting to UNAIDS in 2017 (76%, or 84 of 110) criminalized some aspect of sex work (Figure 11.2). By definition, criminalization holds the prospect of detention and arrest, which affords police enormous power over sex workers and exposes members of that key population to extortion, beatings and other violence, including sexual coercion and assault *(8)*. A review of the impact of human rights violations on the health of sex workers concluded that abuses occur most profoundly where sex work is criminalized through punitive law *(9)*. A systematic review of studies from Asia, eastern Africa, eastern Europe and Latin America found that between 6% and 45% of sex workers reported having ever been arrested, and between 3% and 37% of sex workers said they had been coerced into sex by police *(10)*. In a study from Soweto, South Africa, one in five female sex workers (19%) said police had assaulted them in the previous year *(11)*.

FIGURE 11.2 **Criminalization of any aspect of sex work, global, 2017**

Criminalization of sex work, global, 2016



Source: 2017 National Commitments and Policy Instrument.

Criminalization also exposes sex workers to violence from clients and other sexual partners. Studies from India and the United Kingdom of Great Britain and Northern Ireland found that sex workers who had been arrested or imprisoned were more likely to be assaulted by clients than peers who had avoided arrest *(12, 13)*.

Violence and unsafe working conditions—along with criminalization and social stigma against paid sex—have a major bearing on the health of sex workers, including their risk of acquiring HIV *(14)*. In the case of male sex workers, the stigma of same-sex sexual practices adds a further deterrent *(15)*. Together, these factors restrict access to vital health services, including for sexual and reproductive health; they also make it difficult to negotiate safer sex practices, including consistent condom use *(8, 16)*. In Vancouver, Canada, for example, sex workers living with HIV were more likely to interrupt their treatment if they were in areas that were aggressively policed *(17)*.

A recent analysis of data from 27 European countries underscores the public health benefits of decriminalizing sex work. It found that countries that have decriminalized at least some aspects of sex work have fewer sex workers living with HIV than countries that criminalize all aspects of sex work *(18)*. Modelling based on data from Canada, India and Kenya indicates that the decriminalization of sex work could avert 33–46% of HIV infections over the course of a decade *(19)*.

Improving policing practices can have a major positive impact on the HIV vulnerability and risk of sex workers *(10)*. In the Indian state of Karnataka, advocacy work with senior police officials, sensitization workshops and the inclusion of HIV and human rights topics in pre-service curricula led to significant decreases in the arrest of female sex workers, especially during police raids. Before the interventions, half (50%) of the 4110 surveyed female sex workers said they had been arrested or detained at some point during police raids; that proportion shrank to 20% after the interventions *(20)*.

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EMERGING EVIDENCE AND INNOVATIONS

Momentum builds for decriminalization of sex work in South Africa

In South Africa, the National AIDS Council (SANAC) is calling on Parliament to decriminalize sex work. Proponents of decriminalization—including SANAC, the Commission for Gender Equality and sex worker rights activists—argue that decriminalization will help address the high levels of violence and police abuse faced by sex workers and improve their access to health care and the justice system *(21)*.

SANAC launched a South African National Sex Worker HIV Plan in 2016 that calls for a holistic approach to sex work, including health, psychosocial support, economic empowerment, and legal and human rights protections for sex workers *(22)*. The plan was developed in collaboration with sex worker organizations, gender activists and United Nations organizations.

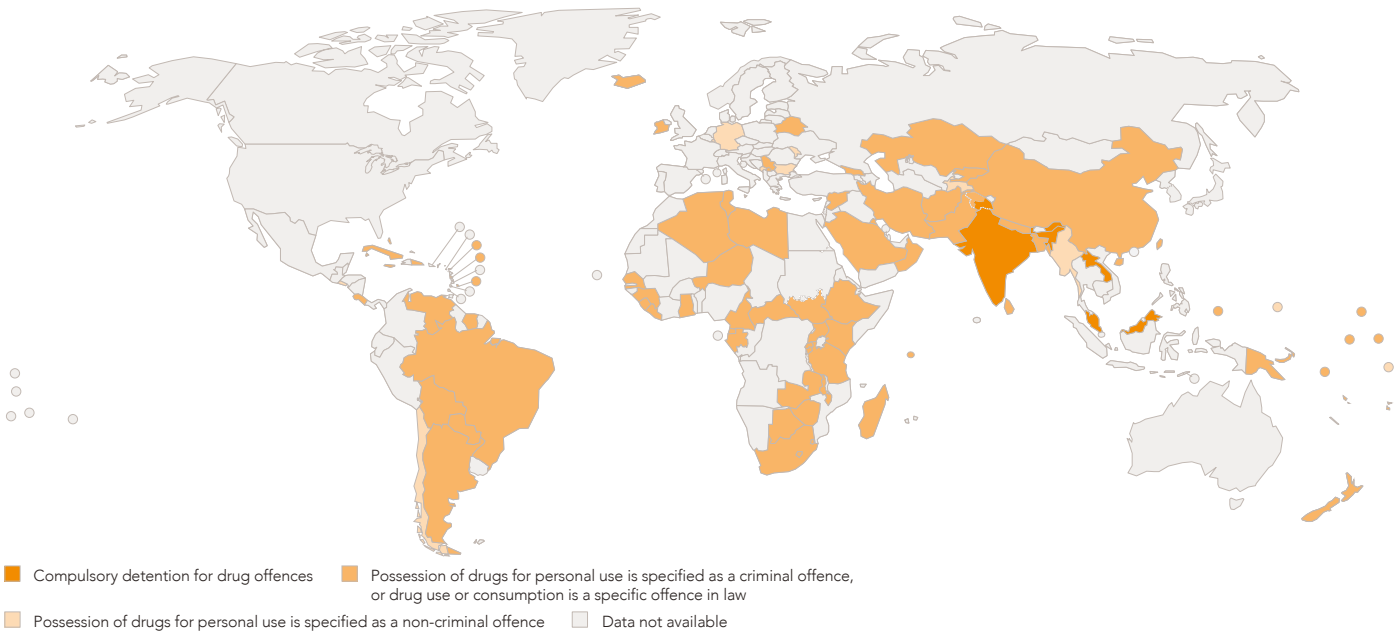
A public debate was held in Parliament in March 2018 following the release of a report by the South African Law Reform Commission, which recommended continued criminalization of sex work or partial criminalization of sex work by making the purchase of sex illegal *(23)*. The South African Law Reform Commission argued in its report that selling sex "does not fit comfortably into the international definition of 'decent work,'" and that women in South Africa would remain at high risk of exploitation and violence within a legal sex work industry *(24)*.

SANAC made an oral submission at the parliamentary debate calling for full decriminalization of sex work. SANAC's Deputy Chair told lawmakers that the Commission's report largely ignored the national sex work HIV plan, and that criminalization fuels negative perceptions of sex workers among health-care workers, perpetuates high levels of stigma and discrimination against sex workers, and makes it difficult for sex workers to access essential health services *(23)*.

The chairperson of the Parliament's Committee on Multiparty Womens Caucus told the summit participants that all inputs will be considered before a resolution is taken *(23)*. In April 2018, it was unclear whether new legislation would be proposed on sex work *(25)*.

FIGURE 11.3 **A barrier to reaching people who inject drugs**

Criminalization of drug use, global, 2016



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People who inject drugs remain the targets of punitive laws and aggressive law enforcement in dozens of countries. Of the 90 countries that reported data to UNAIDS in 2017, 78 stated that drug use or possession of drugs for personal use was a criminal offence or grounds for compulsory detention (Figure 11.3). Ten countries reported that possession of a needle or syringe without a prescription could be used as evidence of drug use or cause for arrest. In some cases, as in the Philippines, anti-drug laws and policies have given license to large-scale state violence and other human rights abuses against people alleged to deal or use drugs *(26)*. Compulsory drug dependence treatment centres continue to operate; in some countries, the conditions within these facilities are so harsh that a United Nations Special Rapporteur on torture or other cruel, inhuman or degrading treatment or punishment has singled them out for criticism *(27)*.

There are striking gender disparities in drug-related imprisonment. Although men are much more likely than women to use, possess or sell drugs, women are more likely to be imprisoned for drug-related convictions in nearly all countries where data were available *(28)*.

Numerous studies show that the criminalization of drug use undermines public health and HIV prevention and treatment efforts *(29)*. It compromises the provision of harm reduction services and deters from their use, and it is often associated with a very high prevalence of HIV infection among people who inject drugs *(28)*. When Cambodia launched an antidrug crackdown in early 2017, the number of people accessing needle–syringe services fell by half within a month *(30)*. In a study from Thailand, one in four (26%) people who inject drugs said they avoided health services due to experiences of abuse or being refused medical care *(31)*. In countries with repressive drug policies, people who inject drugs often end up in prison or detention, where access to health services, including those for HIV and hepatitis C prevention and treatment, are inadequate and drug use is likely to continue *(32)*.

There is no evidence that decriminalization leads to increased drug use *(29)*. On the contrary, there are strong arguments—and considerable scientific consensus—for replacing punitive drug policies with evidence-informed alternatives that advance public health *(33)*. In Portugal, the decriminalization of the possession of drugs for personal use in 2001 triggered a decline in the incidence of HIV infection related to injecting drug use *(34)*. The number of new HIV infections among people who inject drugs fell from 800 in 2003 to less than 100 in 2012; Portugal also has the second-lowest rate of drug-induced deaths in Europe *(35)*. Czechia's decriminalization of the use and possession of small quantities of drugs—combined with relatively high coverage of needle–syringe programmes and opioid substitution therapy—has been credited with the country's remarkably low rates of HIV among people who inject drugs *(36)*.

EMERGING EVIDENCE AND INNOVATIONS

Transgender rights in Pakistan

Among 116 countries that reported data to UNAIDS in 2017, 17 countries reported that they criminalize or prosecute transgender people. There has been growing recognition in recent years of the need to promote and protect the rights of transgender persons.

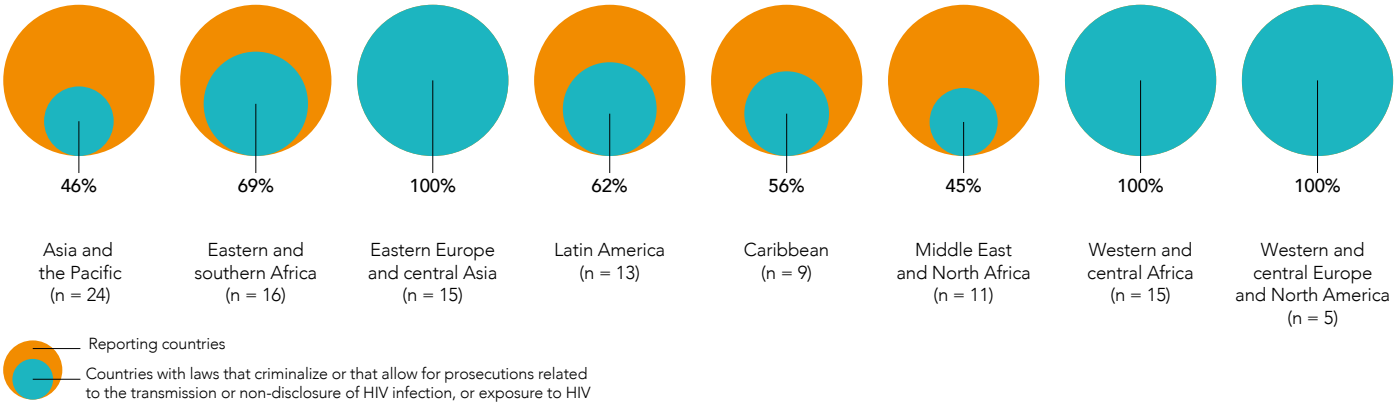
Pakistan is one of the first countries to codify such protection in national legislation. In May 2018, it passed the Transgender Persons (Protection of Rights) Act, which guarantees basic rights for transgender persons and outlaws discrimination against them. The law guarantees people the right to gender self-identify and to have that identity reflected on all official documents.

The new law bans discrimination against transgender citizens by employers, educational institutions, health-care providers and institutions, transportation service providers and any private business or service provider.

The next step will be to give this law effect in the lives of transgender persons. As in other countries around the world, transgender persons in Pakistan experience routine discrimination in all aspects of life and are frequently targeted with violence. One of the measures called for in the law is the establishment of government-run protection centres for transgender persons who feel at risk *(37)*.

FIGURE 11.4 **Fuelling stigma, discrimination and fear of people living with HIV**

Countries with laws that criminalize or allow for prosecutions related to the transmission or non-disclosure of HIV infection, or exposure to HIV



Source: National Commitments and Policy Instrument, 2017.

CRIMINALIZATION OF HIV NON-DISCLOSURE, EXPOSURE AND TRANSMISSION

The United Nations General Assembly's 2016 Political Declaration on Ending AIDS commits countries to review and reform (as needed) legislation that may undermine the HIV response, such as laws related to HIV non-disclosure, exposure and transmission. These laws fuel stigma, discrimination and fear, and they may discourage people from knowing their HIV status, which undermines public health interventions for HIV *(38)*. However, among the 109 countries that reported data to UNAIDS in 2017, 51 reported having laws that criminalized HIV transmission, non-disclosure or exposure. A further 25 countries reported that while they did not have such specific laws on their statute books, prosecutions do occur based on other criminal laws (Figure 11.4).

These laws can have a particular impact on women. They may face prosecution for transmitting HIV to their infants, although that practice appears to be on the decline: in 2017, only four countries reported to UNAIDS that they continue to prosecute vertical transmission of HIV.

Increased knowledge about reduced infectiousness in people who adhere to antiretroviral therapy is causing some jurisdictions to review or revise their criminal laws or prosecutorial practices relating to HIV transmission, including Austria, Denmark, England, Scotland and Sweden *(39, 40)*.

CONSENT LAWS AND POLICIES

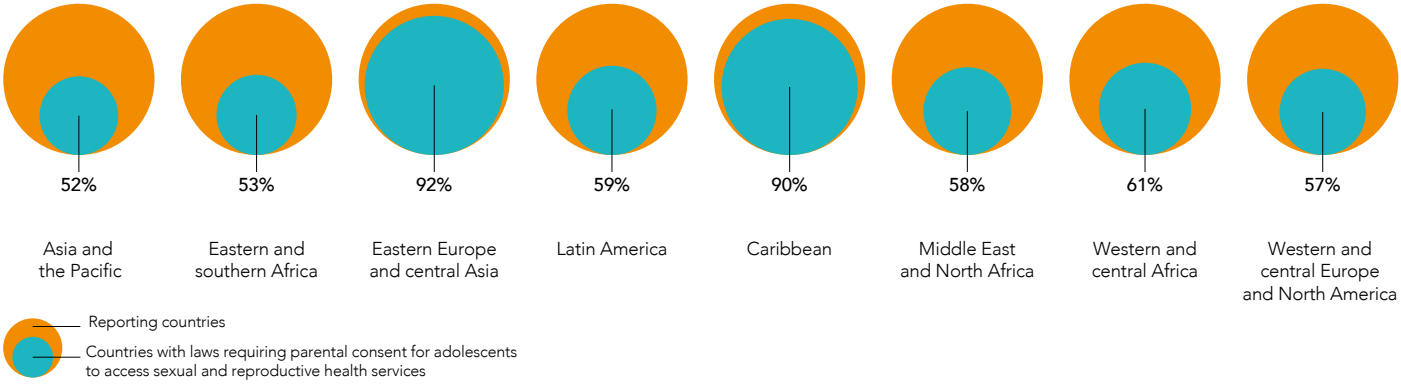
Many countries retain laws or policies that require third-party authorization for accessing certain health services and tools. Age of consent laws for medical services require persons aged younger than 18 years to obtain permission from a parent or guardian before accessing sexual and reproductive health services, HIV testing and treatment, pre-exposure prophylaxis and other health services. The intention may be to protect minors, but in practice, these laws do the opposite by discouraging adolescents from accessing the services they need to stay healthy. The impact is especially detrimental for adolescent girls, whose sexuality tends to be stigmatized and who bear the physical and social burdens of unwanted pregnancies. These laws also are pertinent to the HIV response, which in many countries is failing young people *(41)*.

In 2017, 78 of 110 reporting countries stated that they required parental consent for a child under 18 years to access HIV testing, and 61 of 109 reporting countries required parental consent for HIV treatment. In addition, 68 of 108 reporting countries required parental consent to access sexual and reproductive health services (Figure 11.5).

In some settings, health-care providers are obliged by law to report underage sex or activities such as drug use among adolescents *(42)*. Many countries also prohibit condom promotion and distribution in schools and other venues where adolescents socialize. Of the 100 countries that reported having a national plan or strategy related to condoms in 2017, only 26 reported that the plan included condom promotion in secondary schools.

FIGURE 11.5 **Discouraging adolescents from accessing services**

Countries with age of consent laws to access sexual and reproductive health services, 2018



Source: 2017 and 2018 National Commitments and Policy Instrument.

The consent of husbands is required before adult women can obtain certain health-care services in some countries, thereby preventing them from accessing vital health services (such as those for sexual and reproductive health) on their own. In 2017, four reporting countries had laws requiring married women to obtain consent from their husbands before seeking sexual and reproductive health services.[1] Two countries required spousal consent for married women to take an HIV test.[2]

ACCESS TO JUSTICE AND LEGAL REDRESS

Practical enforcement mechanisms are needed so people can claim their rights and obtain legal redress when their rights are violated. This is especially important for populations that face discrimination and are highly vulnerable to rights abuses. Data from 19 Stigma Index surveys show that more than half of people living with HIV who said they had experienced a violation of their human rights did not seek legal redress (Figure 11.6). This was often because they were unaware of the availability of redress mechanisms or because they felt nothing good would come of making a claim.

In the 2016 Political Declaration, United Nations Member States committed to have national AIDS strategies that empower people to know their rights and access legal services to prevent and challenge violations of human rights. Many countries have followed through on this commitment: in 2017, 87 of 105 countries that reported to UNAIDS stated that they had an independent national institution for promoting and protecting human rights. About two thirds (73 of 107) of reporting countries indicated that mechanisms existed to record and address discrimination against key populations or discrimination based on people's perceived HIV status. Seventy-one countries reported that they had legal aid systems applicable to HIV casework (Figure 11.7).

However, among the 95 countries that submitted the views of civil society on this issue, civil society stakeholders in 32 countries stated that enforcement mechanisms were not functioning, 45 said they were not affordable and 84 said awareness of these mechanisms was limited (Figure 11.8). Legal services are more likely to be used if they are offered for free or at reduced cost. A report on human rights, HIV and tuberculosis in eastern and southern Africa noted that legal services were underfunded and that high legal expenses discouraged people from taking action against rights violations *(43)*. A major review of legal aid services globally has found that legal aid tends to be available chiefly for criminal cases and that its quality is often limited. Specialized legal aid for specific vulnerable populations is scarce, including for vulnerable groups of women and girls, and public awareness of legal aid services is uneven *(44)*.

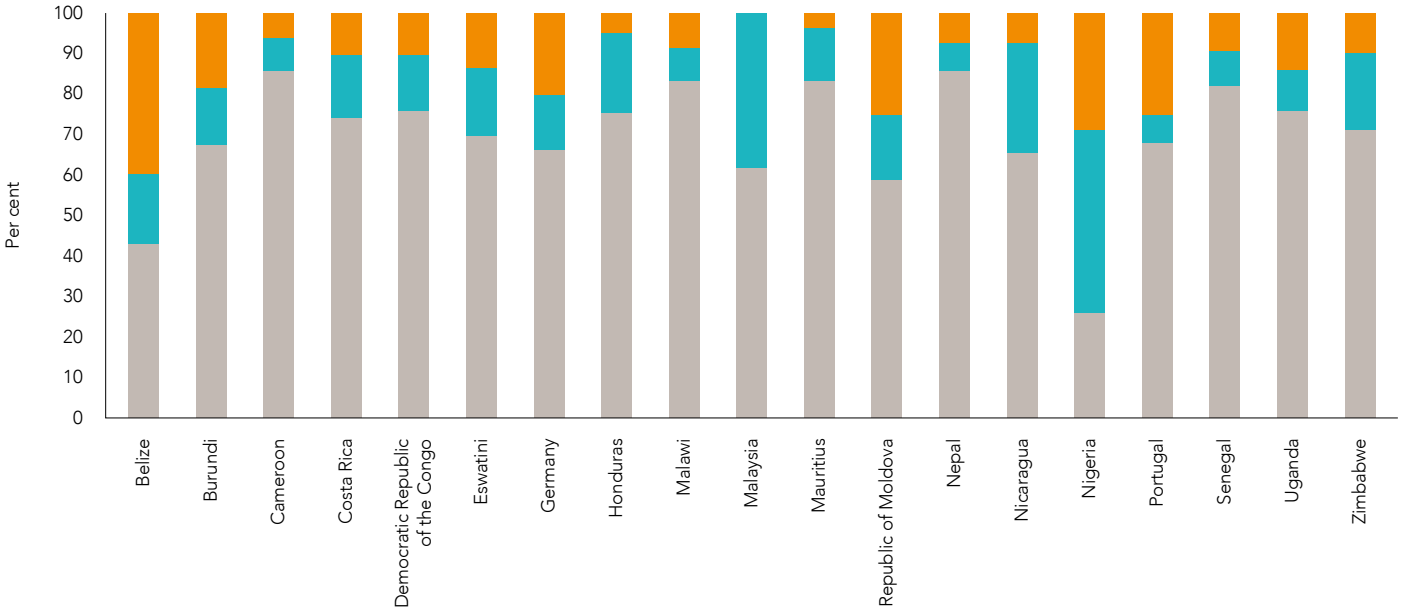
Continued on page 165

[1] Bulgaria, Kuwait, Lithuania and Pakistan.

[2] Algeria and Montenegro.

FIGURE 11.6 People living with HIV struggling to claim their rights

Percentage of people living with HIV who reported their rights were abused in the past 12 months who sought legal redress, countries with available data, 2011–2016

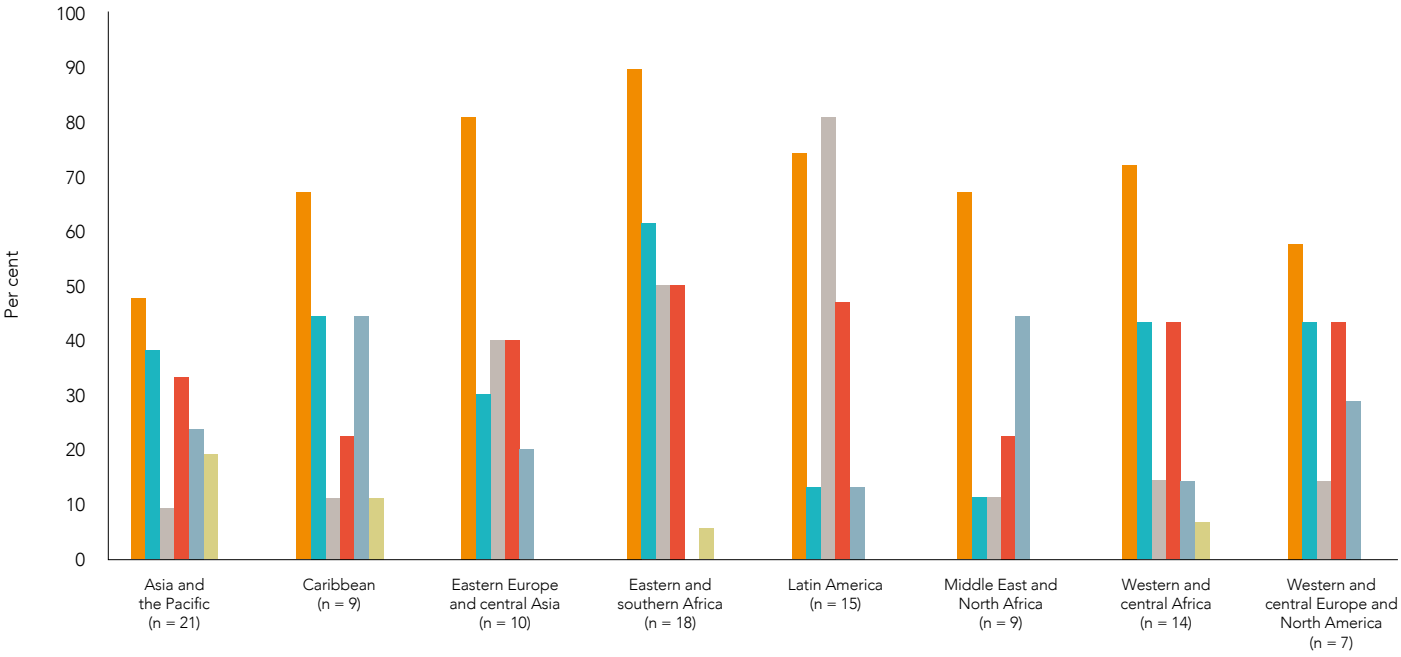


- Reported rights as a person living with HIV were abused in the past 12 months and tried to get legal redress and matter was dealt with or was still in process
- Reported rights as a person living with HIV were abused in the past 12 months and tried to get legal redress and the process had not started in the past 12 months or the process had started but nothing happened
- Reported rights as a person living with HIV were abused in the past 12 months and did not try to get legal redress

Source: People Living with HIV Stigma Index surveys, 2011–2016.

FIGURE 11.7 Putting in place mechanisms to empower people living with HIV

Percentage of reporting countries that have mechanisms in place to promote access to justice, by region, 2017

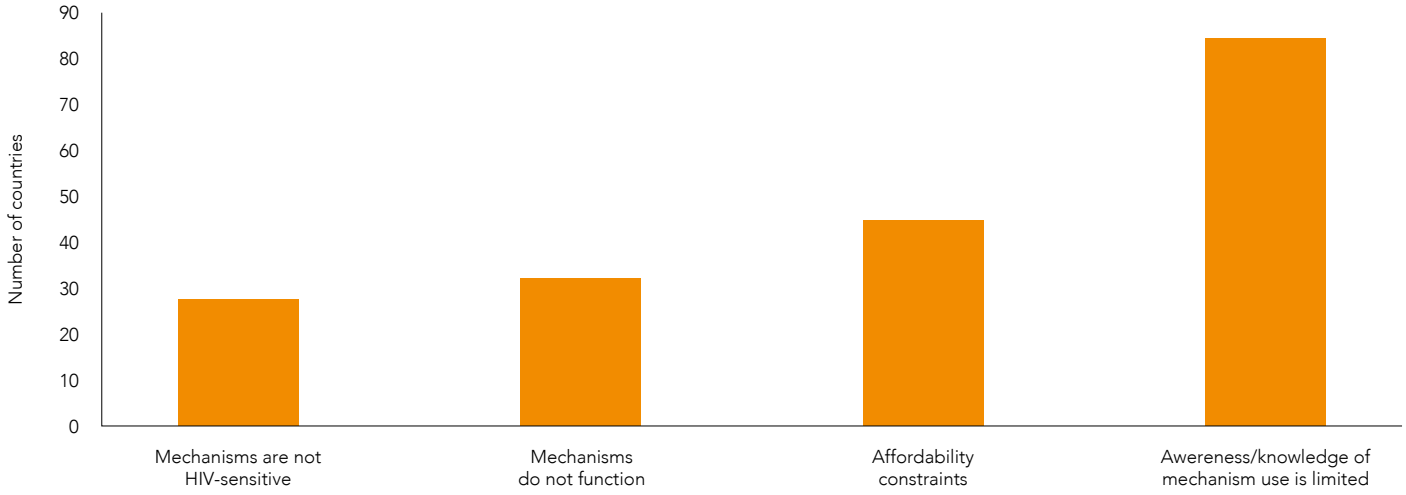


- Legal aid systems applicable to HIV casework
- Pro bono legal services provided by private law firms
- Legal services by legal clinics
- Community paralegals
- Other
- None

Source: 2017 National Commitments and Policy Instrument.

FIGURE 11.8 **Help is expensive and hard to find**

Number of countries where civil society and other nongovernmental partners report barriers to accessing accountability mechanisms, global, 2017



Source: 2017 National Commitments and Policy Instrument.

EMERGING EVIDENCE AND INNOVATIONS

Expanding legal aid in sub-Saharan Africa

Innovative approaches are making legal redress more widely available to people living with HIV and people at high risk of HIV infection in sub-Saharan Africa. The Kenya Hospices and Palliative Care Association, for example, has been training health-care workers as paralegals to identify legal issues, provide legal advice and refer people to pro bono lawyers *(45)*. In the Gambia, mobile legal aid clinics are staffed by paralegals *(46)*. In Nigeria, UNAIDS has supported people living with HIV, lawyers and civil society groups to form the country's first network of lawyers who provide legal advice and representation to people living with HIV, sexual minorities, sex workers and people who inject drugs *(47)*.

In Cape Town, South Africa, the non-profit Women's Legal Centre works closely with the Sex Workers Education and Advocacy Taskforce (SWEAT) and the national sex worker movement, Sisonke, to support and advance the rights of sex workers. In addition to running weekly workshops for sex workers on human rights and laws related to sex work, it also trains sex workers as community-based paralegals who provide peer-based legal assistance. The paralegals accompany SWEAT teams on outreach visits to sex work hotspots in the city. They provide sex workers of all genders with information and advice, escort them to medical clinics or to court, and assist with bail applications and complaints about police abuse. The Women's Legal Centre has produced pamphlets and an information card for sex workers that explain their rights if arrested or detained. Since it began this work, the Centre has noticed marked improvements in the attitudes and behaviour of police toward sex workers *(48)*.

EMERGING EVIDENCE AND INNOVATIONS

Leveraging mobile technologies in the fight for rights

New communication technologies offer exciting opportunities for linking law and justice work with public health efforts. For example, text messaging is being used in Burundi, Côte d'Ivoire, Haiti and Malawi to rate people's experiences at health facilities, and it has been effective in improving retention in HIV care *(49)*.

The same technologies can be used to report and document experiences of discrimination. In Ghana, text messaging and a website are being used to gather complaints about discrimination experienced by people living with HIV and key populations *(50)*. Virtual legal consultations are being offered in Ukraine *(51)*, while Barefoot Law, a legal aid start-up in Uganda, provides legal consultations via various social media platforms *(52)*.

iMonitor+ is another exciting digital tool, developed through a public–private partnership in Thailand. The smartphone application enables users to receive or send information on stock-outs of medicines or HIV treatment complications, or to report their experiences at health facilities. It has been used to facilitate access to legal services in Botswana, Indonesia, Kenya, the Philippines, South Africa and Thailand *(53)*.

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However, an increasing number of countries are providing such services: 38 countries reported to UNAIDS that pro-bono legal services were being provided by private law firms, 32 countries had legal services provided by university-based legal clinics and 40 countries had community paralegal services.

CIVIL SOCIETY ENGAGEMENT

Protection of human rights is the responsibility of states, but accountability often requires the involvement of civil society to monitor rights abuses and demand action. Restrictions on the financing and operations of civil society organizations create a chilling climate for efforts to provide support to marginalized sections of society *(54)*. A range of restrictive tactics—including burdensome registration requirements, fundraising restrictions and so-called public morality laws—have been utilized *(55)*. Among 94 countries that reported data to UNAIDS in 2018, 80 stated that civil society organizations of people living with HIV and key populations can legally register, and 83 stated that civil society organizations can provide services to their constituents.

Data from Civicus, a global network of civil society organizations, paints an even more troubling picture. Civicus reported in 2018 that civic space was "closed," "repressed" or "obstructed" in 109 countries, signalling that serious restrictions were in place *(56)*. Civicus has previously estimated that only about 2% of the world's population lives in societies where space for civil activism is open *(57)*.

Other research has documented the closing of space for civil society groups representing sexual minorities in several countries *(54)*. It is estimated that people in more than 100 countries face serious threats when organizing or protesting around social justice and rights issues *(57)*. These developments threaten progress on many fronts, including efforts to end the AIDS epidemic.

REACHING PEOPLE IN NEED

Because every person matters: legal aid in Indonesia

A few months ago, Yosua Octavian, a caseworker from Lembaga Bantuan Hukum Masyarakat (LBHM), a community legal aid institute, heard that the local police had arrested a gay couple who had been found sharing a room together in the Palmerah district of Jakarta. The media revealed the gay couple's identity. The police had arrested them based on reports from neighbours, who suspected that one of the men was gay. Mr Octavian tracked one of the men down and found him detained in a halfway house in western Jakarta.

At the Kedoya halfway house, Mr Octavian explained that the man did not have any private space and he was forced to participate in Qur'an recitation and prayers as part of the house's religious counselling.

After LBHM insisted that there was no legal basis to detaining lesbian, gay or transgender people, the halfway house agreed to release the man after a few days. Halfway houses like Kedoya were created to provide rehabilitation for people considered "social problems", including homeless people, street children, people with mental disorders, sex workers and people living with HIV.

For the past 10 years, LBHM has dealt with countless cases like these. LBHM is an organization focused on protecting the rights of people living with HIV, lesbian, gay, bisexual, transgender and intersex (LGBTI) people and people who inject drugs by providing legal aid, advocacy and media monitoring. They keep an eye out to ensure there is no breach of people's right to privacy. Just recently, local media exposed the status and identity of a child who lives with HIV. The LBHM staff promptly demanded that the editors apologize and retract the article. The newspaper complied.

"Protecting human rights is the core of our work," said Ajeng Larasati, LBHM's Program, Research and Communication Coordinator. She explained that this was particularly crucial in Indonesia, where key populations are highly vulnerable to discrimination.

Homosexuality is not criminalized, but discrimination is widespread in the country. Many LGBTI people face daily stigma and persecution.

And Ms Larasati fears the worse. "We are at a tipping point, as the soon-to-be legalized penal code includes problematic clauses that will negatively impact key populations and the HIV response in Indonesia as a whole," she said.

Organizations like LBHM are key to tackling barriers to health and legal services and fighting discrimination. Smiling, Ms Larasati said, "we are essential in Indonesia, especially if we aim to have zero discrimination and full protection of human rights for key populations."

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12. Poverty and inequality

AT A GLANCE

1 Socioeconomic status and health are closely linked. People with lower incomes are more likely to have less favourable health outcomes, including higher prevalence of disease and reduced life expectancy.

2 The links between poverty and HIV are complex. Insufficient access to nutritious food has been associated with increased HIV risk behaviours among women.

3 Food insecurity and difficulties meeting health-care costs contribute to later treatment initiation, lower treatment adherence and higher rates of AIDS-related mortality among poorer people living with HIV.

4 Private out-of-pocket spending accounts for more than 60% of total health expenditure in some low- and middle-income countries.

5 User fees deter access to HIV services, increase inequities, impoverish entire households affected by HIV and increase AIDS-related morbidity and mortality.

Progress and gaps

Progress in human development over the past 25 years has increased access to education, health care and social services, leading to longer average life expectancy. However, progress has been uneven across regions, among countries and within countries *(1)*. Rising income inequality in many parts of the world threatens efforts to achieve the Sustainable Development Goals (SDGs).

In recent decades, income inequality has increased in nearly all countries and regions, but at different speeds. Since 1980, the share of national income accounted for by the wealthiest 10% sky-rocketed in India and the Russian Federation, increased rapidly in North America and increased moderately in Europe *(2)*. During the same period, income inequality has remained relatively stable—at extremely high levels—in the Middle East, sub-Saharan Africa and Brazil (Figure 12.1) *(2)*.

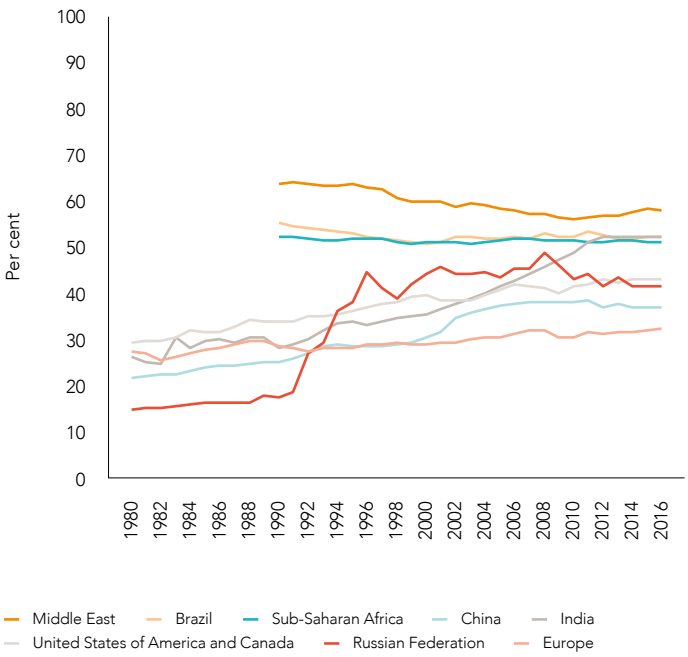
POVERTY, INEQUALITY AND HEALTH

Socioeconomic status and health are closely linked *(3)*. People with lower incomes are more likely to have less favourable health outcomes—including poorer self-rated health, higher prevalence of disease and reduced life expectancy—than people with higher incomes *(4, 5)*.

When the health outcomes of more than 1.7 million patients were tracked over 13 years, participants aged 40–85 years with lower socioeconomic status had approximately 40% higher premature mortality and died on average two years earlier than those with higher socioeconomic status *(6)*. Certain diseases, such as tuberculosis, are generally understood to be diseases of poverty and social deprivation *(7, 8)*.

FIGURE 12.1 **Rising inequality almost everywhere**

Share of national income accounted for by top 10% of earners, select regions and countries, 1980–2016



Source: World inequality report 2018. Washington (DC): World Bank; 2018 (http://wir2018.wid.world).

Evidence linking income inequality within countries to disparities in health outcomes is on the increase *(9)*. A review of 168 studies from different regions showed that more than three quarters of the studies had reported significant associations between better health and less income inequality *(10)*. A landmark study from the United States of America linked 1.4 billion tax records from 1999 to 2014 to survival information collected in the social security system *(11)*. It found a gap in life expectancy of 14.6 years for men and 10.1 years for women when comparing the most affluent 1% of individuals with the poorest 1% *(11)*. The association between life expectancy and income was not only apparent at the extreme ends of the income spectrum; it was visible at each percentile of income distribution *(12)*. Another analysis noted a striking divergence of life expectancy by income among Americans since 2001, especially women: as income disparity increased, the association between low income and poor health strengthened *(13)*.

A large longitudinal study from Canada also found strong links between socioeconomic inequality and mortality rates. There, too, the association was not limited to people at the lowest end of the income distribution: each successively lower level of income was associated with a higher mortality rate *(14)*. In Germany, a recent analysis of data suggests that the risk of poor health is roughly halved when net income doubles from €15 000 to €30 000 *(15)*.

POVERTY, INEQUALITY AND HIV

The links between poverty and HIV are complex, with analyses showing that HIV risk does not align neatly with income levels *(16, 17)*. One analysis of population-based surveys from sub-Saharan African countries indicated that HIV infection tended to be higher among wealthier individuals *(18)*. Another analysis of survey data from the region showed that HIV infections in urban areas tended to be concentrated among low-income earners, while in rural areas, HIV prevalence was higher among wealthier individuals *(18, 19)*. Women's higher risk of HIV infection in those sub-Saharan African countries also appeared to be more pronounced in urban areas *(19)*.

Such findings hint at dynamic processes in which socioeconomic and other forms of inequality can influence HIV risk. An analysis of data from Demographic and Health Surveys across 16 sub-Saharan African countries concluded that "inequality trumps wealth": living in an area with greater inequality in wealth was found to be significantly associated with increased individual risk of HIV infection *(20)*. The analysis also cast light on the shifting interplay between wealth, poverty and HIV risk: in wealthier settings, individuals with less wealth were more likely to acquire HIV, while in poorer settings, individuals with more wealth were more likely to acquire HIV. In addition, the risk of acquiring HIV infection tended to decrease with wealth in most urban areas while increasing with wealth in most rural areas. The study concluded that HIV risk increases as relative deprivation worsens *(20)*.

Several studies from the United States have reported links between HIV prevalence and socioeconomic deprivation. One large survey conducted in several cities found that HIV prevalence in impoverished urban areas was higher among people with lower socioeconomic status and education: it was more than double among the unemployed than those in employment (2.6% versus 1.0%), and more than double among residents who did not complete high school compared with those with a university education (2.7% versus 1.3%) *(21)*. Higher socioeconomic deprivation within neighborhoods has also been associated with higher rates of HIV diagnoses *(22)*.

Poor individuals may not necessarily be at higher risk of acquiring HIV, but they are differentially affected by its health, economic and social consequences *(23)*. For example, income level appears to be an important variable in HIV treatment outcomes. A review of 10 studies from between 2006 and 2014 in South Africa comprising data from 175 000 individuals has indicated that persons living with HIV with low socioeconomic status (based on income,

Continued on page 173

REACHING PEOPLE IN NEED

Food assistance is improving treatment adherence in conflict-affected Ukraine

When armed conflict struck her home city of Donetsk, Marina fled to the city of Mariupol with her four children. Living conditions were poor, as the family took shelter in a small summer cabin owned by acquaintances. There was little money for proper nutrition, and no cash to spare for travel to a medical facility. This was a big problem, because Marina and two of her four children are living with HIV.

Marina soon ran out of antiretroviral medicines, but what preoccupied her most was feeding her family. Social workers from the Food for Life project stepped in and provided her family with assistance through an e-voucher system that helps people living with HIV to buy food.

The programme was started in 2017 by the World Food Programme (WFP) and the All-Ukrainian Network of People Living with HIV/AIDS. It uses the vouchers to help people start and/or adhere to antiretroviral therapy. People living with HIV without reliable access to food—including people on antiretroviral therapy, people who need to start HIV treatment and people on tuberculosis treatment—start with a phone consultation with a social worker before being able to register. After registration, each beneficiary is given a food e-voucher—a debit card that can be used at a local supermarket chain—that is replenished by WFP on a monthly basis as long as the person living with HIV remains on antiretroviral therapy. About 6500 food-insecure people living with HIV, including people coinfected with tuberculosis, are enrolled in the project. Almost all of the money provided through the e-vouchers is spent on food and household goods.

In Marina's case, her viral load became undetectable after three months on the programme. "Without this help, my children and I would have had no medication and would have starved," she said.

Marina is one of the thousands of people living with HIV from the Donetsk and Luhansk oblasts who ran out of food and missed their treatment as a result of the ongoing conflict in the region. The Food for Life programme has had a clear impact on treatment uptake and adherence. From June to December 2017, more than 600 people living with HIV started antiretroviral therapy, and more than 68% of the total beneficiaries improved their food security.

EMERGING EVIDENCE AND INNOVATIONS

Food insecurity and poverty put women and girls at special risk

According to several studies from sub-Saharan Africa, insufficient access to nutritious food appears to be more strongly associated with HIV risk behaviours among women.

In southern Zambia, droughts and employment insecurity ranked high among the factors driving apparent increases in transactional sex *(26)*. This finding is in line with a recent systematic review of studies from Europe, North America and sub-Saharan Africa, which concluded that food insecurity was associated with increased sexual risk-taking among women (through transactional sex and difficulty negotiating safer sex) *(27)*. Hunger and food insecurity were also found to be barriers to initiating and adhering to antiretroviral therapy, a finding confirmed in another recent meta-analysis of data from North America, Brazil and Uganda *(27)*. In the latter study, experiencing food insecurity resulted in a 29% lower rate of viral suppression *(28)*.

In south-eastern Zimbabwe, economic need and food insufficiency were strongly associated with unsafe sexual behaviours and heightened risk of HIV infection among young poor women (aged 18–22 years) *(29)*. A similar association was seen among adolescents (aged 10–17 years) in two South African provinces. The teenagers with the greatest socioeconomic deprivation, including food insufficiency and inadequate housing, were most at risk of HIV *(30)*.

An earlier study in Botswana and Eswatini found that women who had experienced food insecurity in the previous year were 84% more likely to have engaged in transactional sex and 68% more likely to have had unprotected sex with a man who was not their primary partner than women who had not experienced food insecurity *(31)*. The associations between food insecurity and high-risk sex were much weaker for men.

Continued from page 171

assets or employment status) had more than a 50% higher risk of dying from HIV-related causes than their counterparts with high socioeconomic status *(24)*. Food insecurity, the impact of HIV-related illness on household income, and difficulties affording transport and other expenses related to health care appear to contribute to that disparity.

There are ways of averting such disparities in treatment outcomes. A study examining socioeconomic status and long-term outcomes for people receiving antiretroviral therapy in Kampala, Uganda, found no significant association between household income and incidence of mortality or virologic failure *(25)*. Formal education levels also were not related to 10-year incidence of mortality or virologic failure among patients *(25)*. Importantly, the source of the data was a clinic that provided routine support to all patients, including counselling, telephone calls to schedule visits or follow-up on missed visits, one-on-one consultations, and financial support for transport. Quality services and proper support seemed to negate the effect of the socioeconomic disparities among patients.

EDUCATION, HEALTH AND HIV

There is a close relationship between education and health outcomes. Certain health risks are more common among people who did not complete secondary education than they are among people who did *(32)*. Studies in the United States have shown that rates of several major illnesses—including diabetes, heart disease and liver disease—tend to be higher among people with lower educational achievement *(33)*. Research done by the Organisation of Economic Cooperation and Development (OECD) found considerable evidence from different regions that education is strongly linked to health and various determinants of health, and that a substantial element of this effect is causal *(34)*. For example, lengthier schooling not only brings broad socioeconomic benefits for women and girls; it also reduces their risk of experiencing intimate partner violence *(35)*.

There is a dynamic relationship between educational attainment and the risk of HIV infection. Earlier in the epidemic, HIV prevalence tended to be higher among people with higher levels of education *(36)*. Over time, researchers found that HIV prevalence was declining among people with higher education, but that it was increasing among people with lower levels of education *(37)*. A systematic review of studies confirmed that shift *(38)*. Termed the "inverse hypothesis," this trend is frequently detected in emerging epidemics: as awareness and information spread—and the means for protecting against infection become more widely available—the more educated sections of society tend to adapt their behaviours more rapidly compared with those who are less educated.

In recent years, education has been shown to be highly protective against HIV for girls. In a study in South Africa, for example, HIV prevalence was about half as high among girls who had finished high school compared with those who had not done so (8.6% versus 16.9%) *(39)*. Similar correlations have been reported in studies of the impact of universal primary education policies in Botswana, Malawi and Uganda *(40, 41)*.

This protective effect seems to operate even among populations at very high risk of HIV infection, such as female sex workers. In a recent study from Soweto, South Africa, the least educated sex workers had the highest risk of acquiring HIV; not having completed secondary schooling tripled their likelihood of being HIV-positive *(42)*. In another South African study among women in Western Cape province, every additional year of formal education was associated with a 10% decrease in the risk of HIV infection, which is similar to the 7% reduction in HIV risk reported in an earlier study from KwaZulu-Natal *(43, 44)*.

OUT-OF-POCKET SPENDING

Being poor not only increases a person's chances of ill health; the cost of health care is more likely to push that person deeper into poverty. Impoverished individuals must spend much larger proportions of their income on health care than the wealthy. In the United States, for example, data from 2014 show that health-care costs reduced the median income of the poorest 10% of the population by 48%, whereas those costs cut the median income of the wealthiest 10% by less than 3% *(13, 45)*.

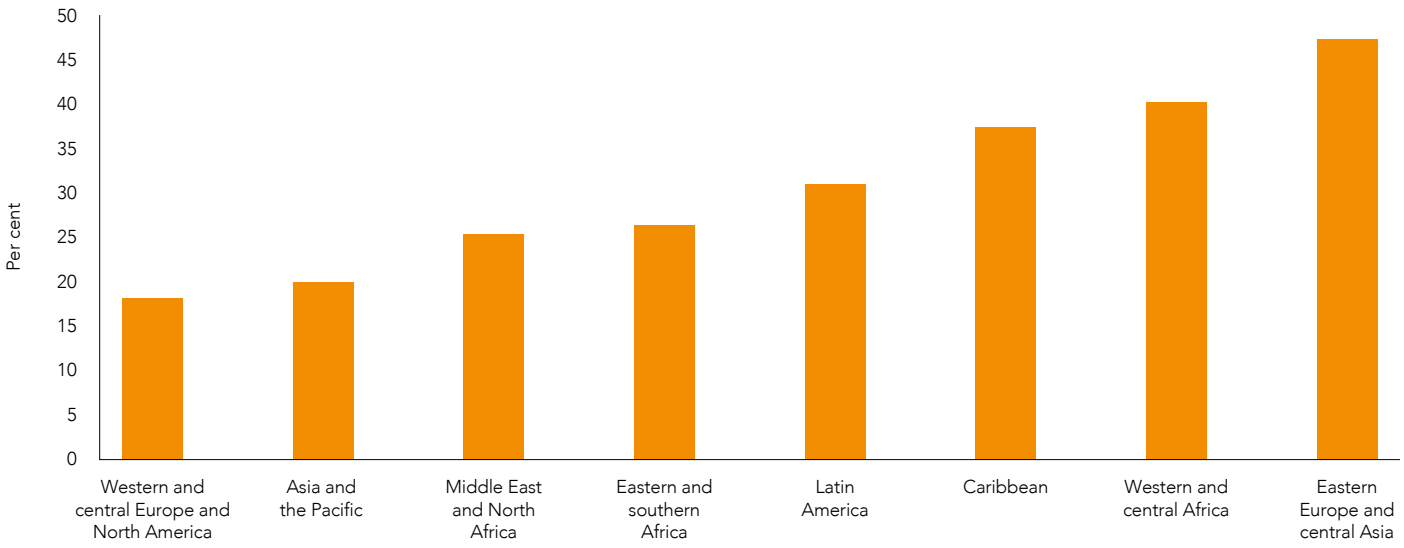
Health insurance protects against catastrophic health costs, but it is unevenly available in most countries and often requires the payment of premiums that are beyond the means of impoverished individuals. As a result, out-of-pocket spending on health care can be high. Out-of-pocket expenditure include all costs paid directly by the consumer, including user fees, direct payments for transport, compensation for work lost, formal cost sharing and informal payments.

Out-of-pocket payments continue to make up substantial proportions of total health expenditure in all regions, most strikingly in the Caribbean, eastern and central Europe, and western and central Africa (Figure 12.2) *(46)*. It is estimated that private out-of-pocket spending accounts for more than 60% of total health expenditure in some low- and middle-income countries *(47)*. These payments can have a devastating effect on the well-being and viability of households, especially if illnesses go untreated and worsen. An estimated 150 million people suffer financial catastrophe due to health-care costs, and 100 million are pushed under the poverty line each year because of out-of-pocket spending on health *(48)*. User fees or user charges—defined as direct payments at the point of service that are not covered by any form of insurance—are a common out-of-pocket expenditure. They can involve payments for medicines, medical supplies, tests and consultation fees. The amounts charged vary, but they can add up to substantial expenditure. Some countries have relied heavily on user fees to fund public health facility costs and supplement low health worker salaries. In Guinea, for example, user fees paid by patients represented an estimated at 62% of all health expenditure in 2014 *(49)*.

Advocates of user fees claim the extra revenue they raise can be used to tackle inequality in the access to health care. However, the prevailing evidence shows the opposite: user fees shift the health-care funding burden away from population-based, risk-sharing arrangements—such as funding from taxes or social insurance—and towards payments by individuals and households *(50)*. User fees have also been shown to reduce access to health services among the more vulnerable, and they stand in the way of progress towards universal health coverage *(51, 52)*.

FIGURE 12.2 **High out-of-pocket spending in all regions**

Out-of-pocket payments by households as percentage of total current health expenditure, regional average, 2015



Source: World inequality report 2018. Washington (DC): World Bank; 2018 (http://wir2018.wid.world).

User fees deter access to HIV services, undermine progress towards the Fast-Track Targets, increase inequities, impoverish entire households affected by HIV and increase AIDS-related morbidity and mortality. Even if antiretroviral medicines are available free of charge, fees for diagnostic tests, consultation cards and medicines for opportunistic infection have a huge impact on lower-income individuals. A major new review of studies from 20 countries has found that limited household resources and the inability to pay user fees rank among the top factors limiting access to health-care services for people living with HIV *(53)*.

Earlier population-based surveys done by Médecins Sans Frontières in Burundi, Chad, Democratic Republic of the Congo, Haiti, Mali and Sierra Leone showed that user fees generally deterred people from utilizing public health facilities, aggravated impoverishment and forced many households to seek alternative care *(54)*. In the case of Guinea, user fees had a number of detrimental effects, including depressing demand for certain HIV services (such as diagnostics) and leading health workers to avoid offering HIV care to people living with HIV *(55)*.

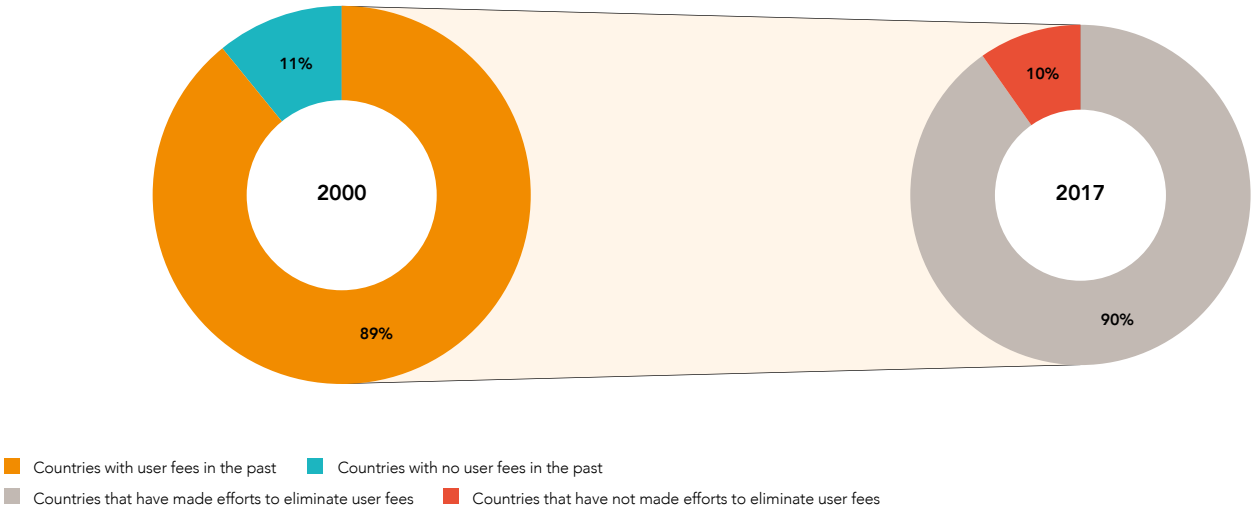
In the past two decades, social movements—often led by people living with HIV and allied with international organizations—have pushed successfully for the reduction or removal of user fees in many countries *(56, 57)*. Benin, Burkina Faso, Burundi, Kenya, Lesotho, Liberia, Mali, Morocco, Niger, Rwanda, Senegal, Sierra Leone, South Africa, Thailand, Uganda and Zambia are among the countries that have partially or entirely done away with user fees for health services. In sub-Saharan Africa, a broad consensus has been established among health policy-makers that the removal of user fees is a crucial step to increasing access to health care and reducing the financial risks associated with ill health. Accordingly, 80% of countries that had user fees in 2000 have implemented reforms to reduce or eliminate them (Figure 12.3).

The results have been positive. When user fees are removed, the use of health services tends to increase and fewer households become trapped by catastrophic health expenditure *(54, 58, 59)*.

In Malawi, when user fees were reintroduced at three of 13 health centres in Neno District in 2013, attendance fell by 68% and new malaria and HIV diagnoses decreased by 56% and 48%, respectively *(60)*. The subsequent removal of the fees in 2015 saw a 350% increase in attendance and a greater than 200% increase in malaria diagnoses *(60)*.

FIGURE 12.3 **Momentum on eliminating user fees**

Health-care user fees, sub-Saharan Africa, 2000 and 2017



Source: Cotlear D, Rosemberg N. Going universal in Africa: how 46 African countries reformed user fees and implemented health care priorities. Universal Health Care Coverage Series No. 26. Washington (DC): World Bank; 2018.

After Kenya abolished most user fees at primary health facilities in 2004, the percentage of households incurring catastrophic health-care expenditure decreased from almost 15% in 2007 to 4.8% in 2013 *(61, 62)*. When Zambia eliminated user fees in 54 of 72 districts in 2006, out-of-pocket expenditure decreased by almost 90% *(63)*. Other studies from Ghana, South Africa and Uganda found that the abolition of user fees primarily benefitted poor households *(64)*.

Decreeing the removal of user fees, however, is insufficient on its own. Ending these fees can create funding gaps for the health system, and in some cases, health-care providers may continue to charge fees under other guises (e.g. as so-called enrolment fees). They also may withhold certain medical supplies in order to reduce revenue losses.

Kenya's experience is instructive. Analysis of national representative survey data for 2013 showed that 40% of individuals seeking care at primary health-care facilities still incurred direct expenses after user fees had been removed *(61)*. In one study, three quarters of surveyed patients had paid some fees, and one quarter had to buy their own medical supplies from a private provider *(65)*. User fee revenues had accounted for almost all cash income in most of the surveyed facilities; the facilities continued to charge fees in a bid to cover basic operating costs (mainly for staff and non-drug supplies) *(65)*. This highlights the need for strategies to compensate facilities for lost revenue and to monitor any fees that continue to be charged once user fees are removed *(65)*.

Elsewhere, several studies—including from Burkina Faso, Uganda and Zambia—found that the removal of user fees can lead to increases in out-of-pocket payments if sufficient planning and preparations are absent. Shortages of staff, essential medicines and supplies at clinics have been reported, and these may result in people bypassing public facilities to seek health-care services from private providers *(54, 64, 66–68)*. Laboratory costs, transportation costs and other expenses also may continue hindering access, especially for poor individuals *(54)*.

As more countries phase out user fees, important lessons are being learned. Firstly, strong political leadership is needed to ensure that adequate, careful planning is done to offset potential fiscal and logistical difficulties, and to make sure that actual implementation occurs. Commitments to the process and investment from international donors and national governments are essential to avoid budget shortfalls at the facility level.

Secondly, steps must be taken to cover revenue losses at facilities or for services that used to be subsidized with user fees *(64)*. When user fees coincide with cuts in donor funding, this supply-side challenge has proven so difficult that some countries in sub-Saharan Africa have considered reintroducing user fees *(55)*. An incremental approach to the elimination of user fees can ease the

transition. Performance-based donor financing also has been used in some countries (Burkina Faso, Burundi, Cameroon and Rwanda among them) to support their move away from user fees *(69, 70)*.

On the demand side, preparations are needed to cope with anticipated increases in service use (e.g. adequate staffing and supplies of drugs and other medical supplies) and to ensure that improved access does not come at the expense of the quality of care being provided.

SOCIAL PROTECTION

Social protection programmes have many benefits, and they hold great potential for improving the health, well-being and life prospects of billions of people. The SDGs highlight the need to expand access to these kinds of programmes. SDG Target 1.3 calls on countries to "implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable."

EMERGING EVIDENCE AND INNOVATIONS

Expanding health-care access through universal health coverage schemes

Removing user fees and increasing public spending on health can be part of a phased move towards universal health coverage. In such phased approaches, essential service packages (usually including maternal and child health care, HIV testing and care, tuberculosis screening and treatment, and paediatric care) are the first to be provided free of charge.

Countries that rely predominantly on public financing arrangements for health care generally achieve the greatest health-care coverage and the strongest financial protection for people using health services, especially for impoverished and vulnerable persons *(71)*. An increasing number of countries are combining different funding streams—such as taxes and other government charges or social insurance premiums—into a single financing scheme, with contributions reflecting ability to pay *(57, 72)*.

More ambitious and equitable arrangements also are on the increase. In addition to long-standing examples such as Cuba and the Indian state of Kerala, a growing number of low- and middle-income countries have been introducing or moving towards universal health coverage schemes, including Bangladesh, Colombia, Costa Rica, Rwanda, Thailand and Viet Nam *(73, 74)*.

For the past decade and a half, Thailand has provided affordable, reliable health care via its universal health coverage programme, which it introduced in 2001. The scheme is financed from general revenue and waives all medical fees for the poorest sections of society *(75)*. As a result, health insurance coverage in Thailand expanded from 71% of the national population in 2001 to 94% by 2004 *(76)*. Thailand also expanded its national health insurance system in 2013 to cover non-Thais residing and working in the country *(77)*.

Importantly, Thailand's scheme was buttressed with several supportive actions: (a) adequate financing for public services was ensured; (b) health service infrastructure was expanded geographically (especially at the district level); (c) steps were taken to ensure that primary health-care facilities functioned well; and (d) co-payments were abolished at the point of care *(78)*.

The effects on health outcomes have been dramatic. Thailand has seen a major drop in mortality (especially infant and maternal mortality) and a significant increase in life expectancy over the past two decades. Women adhering to antiretroviral therapy noted that having access to free treatment was a significant reason why they remained in care *(79)*.

Rwanda scaled up health coverage to the entire country in 2004–2005 by setting up an inclusive health system anchored in equity-based national policies. The results included sharp declines in mortality and a steep rise in life expectancy compared with the mid-1990s *(80)*.

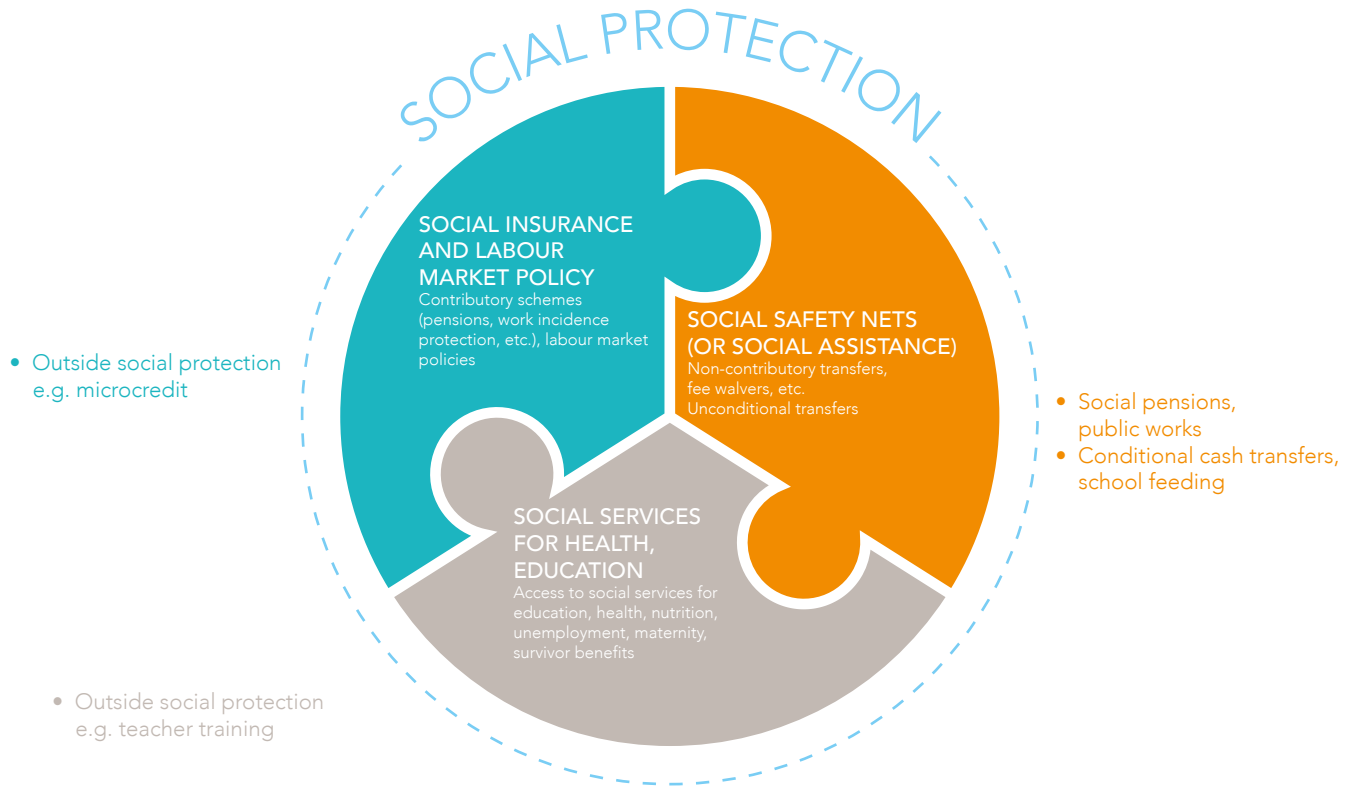
Social protection involves a variety of actions to reduce risk, vulnerability and poverty, including social safety nets, social security schemes and labour market policies. It can also involve policies and programmes that provide access to education, nutrition, housing, health or other social services (Figure 12.4) *(81)*.[1]

In addition to their other benefits, social protection schemes can temper the social drivers of HIV risk, such as gender and income inequalities and social exclusion. They also make it easier for people to access HIV and other health services, and they can cushion the social and economic impact of HIV on households and individuals *(77)*. A recent review of experiences in eastern and southern Africa found that social protection that is both HIV-inclusive and child-sensitive and adolescent-sensitive has the potential to diminish risk of HIV infection *(82)*. Other recent studies have shown it can help increase adherence to HIV and tuberculosis treatment among adolescents *(83)*. That is why the United Nations General Assembly agreed in 2016 to ensure that by 2020, 75% of people living with, at risk of, or affected by HIV benefit from HIV-sensitive social protection.

A large number of countries operate social protection programmes of some type, and a growing number of those schemes are large in scope. Although the programmes historically have been less extensive in low- and middle-income countries, that picture has changed dramatically in the past decade *(84)*. The International Labour Organization (ILO) estimates that about 45% of the world's population had access to some form of social benefit in 2016. Although coverage is expanding, it varies widely by region, and social protection programmes remain highly uneven in scope and reliability *(85)*.

FIGURE 12.4 **Multiple actions to reduce risk, vulnerability and poverty**

Components of social protection systems



Source: State of social safety nets. Washington (DC): World Bank; 2015.

[1] Social safety nets are also known as social assistance or social transfers. These programmes provide regular support to poor and vulnerable people. Social security is the protection that a society provides to individuals and households to ensure access to health care and to guarantee income security, particularly in cases of old age, unemployment, sickness, invalidity, work injury, maternity or loss of a breadwinner.

Coverage varies widely by region. In Europe and central Asia, about 84% of people had access to at least one social protection programme, as did 68% of people in the Americas. However, coverage was only 39% of people in Asia and the Pacific and just 18% in Africa. ILO estimates that 4 billion people worldwide lacked any such protection in 2016, and only 35% of children enjoyed effective access to some form of social protection. Most of the 1.3 billion children globally who are not covered by social protection live in Africa and Asia and the Pacific *(85)*.

In countries with high burdens of HIV, social protection schemes need to be made sensitive to the needs of people at high risk of HIV infection and people living with HIV. Strong linkages between HIV services and social protection programmes are especially important for orphans and other vulnerable children, adolescents, people who are living with or affected by HIV, and to all efforts to advance the HIV response. Among 35 countries that account for nearly 90% of new HIV infections globally, 24 reported to UNAIDS in 2018 that they had an approved social protection strategy, policy or framework that is being implemented. Of those approved strategies, 20 refer to people living with HIV as key beneficiaries; only a handful say the same about key populations at higher risk of HIV infection (Table 12.1).

Cash transfers have emerged as an especially popular and effective variety of social protection in low- and middle-income countries *(81)*.[2] Numerous studies have indicated that these transfers are associated with multiple benefits, such as increased enrolment and retention in school, poverty reduction, improved nutrition and food security, and increased uptake of health services *(86)*. According to the World Bank, among the 142 countries reporting these data in 2017, 70% provided unconditional cash transfers and 43% provided conditional cash transfers *(81)*.

In countries in sub-Saharan Africa, the transfers have been especially effective at enabling girls to remain in school, and they have been linked to reductions in intimate partner violence and declines in early marriage and teenage pregnancy—outcomes that support general well-being and help reduce HIV vulnerability and risk *(87–92)*. A notable feature is the agency they afford adolescent girls and young women: in the HPTN 068 trial in South Africa—as in an earlier study in Malawi—a large majority of young women said they decided how the cash grants would be spent *(93, 94)*.

When combined with focused and supportive care interventions, as shown in a South African study (Figure 12.5), these transfers were linked with broad developmental gains, including steep drops in HIV risk behaviours for adolescent girls and boys (aged 10–18 years) *(95)*. Also popular are conditional cash grants, many of which are tied to school attendance: they, too, have been shown to reduce HIV risk *(96–98)*.

Given the multiple benefits of social protection programmes, the objective should be to reach, at a minimum, the most vulnerable and marginalized populations with such schemes. Experience suggests that a good starting point is to undertake a social protection assessment before introducing a number of specific and focused programmes based on a clear national needs analysis. These programmes can then be woven into coherent national social protection programmes, with donor support drawn into a nationally coordinated system. Middle- and high-income countries should be aiming for social protection systems that provide the widest possible protection.

As countries build and expand their social protection systems, they need to strengthen the basic functioning of those programmes and ensure that they are HIV-sensitive so that people at risk of HIV infection or living with HIV benefit from them. One option may initially be to prioritize geographic areas or populations for actions that can enhance access to social protection measures. The evidence also shows that linking and layering interventions can have major cumulative benefits.

Overall, social protection programmes tend to be most effective when they are underpinned with strong operational tools (including beneficiary registers and payment verification and monitoring systems), evaluated regularly and guided by practical experience *(81)*.

[2] In sub-Saharan Africa, most cash transfer schemes are "targeted" (by location or age group), "conditional" (requiring school enrolment, attendance at health facilities or a similar activity) or "means-tested" (based on a person's income level). The majority of these schemes in low-income countries are being promoted or supported by donor countries.

TABLE 12.1 Policies for HIV-sensitive social protection

HIV-sensitivity of social protection strategies, policies or frameworks in Fast-Track countries, 2018

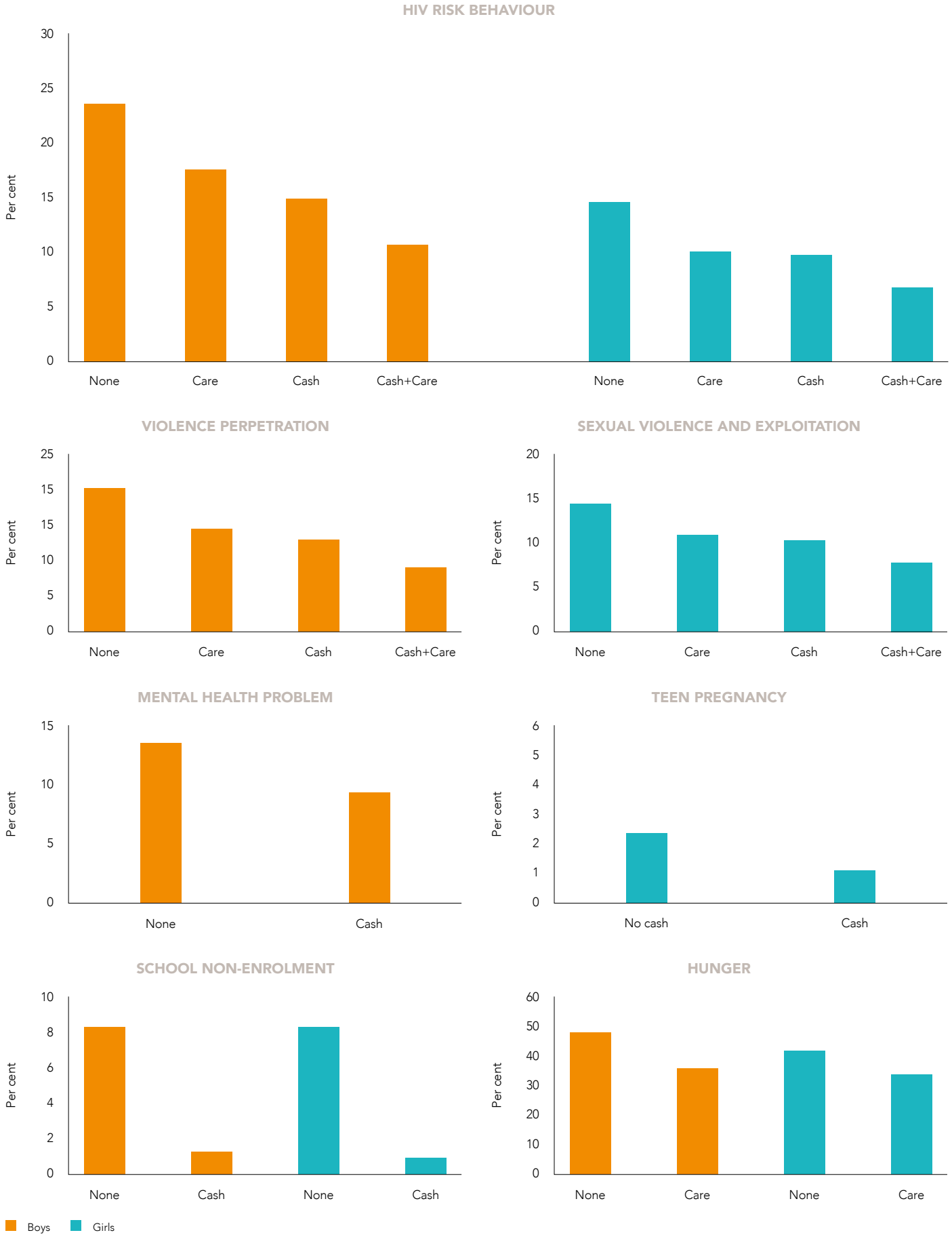
Country	Has an approved social protection strategy, policy or framework that is being implemented	Refers to HIV	Recognizes people living with HIV as key beneficiaries	Recognizes key populations as key beneficiaries	Recognizes adolescent girls and young women as key beneficiaries	Recognizes people affected by HIV as key beneficiaries	Addresses the issue of unpaid care work in the context of HIV
Angola	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Botswana	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Brazil	Yes	Yes	Yes	No	No	Yes	No
Cameroon	Yes	No	No	No	No	No	No
Chad	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
China	Yes	Yes	Yes	No	No	Yes	Yes
Côte d'Ivoire	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Democratic Republic of the Congo	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Eswatini	Yes	Yes	Yes	Yes	Yes	Yes	No
Ethiopia	Yes	Yes	Yes	No	No	Yes	No
Ghana	Yes	Yes	Yes	No	Yes	Yes	No
Haiti	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
India	Yes	Yes	Yes	Data not available	No	Yes	Data not available
Indonesia	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Iran (Islamic Republic of)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jamaica	Yes	No	No	No	No	No	No
Kenya	Yes	Yes	Yes	No	Yes	Yes	Yes
Lesotho	Yes	Yes	Yes	No	Yes	Yes	No
Malawi	Yes	Yes	Yes	No	Yes	Yes	No
Mali	No	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Mozambique	Yes	Yes	Yes	No	No	Yes	No
Myanmar*	Yes	No	No	No	Yes	No	No
Namibia*	Yes	No	Yes	Yes	Yes	Yes	No
Nigeria	Yes	Yes	Yes	Yes	Yes	Yes	Data not available
Pakistan	Yes	No	No	No	No	No	Yes
South Africa	Yes	Yes	Yes	Yes	Yes	Yes	Yes
South Sudan	Yes	Yes	Yes	No	Yes	Yes	No
Uganda	Yes	Yes	Yes	No	Yes	Yes	Yes
United Republic of Tanzania	Yes	Yes	Yes	No	Yes	Yes	No
Ukraine	Yes	Yes	Yes	No	Yes	Yes	Yes
Viet Nam	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Zambia	Yes	Yes	Yes	No	Yes	Yes	Data not available
Zimbabwe	Yes	Yes	Yes	No	Yes	Yes	No
Russian Federation	Yes	Yes	Data not available	Yes	Yes	Yes	No
United States of America	Yes	Yes	Yes	No	No	Yes	No

Yes No Data not available

Source: 2018 National Commitments and Policy Instrument.

FIGURE 12.5 Broad benefits of cash plus care

Developmental benefits of cash transfers and supportive care interventions for adolescents (aged 10–18 years), South Africa, 2009–2012



Source: Cluver LD, Orkin M, Meinck F, Boyes ME, Yakubovich AR, Sherr L et al. Can social protection improve Sustainable Development Goals for adolescent health? PLoS One. 2016;11(10):e0164808.

EMERGING EVIDENCE AND INNOVATIONS

Magnifying the benefits of social protection

Layering and combining several elements of social protection with health-care interventions and community-based activities can magnify the benefits, especially in relation to HIV. Such linked approaches are especially appealing for HIV prevention and care efforts among adolescents in sub-Saharan Africa. Their potential impact is evident in recent studies from southern Africa that have been exploring better ways to protect adolescents against HIV infection and to enable adolescents living with HIV to adhere to treatment.

Adolescents and young people living with HIV in southern Africa have low retention in HIV care and consequently experience high rates of mortality. There has been a shortage of evidence identifying the health-care factors that can reliably improve the retention of adolescents in HIV treatment and care *(99)*.

In South Africa, analysis of 2014–2015 data from a large study in Eastern Cape province has shown that various combinations of interventions can significantly improve treatment adherence among adolescents. For example, non-adherence to antiretroviral therapy among adolescents (aged 10–19 years) who received food security support, support from parents or caregivers and attended an HIV support group was 18%, compared to 54% among adolescents who had none of these social protections *(83)*.

In an earlier project in Zambia, social cash transfers were combined with enhanced HIV treatment and prevention services for young people (aged 15–19 years). Health staff were trained and supported to provide adolescent-friendly services in target communities, and community-based support was expanded (via peer educators, theatre groups and youth-friendly gathering spaces). Between 2015 and 2017, HIV testing uptake increased from 62% to 73% for girls and from 47% to 57% for their male peers; levels of condom use at last sex increased from 50% to 72% for girls and 48% to 61% for boys *(100)*.

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PART III

REGIONS IN FOCUS

Eastern and southern Africa

AT A GLANCE

1 Strong domestic and international investment has stimulated steep declines in HIV infections and deaths from AIDS-related illness.

2 Adolescent girls and young women continue to face a disproportionally high risk of HIV infection.

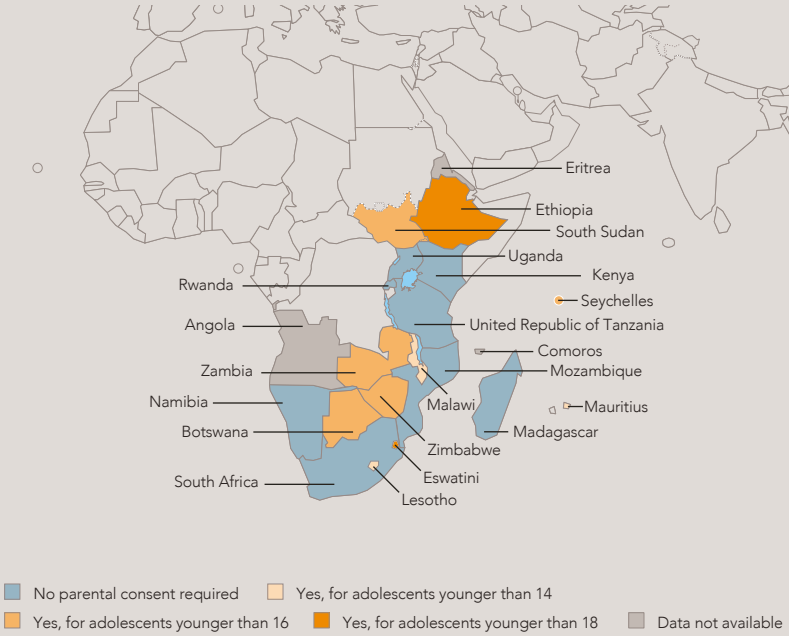
3 Despite a higher HIV burden among women, men account for the majority of deaths from AIDS-related illness.

4 Reaching more men with HIV testing and treatment is critical to breaking cycles of HIV transmission and reducing HIV incidence among young women.

5 Community-based service delivery is at the cutting edge of HIV service provision in eastern and southern Africa and holds the key to future progress.

6 Punitive laws, police harassment and widespread social stigma and discrimination stand in the way of efforts to address the extremely high incidence of HIV among key populations.

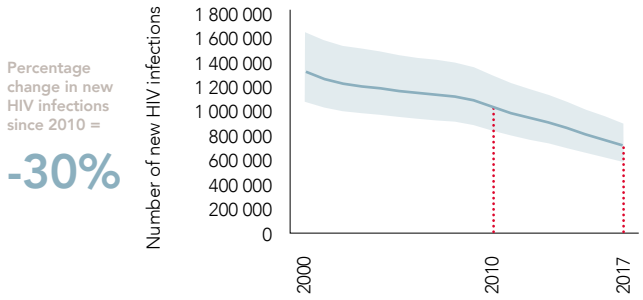
FIGURE 13.1 *Countries with laws and policies requiring parental consent for adolescents to access sexual and reproductive health services, eastern and southern Africa, 2018*



Source: 2017 and 2018 National Commitments and Policy Instrument.

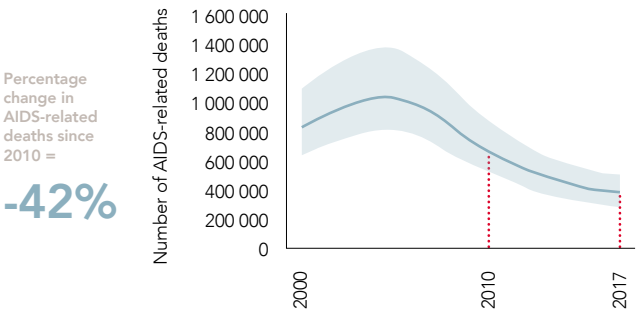
Eastern and southern Africa remains the region most affected by the HIV epidemic, accounting for 45% of the world's HIV infections and 53% of people living with HIV globally. Strong shared responsibility between the region's governments, civil society, international donors and the research community is delivering steep declines in HIV infections and AIDS-related mortality. However, huge challenges remain. Gender inequalities and gender-based violence, combined with physiological factors, place women and girls in eastern and southern Africa at huge risk of HIV infection. In 10 countries in the region, laws and policies that require parental consent to access sexual and reproductive health services discourage adolescent girls from accessing the services they need to stay healthy (Figure 13.1). Removal of these requirements is needed, as is the rapid scale-up of intensive combination prevention programme packages, including elements that improve school attendance and empower young women to mitigate their own risk.

FIGURE 13.2 *Number of new HIV infections, eastern and southern Africa, 2000–2017*



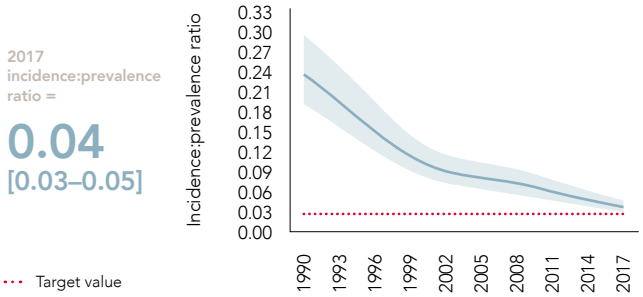
Source: UNAIDS 2018 estimates.

FIGURE 13.3 *Number of AIDS-related deaths, eastern and southern Africa, 2000–2017*



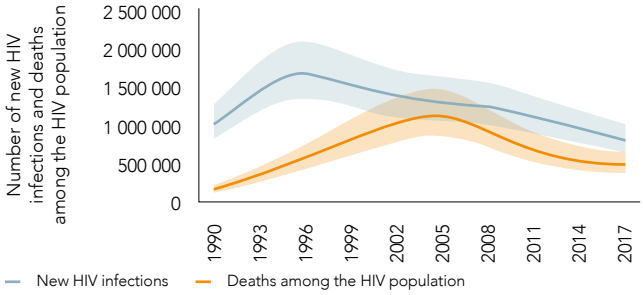
Source: UNAIDS 2018 estimates.

FIGURE 13.4 *Incidence:prevalence ratio, eastern and southern Africa, 1990–2017*



Source: UNAIDS 2018 estimates.

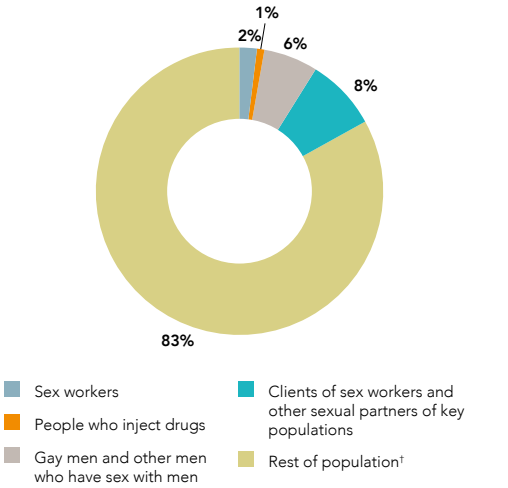
FIGURE 13.5 *Number of new HIV infections and deaths among the HIV population, eastern and southern Africa, 1990–2017*



Source: UNAIDS 2018 estimates.

Major progress in averting deaths from AIDS-related illness (there were 42% fewer in 2017 than in 2010) and preventing new HIV infections (30% fewer in 2017 than in 2010) has brought the incidence:prevalence ratio of eastern and southern Africa to 0.04 [0.03–0.05]. It is steadily moving towards the epidemic transition benchmark of 0.03. The scale of the region's HIV epidemic, however, remains massive. An estimated 800 000 [650 000–1 000 000] people in eastern and southern Africa acquired HIV in 2017, and an estimated 380 000 [300 000–510 000] people died of AIDS-related illness. Mozambique, South Africa and the United Republic of Tanzania accounted for more than half of new HIV infections and deaths from AIDS-related illness in the region in 2017 (Figure 13.7).

FIGURE 13.6 *Distribution of new HIV infections, by population group, eastern and southern Africa, 2017*

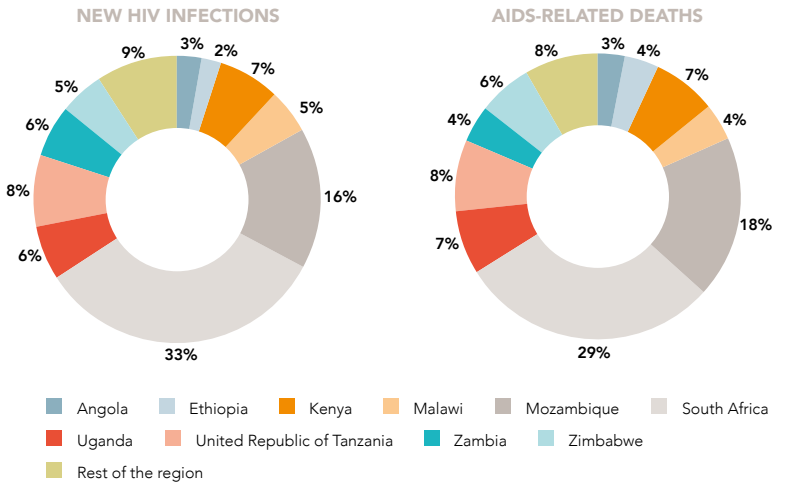


*No data reported on transgender women.

† Individuals in this category did not report any HIV-related risk behaviour.

Source: UNAIDS special analysis, 2018.

FIGURE 13.7 *Distribution of new HIV infections and AIDS-related deaths by country, eastern and southern Africa, 2017*



Source: UNAIDS 2018 estimates.

LAWS AND POLICIES SCORECARD

Country	Criminalization of transgender people	Criminalization of sex work	Criminalization of same-sex sexual acts	Drug use or possession for personal use an offence	Parental consent for adolescents to access HIV testing	Spousal consent for married women to access SRH services	Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Laws or policies restricting the entry, stay and residence of people living with HIV	Mandatory HIV testing for marriage, work or residence permits or for certain groups
Angola			a				b		
Botswana									
Comoros			a	i					
Eritrea			a	c					
Eswatini									
Ethiopia									
Kenya									
Lesotho		d	f		k		e		
Madagascar									
Malawi									
Mauritius			a						
Mozambique					g	l	m		
Namibia				h					
Rwanda		f			g				
Seychelles							n		
South Africa					o				
South Sudan			a				p		
Uganda									q
United Republic of Tanzania									
Zambia									
Zimbabwe									

Criminalized and/or prosecuted
Neither criminalized nor prosecuted
Data not available

Any criminalization or punitive regulation of sex work
Sex work is not subject to punitive regulations or is not criminalized
Issue is determined/differs at subnational level
Data not available

Death penalty
Imprisonment (14 years–life, up to 14 years) or no penalty specified
Laws penalizing same-sex sexual acts have been decriminalized or never existed, or no specific legislation
Data not available

Compulsory detention for drug offences
Possession of drugs for personal use is specified as a criminal offence or drug use or consumption is a specific offence in law
Possession of drugs for personal use is specified as a non-criminal offence
Data not available

Yes, for adolescents younger than 18
Yes, for adolescents younger than 14 and 16
Yes, for adolescents younger than 12
No
Data not available

Yes
No
Data not available

Yes
No, but prosecutions exist based on general criminal laws
No
Data not available

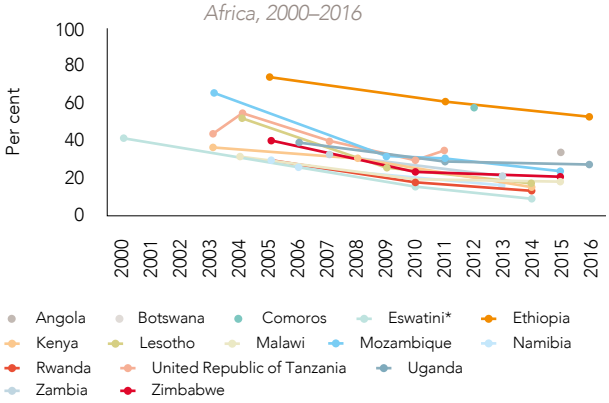
Yes
No
Data not available

Yes
No
Data not available

Note: Data on laws restricting the entry, stay and residence of people living with HIV are currently undergoing a global review that will involve country validation. An update is expected by the end of 2018.

Sources: National Commitment and Policy Instrument, 2017 and 2018; supplemented by additional sources where noted (see references at end of chapter).

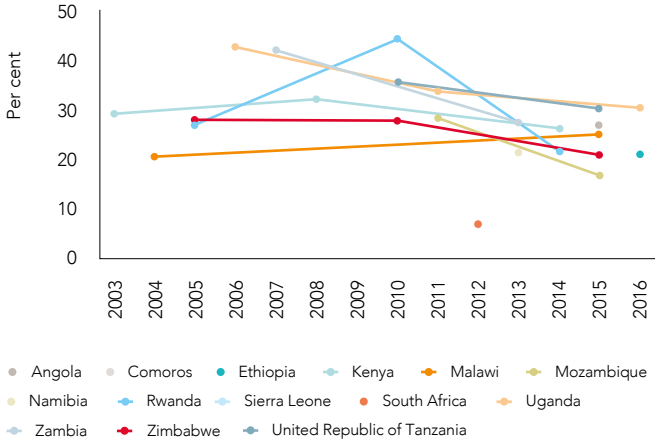
FIGURE 13.8 *Percentage of men and women aged 15–49 years who would not buy vegetables from a shopkeeper living with HIV, eastern and southern Africa, 2000–2016*



*Female respondents only.

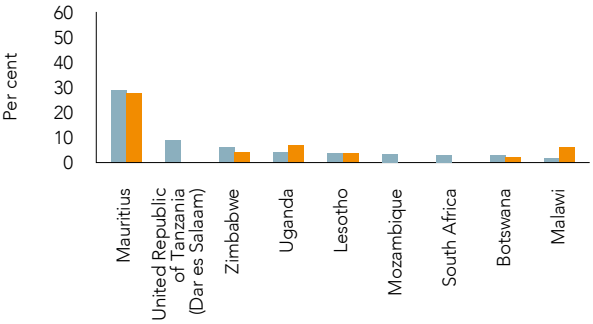
Source: Population-based surveys, 2000–2016.

FIGURE 13.9 *Percentage of ever-married or partnered women aged 15–49 years who experienced physical and/or sexual violence by an intimate partner in the past 12 months, countries with available data, eastern and southern Africa, 2003–2016*



Source: Population-based surveys, 2003–2016.

FIGURE 13.10 *Percentage of people living with HIV who experienced discrimination in health-care settings, countries with available data, eastern and southern Africa, 2013–2016*

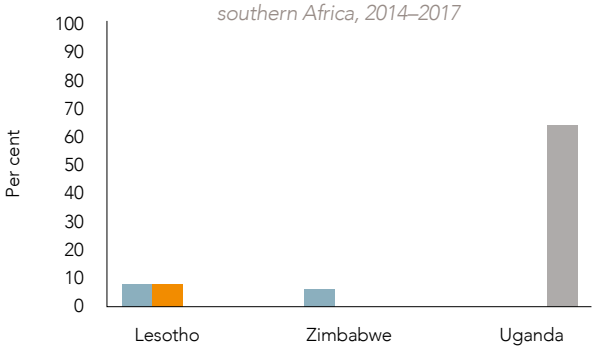


Denied health services because of their HIV status at least once in the past 12 months

Health-care professional ever told other people about their HIV status without their consent

Source: People Living with HIV Stigma Index surveys, 2013–2016.

FIGURE 13.11 *Percentage of key populations who reported having avoided health-care services in the past 12 months due to stigma and discrimination, countries with available data, eastern and southern Africa, 2014–2017*



Female sex workers

Gay men and other men who have sex with men

People who inject drugs

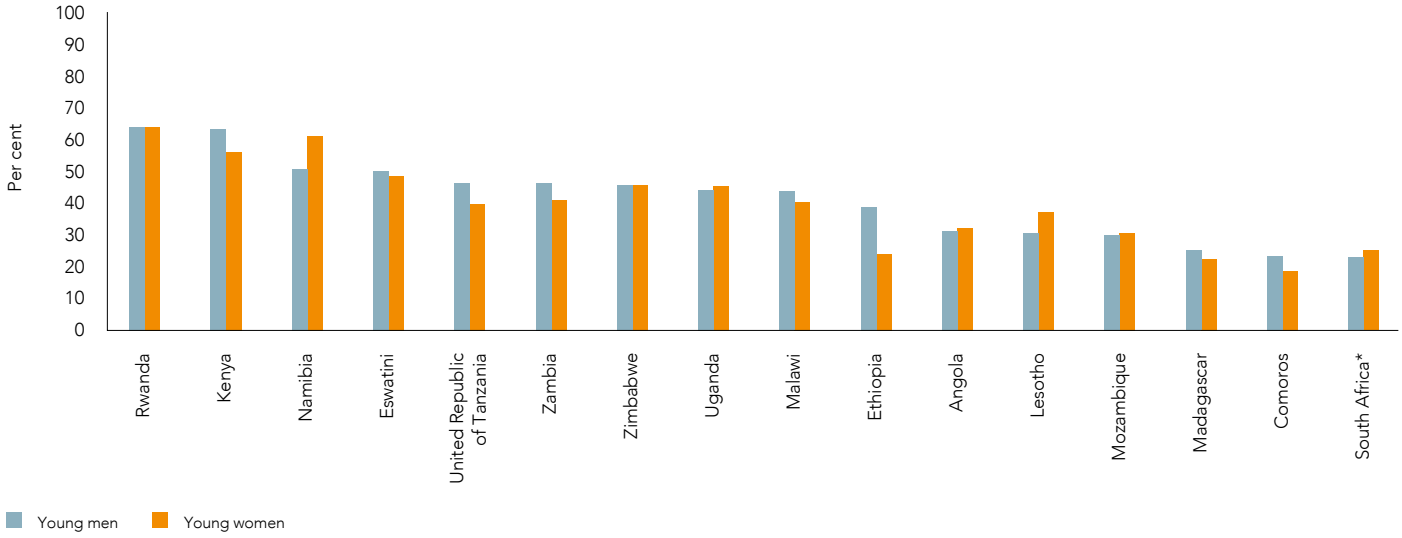
Source: Integrated biological and behavioural surveys, 2014–2017.

HIV-related stigma has declined across much of the region since 2000, but it remains high in several countries (Figure 13.8). More than half of household survey respondents in Comoros and Ethiopia said they would avoid buying vegetables from a vendor living with HIV. This discriminatory attitude was also expressed by 31% of people in Angola, 25% in Uganda, 21% in Mozambique, 18% in Zimbabwe, 15% in Malawi and 13% in Botswana, suggesting that many people still lack basic knowledge about HIV *(1)*.

Even though the region has been confronting major HIV epidemics for more than three decades, special surveys indicate that discrimination in health-care settings still occurs, especially towards key populations. About one in three people living with HIV surveyed in Mauritius said they were denied health services because of their HIV status and that their HIV status had been disclosed without consent (Figure 13.10) *(2)*. In Uganda, almost two thirds (64%) of surveyed people who inject drugs said they avoided health-care services for fear of discrimination or of being reported to law enforcement authorities *(3)*.

High levels of intimate partner violence, which has been shown to increase vulnerability to HIV infection, is a major concern. In household surveys conducted in 12 countries between 2013 and 2016, the percentage of adult women who reported that a male partner had physically or sexually assaulted them in the previous 12 months ranged between 16% (Mozambique) and 30% (Uganda) (Figure 13.9) *(4)*.

FIGURE 13.12 *Percentage of young people (aged 15–24 years) who had correct and comprehensive knowledge about HIV, eastern and southern Africa, 2012–2017*



* The survey in South Africa used different wording and included an additional question.
Source: Population-based surveys, 2012–2017.

The percentage of young people (aged 15–24 years) who had correct and comprehensive knowledge about HIV in the region ranged from 65% of young girls in Rwanda to 23% of young men in South Africa (Figure 13.12). Major programmes to improve HIV prevention services for young people, especially adolescent girls and young women, are being rolled out, such as the DREAMS initiative from the United States President's Emergency Plan for AIDS Relief (PEPFAR), the ALL IN initiative for adolescents, and various national programmes supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund). Greater integration of services for HIV and sexual and reproductive health and rights, including for young people, is important for reducing HIV and other health risks.

Insufficient attention is given to key populations in the region despite extremely high HIV prevalence among them. Population size estimates suggest there are nearly 1 million sex workers in need of services (Figure 13.13). Available data on prevention programme coverage for this key population ranged from 38% in South Sudan to 74% in Kenya (Figure 13.14).

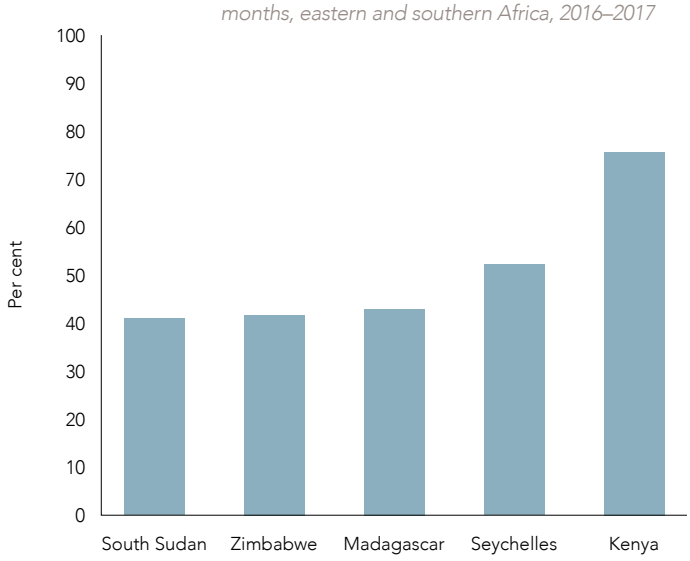
FIGURE 13.13 *Estimated size of sex worker populations, by country, eastern and southern Africa, 2014–2017*

Country	Sex workers
Angola	54 000
Botswana	4000
Burundi	51 000
Eritrea	1600
Eswatini	12 000
Ethiopia	12 000
Kenya	130 000
Lesotho	6300
Madagascar	170 000
Malawi	31 000
Mauritius	5500

Country	Sex workers
Mozambique	27 000
Namibia	8100
Rwanda	12 000
Seychelles	590
South Africa	240 000
South Sudan	39 000
Uganda	2100
United Republic of Tanzania	160 000
Zambia	18 000

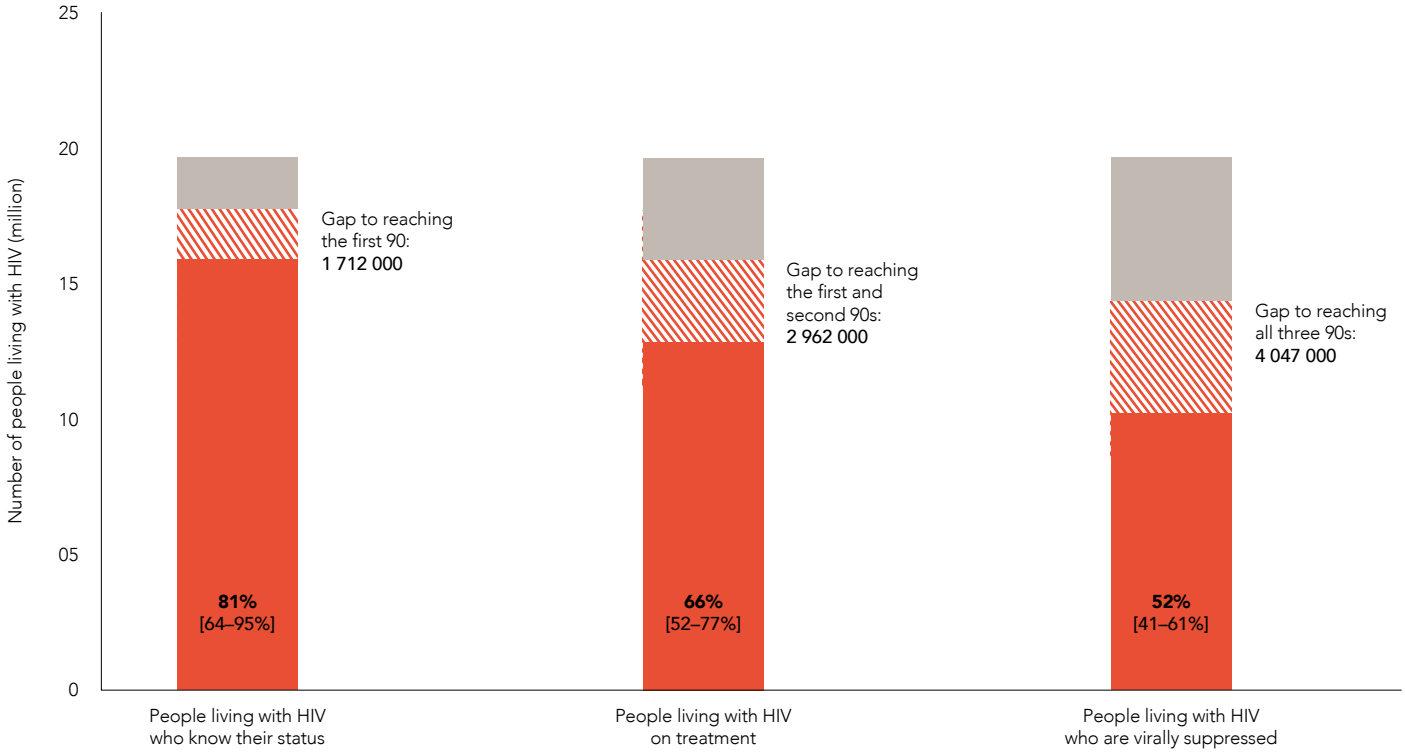
Source: 2018 Global AIDS Monitoring.

FIGURE 13.14 *Percentage of sex workers who reported receiving at least two prevention services in the past three months, eastern and southern Africa, 2016–2017*



Source: 2018 Global AIDS Monitoring.

FIGURE 13.15 *HIV testing and treatment cascade, eastern and southern Africa, 2017*



Source: UNAIDS special analysis, 2018; see annex on methods for more details.

Among 19.6 million [17.5–22.0 million] people living with HIV in eastern and southern Africa at the end of 2017, 81% [64–95%] were aware of their HIV status, an increase from 77% [61–90%] in 2016. The gap to achieving the first 90 of the 90–90–90 targets in 2017 was 1.7 million people living with HIV.

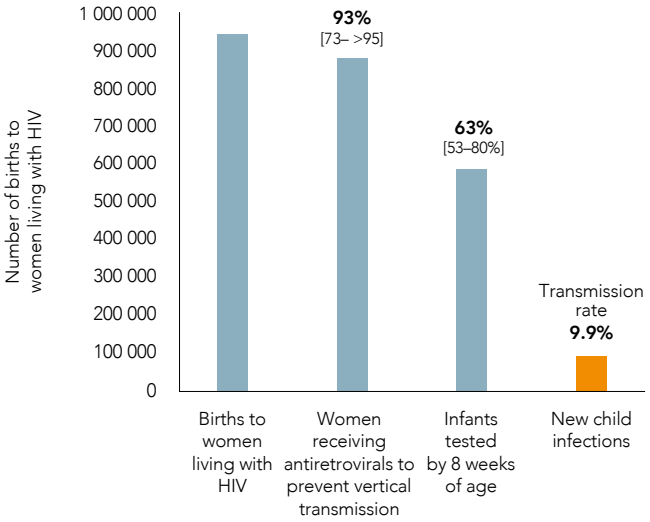
About 12.9 million [11.4–13.4 million] people in the region were accessing antiretroviral therapy in 2017, or 66% [52–77%] of all people living with HIV. The gap to achieving the second 90 of the 90–90–90 targets in 2017 was 3.0 million people living with HIV.

The estimated percentage of people living with HIV who achieved viral suppression increased from 48% [38–56%] in 2016 to 52% [41–61%] in 2017. The gap to achieving the third 90 in 2017 was the viral suppression of an additional 4.0 million people living with HIV.

Botswana and Eswatini have nearly achieved the 90–90–90 testing and treatment targets. Uptake of HIV testing and treatment services in the region continues to be lower among men. Self-testing and assisted partner notification remain important but under-utilized methods to increase HIV diagnoses among men.

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

FIGURE 13.16 *Cascade of services for preventing vertical transmission, number of new infections and transmission rate, eastern and southern Africa, 2017*

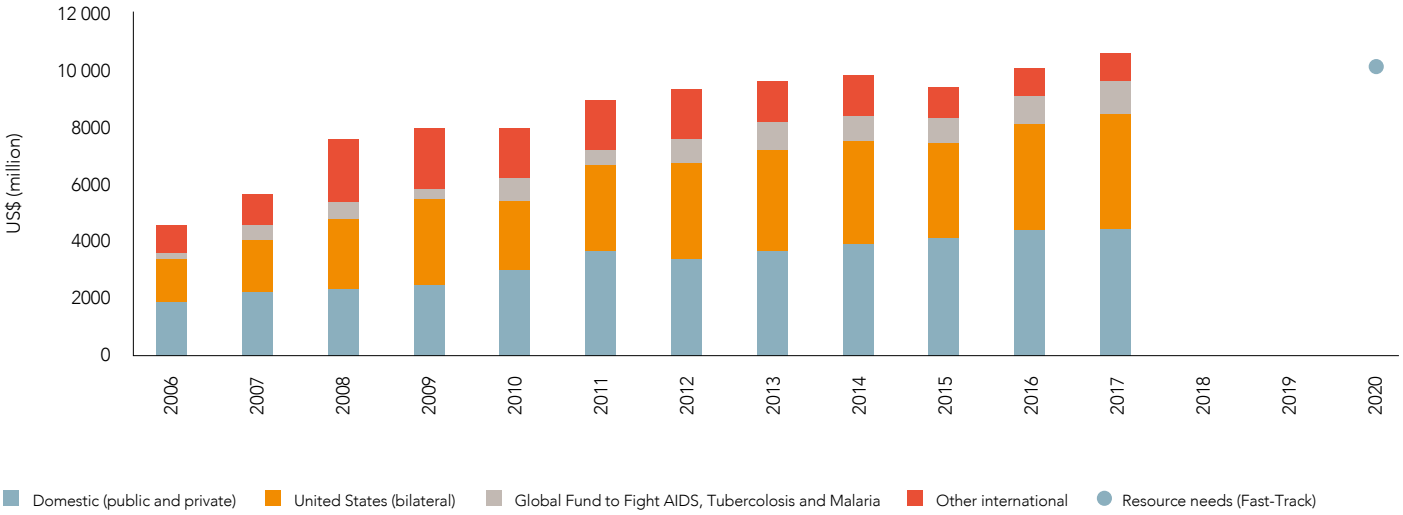


Source: UNAIDS 2018 estimates; 2018 Global AIDS Monitoring.

The region-wide drive to eliminate mother-to-child transmission of HIV continues to yield results. A remarkable 93% [73– >95] of the 940 000 [730 000–1.1 million] pregnant women living with HIV in the region received antiretroviral prophylaxis in 2017 (Figure 13.16), resulting in an average rate of mother-to-child transmission of under 10%, the lowest in the world. That rate would be even lower were it not for the significant numbers of pregnant women who acquire HIV infection during pregnancy or postpartum but who are not diagnosed and offered antiretroviral medicines. Greater availability of point-of-care early infant diagnostics would further expand coverage of early infant testing, which was 63% [53–80%] in 2017.

INVESTMENT

FIGURE 13.17 *HIV resource availability by source, 2000–2017, and projected resource needs by 2020, eastern and southern Africa*



*Estimates for low- and middle-income countries per 2015 World Bank income level classification. All figures are expressed in constant 2016 US dollars.
Source: UNAIDS 2018 resource availability and needs estimates.

In eastern and southern Africa, steady increases in the availability of HIV resources have enabled countries to expand their HIV responses massively over the past decade. Both domestic and international funding for HIV programmes have increased over that period, with domestic investments now accounting for 42% of total resources in 2017. PEPFAR provides 39% of the HIV funding for the region and the Global Fund share is nearly 11%. In total, about US$ 10.6 billion was available for HIV programmes in the region in 2017, a 130% increase since 2006 and US$ 500 million higher than the region's target for 2020. Achieving Fast-Track coverage and impact targets will require maintaining this high level of resource commitment while significantly increasing both the effectiveness and efficiency of programmes.

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Western and central Africa

AT A GLANCE

1 HIV responses in western and central Africa continue to lag behind the rest of sub-Saharan Africa.

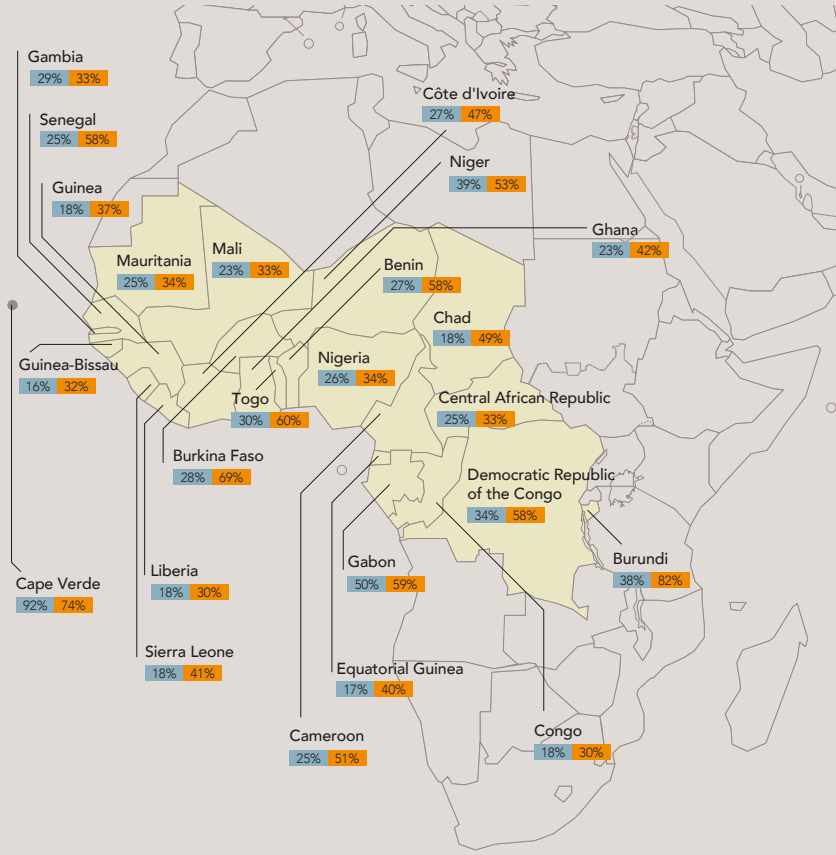
2 The region accounts for 21% of the world's new HIV infections and 30% of global deaths from AIDS-related illness.

3 A regional catch-up plan has been implemented in the region since 2016, but it has not yet translated into a significative change in the rate of programme scale-up.

4 Tailored combination prevention packages for adolescent girls, young women and key populations are a priority and should be implemented with greater urgency.

5 Major humanitarian challenges—including armed conflict, terrorism and the effects of climate change—add to the strain on both government and community resources.

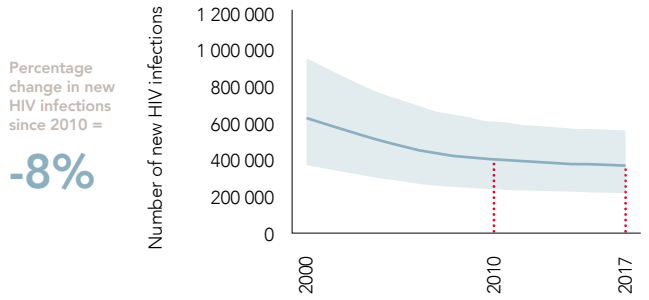
FIGURE 14.1 *Antiretroviral therapy coverage among children (aged 0–14 years) and adults (aged 15 years and older), western and central Africa, 2017*



Source: UNAIDS 2018 estimates.

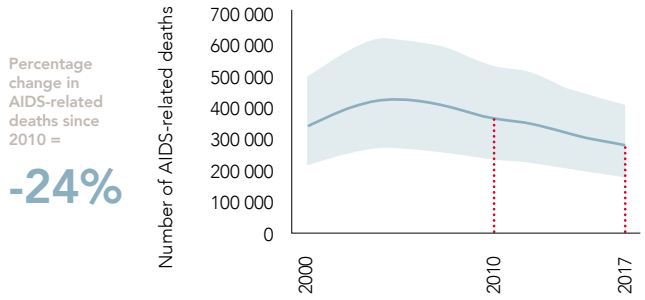
A priority issue facing western and central Africa is the extremely low coverage of antiretroviral therapy among children. Treatment coverage among children (aged 0–14 years) is lower than among adults (aged 15 years and older) globally, but the disparity in western and central Africa is often huge (Figure 14.1): for instance, less than one in five children living with HIV were accessing antiretroviral therapy in Chad, Congo, Equatorial Guinea, Guinea, Guinea-Bissau, Liberia and Sierra Leone.

FIGURE 14.2 *Number of new HIV infections, western and central Africa, 2000–2017*



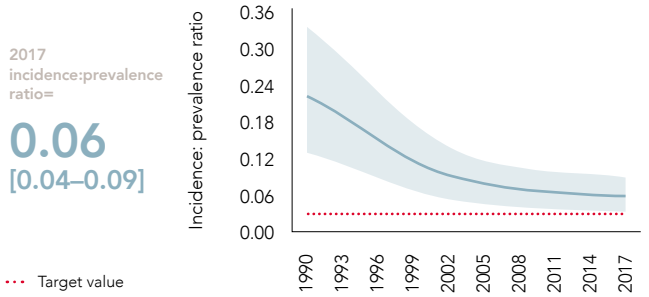
Source: UNAIDS 2018 estimates.

FIGURE 14.3 *Number of AIDS-related deaths, western and central Africa, 2000–2017*



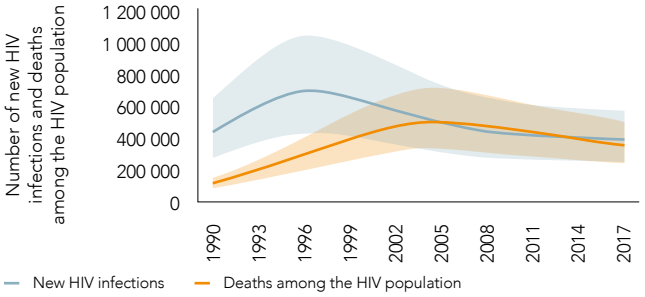
Source: UNAIDS 2018 estimates.

FIGURE 14.4 *Incidence:prevalence ratio, western and central Africa, 1990–2017*



Source: UNAIDS 2018 estimates.

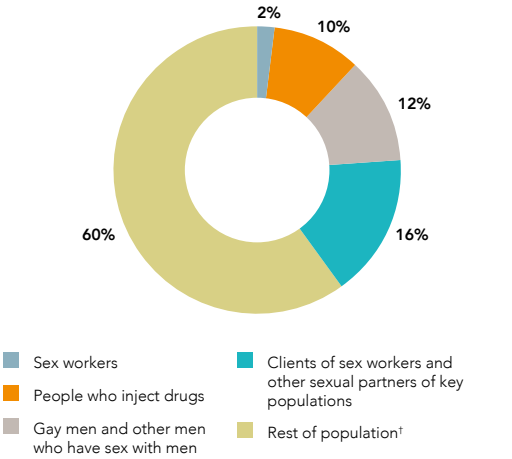
FIGURE 14.5 *Number of new HIV infections and deaths among the HIV population, western and central Africa, 1990–2017*



Source: UNAIDS 2018 estimates.

Both the rate of new HIV infections and the burden of HIV remain high in western and central Africa. The incidence:prevalence ratio in the region has changed little since 2010: it stood at 0.06 [0.04–0.09] in 2017, twice as high as the epidemic transition benchmark of 0.03. Deaths from AIDS-related illness in the region have declined by nearly a quarter since 2010, and annual new HIV infections declined by 8%. Cameroon, Côte d'Ivoire and Nigeria together accounted for approximately 71% of new HIV infections in the region in 2017. Nigeria alone accounted for more than half of new infections and deaths from AIDS-related illness, in part reflecting its large population size compared to other countries in the region.

FIGURE 14.6 *Distribution of new HIV infections, by population group, western and central Africa, 2017*

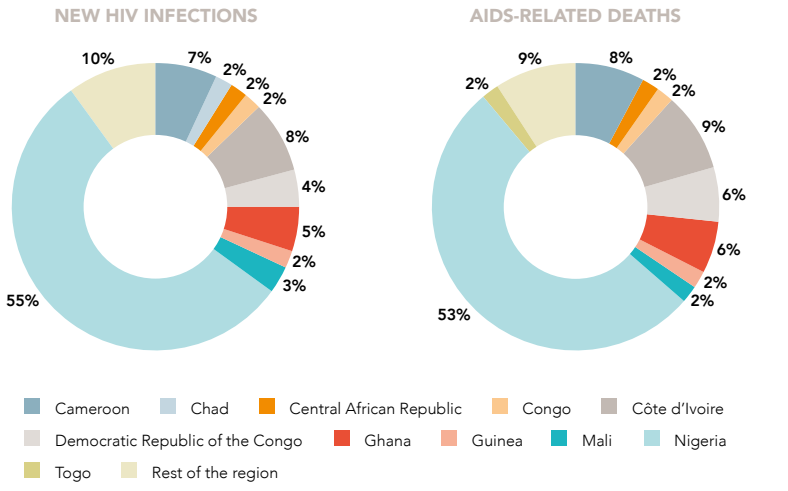


*No data reported on transgender women.

† Individuals in this category did not report any HIV-related risk behaviour.

Source: UNAIDS special analysis, 2018.

FIGURE 14.7 *Distribution of new HIV infections and AIDS-related deaths by country, western and central Africa, 2017*



Source: UNAIDS 2018 estimates.

LAWS AND POLICIES SCORECARD

Country	Criminalization of transgender people	Criminalization of sex work	Criminalization of same-sex sexual acts	Drug use or possession for personal use and offence	Parental consent for adolescents to access HIV testing	Spousal consent for married women to access SRH services	Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Laws or policies restricting the entry, stay and residence of people living with HIV	Mandatory HIV testing for marriage, work or residence permits or for certain groups
Benin				d					
Burkina Faso		a	b	m			c		
Burundi			n						
Cabo Verde			b				c		
Cameroon			b						
Central African Republic		f							
Chad			b				c		g
Congo			b				c		
Côte d'Ivoire				h					
Democratic Republic of the Congo		a	b		a		c		
Equatorial Guinea									
Gabon									
Gambia		a	b	i	a		c		j
Ghana									
Guinea									
Guinea-Bissau							c		
Liberia									
Mali									
Mauritania			e				k		
Niger			b						
Nigeria				o					
Sao Tome and Principe									
Senegal			p						
Sierra Leone									
Togo				l					

Criminalized and/or prosecuted
Neither criminalized nor prosecuted
Data not available

Any criminalization or punitive regulation of sex work
Sex work is not subject to punitive regulations or is not criminalized
Issue is determined/differs at subnational level
Data not available

Death penalty
Imprisonment (14 years–life, up to 14 years) or no penalty specified
Laws penalizing same-sex sexual acts have been decriminalized or never existed, or no specific legislation
Data not available

Compulsory detention for drug offences
Possession of drugs for personal use is specified as a criminal offence or drug use or consumption is a specific offence in law
Possession of drugs for personal use is specified as a non-criminal offence
Data not available

Yes, for adolescents younger than 18
Yes, for adolescents younger than 14 and 16
Yes, for adolescents younger than 12
No
Data not available

Yes
No
Data not available

Yes
No, but prosecutions exist based on general criminal laws
No
Data not available

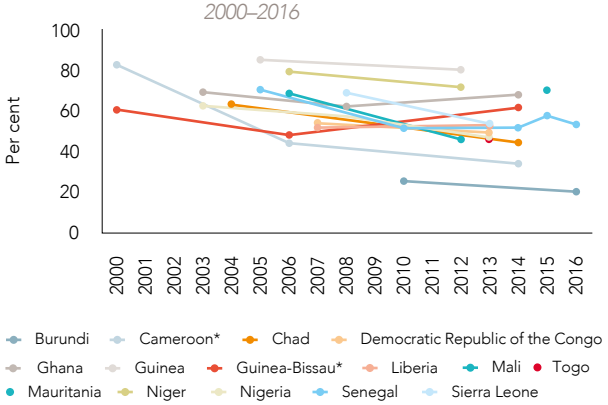
Yes
No
Data not available

Yes
No
Data not available

Note: Data on laws restricting the entry, stay and residence of people living with HIV are currently undergoing a global review that will involve country validation. An update is expected by the end of 2018.

Sources: National Commitment and Policy Instrument, 2017 and 2018; supplemented by additional sources where noted (see references at end of chapter).

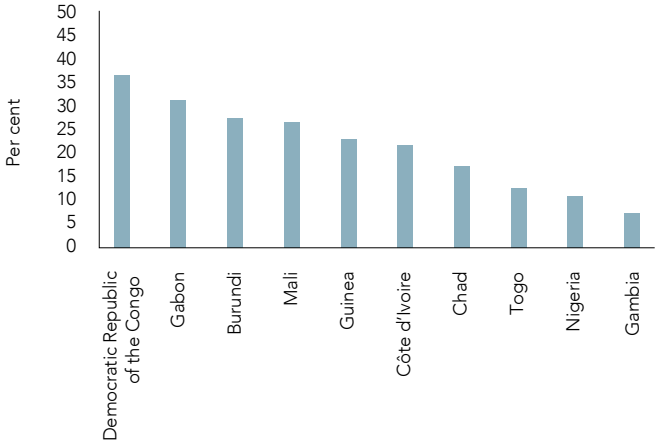
FIGURE 14.8 *Percentage of men and women aged 15–49 who would not buy vegetables from a shopkeeper living with HIV, western and central Africa, 2000–2016*



*Female respondents only.

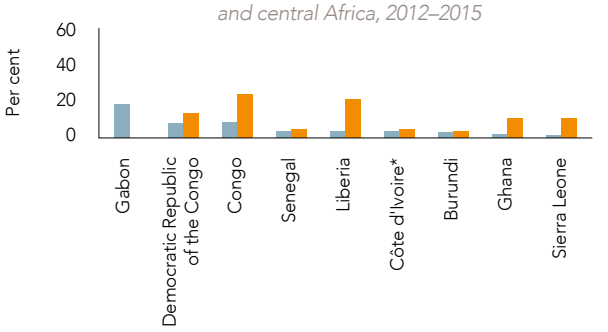
Source: Population-based surveys, 2000–2016.

FIGURE 14.9 *Percentage of ever-married or partnered women aged 15–49 years who experienced physical and/or sexual violence by an intimate partner in the past 12 months, countries with available data, western and central Africa, 2012–2017*



Source: Population-based surveys, 2012–2017.

FIGURE 14.10 *Percentage of people living with HIV who experienced discrimination in health-care settings, countries with available data, western and central Africa, 2012–2015*



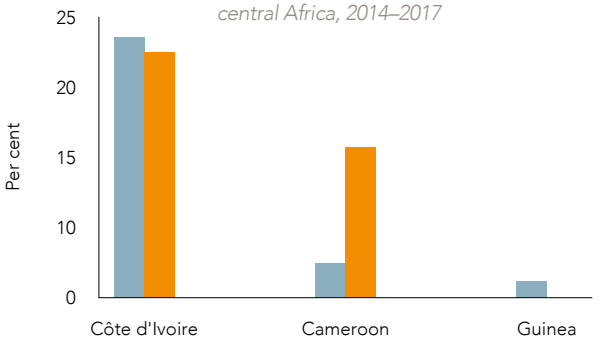
Denied health services because of their HIV status at least once in the past 12 months

Health-care professional ever told other people about their HIV status without their consent

*Ever experienced denial of health care.

Source: People Living with HIV Stigma Index surveys, 2012–2015.

FIGURE 14.11 *Percentage of key populations who reported having avoided health-care services in the past 12 months due to stigma and discrimination, countries with available data, western and central Africa, 2014–2017*



Female sex workers

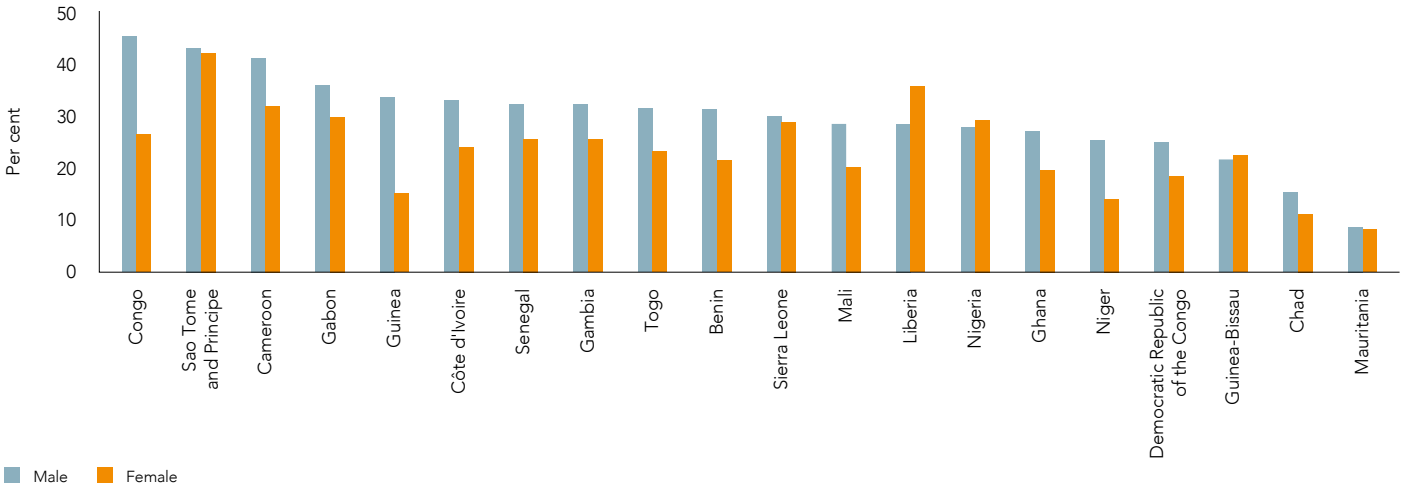
Gay men and other men who have sex with men

Source: Integrated biological and behavioural surveys, 2014–2017.

High levels of stigma and misconceptions about HIV persist in the region. In all but two of the countries with recent population-based survey data, at least 40% of adults said they would not buy vegetables from a shopkeeper living with HIV (Figure 14.8). Substantial proportions of people living with HIV in Congo and Liberia say that health-care professionals have disclosed their HIV status to others without their consent, a breach of confidentiality that undermines confidence in HIV services (Figure 14.10). Comparatively small percentages of people living with HIV report being denied health-care services due to their HIV status, but key populations appear to face additional difficulties *(1)*. In Côte d'Ivoire, for example, 23% of female sex workers and 22% of gay men and other men who have sex with men reported avoiding health-care services due to stigma and discrimination (Figure 14.11).

Intimate partner violence is common in the region. The percentage of adult women (aged 15–49 years) who reported being physically or sexually assaulted by an intimate partner within the previous 12 months ranged from 37% in Democratic Republic of the Congo to 7% in the Gambia (Figure 14.9). Efforts are underway to incorporate gender and other rights into the training of community health workers in the Democratic Republic of the Congo, while ENDA Santé in Senegal is building the capacity of sex worker organizations to promote and protect the human rights of female sex workers and reduce stigma against gay men and other men who have sex with men.

FIGURE 14.12 *Percentage of young people (aged 15–24 years) who had correct and comprehensive knowledge about HIV, western and central Africa, 2012–2017*



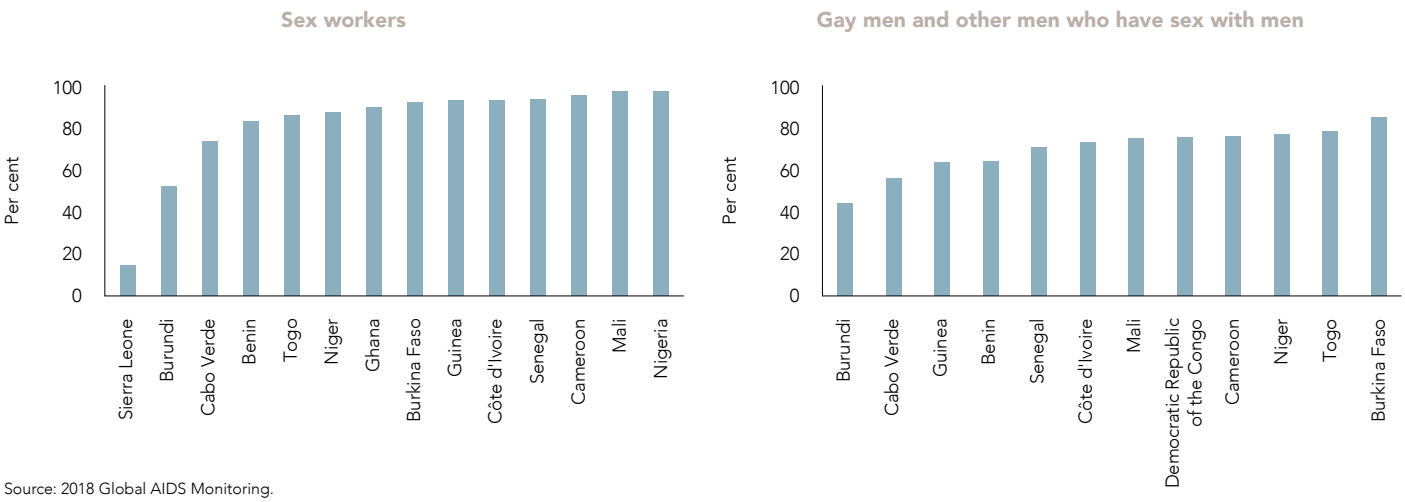
Source: Population-based surveys, 2012–2017.

Slow progress in reducing new HIV infections among adults in western and central Africa highlights the urgent need to expand combination HIV prevention efforts in the region.

Both knowledge about HIV and condom use are low among young people in the region. Population-based surveys conducted between 2012 and 2017 indicate that fewer than one in three (29%) young men (aged 15–24 years) and one in four (23%) young women (aged 15–24 years) had comprehensive and correct knowledge of how to prevent HIV (Figure 14.12).

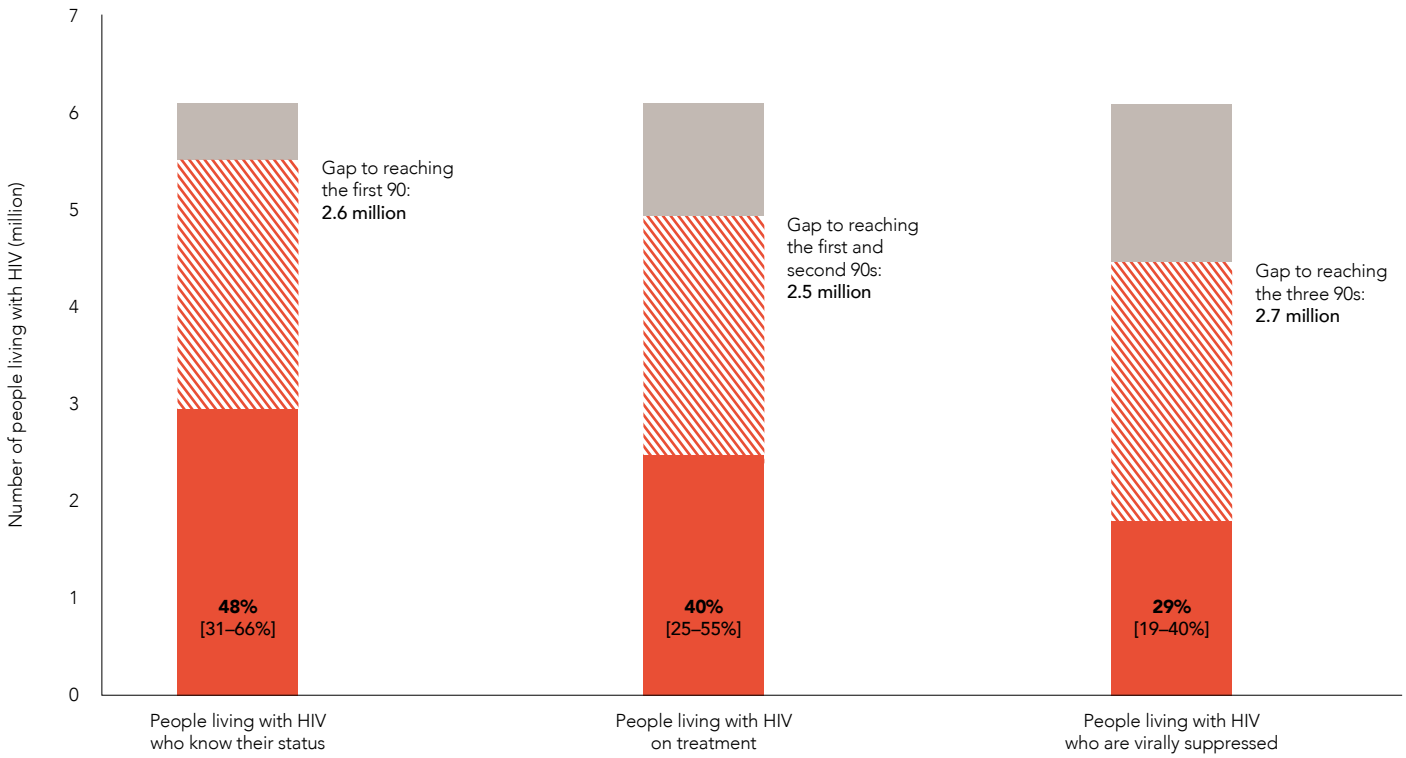
Condom use at last sex with a non-regular, non-cohabitating partner varied among countries, but it was often low among young people (aged 15–24 years): it ranged from 6.8% and 17.8% among young women and young men, respectively, in Sierra Leone, to 65% and 82.5% among young women and young men, respectively, in Sao Tome and Principe. Condom use appeared to be higher during paid sex (more the 80% in 11 of 14 countries with available data) and during sex between gay men and other men who have sex with men (more than 70% in eight of 12 countries with available data) (Figure 14.13).

FIGURE 14.13 *Percentage of sex workers reporting condom use with last client and percentage of gay men and other men who have sex with men reporting condom use with last male partner, countries with available data, western and central Africa, 2014–2017*



Source: 2018 Global AIDS Monitoring.

FIGURE 14.14 *HIV testing and treatment cascade, western and central Africa, 2017*



Source: UNAIDS special analysis, 2018; see annex on methods for more details.

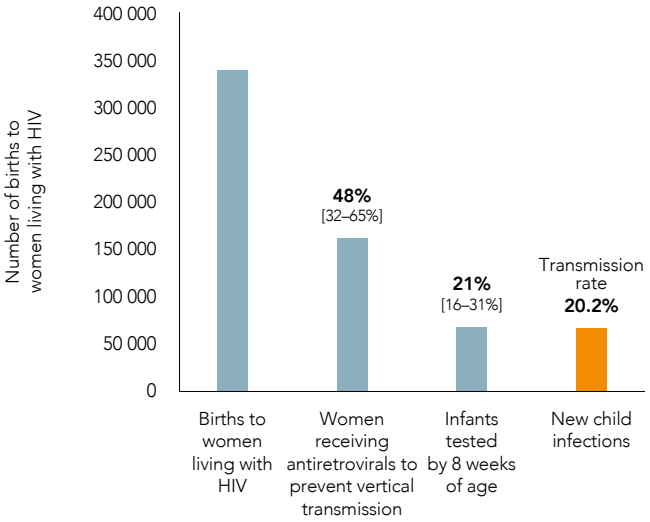
Among the 6.1 million [4.4–8.1 million] people living with HIV in western and central Africa at the end of 2017, 48% [31–66%] were aware of their HIV status, an increase from 43% [27–59%] in 2016. The gap to achieving the first 90 of the 90–90–90 targets in 2017 was 2.6 million people living with HIV who did not know their HIV status.

About 2.4 million [2.1–2.5 million] people in the region were accessing antiretroviral therapy in 2017, or 40% [25–55%] of all people living with HIV. The gap to achieving the second 90 of the 90–90–90 targets in 2017 was 2.5 million people living with HIV not on treatment. Community antiretroviral distribution points are being used in the Democratic Republic of the Congo to avoid long waiting times and discrimination at clinics, as well as recurrent out-of-pocket expenses. Other countries in the region are replicating this approach.

The estimated percentage of people living with HIV in the region who achieved viral suppression increased from 26% [16–36%] in 2016 to 29% [19–40%] in 2017. The gap to achieving the third 90 in 2017 was the viral suppression of an additional 2.7 million people living with HIV.

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

FIGURE 14.15 *Cascade of services for preventing vertical transmission, number of new infections and transmission rate, western and central Africa, 2017*

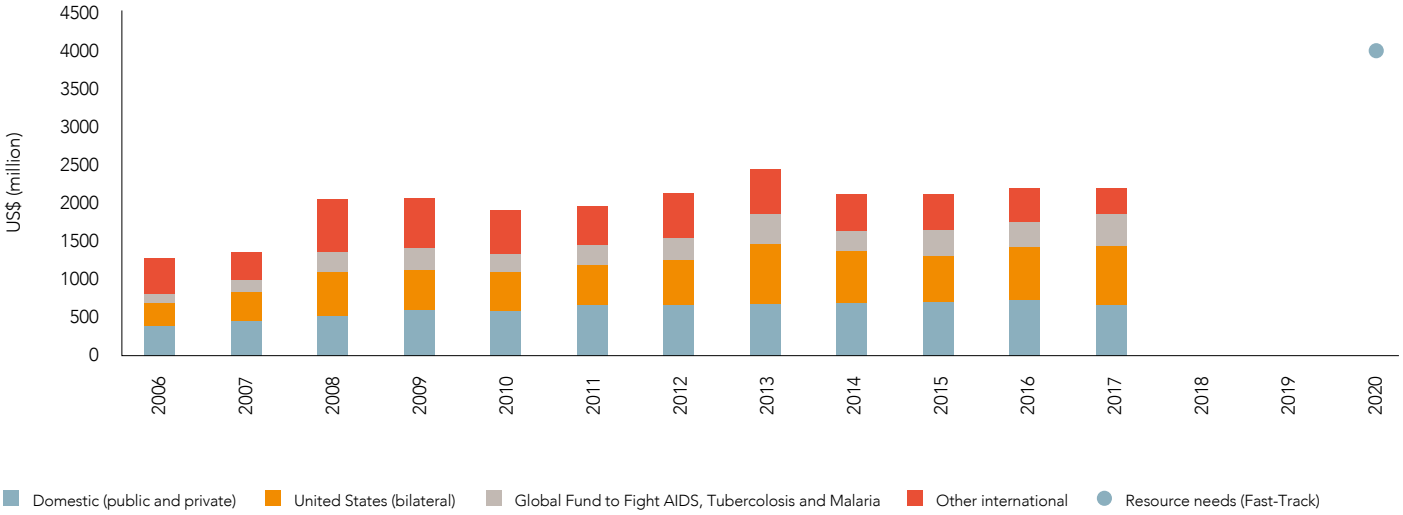


Source: UNAIDS 2018; 2018 Global AIDS Monitoring.

Of the estimated 330 000 pregnant women living with HIV in 2017, fewer than half (48%; [32–65%]) received services to prevent mother-to-child transmission of HIV. As a result, the rate of mother-to-child transmission (including during the breastfeeding period) was 20.2%, twice the rate in eastern and southern Africa. That rate has changed little since 2014, which suggests that the region's drive to eliminate vertical transmission has stalled. Early infant diagnosis also lags, with only about 20% of HIV-exposed infants tested before reaching eight weeks of age. Low HIV testing and treatment coverage for children has resulted in very high mortality rates.

INVESTMENT

FIGURE 14.16 *HIV resource availability by source, 2000–2017, and projected resource needs by 2020, western and central Africa*



*Estimates for low- and middle-income countries per 2015 World Bank income level classification. All figures are expressed in constant 2016 US dollars.
Source: UNAIDS 2018 resource availability and needs estimates.

Resources available for HIV responses in western and central Africa came to approximately US$ 2.1 billion in 2017, with domestic resources accounting for less than one third (31%) of the total. A big funding gap has opened up in this region: about US$ 1.8 billion is needed to reach Fast-Track Targets, 81% more than the funding that was available in 2017. However, important competing priorities (including droughts, food insecurity, terrorism and social instability) limit the scope for increased domestic funding. Arrangements where countries demonstrably step up their HIV responses are needed to match domestic funding with increased external support.

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Asia and the Pacific

AT A GLANCE

1 The HIV epidemic is not over yet: some countries in the region are on track to meet the Fast-Track Targets, but epidemics are expanding in Pakistan and Philippines.

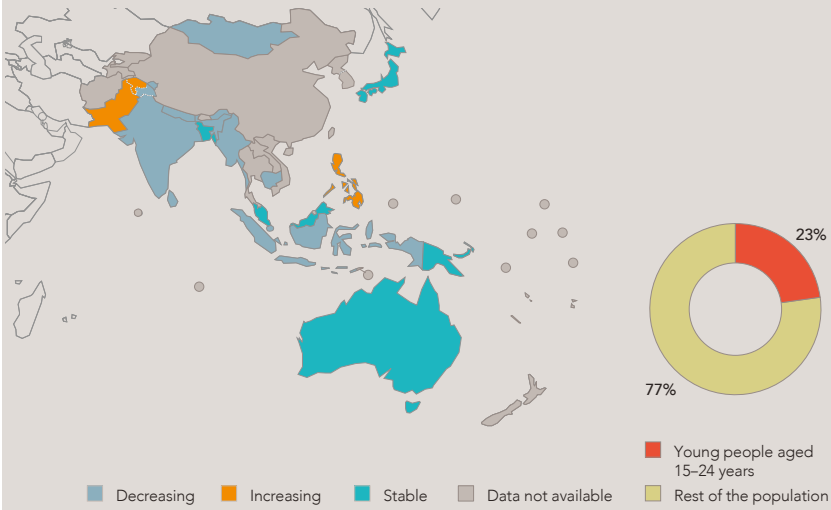
2 While strong progress has been made in increasing access to life-saving HIV treatment, access to HIV prevention services for members of key populations and their intimate partners continue to lag.

3 Rising incidence of HIV among gay men and other men who have sex with men could lead to rebounding HIV epidemics in several countries in the region.

4 Some countries with comprehensive harm reduction programmes have reduced new HIV infections among people who inject drugs, but access to harm reduction services is still not adequate across the region.

5 Active and well-supported community involvement is crucial for the success of the HIV response in the region.

FIGURE 15.1 *Percent change in new HIV infections between 2010 and 2017 and the proportion of new HIV infections that were among young people aged 15–24 years in 2017, Asia and the Pacific*



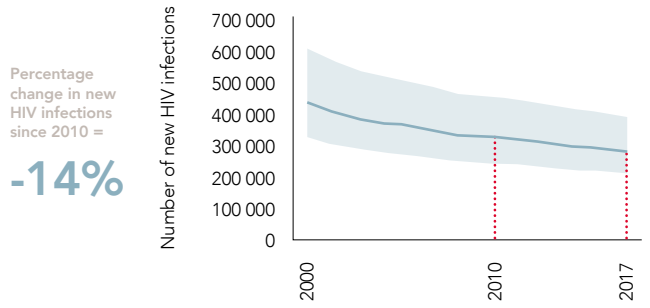
Source: UNAIDS 2018 estimates.

Asia and the Pacific has made strong inroads with its HIV response. Sustained and focused efforts to reach key populations have led to major reductions in HIV infections in Cambodia, India, Myanmar, Thailand and Viet Nam between 2010 and 2017. However, epidemics are expanding in Pakistan and Philippines (Figure 15.1).

The vast majority of new HIV infections in Asia and the Pacific are associated with current or former members of key populations and their partners. Unprotected sex between men—especially young men—is an increasingly important factor in many of the region's HIV epidemics: epidemics among gay men and other men who have sex with men are expanding in several countries. Key populations must remain at the core of HIV prevention.

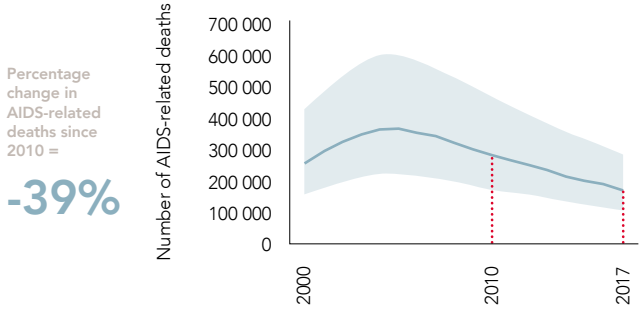
HIV risk among young people within key populations is of particular concern: since 2010, new HIV infections among young people (aged 15–24 years) increased by 170% in Philippines and 29% in Pakistan.

FIGURE 15.2 *Number of new HIV infections, Asia and the Pacific, 2000–2017*



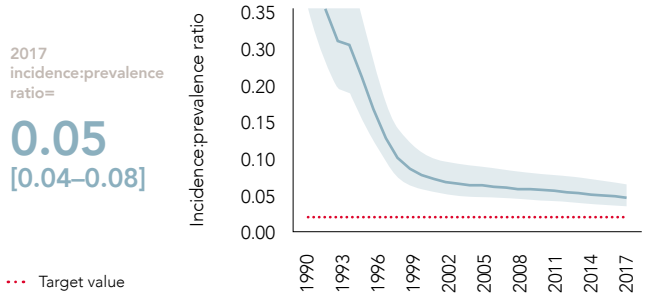
Source: UNAIDS 2018 estimates.

FIGURE 15.3 *Number of AIDS-related deaths, Asia and the Pacific, 2000–2017*



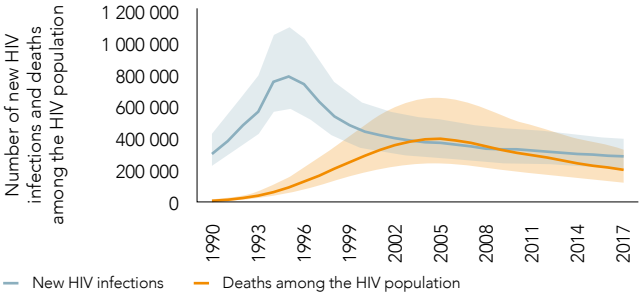
Source: UNAIDS 2018 estimates.

FIGURE 15.4 *Incidence:prevalence ratio, Asia and the Pacific, 1990–2017*



Source: UNAIDS 2018 estimates.

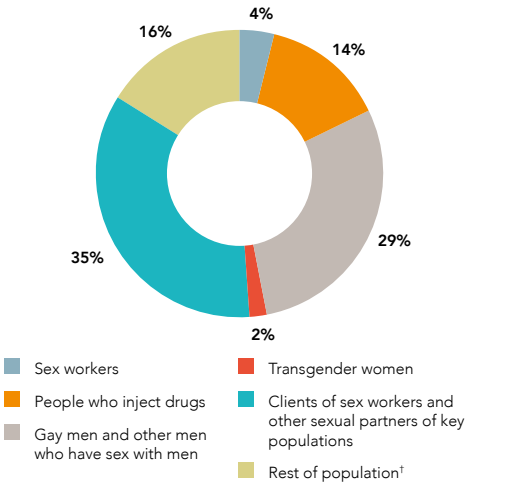
FIGURE 15.5 *Number of new HIV infections and deaths among the HIV population, Asia and the Pacific, 1990–2017*



Source: UNAIDS 2018 estimates.

New HIV infections in Asia and the Pacific decreased by 14% during 2010–2017 and annual deaths from AIDS-related illness declined by 39% during that same period. The combined progress reduced the region's incidence:prevalence ratio to a comparatively low 0.05 [0.04–0.08] in 2017; it is steadily moving towards the 0.03 epidemic transition benchmark. Slower progress on HIV prevention compared to treatment translates to steadily increasing numbers of people living with HIV and rising costs for HIV-related health care.

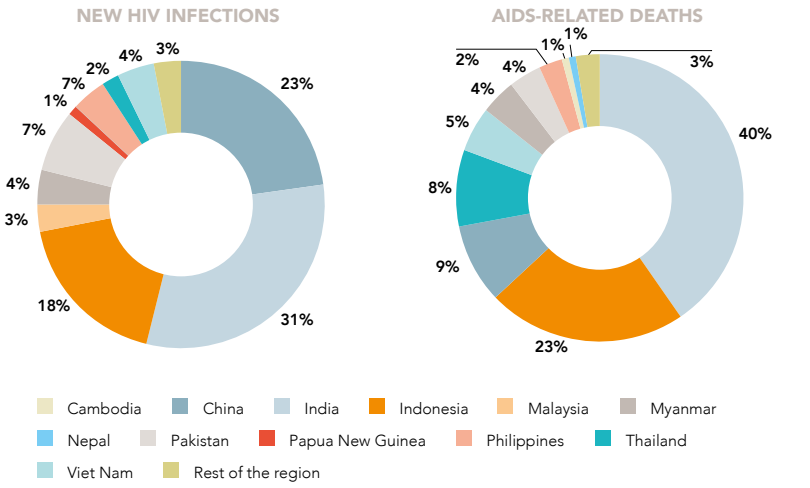
FIGURE 15.6 *Distribution of new HIV infections, by population group, Asia and the Pacific, 2017*



† Individuals in this category did not report any HIV-related risk behaviour.

Source: UNAIDS special analysis, 2018.

FIGURE 15.7 *Distribution of new HIV infections and AIDS-related deaths by country, Asia and the Pacific, 2017*



Source: UNAIDS 2018 estimates.

Country	Criminalization of transgender people	Criminalization of sex work	Criminalization of same-sex sexual acts	Drug use or possession for personal use an offence	Parental consent for adolescents to access HIV testing	Spousal consent for married women to access SRH services	Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Laws or policies restricting the entry, stay and residence of people living with HIV	Mandatory HIV testing for marriage, work or residence permits or for certain groups
Afghanistan	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Imprisonment (14 years–life, up to 14 years) or no penalty specified	Possession of drugs for personal use is specified as a non-criminal offence	Yes, for adolescents younger than 18	Yes	Yes	Yes	Criminalized and/or prosecuted
Australia	Data not available	Data not available	a	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Bangladesh	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Death penalty	Compulsory detention for drug offences	Criminalized and/or prosecuted	Neither criminalized nor prosecuted	Neither criminalized nor prosecuted	Neither criminalized nor prosecuted	Neither criminalized nor prosecuted
Bhutan	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Brunei-Darussalam	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Cambodia	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Imprisonment (14 years–life, up to 14 years) or no penalty specified	Data not available	Yes, for adolescents younger than 18	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Neither criminalized nor prosecuted	Neither criminalized nor prosecuted
China	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Imprisonment (14 years–life, up to 14 years) or no penalty specified	Criminalized and/or prosecuted	Yes, for adolescents younger than 18	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Neither criminalized nor prosecuted	Criminalized and/or prosecuted
Cook Islands	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Democratic People's Republic of Korea	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Fiji	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Imprisonment (14 years–life, up to 14 years) or no penalty specified	Criminalized and/or prosecuted	Yes, for adolescents younger than 18	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Neither criminalized nor prosecuted	Data not available
India	Neither criminalized nor prosecuted	Data not available	Death penalty	Compulsory detention for drug offences	Criminalized and/or prosecuted	Neither criminalized nor prosecuted	Neither criminalized nor prosecuted	Neither criminalized nor prosecuted	Neither criminalized nor prosecuted
Indonesia	Data not available	Data not available	Data not available	Data not available	Yes, for adolescents younger than 14 and 16	Criminalized and/or prosecuted	Data not available	Data not available	Criminalized and/or prosecuted
Japan	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Kiribati	Criminalized and/or prosecuted	Criminalized and/or prosecuted	Death penalty	Criminalized and/or prosecuted	Yes, for adolescents younger than 12	Neither criminalized nor prosecuted	Any criminalization or punitive regulation of sex work	Neither criminalized nor prosecuted	Criminalized and/or prosecuted
Lao People's Democratic Republic	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Imprisonment (14 years–life, up to 14 years) or no penalty specified	Compulsory detention for drug offences	Yes, for adolescents younger than 14 and 16	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Neither criminalized nor prosecuted	Criminalized and/or prosecuted
Malaysia	Criminalized and/or prosecuted	Criminalized and/or prosecuted	Data not available	Compulsory detention for drug offences	Criminalized and/or prosecuted	Neither criminalized nor prosecuted	Data not available	Data not available	Criminalized and/or prosecuted
Maldives	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Marshall Islands	Neither criminalized nor prosecuted	Criminalized and/or prosecuted	Imprisonment (14 years–life, up to 14 years) or no penalty specified	Criminalized and/or prosecuted	Yes, for adolescents younger than 12	Neither criminalized nor prosecuted	Data not available	Criminalized and/or prosecuted	Criminalized and/or prosecuted
Micronesia (Federated States of)	Neither criminalized nor prosecuted	Data not available	Death penalty	Possession of drugs for personal use is specified as a non-criminal offence	Yes, for adolescents younger than 12	Neither criminalized nor prosecuted	Neither criminalized nor prosecuted	Neither criminalized nor prosecuted	Neither criminalized nor prosecuted
Mongolia	Data not available	Data not available	Data not available	Data not available	Criminalized and/or prosecuted	Neither criminalized nor prosecuted	Data not available	Data not available	Criminalized and/or prosecuted

Criminalized and/or prosecuted; Neither criminalized nor prosecuted; Data not available

Any criminalization or punitive regulation of sex work; Sex work is not subject to punitive regulations or is not criminalized; Issue is determined/differs at subnational level; Data not available

Death penalty; Imprisonment (14 years–life, up to 14 years) or no penalty specified; Data not available

Laws penalizing same-sex sexual acts have been decriminalized or never existed, or no specific legislation

Compulsory detention for drug offences; Possession of drugs for personal use is specified as a non-criminal offence; Data not available

Possession of drugs for personal use is specified as a criminal offence or drug use or consumption is a specific offence in law

Yes, for adolescents younger than 18; Yes, for adolescents younger than 14 and 16; Yes, for adolescents younger than 12; No; Data not available

Yes; No; Data not available

Yes; No, but prosecutions exist based on general criminal laws; No; Data not available

Yes; No; Data not available

Yes; No; Data not available

[a] Australia. Marriage Amendment (Definition and Religious Freedoms) Act 2017. Sec 2CA (https://www.legislation.gov.au/Details/C2017A00129).

Note: Data on laws restricting the entry, stay and residence of people living with HIV are currently undergoing a global review that will involve country validation. An update is expected by the end of 2018.

Sources: National Commitment and Policy Instrument, 2017 and 2018; supplemented by additional sources where noted.

Country	Criminalization of transgender people	Criminalization of sex work	Criminalization of same-sex sexual acts	Drug use or possession for personal use an offence	Parental consent for adolescents to access HIV testing	Spousal consent for married women to access SRH services	Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Laws or policies restricting the entry, stay and residence of people living with HIV	Mandatory HIV testing for marriage, work or residence permits or for certain groups
Myanmar									
Nauru									
Nepal									
New Zealand									
Niue									
Pakistan									
Palau									
Papua New Guinea									
Philippines									
Republic of Korea									
Samoa			b						
Singapore									
Solomon Islands									
Sri Lanka									
Thailand									
Timor-Leste									
Tonga									
Tuvalu									
Vanuatu									
Viet Nam									

Criminalized and/or prosecuted
Neither criminalized nor prosecuted
Data not available

Any criminalization or punitive regulation of sex work
Sex work is not subject to punitive regulations or is not criminalized
Issue is determined/differs at subnational level
Data not available

Death penalty
Imprisonment (14 years–life, up to 14 years) or no penalty specified
Data not available

Laws penalizing same-sex sexual acts have been decriminalized or never existed, or no specific legislation

Compulsory detention for drug offences
Possession of drugs for personal use is specified as a non-criminal offence
Data not available

Possession of drugs for personal use is specified as a criminal offence or drug use or consumption is a specific offence in law

Yes, for adolescents younger than 18
Yes, for adolescents younger than 14 and 16
Yes, for adolescents younger than 12
No
Data not available

Yes
No
Data not available

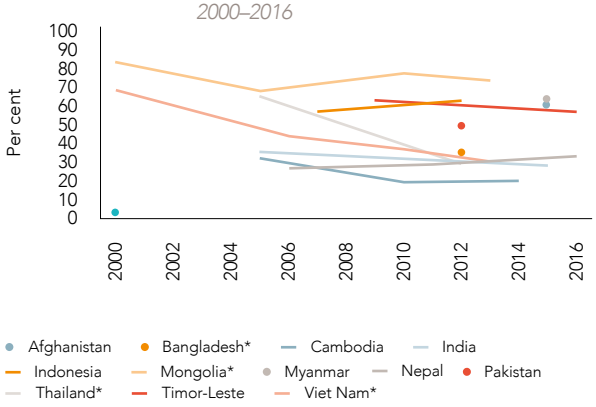
Yes
No, but prosecutions exist based on general criminal laws
No
Data not available

Yes
No
Data not available

Yes
No
Data not available

[b] Independent State of Samoa. Crimes Act 2013, No. 10. Sec 67 (http://www.palemene.ws/new/wp-content/uploads//01.Acts/Acts%202013/Crimes_Act_2013_-_Eng.pdf).

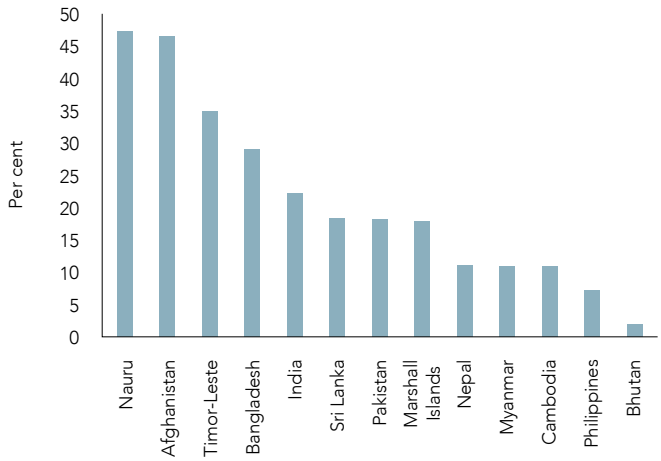
FIGURE 15.8 *Percentage of men and women aged 15–49 years who would not buy vegetables from a shopkeeper living with HIV, Asia and the Pacific, 2000–2016*



*Female respondents only.

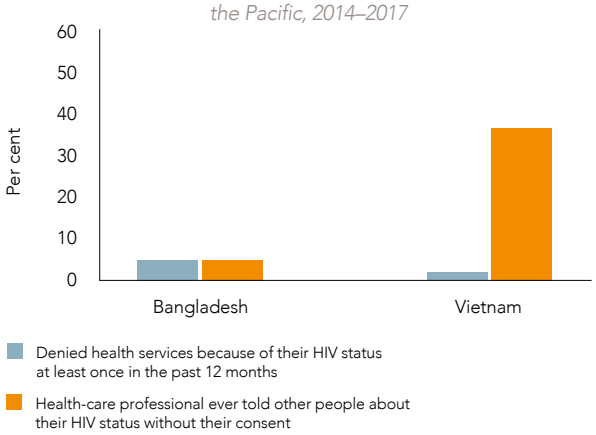
Source: Population-based surveys, 2000–2016.

FIGURE 15.9 *Percentage of ever-married or partnered women aged 15–49 years who experienced physical and/or sexual violence by an intimate partner in the past 12 months, countries with available data, Asia and the Pacific, 2012–2016*



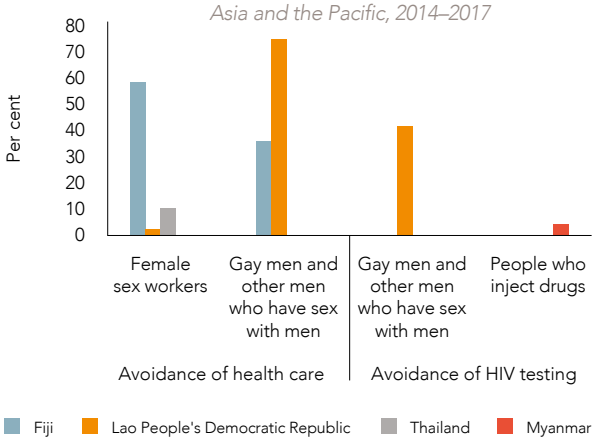
Source: Population-based surveys, 2012–2016.

FIGURE 15.10 *Percentage of people living with HIV who experienced discrimination in health-care settings, countries with available data, Asia and the Pacific, 2014–2017*



Source: People Living with HIV Stigma Index surveys, 2014–2017.

FIGURE 15.11 *Percentage of key populations who reported having avoided health-care services and HIV testing in the past 12 months due to stigma and discrimination, countries with available data, Asia and the Pacific, 2014–2017*



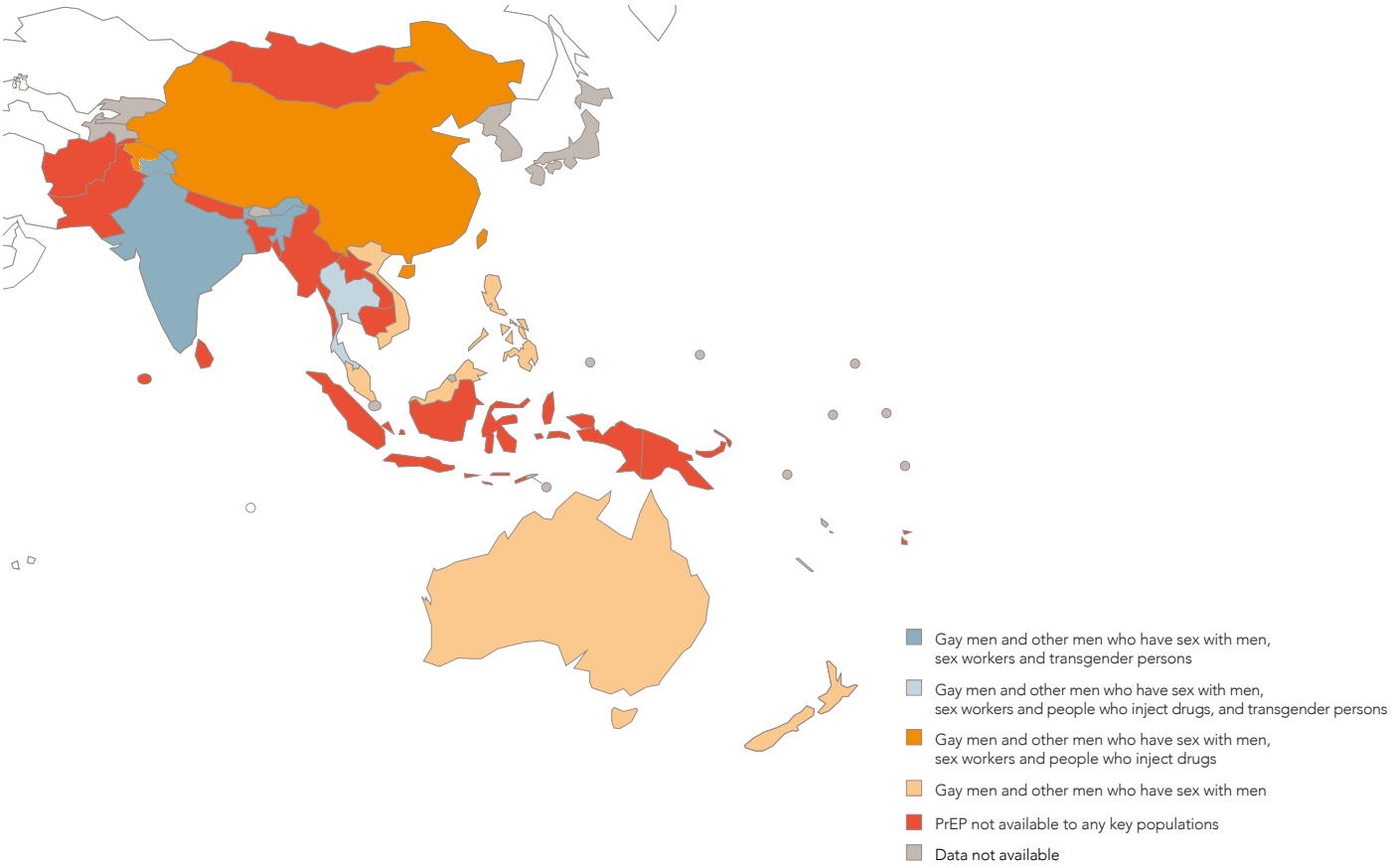
Source: Integrated biological and behavioural surveys, 2014–2017.

Successive surveys in Cambodia, India, Thailand and Viet Nam indicate that attitudes towards people living with HIV have improved. At the same time, 50% or more of people surveyed in Afghanistan, Indonesia, Mongolia, Myanmar, Pakistan and Timor-Leste said they would not buy vegetables from a vendor living with HIV (Figure 15.8) *(1)*.

While several countries in the region have earned plaudits with their HIV programmes for female sex workers, stigma and discrimination still poses a major barrier in places like Fiji, where more than half (59%) of female sex workers reported avoiding health-care services due to stigma and discrimination. In Lao People's Democratic Republic and Thailand, by contrast, only 2% and 11% of female sex workers, respectively, reported similar trepidation *(1)*. Three quarters (75%) of gay men and other men who have sex with the men in Lao People's Democratic Republic and about one third (36%) of their peers in Fiji said that stigma and discrimination deterred them from visiting health-care facilities (Figure 15.11) *(2)*.

More than a quarter of women reported being physically or sexually assaulted by an intimate partner in the previous 12 months in Afghanistan, Bangladesh, Nauru and Timor-Leste (Figure 15.9) *(3)*. One in five transgender women in India experienced sexual violence in the last 12 months, and one quarter of transgender women in Bangladesh reported being raped in the last 12 months *(4)*.

FIGURE 15.12 *Availability of pre-exposure prophylaxis for key populations through pilot projects and demonstration sites, Asia and the Pacific, March 2018*



Source: 2017 and 2018 National Commitments and Policy Instrument. Information based on communications with national HIV programmes and UNAIDS country offices in Asia and the Pacific, 2017.

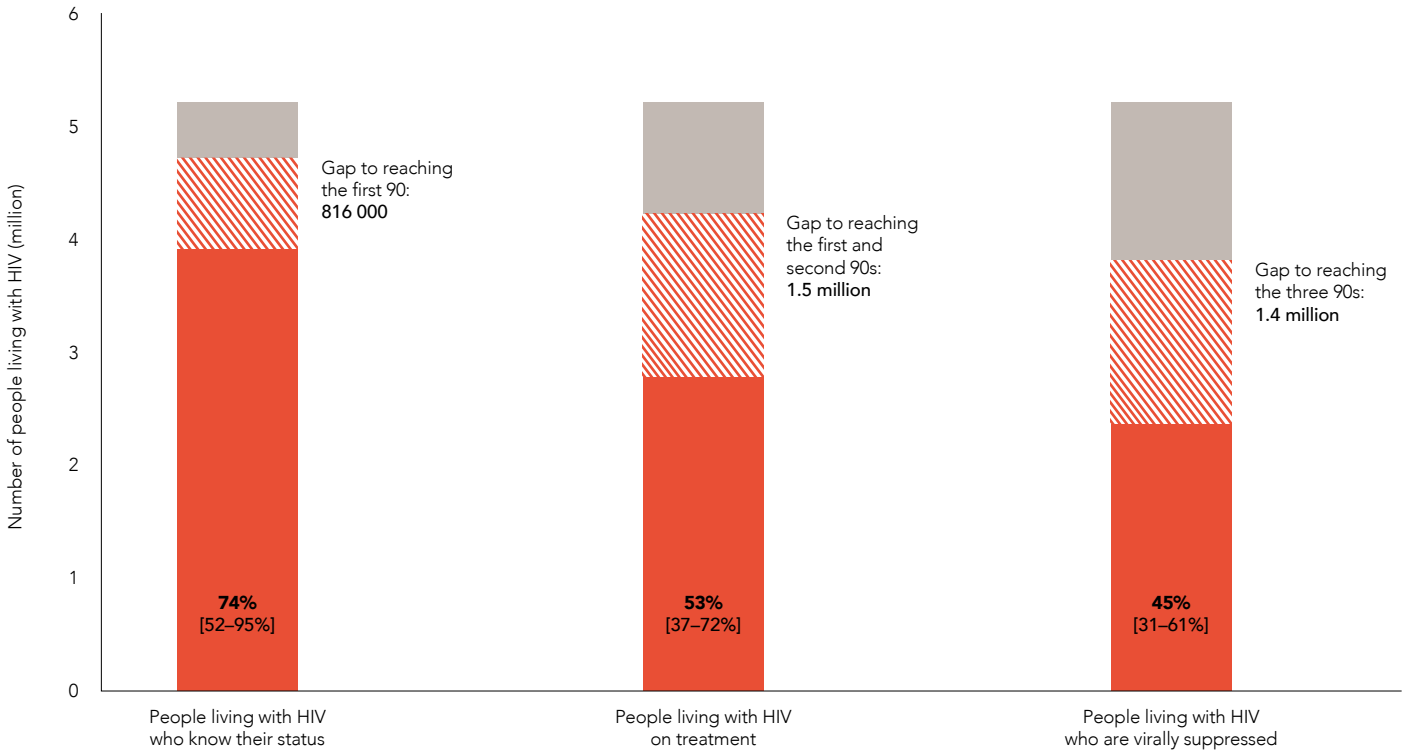
While several countries have successfully reduced HIV transmission during sex work, the region has had less success in reversing the HIV epidemics among gay men and other men who have sex with men. Coverage of prevention programmes for this population are low, and services tend to be focused chiefly in large cities. There has been an encouraging increase in the number of countries offering pre-exposure prophylaxis (PrEP), albeit mainly through pilot projects and at demonstration sites. By March 2018, PrEP was available on a limited basis to gay men and other men who have sex with men in China, India, Malaysia, New Zealand, Philippines, Thailand and Viet Nam (Figure 15.12)[1]. In Australia, PrEP is being provided at scale.

When harm reduction programmes have been provided at scale in Asia and the Pacific, they have led to declines in HIV prevalence among people who inject drugs (such as in Malaysia). Fourteen countries across Asia were implementing needle–syringe programmes in 2016, but very few of them have expanded their programmes in recent years *(5)*.

Prevention services also must reach the sexual partners of current or former members of key populations. Research in Viet Nam has found HIV prevalence among the female sexual partners of men who inject drugs to be as high as 44% in Hanoi, 37% in Ho Chi Minh City and 10% in Dien Bien. Between one third and almost one half of the female partners of HIV-positive men who inject drugs were unaware of the HIV status of their partners *(6)*.

[1] Information based on communication with national HIV programmes and UNAIDS country offices in Asia and the Pacific, 2017.

FIGURE 15.13 *HIV testing and treatment cascade, Asia and the Pacific, 2017*



Source: UNAIDS special analysis, 2018; see annex on methods for more details.

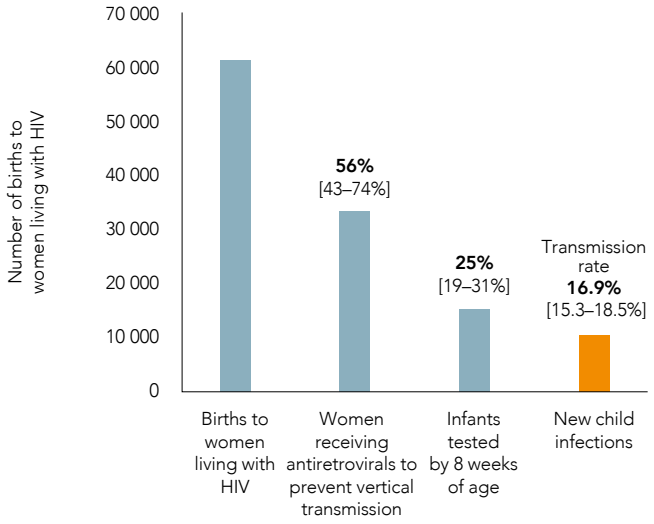
Among the 5.2 million [4.1–6.7 million] people living with HIV in Asia and the Pacific at the end of 2017, 74% [52– >95%] were aware of their HIV status, an increase from 70% [49–94%] in 2016. The gap to achieving the first 90 of the 90–90–90 targets in 2017 was 816 000 people living with HIV.

About 2.7 million [2.4–2.9 million] people in the region were accessing antiretroviral therapy in 2017, or 53% [37–72%] of all people living with HIV. The gap to achieving the first and second 90s of the 90–90–90 targets in 2017 was 1.5 million people living with HIV.

The estimated percentage of people living with HIV who achieved viral suppression increased from 38% [27–52%] in 2016 to 45% [31–61%] in 2017. The gap to achieving all three 90s in 2017 was the testing, treatment and viral suppression of an additional 1.4 million people living with HIV.

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

FIGURE 15.14 *Cascade of services for preventing vertical transmission, number of new infections and transmission rate, Asia and the Pacific, 2017*

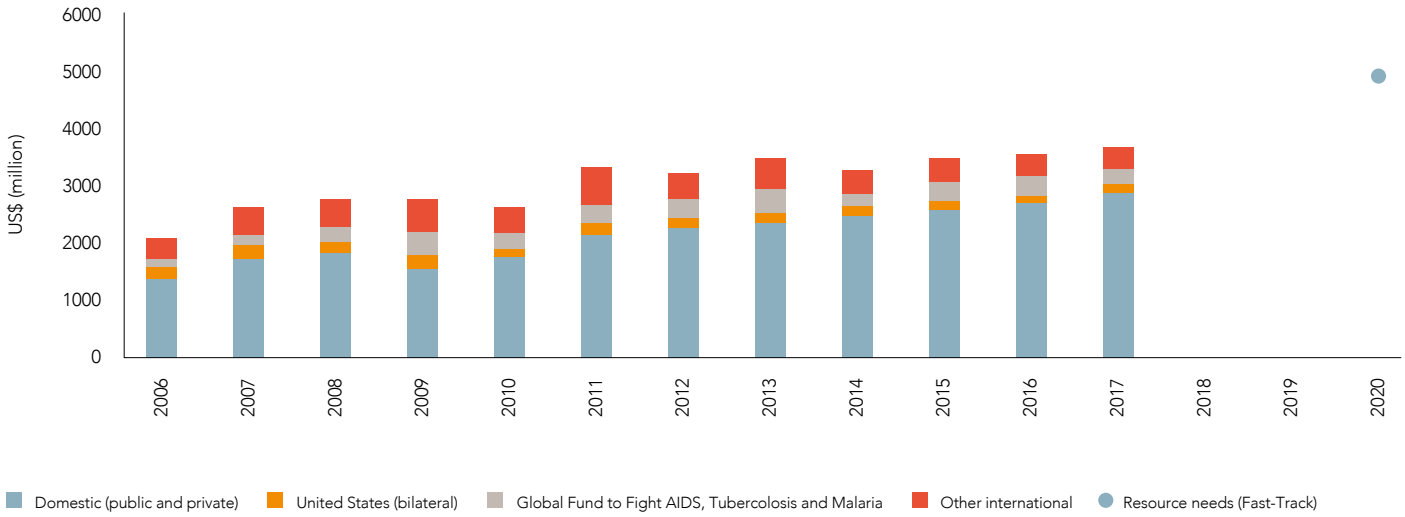


Source: UNAIDS 2018 estimates; 2018 Global AIDS Monitoring.

Although decreasing, the rate of mother-to-child transmission of HIV in Asia and the Pacific remains comparatively high—17% in 2017. Programme coverage has more than doubled since 2010, but it remains among the lowest in the world. Only about half (56%) of the estimated 61 000 women living with HIV who gave birth in the region in 2017 received effective antiretroviral prophylaxis in 2017. Only a quarter of HIV-exposed infants received early infant diagnosis.

INVESTMENT

FIGURE 15.15 *HIV resource availability by source, 2006–2017 and projected resource needs by 2020, Asia and the Pacific*



*Estimates for low- and middle-income countries per 2015 World Bank income level classification. All figures are expressed in constant 2016 US dollars.

Source: UNAIDS 2018 resource availability and needs estimates.

In total, an estimated US$ 3.7 billion was available in 2017 for the AIDS response in Asia and the Pacific. Financial resource availability in Asia and the Pacific has increased by 76% since 2006. While domestic resources have doubled over the last decade, a global shift in donor priorities towards countries with large disease burdens has contributed to a 30% decline in international funding for HIV programmes in the region. A 25% overall increase in resources is needed by 2020 to reach the region's Fast-Track resource target of US$ 4.9 billion. Domestic resources comprised 78.4% of total HIV investments. The Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) and the United States President's Emergency Plan for AIDS Relief (PEPFAR) contributed 7.3% and 4.1%, respectively.

References

1. Population-based surveys, 2012–2017.
2. Integrated biological and behavioural surveys, 2014–2017.
3. Population-based surveys, 2012–2016.
4. Integrated biological and behavioural surveys, 2014–2016.
5. Global state of harm reduction 2016. London: Harm Reduction International: 2016.
6. Hammett TM, Phan S, Nguyen P, Kieu B, Dang S, Nguyen D et al. Female sexual partners of male people who inject drugs in Vietnam have poor knowledge of their male partners' HIV status. J Acquir Immune Defic Syndr. 2015;68(5):562–7.

Latin America

AT A GLANCE

1 The region is approaching the 90–90–90 testing and treatment targets. Closing the remaining gaps requires community-led services that more effectively reach key populations.

2 Prevention needs reinvigoration, especially for young people within key populations.

3 Wider availability of pre-exposure prophylaxis (PrEP) for people at high risk of HIV infection could add momentum to prevention efforts.

4 Despite significant progress related to the HIV and legal and policy environment for lesbian, gay, bisexual, transgender and intersex (LGBTI) people, stigma and violence still obstruct their access to HIV services.

5 Apart from Argentina, Brazil, Chile, Colombia, Mexico and Uruguay, HIV programmes focused on key populations are too dependent on donor funding, which threatens their sustainability.

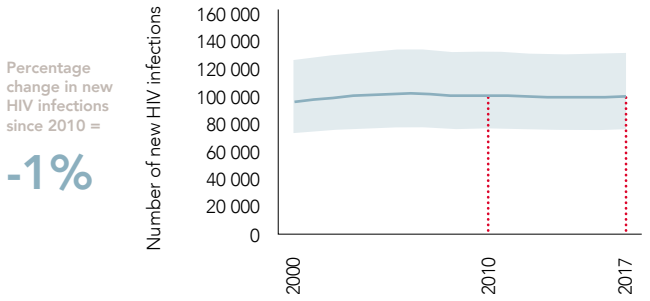
FIGURE 16.1 *Availability of pre-exposure prophylaxis, Latin America, 2018*

Source: National Commitment and Policy Instrument, 2018.

Antiretroviral therapy coverage has been relatively high and AIDS-related mortality relatively low in Latin America for many years. However, little progress has been made towards the region's 2020 HIV prevention milestone, and there is evidence of rising incidence of HIV among young people within key populations. Brazil is playing a key leadership role in the reinvigoration of HIV prevention, but political commitment in the region is inconsistent.

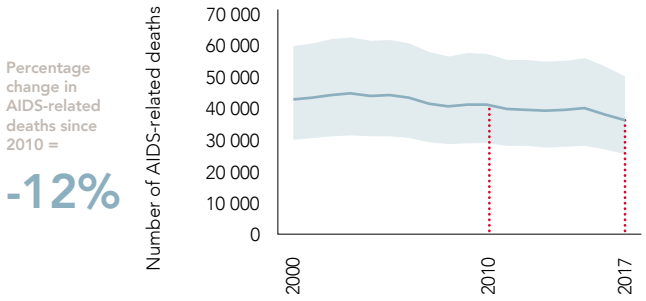
Latin America has made notable progress in safeguarding the human rights of LGBTI people. National and regional networks of key populations and people living with HIV are monitoring human rights abuses. National and local governments have established mechanisms for addressing human rights issues. Sixteen countries in the region have national human rights institutions that include sexual orientation in their mandate (Figure 16.1).

FIGURE 16.2 *Number of new HIV infections, Latin America, 2000–2017*



Source: UNAIDS 2018 estimates.

FIGURE 16.3 *Number of AIDS-related deaths, Latin America, 2000–2017*

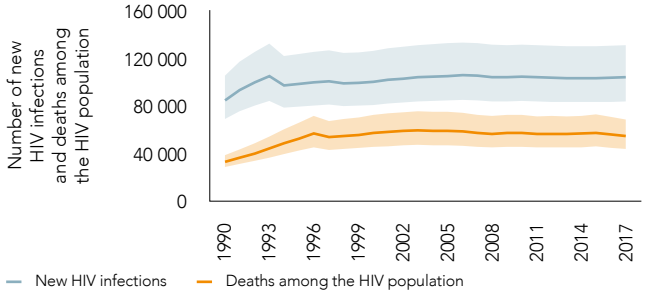


Source: UNAIDS 2018 estimates.

FIGURE 16.4 *Incidence:prevalence ratio, Latin America, 1990–2017*

Source: UNAIDS 2018 estimates.

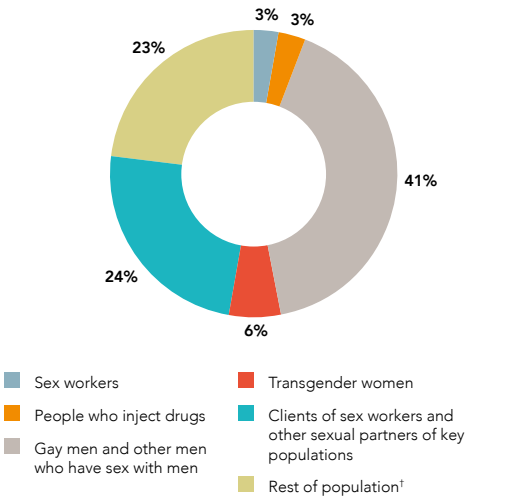
FIGURE 16.5 *Number of new HIV infections and deaths among the HIV population, Latin America, 1990–2017*



Source: UNAIDS 2018 estimates.

The region's strong performance along the 90–90–90 continuum of services saw deaths from AIDS-related illness decline by 12% from 2010 to 2017. Although there has been little change in the number of new HIV infections in Latin America over the last 15 years, high treatment coverage and low AIDS-related mortality has driven a gradual decline in the region's incidence:prevalence ratio, which was 0.06 [0.04–0.07] in 2017. Gay men and other men who have sex with men accounted for 41% of HIV infections in 2017, and key populations and their sexual partners represented more than three quarters of new infections overall.

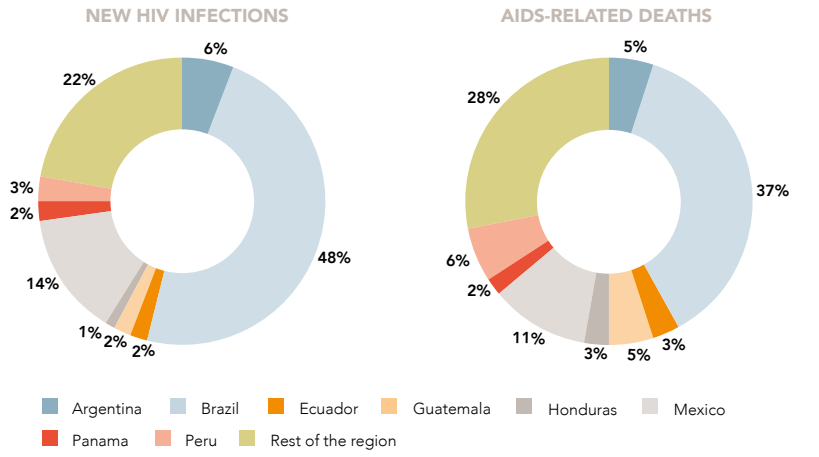
FIGURE 16.6 *Distribution of new HIV infections, by population group, Latin America, 2017*



† Individuals in this category did not report any HIV-related risk behaviour.

Source: UNAIDS special analysis, 2018.

FIGURE 16.7 *Distribution of new HIV infections and AIDS-related deaths by country, Latin America, 2017*



Source: UNAIDS 2018 estimates.

Country	Criminalization of transgender people	Criminalization of sex work	Criminalization of same-sex sexual acts	Drug use or possession for personal use an offence	Parental consent for adolescents to access HIV testing	Spousal consent for married women to access SRH services	Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Laws or policies restricting the entry, stay and residence of people living with HIV	Mandatory HIV testing for marriage, work or residence permits or for certain groups
Argentina									
Bolivia (Plurinational State of)									
Brazil					k				
Chile			l						j
Colombia			m	n					
Costa Rica									
Ecuador		f	b	f					
El Salvador									
Guatemala		a	b	d					
Honduras				o					
Mexico				p					
Nicaragua		q		r			c		
Panama				s					
Paraguay									
Peru		g	b	h			i		
Uruguay				e					
Venezuela (Bolivarian Republic of)			b						

Criminalized and/or prosecuted
Neither criminalized nor prosecuted
Data not available

Any criminalization or punitive regulation of sex work
Sex work is not subject to punitive regulations or is not criminalized
Issue is determined/differs at subnational level
Data not available

Death penalty
Imprisonment (14 years–life, up to 14 years) or no penalty specified
Laws penalizing same-sex sexual acts have been decriminalized or never existed, or no specific legislation
Data not available

Compulsory detention for drug offences
Possession of drugs for personal use is specified as a criminal offence or drug use or consumption is a specific offence in law
Possession of drugs for personal use is specified as a non-criminal offence
Data not available

Yes, for adolescents younger than 18
Yes, for adolescents younger than 14 and 16
Yes, for adolescents younger than 12
No
Data not available

Yes
No
Data not available

Yes
No, but prosecutions exist based on general criminal laws
No
Data not available

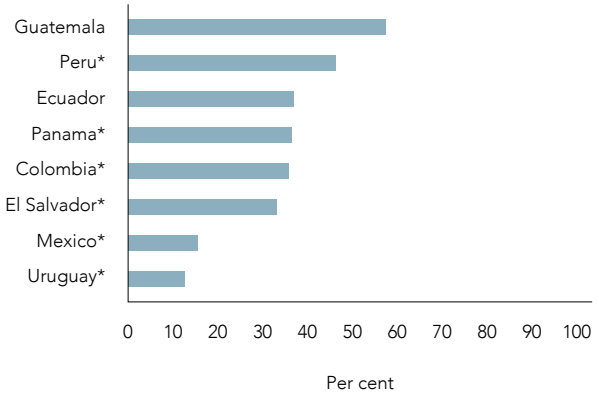
Yes
No
Data not available

Yes
No
Data not available

Sources:
National Commitment and Policy Instrument, 2017 and 2018; supplemented by additional sources where noted (see references at end of chapter).

Note: Data on laws restricting the entry, stay and residence of people living with HIV are currently undergoing a global review that will involve country validation. An update is expected by the end of 2018.

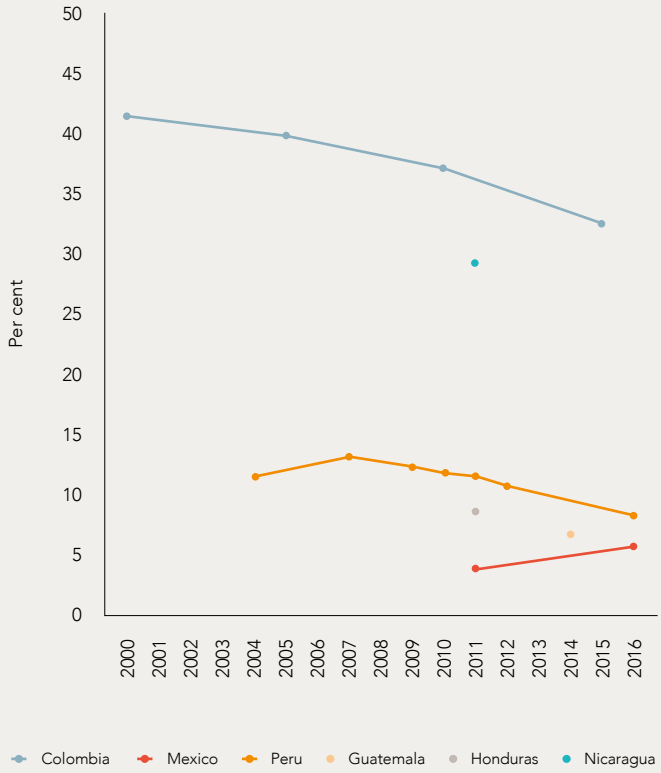
FIGURE 16.8 *Percentage of men and women aged 15–49 years who would not buy vegetables from a shopkeeper living with HIV, Latin America, most recent data, 2012–2016*



*Female respondents only.

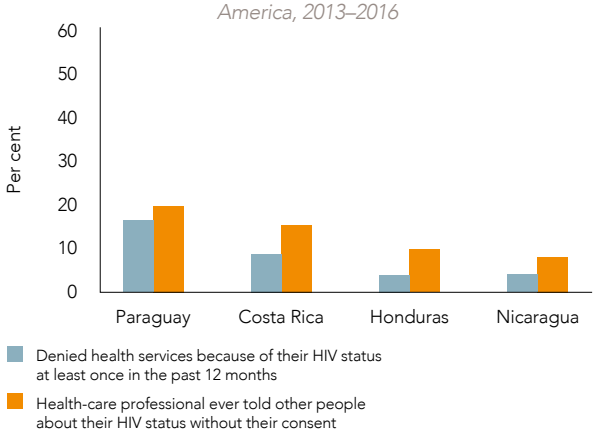
Source: Population-based surveys, 2012–2016.

FIGURE 16.9 *Percentage of ever-married or partnered women aged 15–49 years who experienced physical and/or sexual violence by an intimate partner in the past 12 months, countries with available data, Latin America, 2000–2016*



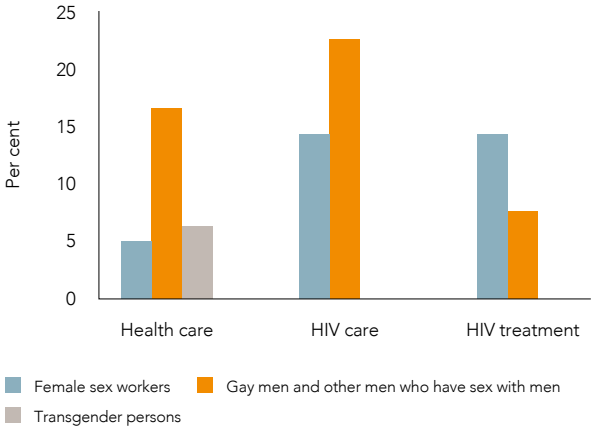
Source: Population-based surveys, 2000–2016.

FIGURE 16.10 *Percentage of people living with HIV who experienced discrimination in health-care settings, countries with available data, Latin America, 2013–2016*



Source: People Living with HIV Stigma Index surveys, 2013–2016.

FIGURE 16.11 *Percentage of key populations who reported having avoided health-care services, HIV care and HIV treatment in the past 12 months due to stigma and discrimination, Paraguay, 2017*



Source: Integrated biological and behavioural surveys, 2016–2017.

Basic misunderstandings about HIV persist. In several Latin American countries, for example, at least one third of men and women (aged 15–49 years) said they would not buy vegetables from a shopkeeper who is living with HIV *(1)*. Widely varying levels of discrimination at health-care facilities are reported by people living with HIV in the region *(2)*. In Paraguay, 17% of people living with HIV said they had been denied health services because of their HIV status within the last 12 months, and 20% said that health-care professionals had revealed their HIV status to others without consent. In Nicaragua, these transgressions were much les frequent at 4% and 8%, respectively (Figure 16.10).

Intimate partner violence is a major issue in several countries in the region. In Colombia and Nicaragua, more than one in three women reported being physically or sexually assaulted by a partner in the previous 12 months, compared with about one in 10 women in Guatemala, Mexico and Peru (Figure 16.9) *(3)*. Violence is also a common threat faced by LGBTI people in the region *(4)*.

FIGURE 16.12 *Availability of PrEP, Latin America, 2017*

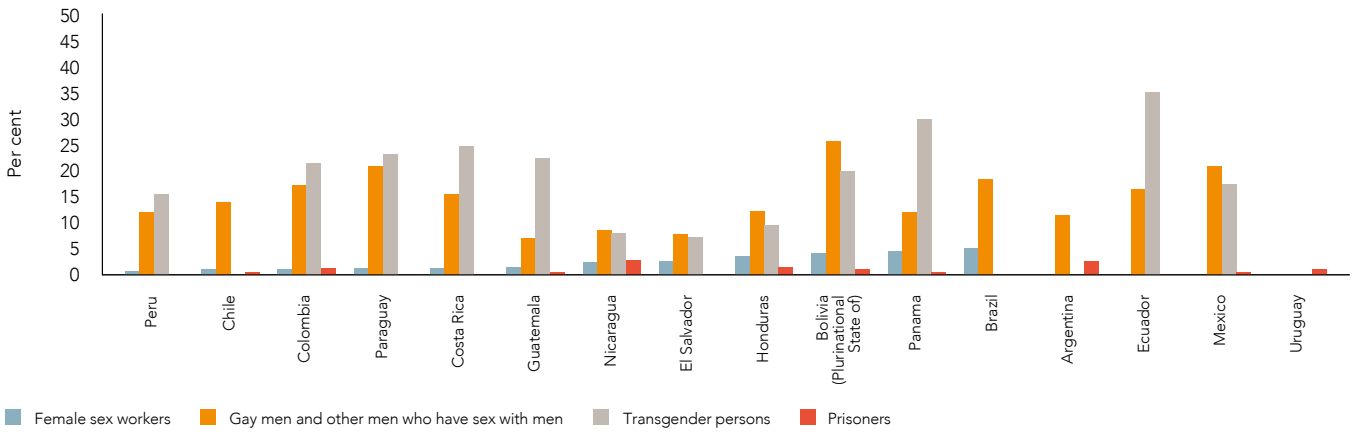
Through private providers, the Internet and/or research
Through public facilities
PrEP not available
Data not available

*Female respondents only.
Source: 2017 and 2018 National Commitments and Policy Instrument.

HIV prevalence among transgender people and gay men and other men who have sex with men is extremely high in several countries (Figure 16.13). HIV prevention efforts should be focused on key populations. Regional prevention targets have been endorsed by all countries in the region and by prominent civil society organizations. However, financial investment in the five pillars of primary prevention remains insufficient and PrEP is underutilized.

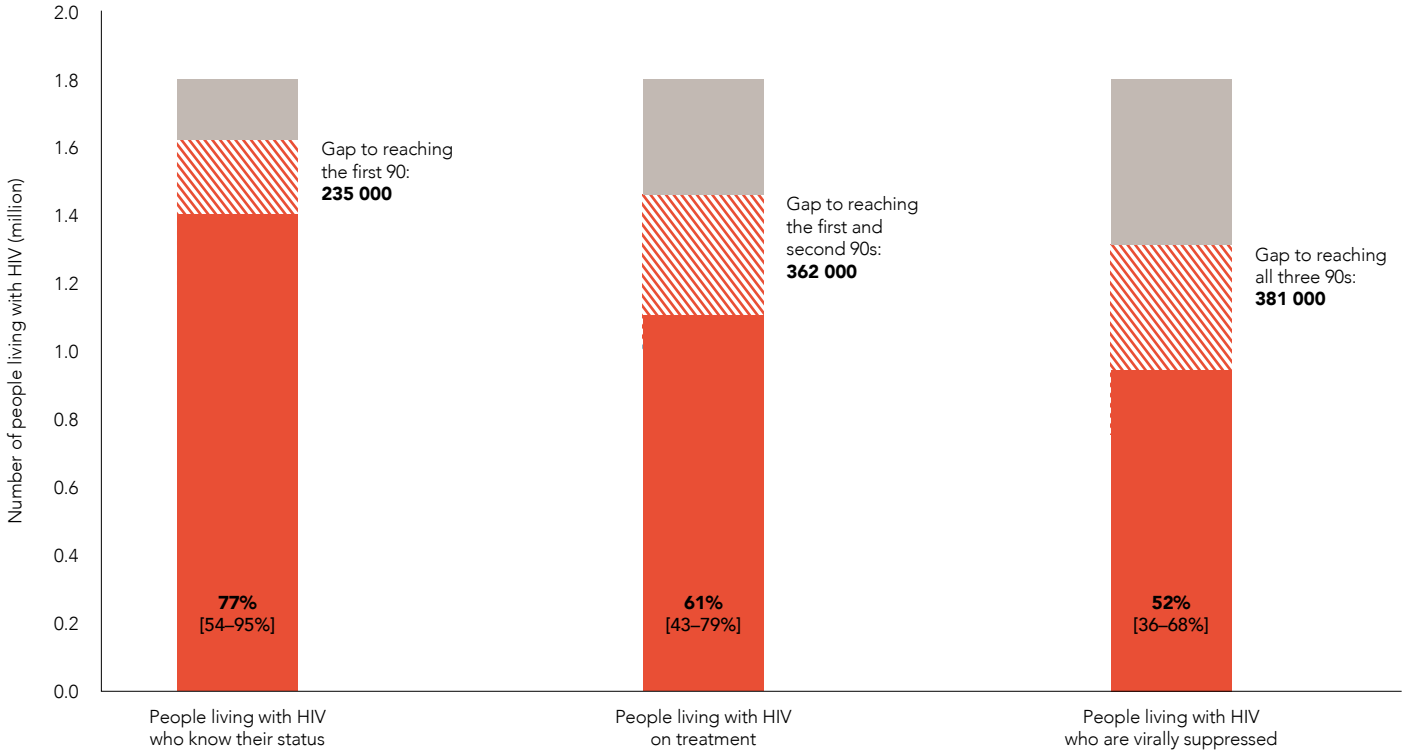
Brazil is at the vanguard of the rejuvenation of HIV prevention in Latin America. With 35% of the total population of the region and 47% of new infections in 2017, Brazil is the only country in the region where PrEP is available through the public sector (Figure 16.12). The country's Ministry of Health aims to provide PrEP to more than 50 000 sex workers, gay men and other men who have sex with men, and transgender people over the next five years. In Chile, Costa Rica, Guatemala, Mexico and Uruguay, PrEP can be obtained through private health-care providers, the Internet or research projects.

FIGURE 16.13 *HIV prevalence among key populations, countries with available data, Latin America, 2015–2017*



Source: 2018 Global AIDS Monitoring.

FIGURE 16.14 *HIV testing and treatment cascade, Latin America, 2017*



Source: UNAIDS special analysis, 2018; see annex on methods for more details

Among the 1.8 million [1.5–2.3 million] people living with HIV in Latin America at the end of 2017, 77% [54– >95%] were aware of their HIV status, the same as in 2016. The gap to achieving the first 90 of the 90–90–90 targets in 2017 was 235 000 people living with HIV.

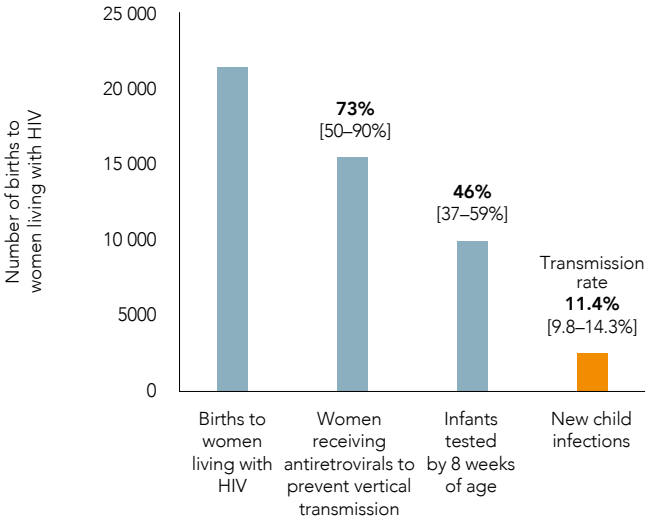
About 1.1 million [992 000–1 200 000] people in the region were accessing antiretroviral therapy in 2017, which represents 61% [43–79%] of all people living with HIV. The gap to achieving the first and second 90s of the 90–90–90 targets in 2017 was 362 000 people living with HIV.

The estimated percentage of people living with HIV who achieved viral suppression increased from 45% [31–59%] in 2016 to 52% [36–68%] in 2017. The gap to achieving all three 90s in 2017 was the viral suppression of an additional 381 000 people living with HIV.

The costs of antiretroviral medicines and other HIV commodities in the region remain an issue. Since most countries in South America are classified as middle-income, they have limited access to the price reductions available to low-income countries. In the Bolivarian Republic of Venezuela, the economic crisis is making it difficult to procure and distribute medical commodities, including for HIV testing and treatment. Shortages of antiretroviral medicines, supplies to treat opportunistic infections and condoms are common.

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

FIGURE 16.15 *Cascade of services for preventing vertical transmission, number of new infections and transmission rate, Latin America, 2017*

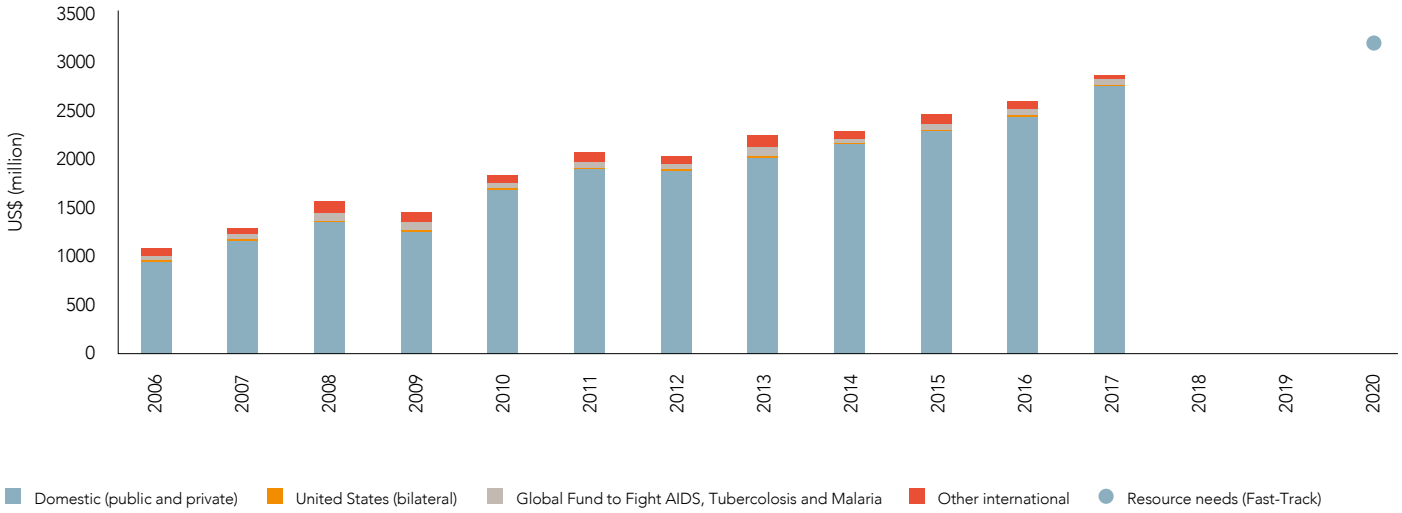


Source: UNAIDS 2018 estimates; 2018 Global AIDS Monitoring.

The rate of mother-to-child transmission of HIV in Latin America was 11.4% [9.8–14.3%] in 2017, one of the lowest in the world (and down from 16.2% [13.9–20.4%] in 2010). This largely reflects the strength of programmes in Brazil and Mexico—two countries that are home to 62% of people living with HIV in the region. Almost 75% [58–90%] of pregnant women living with HIV in 2017 received antiretroviral prophylaxis to prevent vertical transmission of HIV and protect their own health. In addition, almost half (46%) of infants exposed to HIV received early infant diagnosis, a crucial intervention for early initiation of treatment.

INVESTMENT

FIGURE 16.16 *HIV resource availability by source, 2000–2017, and projected resource needs by 2020, Latin America*



*Estimates for low- and middle-income countries per 2015 World Bank income level classification. All figures are expressed in constant 2016 US dollars.
Source: UNAIDS 2018 resource availability and needs estimates.

More than 95% of the HIV response in Latin America is funded from domestic resources, and total funding available for the HIV response in the region has nearly doubled over the last decade (Figure 16.16). Domestic resources increased by 189% since 2006, and international resources decreased by 11.6%. An additional US$ 293 million, a 9.3% increase, will be needed to reach the region's 2020 funding target. However, HIV programme and impact data suggest that additional efficiency and effectiveness measures will be needed to ensure that these resources are sufficient to reach the region's 2020 milestone for the reduction of HIV infections.

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Additional sources for the laws and policies scorecard

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Caribbean

AT A GLANCE

1 Renewed commitment to combination prevention that is tailored to populations and locations with the greatest need is required to accelerate reductions in new HIV infections.

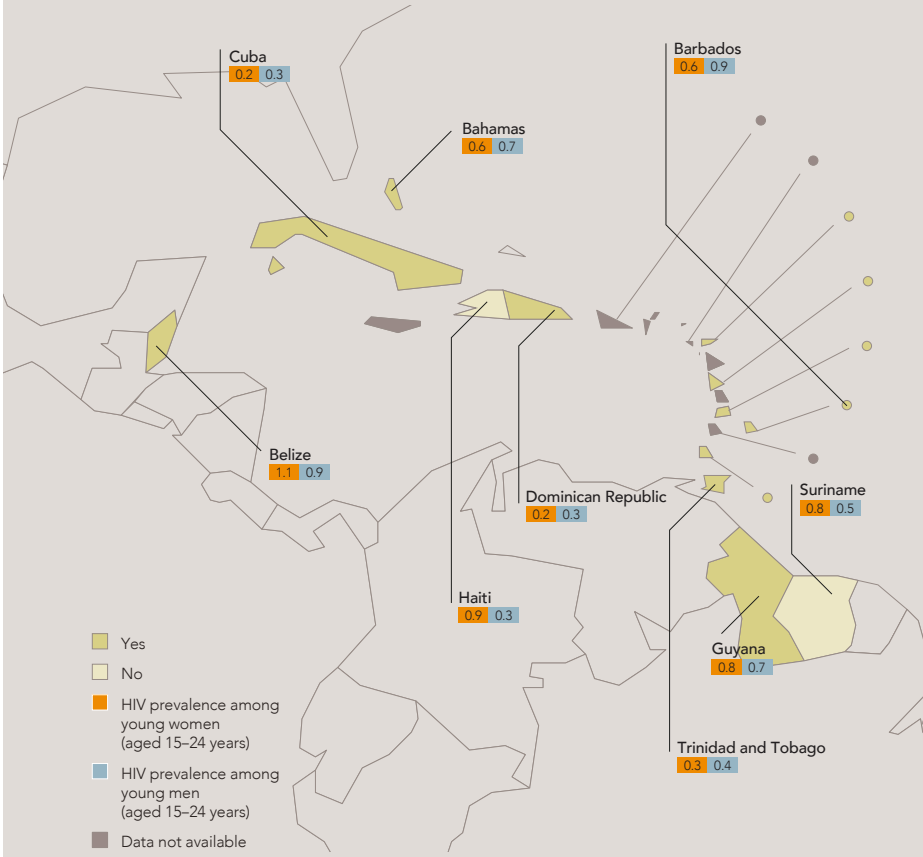
2 Particular emphasis must be placed on the knowledge and service access gaps facing young people, men and key populations in the Caribbean.

3 Stigma and discrimination and restrictive laws and policies hinder access to services for young people and some key populations.

4 There is a large gap in awareness of HIV status at the start of the HIV testing and treatment cascade.

5 Proven strategies for early diagnosis and treatment enrolment, retention and adherence must be applied and scaled up rapidly to achieve the 90–90–90 targets.

FIGURE 17.1 *HIV prevalence among young men and women (aged 15–24 years) and the existence of education policies that guide delivery of life skills-based HIV and sexuality education in secondary schools, Caribbean, 2017*

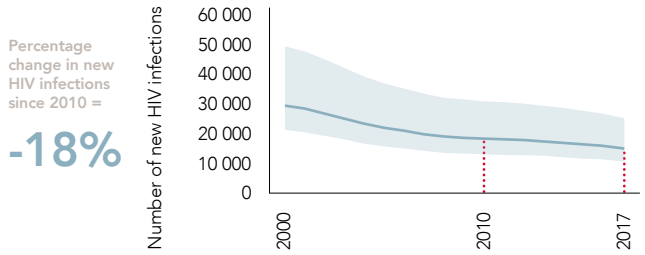


Source: UNAIDS 2018 estimates; 2017 National Commitments and Policy Instrument; United Nations Population Fund 2018 state of the art diagnosis of comprehensive sexuality education (CSE) implementation in the English- and Dutch-speaking Caribbean (unpublished).

Nearly 90% of new infections in the Caribbean in 2017 occurred in four countries—Cuba, Dominican Republic, Haiti and Jamaica—while 87% of deaths from AIDS-related illness occurred in Dominican Republic, Haiti and Jamaica.

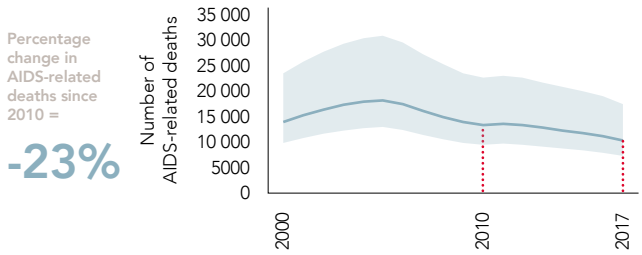
Haiti alone accounts for nearly half of new HIV infections and deaths due to AIDS-related illness. It is one of the few countries in the region that does not provide comprehensive sexuality education in primary and secondary schools (Figure 17.1). Comprehensive sexuality education plays a central role in the preparation of adolescents and young people for a safe, productive and fulfilling life, and it is an important component of the HIV prevention package for young people.

FIGURE 17.2 *Number of new HIV infections, Caribbean, 2000–2017*



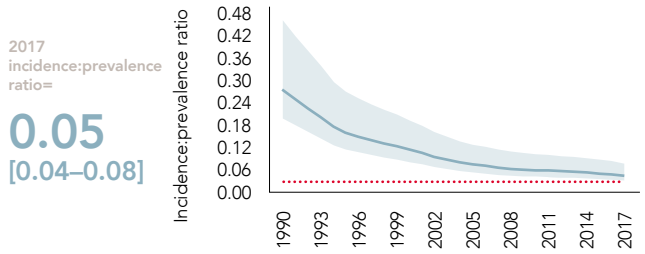
Source: UNAIDS 2018 estimates.

FIGURE 17.3 *Number of AIDS-related deaths, Caribbean, 2000–2017*



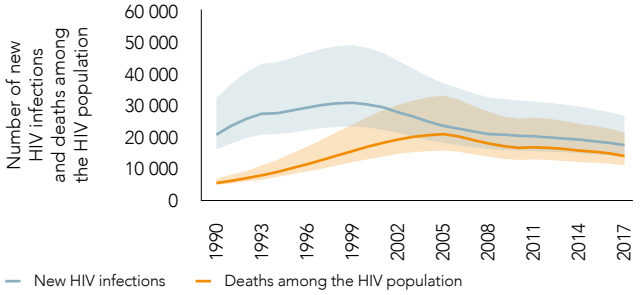
Source: UNAIDS 2018 estimates.

FIGURE 17.4 *Incidence:prevalence ratio, Caribbean, 1990–2017*



Source: UNAIDS 2018 estimates.

FIGURE 17.5 *Number of new HIV infections and deaths among the HIV population, Caribbean, 1990–2017*

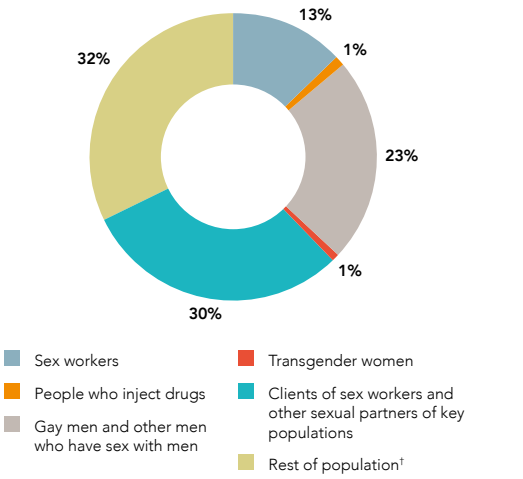


Source: UNAIDS 2018 estimates.

There has been moderate progress on both prevention and treatment in the Caribbean. The annual number of new HIV infections among adults in the Caribbean declined by about 18% from 2010 to 2017, from 19 000 [14 000–31 000] to 15 000 [11 000–26 000]. Deaths from AIDS-related illness declined by 23% (from 13 000 [9300–22 000] to 10 000 [7100–17 000]) over the same period. As a result, the region's incidence:prevalence ratio is edging towards the 0.03 epidemic transmission benchmark, reaching 0.05 [0.04–0.08] in 2017.

Gay men and other men who have sex with men accounted for nearly a quarter of new infections in 2017. Efforts to reach men and boys, and particularly gay men and other men who have sex with men, are constrained by health services insufficiently tailored to their needs and limited community-based services. In total, key populations and their sexual partners represented two thirds of new infections in the region (Figure 17.6).

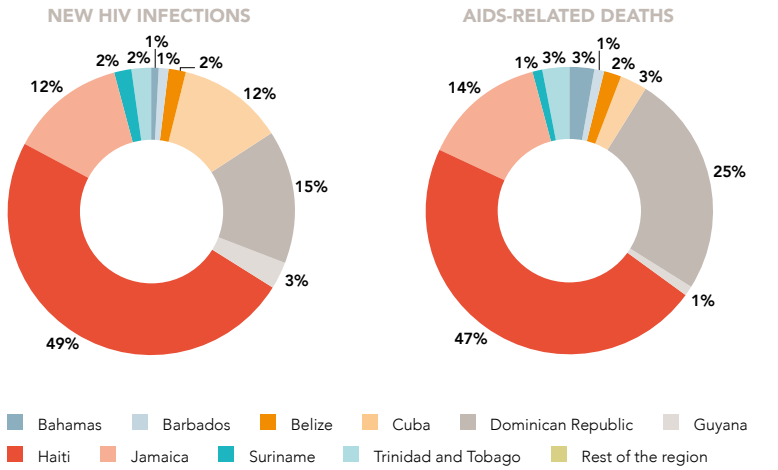
FIGURE 17.6 *Distribution of new HIV infections, by population group, Caribbean, 2017*



† Individuals in this category did not report any HIV-related risk behaviour.

Source: UNAIDS special analysis, 2018.

FIGURE 17.7 *Distribution of new HIV infections and AIDS-related deaths by country, Caribbean, 2017*



Source: UNAIDS 2018 estimates.

Country	Criminalization of transgender people	Criminalization of sex work	Criminalization of same-sex sexual acts	Drug use or possession for personal use an offence	Parental consent for adolescents to access HIV testing	Spousal consent for married women to access SRH services	Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Laws or policies restricting the entry, stay and residence of people living with HIV	Mandatory HIV testing for marriage, work or residence permits or for certain groups
Antigua and Barbuda									
Bahamas									
Barbados			c						
Belize		a	d	e	a				
Cuba			b						
Dominica									
Dominican Republic									
Grenada		f	b	g					
Guyana		a	b	h	a				
Haiti				i	j				
Jamaica									
Saint Kitts and Nevis			b	k					
Saint Lucia				l	a		m		
Saint Vincent and the Grenadines			b	n					
Suriname									
Trinidad and Tobago		a	b	o	p				

Criminalized and/or prosecuted
Neither criminalized nor prosecuted
Data not available

Any criminalization or punitive regulation of sex work
Sex work is not subject to punitive regulations or is not criminalized
Issue is determined/differs at subnational level
Data not available

Death penalty
Imprisonment (14 years–life, up to 14 years) or no penalty specified
Laws penalizing same-sex sexual acts have been decriminalized or never existed, or no specific legislation
Data not available

Compulsory detention for drug offences
Possession of drugs for personal use is specified as a criminal offence or drug use or consumption is a specific offence in law
Possession of drugs for personal use is specified as a non-criminal offence
Data not available

Yes, for adolescents younger than 18
Yes, for adolescents younger than 14 and 16
Yes, for adolescents younger than 12
No
Data not available

Yes
No
Data not available

Yes
No, but prosecutions exist based on general criminal laws
No
Data not available

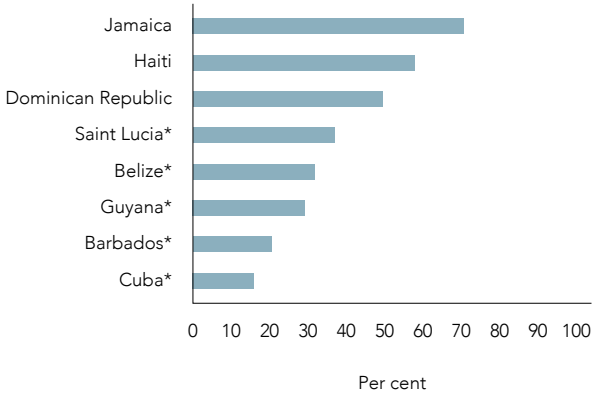
Yes
No
Data not available

Yes
No
Data not available

Note: Data on laws restricting the entry, stay and residence of people living with HIV are currently undergoing a global review that will involve country validation. An update is expected by the end of 2018.

Sources: National Commitment and Policy Instrument, 2017 and 2018; supplemented by additional sources where noted (see references at end of chapter).

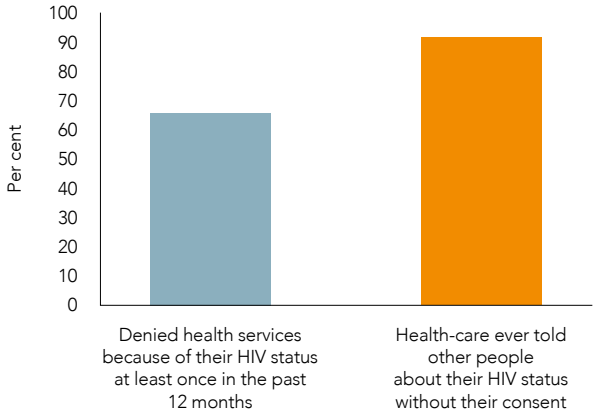
FIGURE 17.8 *Percentage of men and women aged 15–49 years who would not buy vegetables from a shopkeeper living with HIV, Caribbean, most recent data, 2012–2016*



*Female respondents only.

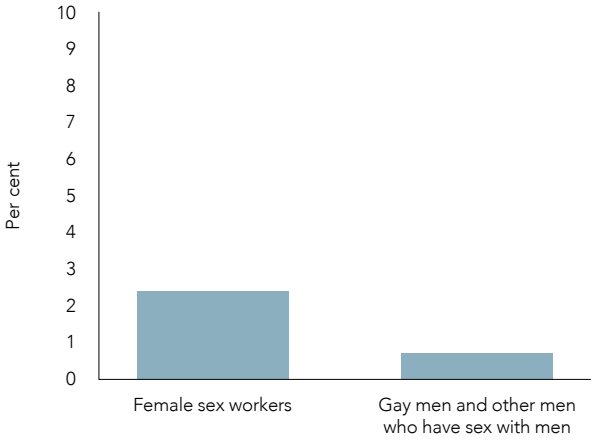
Source: Population-based surveys, 2012–2016.

FIGURE 17.10 *Percentage of people living with HIV who experienced discrimination in health-care settings, Belize, 2013*



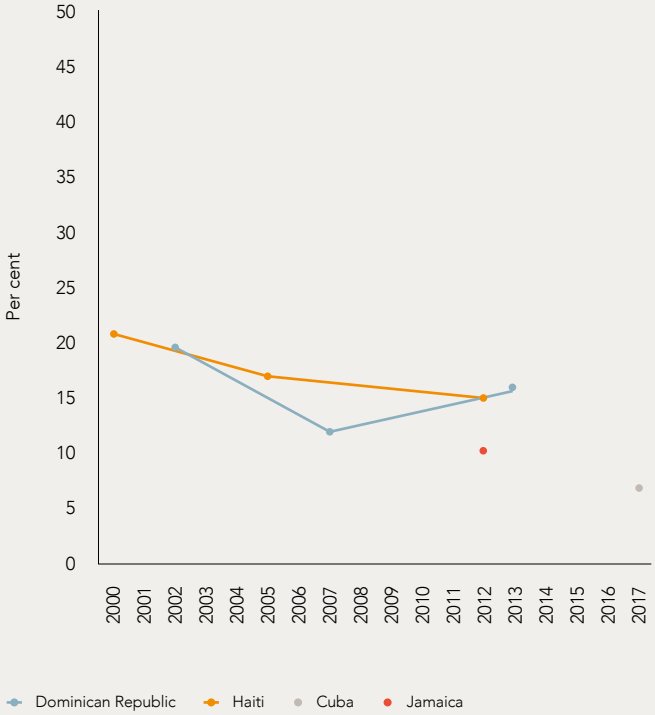
Source: People Living with HIV Stigma Index survey, Belize, 2013.

FIGURE 17.11 *Percentage of key populations who reported having avoided HIV testing in the past 12 months due to stigma and discrimination, Cuba, 2017*



Source: Integrated biological and behavioural surveys, 2017.

FIGURE 17.9 *Percentage of ever-married or partnered women aged 15–49 years who experienced physical and/or sexual violence by an intimate partner in the past 12 months, countries with available data, Caribbean, 2000–2017*



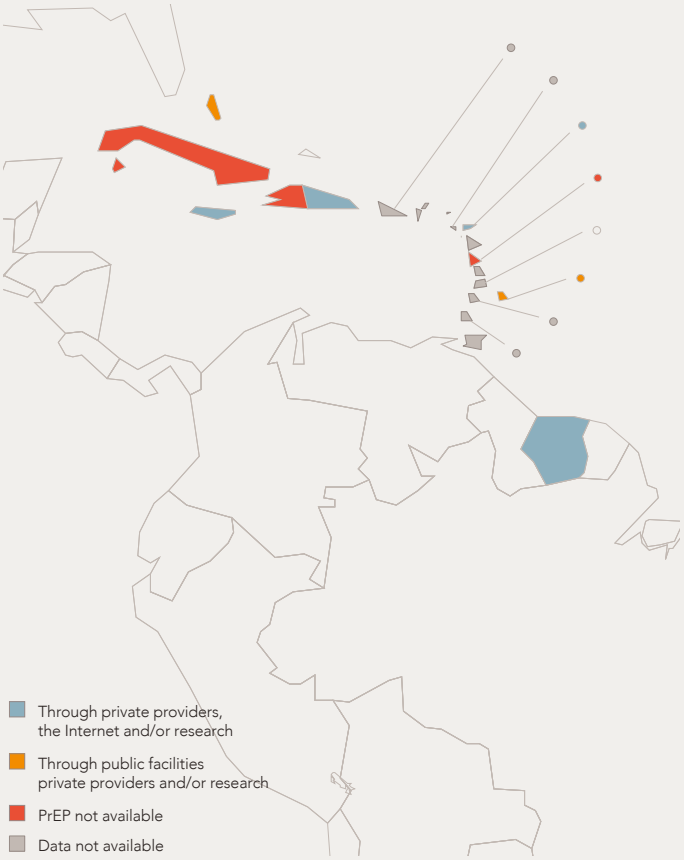
Source: Population-based surveys, 2000–2017.

Large proportions of people in the Caribbean harbour misconceptions about HIV that fuel stigma and discrimination *(1)*. In Jamaica, for example, 71% of people said they would not buy vegetables from a vendor who is living with HIV, as did 58% of people in Haiti and 49% of people in Dominican Republic (Figure 17.8) *(2)*.

There have been notable efforts to address the high levels of stigma and discrimination experienced by key populations in several Caribbean countries. A regional transgender coalition also has been established to coordinate advocacy around issues relating to human rights, social justice and HIV. Recent data from Cuba are encouraging: less than 1% of gay men and other men who have sex with men and about 2% of female sex workers reported avoiding taking an HIV test in the previous 12 months due to stigma and discrimination (Figure 17.11) *(3)*.

Intimate partner violence is a major concern. About one in six adult women surveyed in Dominican Republic and Haiti said they had recently experienced intimate partner violence (Figure 17.9) *(4)*. In Cuba, about 7% of adult women reported similar experiences.

FIGURE 17.12 *Availability of pre-exposure prophylaxis (PrEP), Caribbean, 2018*



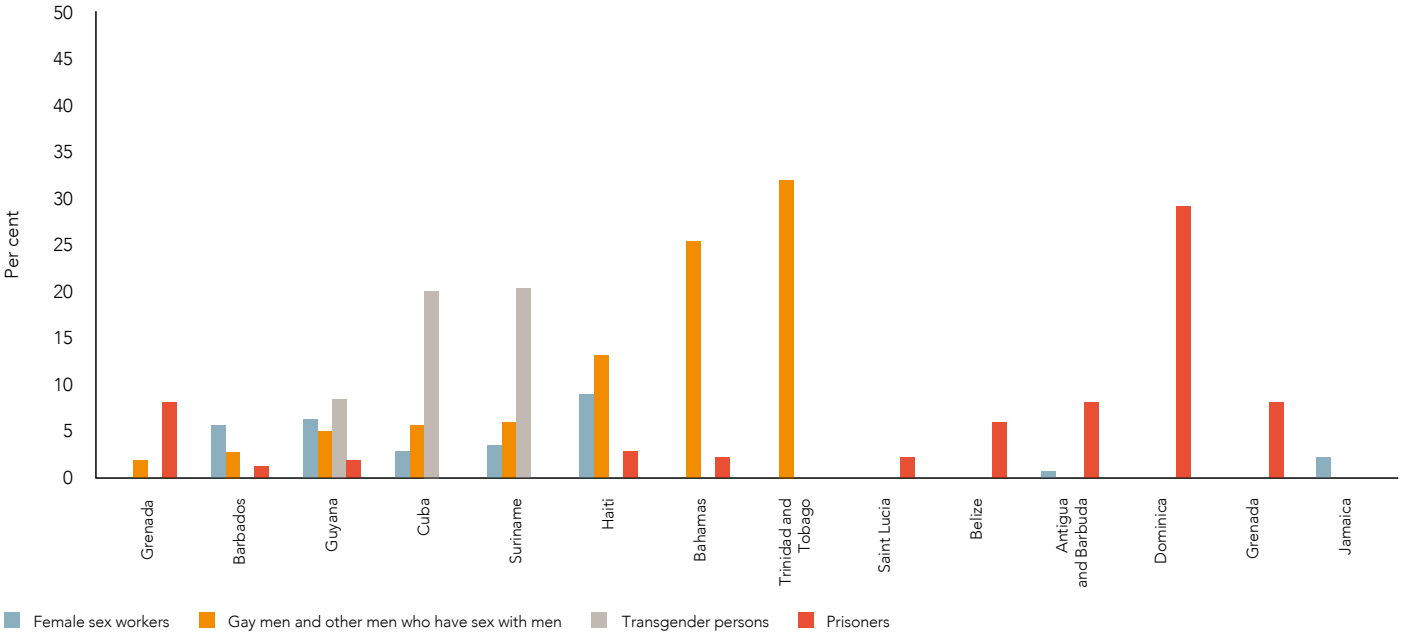
Source: 2017 and 2018 National Commitments and Policy Instrument.

Levels of condom use at last sex with a non-regular partner among young men (aged 15–24 years) ranged from 67% (Belize) to 79% (Jamaica); among young women (aged 15–24 years), the range was 49% (Dominican Republic) to 57% (Jamaica).

HIV prevalence among gay men and other men who have sex with men is particularly high in Trinidad and Tobago (32%), Bahamas (25%) and Haiti (13%). Among transgender people, it is highest in Cuba (20%) and among prisoners, it is highest in Dominica (29%) (Figure 17.13).

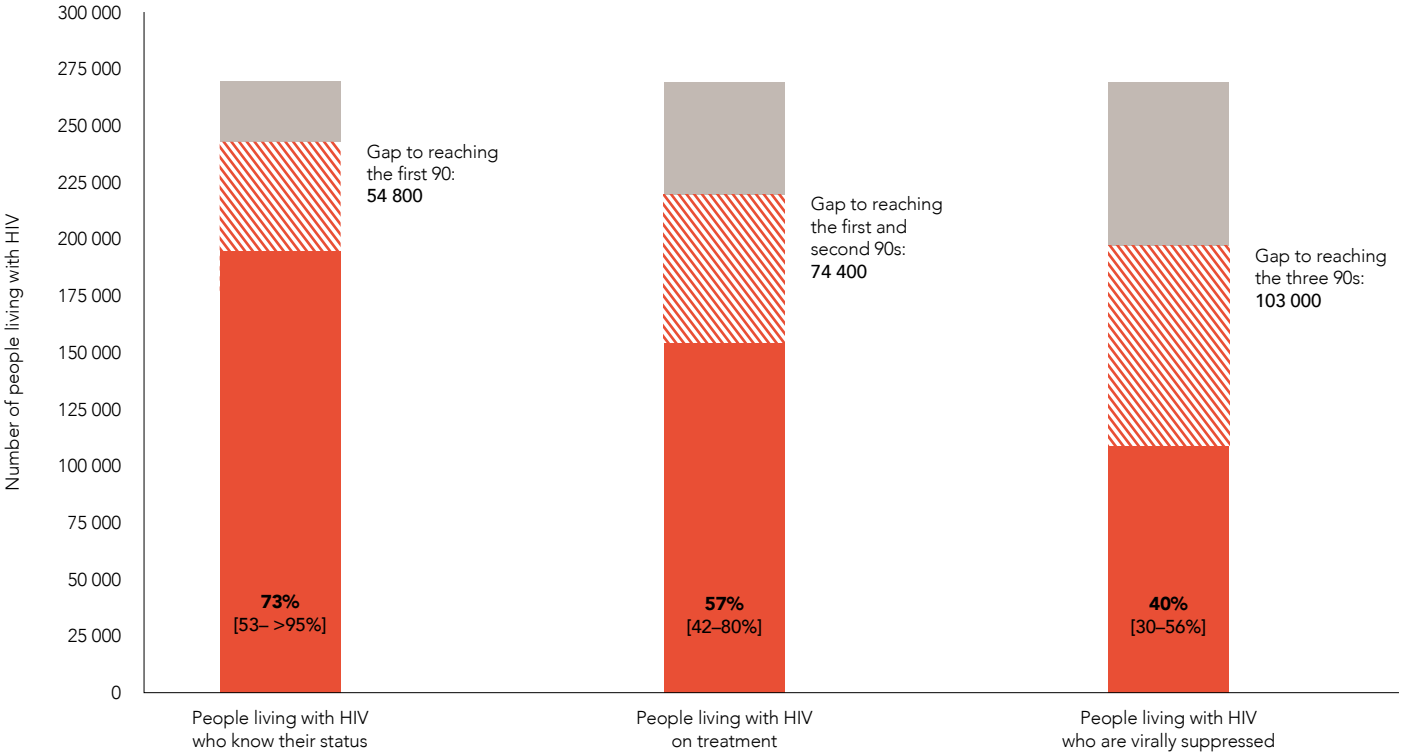
The Bahamas and Barbados were the only countries providing pre-exposure prophylaxis (PrEP) through the public health system in 2018, although PrEP is available through private providers in Dominican Republic, Jamaica and Suriname. It is not yet available in Cuba, Dominica or Haiti (Figure 17.12).

FIGURE 17.13 *HIV prevalence among key populations, countries with available data, Caribbean, 2015–2017*



Source: 2018 Global AIDS Monitoring.

FIGURE 17.14 *HIV testing and treatment cascade, Caribbean, 2017*



Source: UNAIDS special analysis, 2018; see annex on methods for more details.

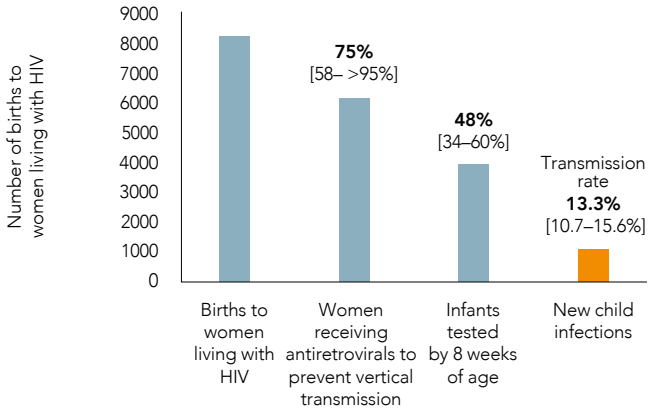
Among the 310 000 [260 000–420 000] people living with HIV in the Caribbean at the end of 2017, 73% [53–95%] were aware of their HIV status, an increase from 66% [48–92%] in 2016. The gap to achieving the first 90 of the 90–90–90 targets in 2017 was 54 800 people living with HIV.

About 181 000 [159 000–188 000] people in the region were accessing antiretroviral therapy in 2017, or 57% [42–80%] of all people living with HIV. The gap to achieving the first and second 90s of the 90–90–90 targets in 2017 was 74 700 people living with HIV.

The estimated percentage of people living with HIV who achieved viral suppression increased from 37% [27–51%] in 2016 to 40% [30–56%] in 2017. The gap to achieving all three 90s in 2017 was the viral suppression of an additional 103 000 people living with HIV.

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

FIGURE 17.15 *Cascade of services for preventing vertical transmission, number of new infections and transmission rate, Caribbean, 2017*

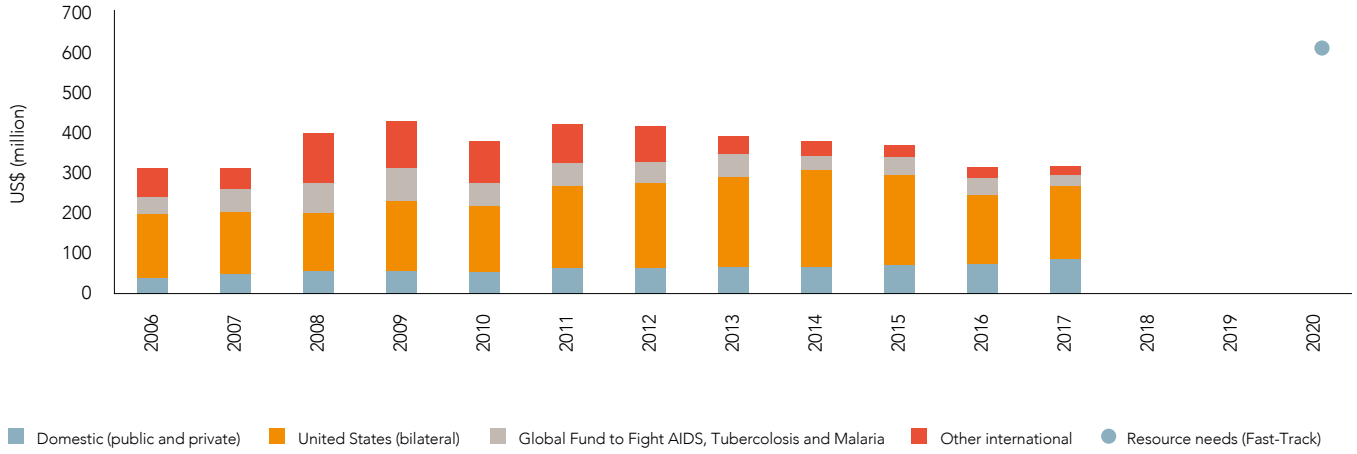


Source: UNAIDS 2018 estimates; 2018 Global AIDS Monitoring.

Seven countries and island states in the Caribbean have been validated as having eliminated mother-to-child transmission of HIV: Anguilla, Antigua and Barbuda, Bermuda, the Cayman Islands, Cuba, Montserrat and Saint Kitts and Nevis. The rate of mother-to-child transmission (including breastfeeding) in the Caribbean in 2017 was 13.3% [10.7–15.6%], among the lowest in the world and significantly lower than the 18.7 [15.2– 22.0] rate in 2010. Antiretroviral treatment prophylaxis to prevent vertical transmission of HIV and to protect the woman's own health was coverage was 75% 58– >95%] in 2017, and almost half (48%) of HIV-exposed infants received an early infant diagnosis before eight weeks of age.

INVESTMENT

FIGURE 17.16 *HIV resource availability by source, 2000–2017, and projected resource needs by 2020, Caribbean*



*Estimates for low- and middle-income countries per 2015 World Bank income level classification. All figures are expressed in constant 2016 US dollars.
Source: UNAIDS 2018 resource availability and needs estimates.

The financial resources available for HIV responses in the Caribbean increased until 2011; since then, it has declined, largely due to scaled back international support. Between 2006 and 2017, the availability of domestic resources increased 123.7%, while international resources have decreased by 16%. In 2017, the United States President's Emergency Plan for AIDS Relief (PEPFAR) provided 57% of the total HIV resources in the region; the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) provided 8%.

The response in Haiti, with the largest epidemic in the region, is more than 90% externally funded and extremely reliant on international support. A UNAIDS analysis shows that Haiti would be unable to absorb even a moderate cut in donor financing (see Chapter 7).

In total, approximately US$ 315 million was available for the Caribbean's HIV programmes in 2017, considerably less than the US$ 604 million needed to finance the achievement of Fast-Track programme coverage targets by 2020. Domestic funding for prevention programmes is low.

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Middle East and North Africa

AT A GLANCE

1 Annual new HIV infections and deaths from AIDS-related illness are on the rise in the Middle East and North Africa.

2 Prevention programmes are not reaching key populations in sufficient numbers, and progress towards the 90–90–90 targets remains well behind the global average.

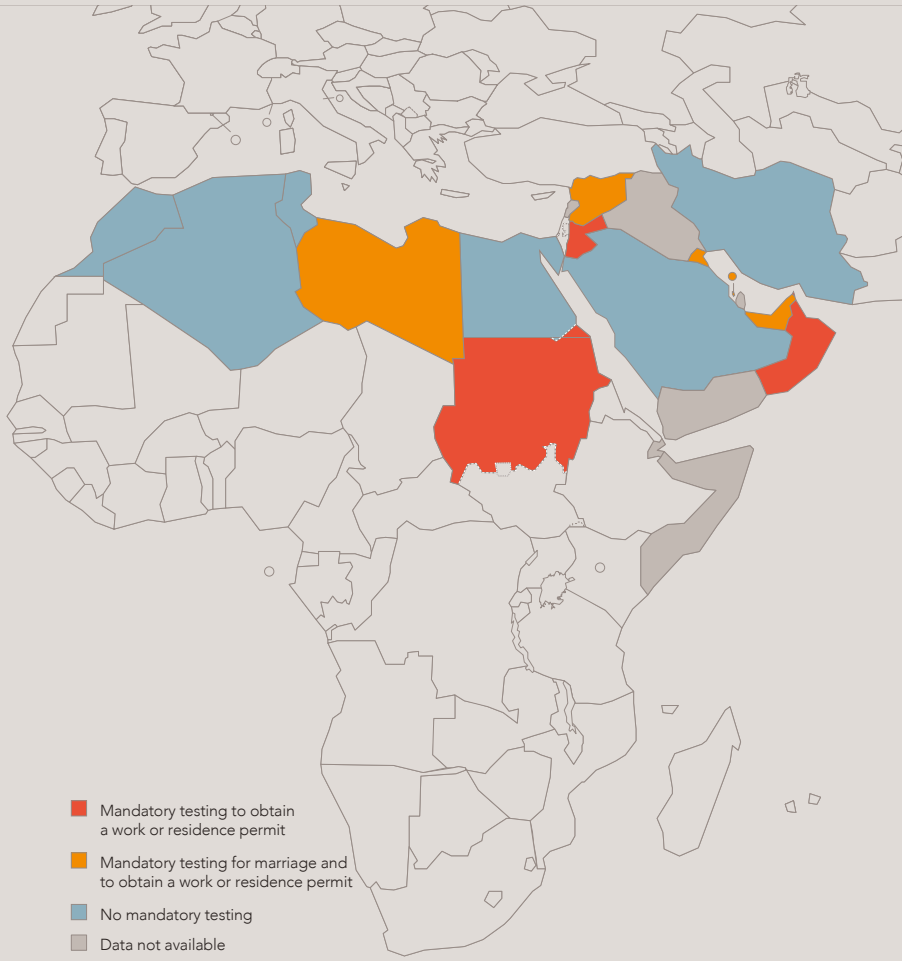
3 Protracted humanitarian emergencies and population mobility in many countries of the region pose an additional challenge. Greater integration of HIV and related health services in humanitarian responses is needed.

4 A more tolerant political and legal environment, backed with political commitment, is essential for giving the HIV response the boost it needs.

5 The League of Arab States and national ministers of health have committed to accelerating the HIV response through implementation of the 2014–2020 Arab AIDS Strategy.

6 More engagement with young people, communities of key populations and people living with HIV in the region will be critical as countries work to get their HIV responses on track.

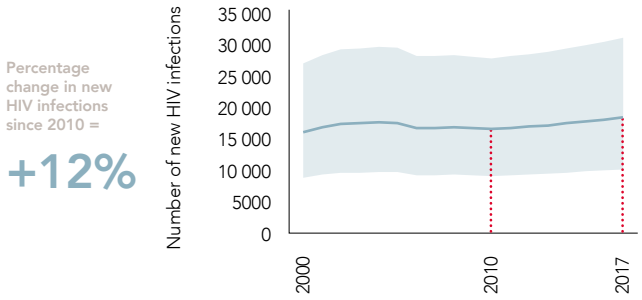
FIGURE 18.1 *Countries with laws, regulations or policies specifying mandatory HIV testing for marriage and to obtain a work or residence permit, Middle East and North Africa, 2018*



Source: 2017 and 2018 National Commitments and Policy Instrument.

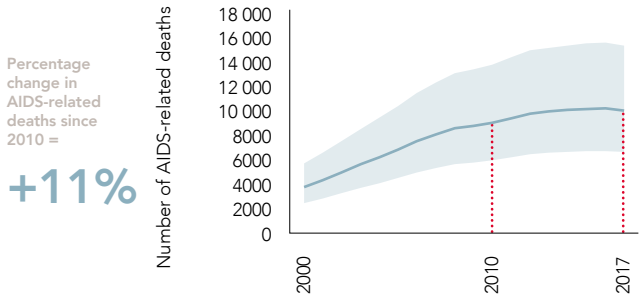
HIV is a hidden epidemic in the Middle East and North Africa. The HIV burden across the region is relatively low, and new HIV infections are largely among key populations that face high levels of stigma, discrimination and criminalization. Almost two thirds of new HIV infections in 2017 were in Egypt, the Islamic Republic of Iran and Sudan. Special efforts are needed to expand and improve the HIV testing and treatment programmes in the Islamic Republic of Iran and Sudan, which accounted for more than 60% of the region's deaths from AIDS-related illness in 2017.

FIGURE 18.2 *Number of new HIV infections, Middle East and North Africa, 2000–2017*



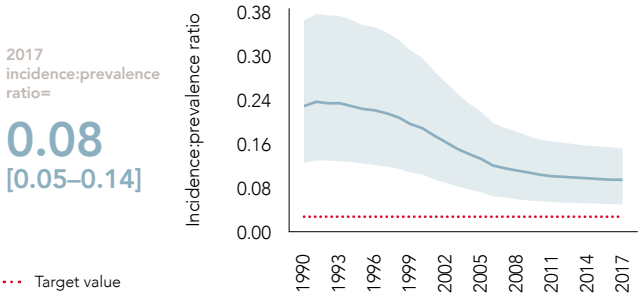
Source: UNAIDS 2018 estimates.

FIGURE 18.3 *Number of AIDS-related deaths, Middle East and North Africa, 2000–2017*



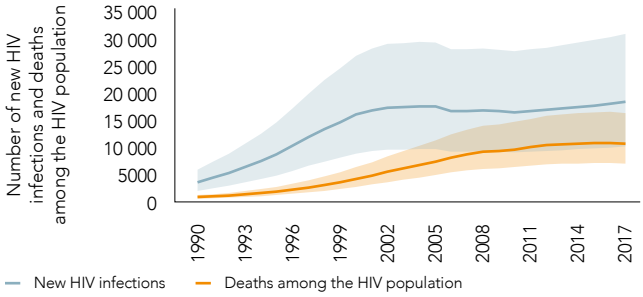
Source: UNAIDS 2018 estimates.

FIGURE 18.4 *Incidence:prevalence ratio, Middle East and North Africa, 1990–2017*



Source: UNAIDS 2018 estimates.

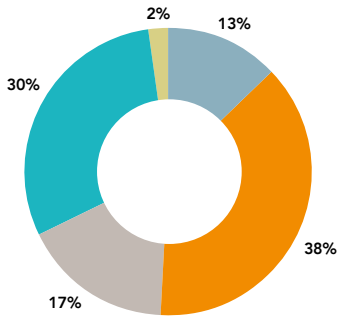
FIGURE 18.5 *Number of new HIV infections and deaths among the HIV population, Middle East and North Africa, 1990–2017*



Source: UNAIDS 2018 estimates.

There were an estimated 18 000 [10 000–31 000] new HIV infections in the Middle East and North Africa in 2017, 12% more than the 16 000 [9000–27 000] in 2010. Annual deaths from AIDS-related illness have stabilized at nearly 10 000 [6400–15 000] since 2015, but the trend since 2010 has been an 11% increase. The region's incidence:prevalence ratio has hovered around 0.08 for much of the last decade, far from the 0.03 epidemic transition benchmark.

FIGURE 18.6 *Distribution of new HIV infections, by population group, Middle East and North Africa, 2017*

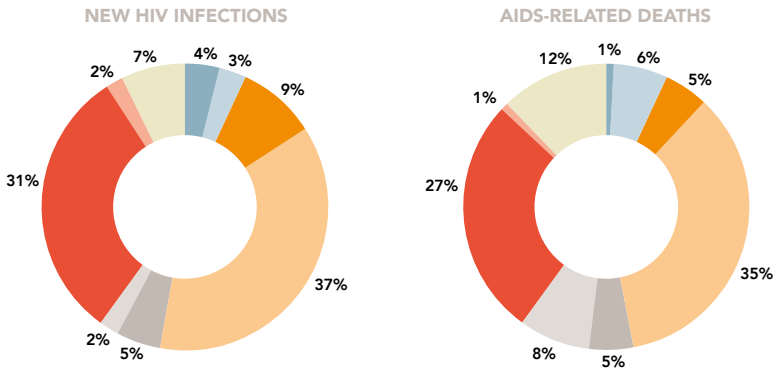


- Sex workers
- People who inject drugs
- Gay men and other men who have sex with men
- Clients of sex workers and other sexual partners of key populations
- Rest of population†

† Individuals in this category did not report any HIV-related risk behaviour.

Source: UNAIDS special analysis, 2018.

FIGURE 18.7 *Distribution of new HIV infections and AIDS-related deaths by country, Middle East and North Africa, 2017*



- Algeria
- Djibouti
- Egypt
- Iran (Islamic Republic of)
- Morocco
- Somalia
- Sudan
- Tunisia
- Rest of the region

Source: UNAIDS 2018 estimates.

LAWS AND POLICIES SCORECARD

Country	Criminalization of transgender people	Criminalization of sex work	Criminalization of same-sex sexual acts	Drug use or possession for personal use an offence	Parental consent for adolescents to access HIV testing	Spousal consent for married women to access SRH services	Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Laws or policies restricting the entry, stay and residence of people living with HIV	Mandatory HIV testing for marriage, work or residence permits or for certain groups
Algeria									
Bahrain		d	b	e					f
Djibouti			b	g	h		c		
Egypt				i					
Iran (Islamic Republic of)		a	b						
Iraq		j	b	l					
Jordan		k	b						
Kuwait									
Lebanon									
Libya			b						
Morocco									
Oman									
Qatar		a	b	m			c		
Saudi Arabia			b						
Somalia			b						
Sudan		a	b	n					
Syrian Arab Republic									
Tunisia									
United Arab Emirates			b	o					
Yemen			b						

Criminalized and/or prosecuted
Neither criminalized nor prosecuted
Data not available

Any criminalization or punitive regulation of sex work
Sex work is not subject to punitive regulations or is not criminalized
Issue is determined/differs at subnational level
Data not available

Death penalty
Imprisonment (14 years–life, up to 14 years) or no penalty specified
Laws penalizing same-sex sexual acts have been decriminalized or never existed, or no specific legislation
Data not available

Compulsory detention for drug offences
Possession of drugs for personal use is specified as a criminal offence or drug use or consumption is a specific offence in law
Possession of drugs for personal use is specified as a non-criminal offence
Data not available

Yes, for adolescents younger than 18
Yes, for adolescents younger than 14 and 16
Yes, for adolescents younger than 12
No
Data not available

Yes
No
Data not available

Yes
No, but prosecutions exist based on general criminal laws
No
Data not available

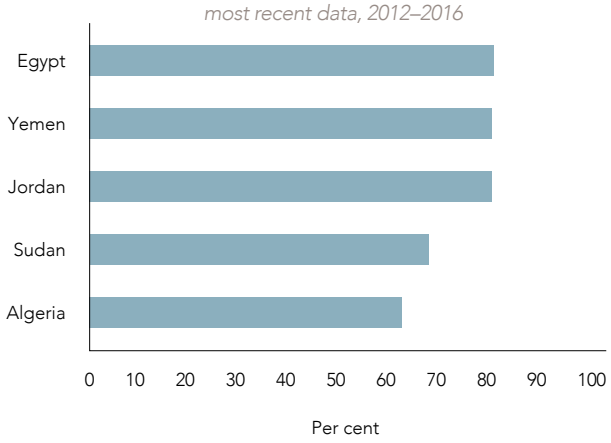
Yes
No
Data not available

Yes
No
Data not available

Note: Data on laws restricting the entry, stay and residence of people living with HIV are currently undergoing a global review that will involve country validation. An update is expected by the end of 2018.

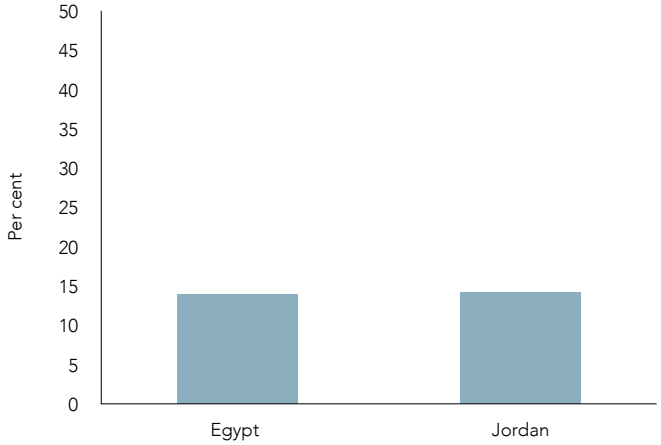
Sources: National Commitment and Policy Instrument, 2017 and 2018; supplemented by additional sources where noted (see references at end of chapter).

FIGURE 18.8 *Percentage of women aged 15–49 years who would not buy vegetables from a shopkeeper living with HIV, Middle East and North Africa, most recent data, 2012–2016*



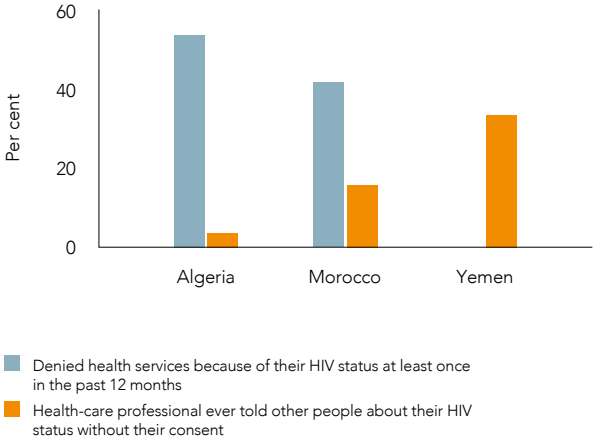
Source: Population-based surveys, 2012–2016.

FIGURE 18.9 *Percentage of ever-married or partnered women aged 15–49 years who experienced physical and/or sexual violence by an intimate partner in the past 12 months, countries with available data, Middle East and North Africa, 2012–2014*



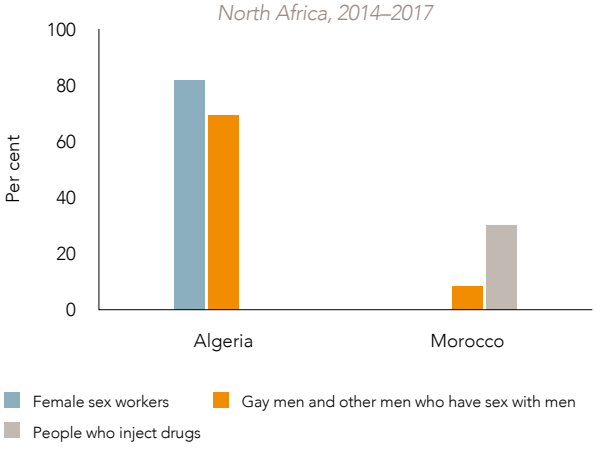
Source: Population-based surveys, 2012–2014.

FIGURE 18.10 *Percentage of people living with HIV who experienced discrimination in health-care settings, countries with available data, Middle East and North Africa, 2012–2017*



Source: People Living with HIV Stigma Index surveys, 2012–2017.

FIGURE 18.11 *Percentage of key populations who reported having avoided health-care services in the past 12 months due to stigma and discrimination, countries with available data, Middle East and North Africa, 2014–2017*



Source: Integrated biological and behavioural surveys, 2014–2017.

Misconceptions about HIV and stigmatizing attitudes remain widespread. When surveyed, more than 60% of adult women in Algeria and Sudan—and more than 70% in Egypt, Jordan and Yemen—said they would not buy vegetables from a shopkeeper who is living with HIV (Figure 18.8) *(1, 2)*. Available data also indicate that people living with HIV experience routine discrimination when trying to use health-care services, with more than 50% of surveyed people living with HIV in Algeria reporting that they had been denied health services due to their HIV status (Figure 18.10) *(3)*. It is not unusual for health professionals to disclose people's HIV status to others without consent. Research in four countries among people who inject drugs has documented high levels of dissatisfaction with health-care services, with more than half the respondents reporting dysfunctional relationships with health-care providers *(4)*.

Courageous efforts are underway in some countries to challenge discrimination and inequality. This includes the Leaders of the Future project in Egypt, which is tackling stigma and discrimination against women living with HIV. In the Islamic Republic of Iran, Positive Clubs have been established within the national programme as safe environments that provide discrimination-free health and prevention services and psychosocial support for people living with and affected by HIV. The clubs are located close to testing and treatment facilities and run by civil society organizations, including organizations of people living with HIV.

FIGURE 18.12 *Estimated size of key populations, Middle East and North Africa, 2014–2017*

Country	Sex workers	Gay men and other men who have sex with men	People who inject drugs
Djibouti	1700	1300	
Egypt	23 000	126 000	93 000
Iran (Islamic Republic of)	400 000	360 000	200 000
Lebanon	4200	8000	9000
Morocco	72 000	42 000	1200
Somalia	3700		
Sudan	260 000	140 000	
Syrian Arab Republic	25 000	10 000	
Tunisia	25 000	28 000	9000
Yemen	59 000	44 000	20 000

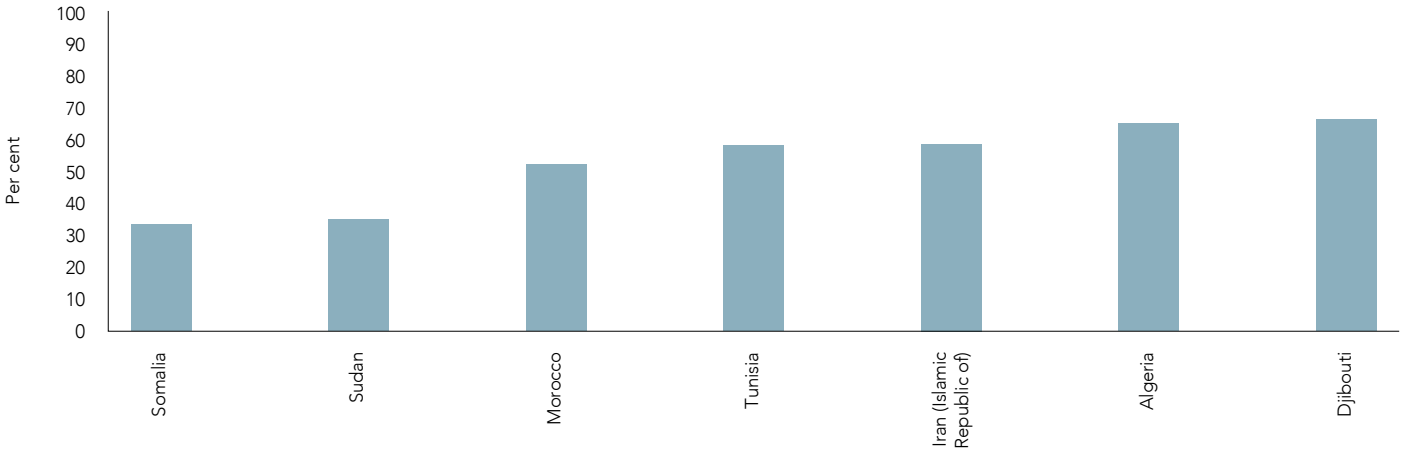
Source: 2018 Global AIDS Monitoring.

Harm reduction services are essential in a region where more than one third of HIV infections in 2017 were among people who inject drugs. However, the Islamic Republic of Iran and Morocco are the only countries in the region with nationwide harm reduction strategies *(5)*. Both needle–syringe programmes and opioid substitution therapy are in place in Lebanon, and needle–syringe programmes also exist in Egypt, Jordan and Tunisia *(6)*.

Pre-exposure prophylaxis (PrEP) is a potentially vital prevention tool in a region where large percentages of new HIV infections occur among key populations and their sexual partners. In June 2017, Morocco became the first country in the region to adopt the use of PrEP as part of its HIV prevention programme. Other countries—such as Algeria, the Islamic Republic of Iran and Lebanon—have initiated pilot studies or policy and planning processes for the introduction of PrEP as part of a comprehensive package of services for key populations.

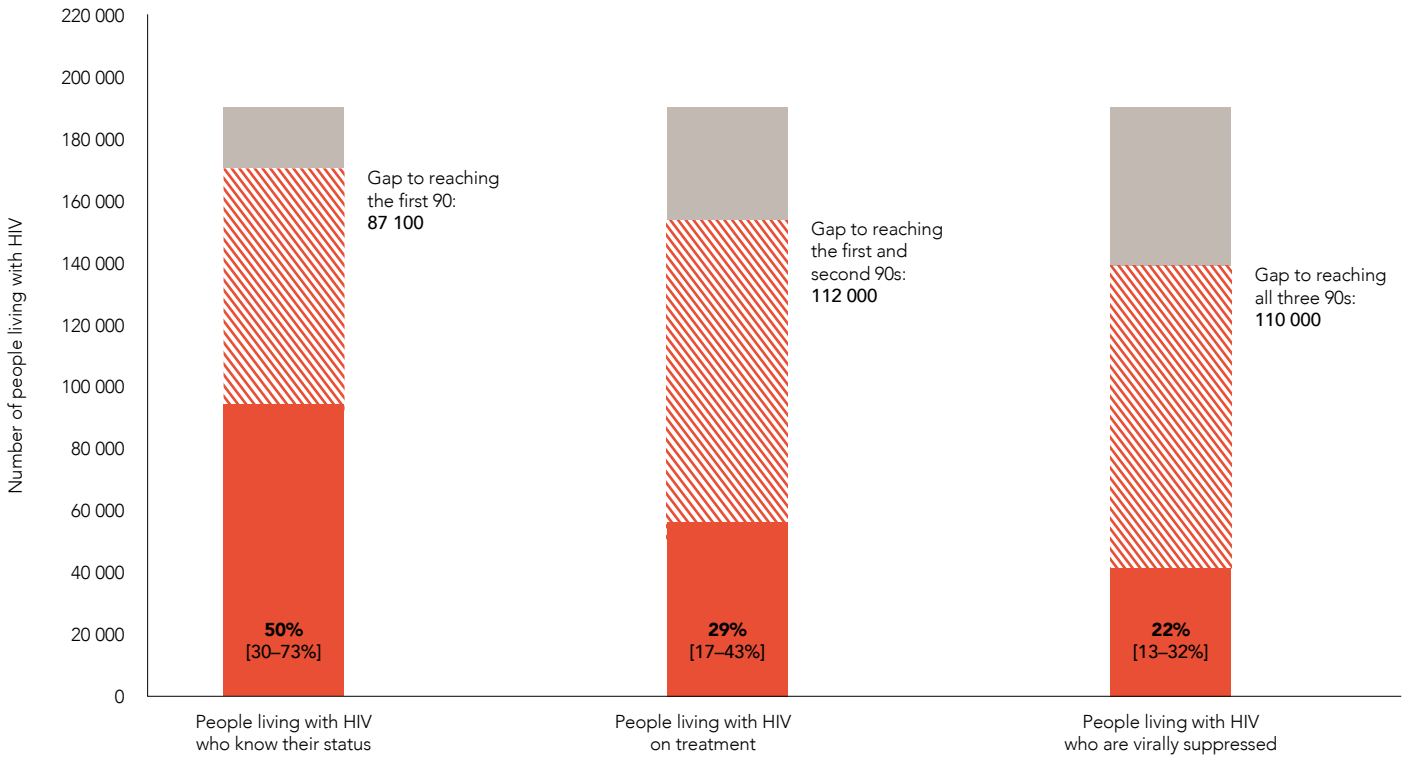
Some countries, such as Morocco, have been upgrading their strategic information systems, but a dearth of accurate information is holding back HIV responses in several other countries. Better data are needed to focus HIV interventions on locations and populations where HIV risk is highest.

FIGURE 18.13 *Percentage of sex workers reporting condom use with last client, countries with available data, Middle East and North Africa, 2015–2017*



Source: 2018 Global AIDS Monitoring.

FIGURE 18.14 *HIV testing and treatment cascade, Middle East and North Africa, 2017*



Source: UNAIDS special analysis, 2018; see annex on methods for more details.

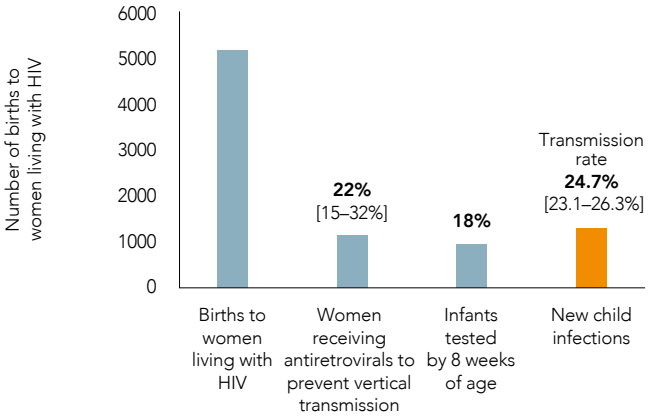
Among the 222 000 [150 000–300 000] people living with HIV in the Middle East and North Africa at the end of 2017, 50% [30–73%] were aware of their HIV status, the same as in 2016. The gap to achieving the first 90 of the 90–90–90 targets in 2017 was 87 100 people living with HIV. To help close the gap, Morocco has introduced community-based HIV testing and counselling.

About 63 200 [55 600–65 700] people in the region were accessing antiretroviral therapy in 2017, or 29% [17–43%] of all people living with HIV. The gap to achieving the first and second 90s of the 90–90–90 targets in 2017 was 112 000 people living with HIV. Algeria is an exception in the region, achieving treatment coverage of 80% [75–87%] in 2017.

The estimated percentage of people living with HIV who achieved viral suppression increased from 17% [10–25%] in 2016 to 22% [13–32%] in 2017. The gap to achieving all three 90s in 2017 was the viral suppression of an additional 110 000 people living with HIV.

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

FIGURE 18.15 *Cascade of services for preventing vertical transmission, number of new infections and transmission rate, Middle East and North Africa, 2017*

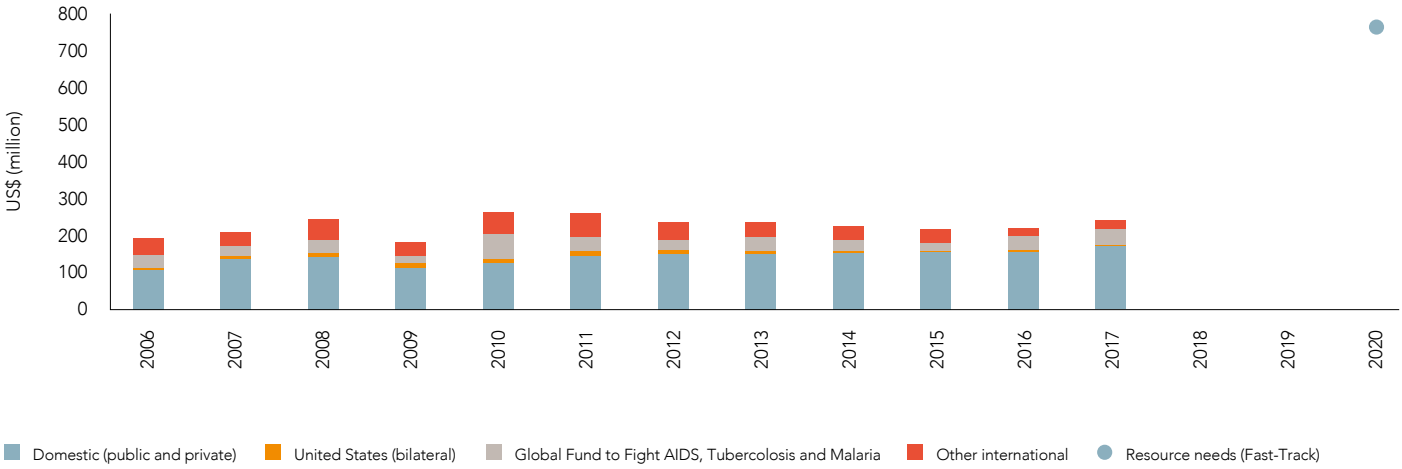


Source: UNAIDS 2018 estimates; 2018 Global AIDS Monitoring.

The rate of mother-to-child transmission of HIV in the region was a very high (24.7% [23.1–26.3%]) in 2017. Almost 1300 children acquired HIV in 2017 in the Middle East and North Africa, reflecting a series of gaps along the cascade of services for the prevention of mother-to-child transmission of HIV. Of the more than 5200 women living with HIV who gave birth in 2017, only about 1100 received antiretrovirals to prevent vertical transmission of HIV. This means that coverage of services for the prevention of mother-to-child transmission was only 22% [15–32%], by far the lowest in the world. Only 940 infants tested for HIV before eight weeks of age (18% coverage).

INVESTMENT

FIGURE 18.16 *HIV resource availability by source, 2000–2017, and projected resource needs by 2020, Middle East and North Africa*



*Estimates for low- and middle-income countries per 2015 World Bank income level classification. All figures are expressed in constant 2016 US dollars.

Source: UNAIDS 2018 resource availability and needs estimates.

The resources currently available for HIV in the Middle East and North Africa fall well short of the estimated needs for achieving the 2020 Fast-Track Targets. Almost three quarters (72%) of the US$ 242 million available for HIV responses in 2017 was domestically sourced. Declining donor resources (a 30% drop in the past decade) means there will be continued pressure on countries to fund their own HIV responses. Countries also will need to allocate larger shares of their HIV budgets to prevention programmes, especially for key populations. Algeria, for example, spent only 3% of HIV funding on prevention in 2017.

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Eastern Europe and central Asia

AT A GLANCE

1 The HIV epidemic in eastern Europe and central Asia continues to grow, with many countries not on track to reach key global targets by the end of 2020.

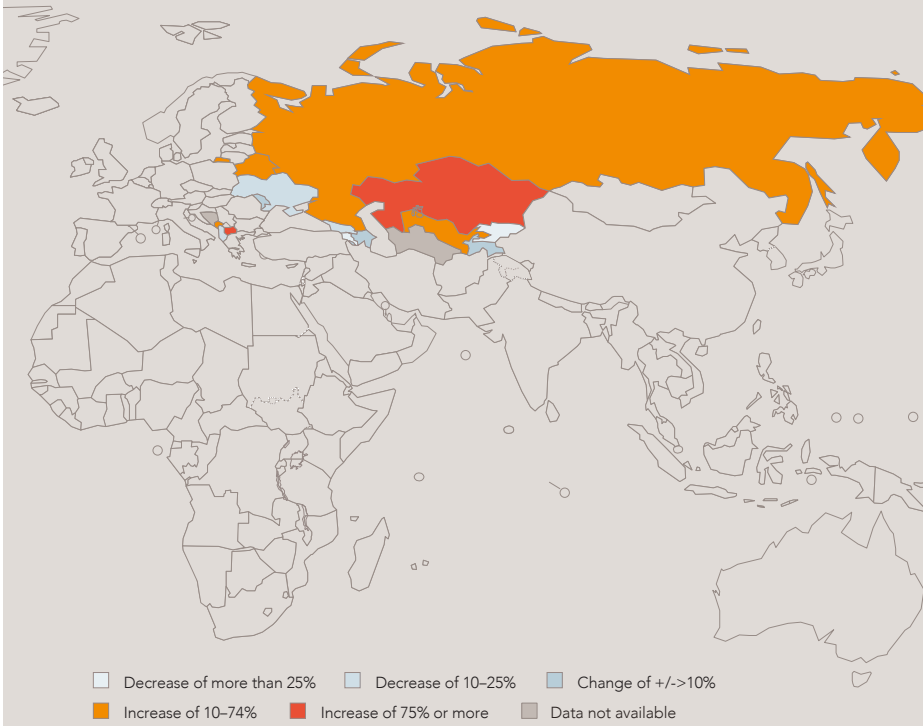
2 HIV transmission among people who inject drugs and their sexual partners account for the majority of HIV infections in the region.

3 Growing HIV epidemics among transgender people and gay men and other men who have sex with men are understudied and unrecognized by several national HIV responses.

4 Political, legal and technical barriers in many national HIV programmes are delaying the use of new, innovative approaches and tools, such as self-testing and pre-exposure prophylaxis (PrEP).

5 The unique potential of civil society organizations must be enhanced to reach the marginalized populations heavily affected by the epidemic.

FIGURE 19.1 *Percentage change in new HIV infections among adults (aged 15 years and older) between 2010 and 2017, eastern Europe and central Asia*

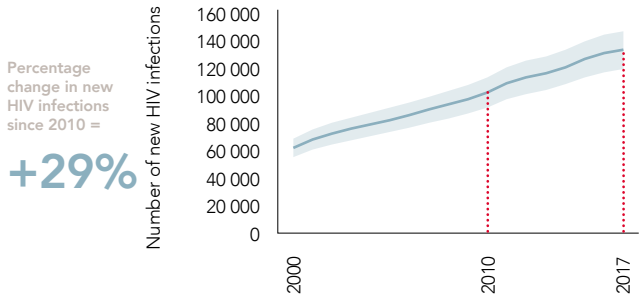


Source: 2018 UNAIDS estimates.

The HIV epidemic in eastern Europe and central Asia continues to grow rapidly, reflecting insufficient political commitment and domestic investment in national AIDS responses across much of the region. Regional trends depend a great deal on progress in the Russian Federation, which is home to 70% of people living with HIV in the region. Outside of the Russian Federation, the rate of new HIV infections is stable.

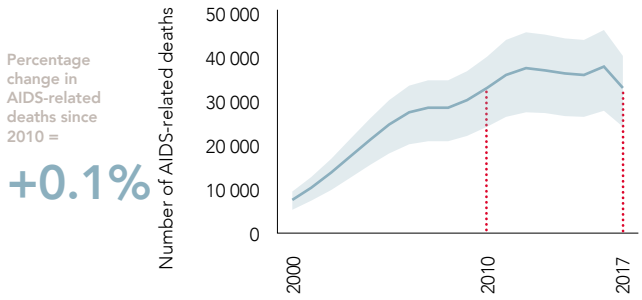
Insufficient access to sterile injecting equipment and the unavailability of opioid substitution therapy are stymying efforts in the Russian Federation to prevent HIV infections among people who inject drugs. Armed conflict has disrupted the provision of testing, prevention and treatment services in the nongovernment controlled areas in eastern Ukraine *(1)*.

FIGURE 19.2 *Number of new HIV infections, eastern Europe and central Asia, 2000–2017*



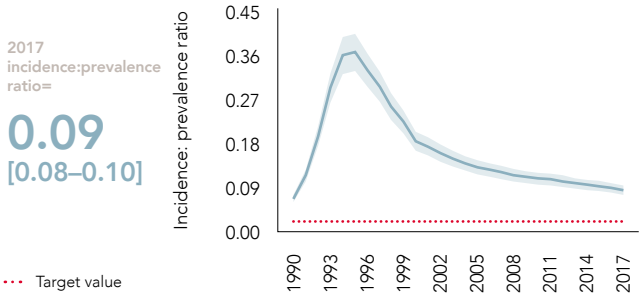
Source: UNAIDS 2018 estimates.

FIGURE 19.3 *Number of AIDS-related deaths, eastern Europe and central Asia, 2000–2017*



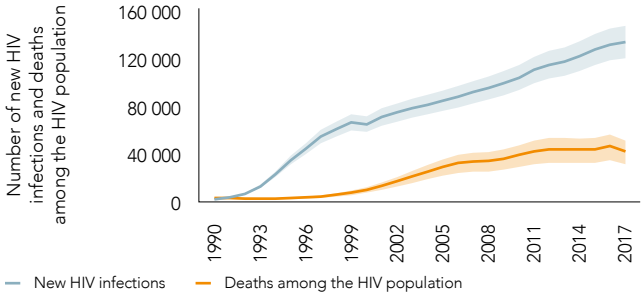
Source: UNAIDS 2018 estimates.

FIGURE 19.4 *Incidence:prevalence ratio, eastern Europe and central Asia, 1990–2017*



Source: UNAIDS 2018 estimates.

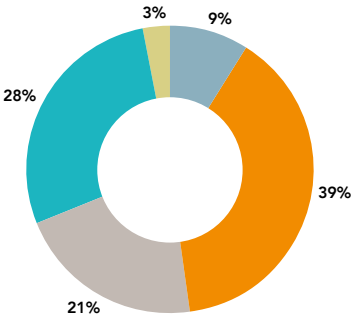
FIGURE 19.5 *Number of new HIV infections and deaths among the HIV population, eastern Europe and central Asia, 1990–2017*



Source: UNAIDS 2018 estimates.

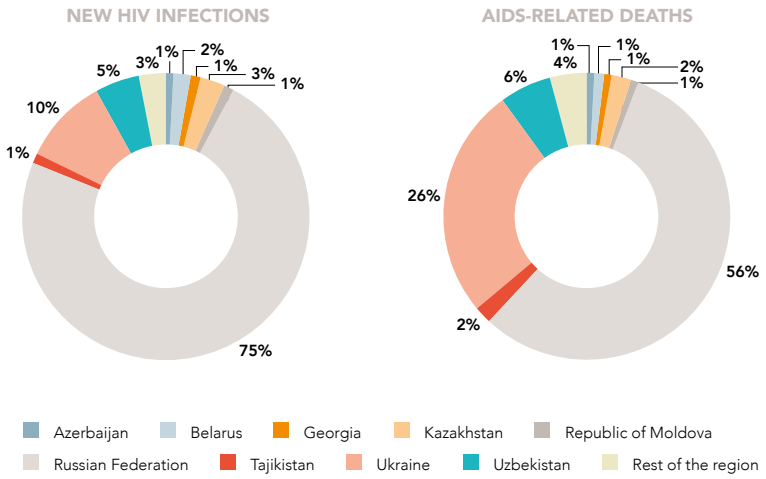
A 30% increase in new HIV infections since 2010 has the region falling behind in its efforts to reach the target of reducing new HIV infections by 75%. The HIV incidence:prevalence ratio of 0.09 [0.08–0.10] is three times higher than the 0.03 epidemic transition benchmark. National HIV surveillance data in several countries also indicate that HIV infections are growing among the general population, particularly urban residents and labour migrants *(2–5)*.

FIGURE 19.6 *Distribution of new HIV infections, by population, eastern Europe and central Asia, 2017*



† Individuals in this category did not report any HIV-related risk behaviour.
Source: UNAIDS special analysis, 2018.

FIGURE 19.7 *Distribution of new HIV infections and AIDS-related deaths by country, eastern Europe and central Asia, 2017*



Source: UNAIDS 2018 estimates.

LAWS AND POLICIES SCORECARD

Country	Criminalization of transgender people	Criminalization of sex work	Criminalization of same-sex sexual acts	Drug use or possession for personal use an offence	Parental consent for adolescents to access HIV testing	Spousal consent for married women to access SRH services	Laws criminalizing the transmission of, non-disclosure of or exposure to HIV transmission	Laws or policies restricting the entry, stay and residence of people living with HIV	Mandatory HIV testing for marriage, work or residence permits or for certain groups
Albania									
Armenia									
Azerbaijan									
Belarus		a							
Bosnia and Herzegovina		a							
Georgia									
Kazakhstan									
Kyrgyzstan									
Montenegro									
Republic of Moldova									
Russian Federation		e	b	f			g	h	i
Tajikistan		d	b						
The former Yugoslav Republic of Macedonia		a	b						
Turkmenistan			b				c	j	j
Ukraine									
Uzbekistan							c		

Criminalized and/or prosecuted
Neither criminalized nor prosecuted
Data not available

Any criminalization or punitive regulation of sex work
Sex work is not subject to punitive regulations or is not criminalized
Issue is determined/differs at subnational level
Data not available

Death penalty
Imprisonment (14 years–life, up to 14 years) or no penalty specified
Laws penalizing same-sex sexual acts have been decriminalized or never existed, or no specific legislation
Data not available

Compulsory detention for drug offences
Possession of drugs for personal use is specified as a criminal offence or drug use or consumption is a specific offence in law
Possession of drugs for personal use is specified as a non-criminal offence
Data not available

Yes, for adolescents younger than 18
Yes, for adolescents younger than 14 and 16
Yes, for adolescents younger than 12
No
Data not available

Yes
No
Data not available

Yes
No, but prosecutions exist based on general criminal laws
No
Data not available

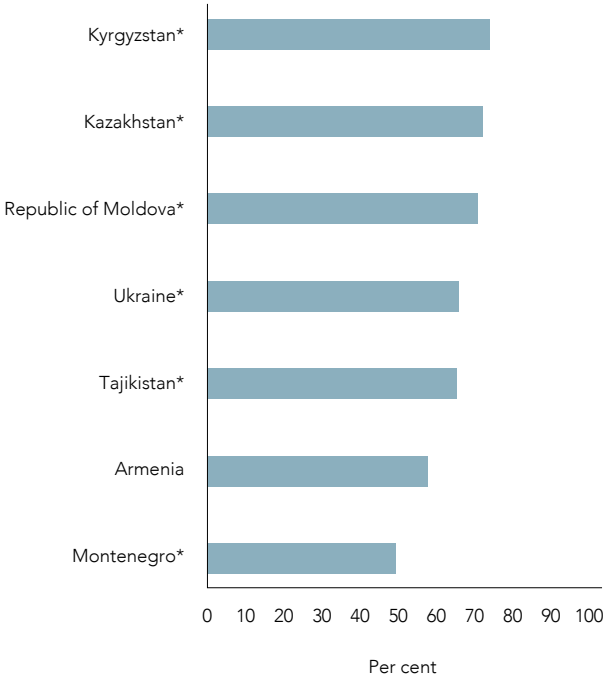
Yes
No
Data not available

Yes
No
Data not available

Note: Data on laws restricting the entry, stay and residence of people living with HIV are currently undergoing a global review that will involve country validation. An update is expected by the end of 2018.

Sources: National Commitment and Policy Instrument, 2017 and 2018; supplemented by additional sources where noted. (see references at end of chapter)

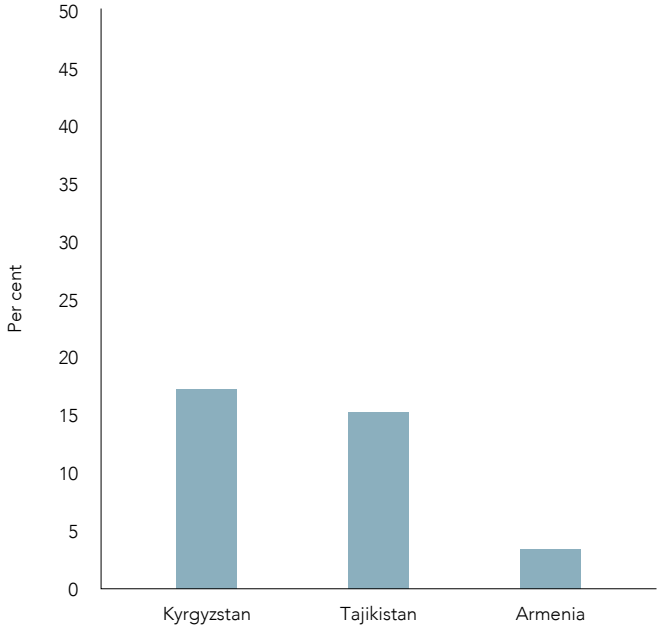
FIGURE 19.8 *Percentage of men and women aged 15–49 years who would not buy vegetables from a shopkeeper living with HIV, eastern Europe and central Asia, most recent data, 2012–2016*



*Female respondents only.

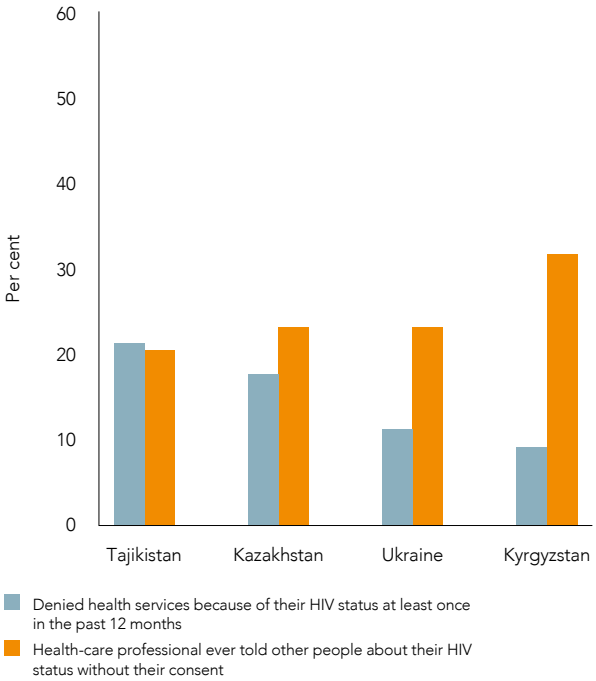
Source: Population-based surveys, 2012–2016.

FIGURE 19.9 *Percentage of ever-married or partnered women aged 15–49 years who experienced physical and/or sexual violence by an intimate partner in the past 12 months, countries with avilable data, eastern Europe and central Asia, 2012–2016*



Source: Population-based surveys, 2012–2017.

FIGURE 19.10 *Percentage of people living with HIV who experienced discrimination in health-care settings, countries with available data, eastern Europe and central Asia, 2013–2015*



Source: People Living with HIV Stigma Index survey, 2013–2015.

A broadly threatening environment for key populations discourages HIV testing and treatment enrolment. Results from the Stigma Index show that at least 20% of people living with HIV in Kyrgyzstan and 18% in Kazakhstan reported being denied health services; disclosure of HIV status by health-care workers without consent is alarmingly common in all countries with available data (Figure 19.10) *(6)*. In wider society, discriminatory attitudes and misconceptions about HIV were common, with at least half of adults in eight countries saying they would not buy vegetables from a shopkeeper who is living with HIV (Figure 19.8) *(7)*. Some progress has been observed: in Ukraine, for instance, stigma and discrimination towards people living with HIV in medical facilities has dropped from 22% (2010) to 8% (2016) *(8)*.

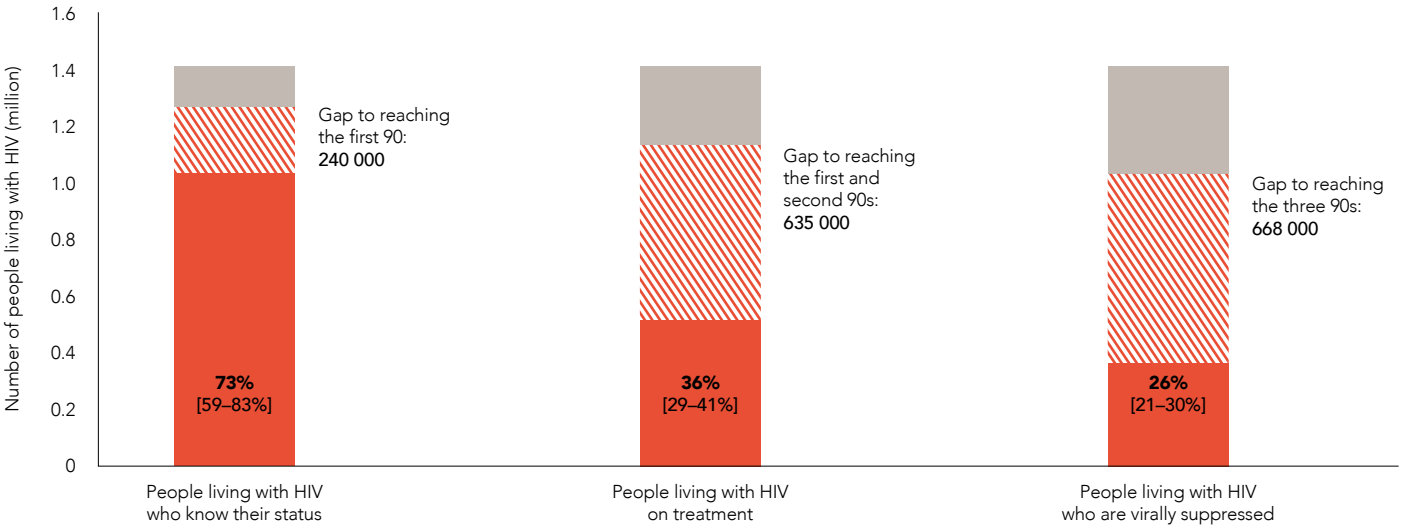
Community-based organizations have major roles to play in efforts to reduce stigma and discrimination towards key populations, especially people who inject drugs, sex workers, gay men and other men who have sex with men, migrants and prisoners.

High coverage and quality of harm reduction services remain essential in a region where nearly one third of new HIV infections are among people who inject drugs. Needle–syringe programmes are in place across the region, but they are often at limited scale. At the end of 2017, harm reduction programmes were still operating in 17 cities in the Russian Federation, but with limited options to sustain them in the future. The city of Saint Petersburg has achieved a consistent decrease in new HIV infections—a result of combination prevention programmes, including harm reduction, that were implemented by city authorities in collaboration with civil society organizations *(9, 10)*.

Several countries—including Belarus, Kazakhstan, the Republic of Moldova and Ukraine—have maintained and scaled up harm reduction programmes with government resources, leading to reductions in new HIV infections among people who inject drugs. The coverage of opioid substitution therapy, which has proven to be efficacious and cost-effective, remains suboptimal throughout the region. There are fewer than 10 operational sites in many countries, and opioid substitution therapy is not available in the Russian Federation, Turkmenistan and Uzbekistan *(11)*.

Political, legal and technical hurdles currently block the use of PrEP in many countries of the region. In 2018, PrEP was available in Georgia, the Republic of Moldova and Ukraine, with the Republic of Moldova providing it through the public health system.

FIGURE 19.11 *HIV testing and treatment cascade, eastern Europe and central Asia, 2017*



Source: UNAIDS special analysis, 2018; see annex on methods for more details.

Among the 1.4 million [1.3–1.6 million] people living with HIV in eastern Europe and central Asia at the end of 2017, 73% [59–83%] were aware of their HIV status, an increase from 69% [56–79%] in 2016. The gap to achieving the first 90 of the 90–90–90 targets in 2017 was 240 000 people living with HIV.

While the overall number of annual HIV tests in the region continues to increase, the proportion of tests among key populations—including people who use drugs, gay men and other men who have sex with men, and patients with sexually transmitted infections—is shrinking, declining from 4.5% of all HIV tests conducted annually in 2010 to 3.2% in 2016 *(12)*. Late HIV diagnosis also remains a major challenge in the region: in the Russian Federation, almost 69% of patients who started treatment in 2016 had CD4 cell counts below 350 cells per mm3 *(13)*.

A majority of countries in the region have officially adopted a test-and-treat policy, but due to resource constraints and barriers to treatment among key populations, the pace of treatment scale-up is slow and coverage remains among the lowest in the world *(14)*. About 520 000 [458 000–541 000 million] people were accessing antiretroviral therapy in 2017, or 36% [29–41%] of all people living with HIV in the region. The gap to achieving the first and second 90s of the 90–90–90 targets in 2017 was testing and treating 635 000 people living with HIV.

The estimated percentage of people living with HIV who achieved viral suppression marginally increased from 25% [20–28%] in 2016 to 26% [21–30%] in 2017. The gap to achieving all three 90s in 2017 was the viral suppression of 668 000 people living with HIV.

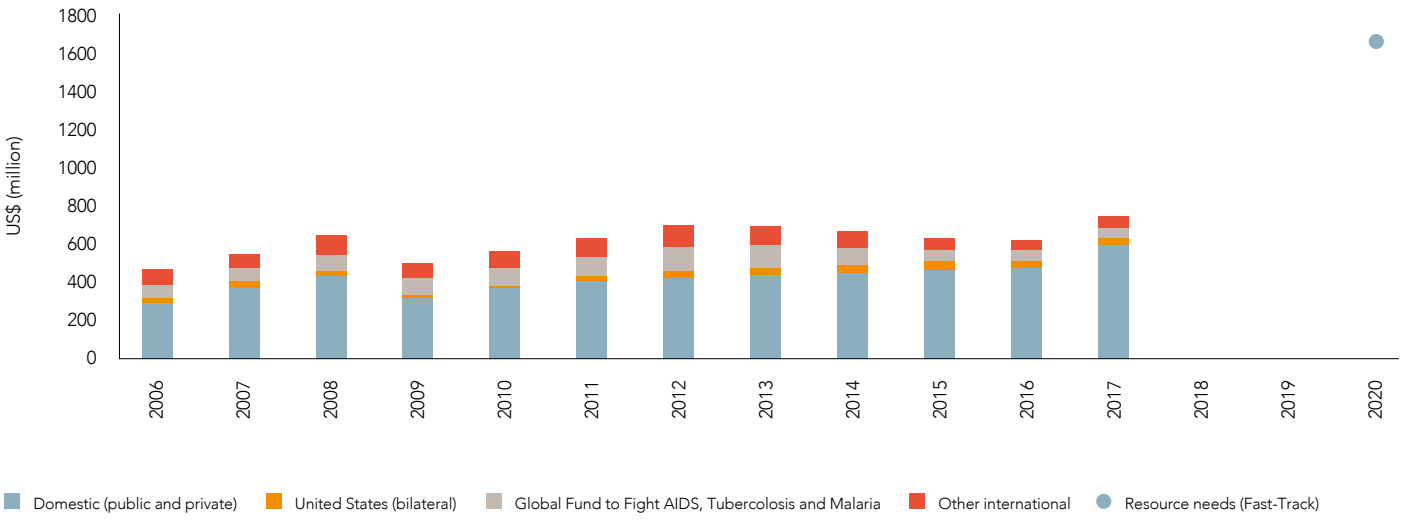
Limited use of fixed-dose combinations of antiretroviral medicines is one among several factors in the poor adherence and high percentage of patients lost to follow-up in the region. The relatively high prices of antiretroviral medicines in the middle-income countries in the region are an additional barrier to treatment scale-up. Several countries—Belarus, Kazakhstan, the Republic of Moldova, the Russian Federation and Ukraine—have successfully reduced the cost of first-line treatment regimens in recent years. In Ukraine, the cost of some first-line regimens has been reduced to as little as US$ 78 per person per year *(15)*. In Kazakhstan, the government, organizations of people living with HIV and technical partners worked together to establish the United Nations Children's Fund (UNICEF) as a procurement agency for antiretroviral medicines, which led to steep price reductions and significant expansion of access to treatment *(16, 17)*.

ELIMINATION OF MOTHER-TO-CHILD TRANSMISSION

The region's progress towards the elimination of mother-to-child transmission of HIV continues. In 2016, Armenia and Belarus were validated by the World Health Organization (WHO) as having eliminated mother-to-child transmission of HIV, and several other countries in eastern Europe and central Asia are on track to apply for validation in 2018 *(18)*. Mother-to-child transmission accounted for just 1% of new cases of HIV infection reported in 2017.

INVESTMENT

FIGURE 19.12 *HIV resource availability by source, 2006–2017, and projected resource needs by 2020, eastern Europe and central Asia*



*Estimates for low- and middle-income countries per 2015 World Bank income level classification. All figures are expressed in constant 2016 US dollars.
Source: UNAIDS 2018 resource availability and needs estimates.

Total resource availability for HIV responses in eastern Europe and central Asia declined between 2012 and 2016, followed by a sharp increase in domestic investment in 2017 to reach US$ 739 million. Despite this increase, the total resources were only 46% of the US$ 1.6 billion per year required to reach the region's 2020 Fast-Track Targets. Increased domestic spending—reaching 81% of all resources in 2017—has helped to offset declines in international support. However, as the funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria in the region continues to decline, it has been difficult to ensure domestic spending from national budgets is used to reach key populations.

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Additional sources for the laws and policies scorecard

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Western and central Europe and North America

AT A GLANCE

1 High coverage of HIV services for much of the last two decades has resulted in steady progress towards ending the AIDS epidemic in the region.

2 Two thirds of the estimated 350 000 people globally who have ever started pre-exposure prophylaxis (PrEP) are in the United States of America.

3 More than three quarters (76%) of people living with HIV in the region are accessing antiretroviral therapy.

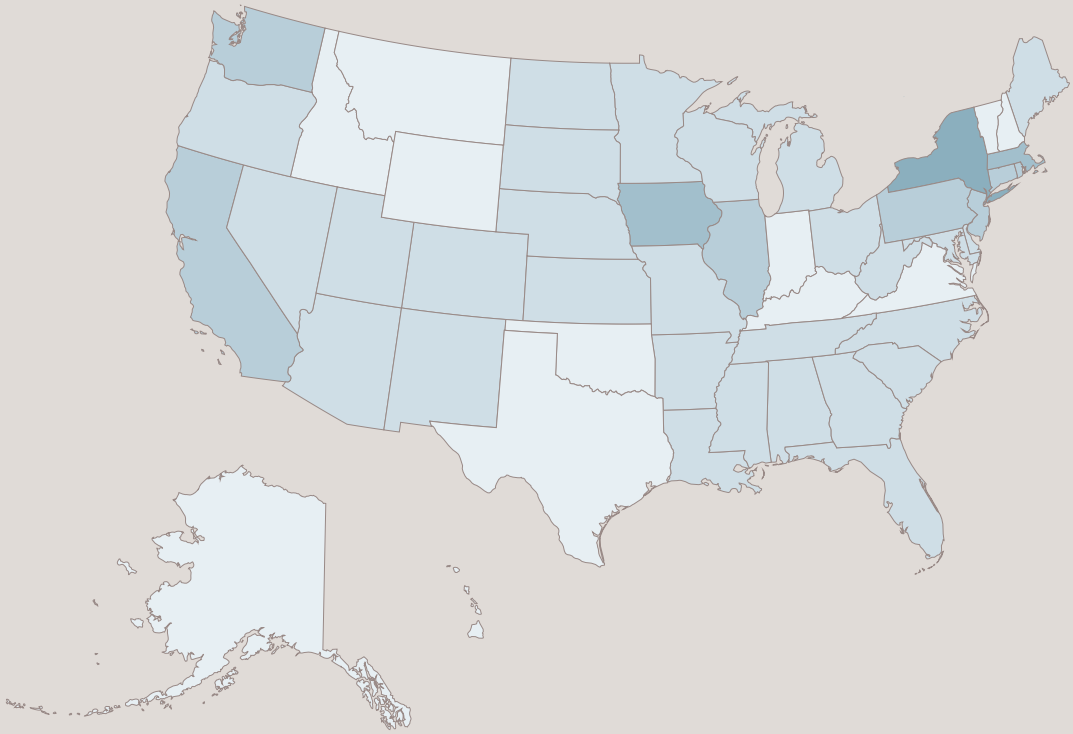
4 Late diagnosis of HIV remains a challenge in western and central Europe. Nearly half (48%) of newly diagnosed individuals in the European Union and European Economic Area in 2016 had CD4 cell counts below 350 cells per mm3.

The state of the HIV epidemic in the high-income region of western and central Europe and North America shows what is possible when sufficient resources and strong health systems implement combination HIV prevention strategies, including antiretroviral therapy, condom promotion, harm reduction and PrEP. For example, comprehensive harm reduction and the decriminalization of drug use have contributed to low rates of HIV infection among people who inject drugs in Czechia and Portugal. PrEP is being aggressively rolled out in the United States and some countries in western Europe, and data from some cities show that it is contributing to declines in new diagnoses of HIV infection among gay men and other men who have sex with men.

In the United States in 2017, the percentage of people in need who were receiving PrEP appeared highest in New York (24%), Massachusetts (17%) and Iowa (16%); access was lowest in New Hampshire (0%), Vermont (0%) and Wyoming (1%) (Figure 20.1).

PrEP is increasingly available in western Europe. In 2017 and early 2018, Belgium, Norway and Scotland joined France in proving PrEP through a national subsidized programme. National-level access was also provided through demonstration projects in England, Luxembourg, Netherlands and Wales.

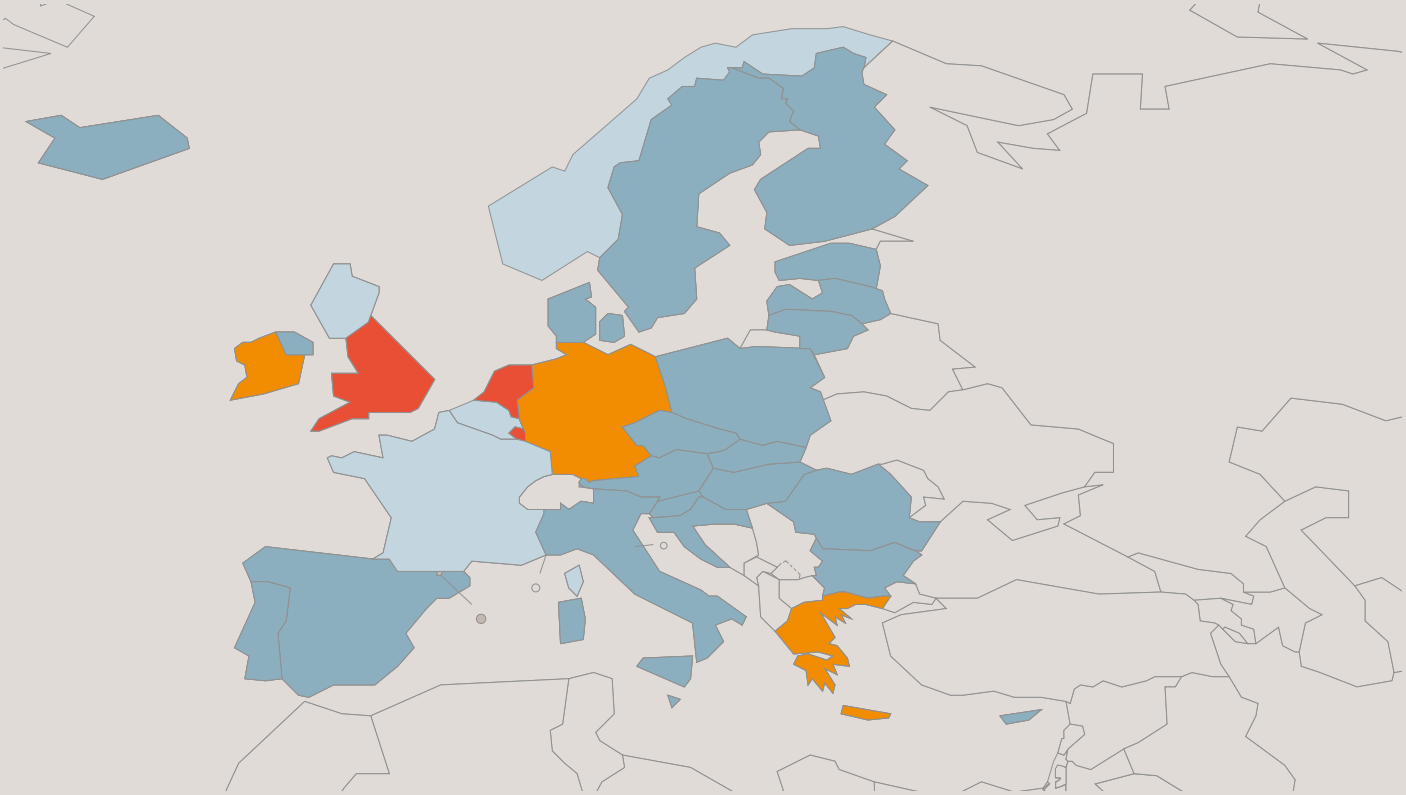
FIGURE 20.1 *Uptake of pre-exposure prophylaxis, 2017, as a proportion of estimated 2015 need, United States of America*



0–5% 6–10% 11–15% 16–20% 21–25% Data not available

Source: Smith DK, et al, Estimates of adults with indications for HIV pre-exposure prophylaxis by jurisdiction, transmission risk group, and race/ethnicity, United States, 2015, Annals of Epidemiology (2018), https://doi.org/10.1016/ j.annepidem.2018.05.003.

FIGURE 20.2 *PrEP availability, countries covered by the European Medicines Agency, 2018*



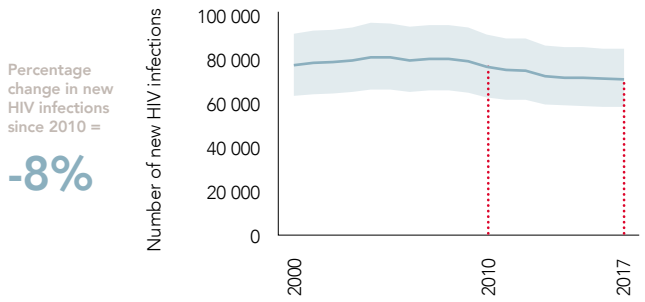
Limited national availability Generic PrEP available through certain pharmacies National level demonstration research National subsidized programme No data

Note: The European Medicines Agency has approved the use of tenofovir in combination with emtricitabine as PrEP in all countries in its mandate. (http://www.ema.europa.eu/ema/index.jsp?curl=pages/medicines/human/medicines/000594/human_med_001113.jsp&mid=WC0b01ac058001d124). Switzerland is not covered by the European Medicines Agency. There are several examples of localized PrEP initiatives that are not captured on this map.

Source: UNAIDS review based on communications with public health authorities and project managers, 2018.

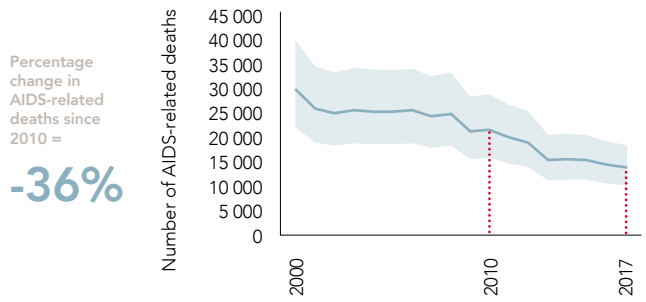
EPIDEMIC TRANSITION MEASURES

FIGURE 20.3 *Number of new HIV infections, western and central Europe and North America, 2000–2017*



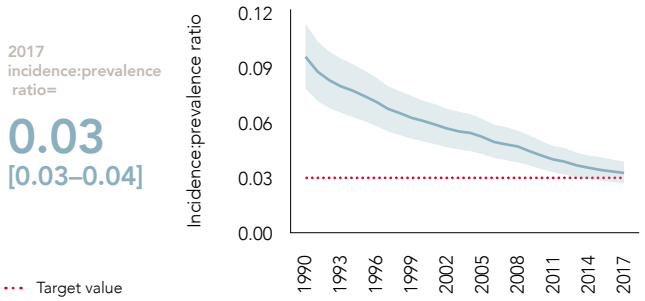
Source: UNAIDS 2018 estimates.

FIGURE 20.4 *Number of AIDS-related deaths, western and central Europe and North America, 2000–2017*



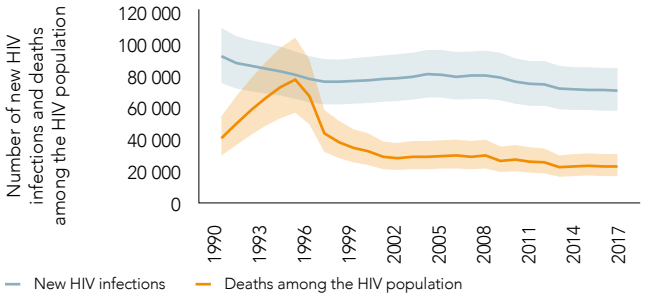
Source: UNAIDS 2018 estimates.

FIGURE 20.5 *Incidence:prevalence ratio, western and central Europe and North America, 1990–2017*



Source: UNAIDS 2018 estimates.

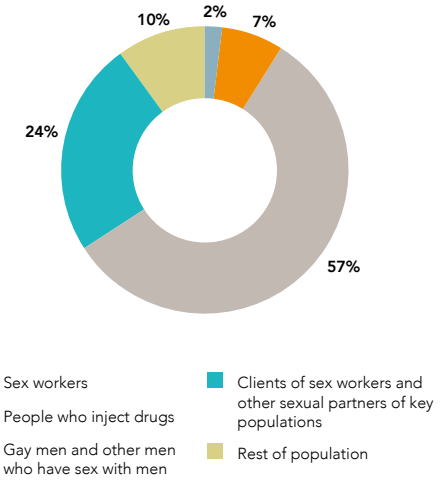
FIGURE 20.6 *Number of new HIV infections and deaths among the HIV population, western and central Europe and North America, 1990–2017*



Source: UNAIDS 2018 estimates.

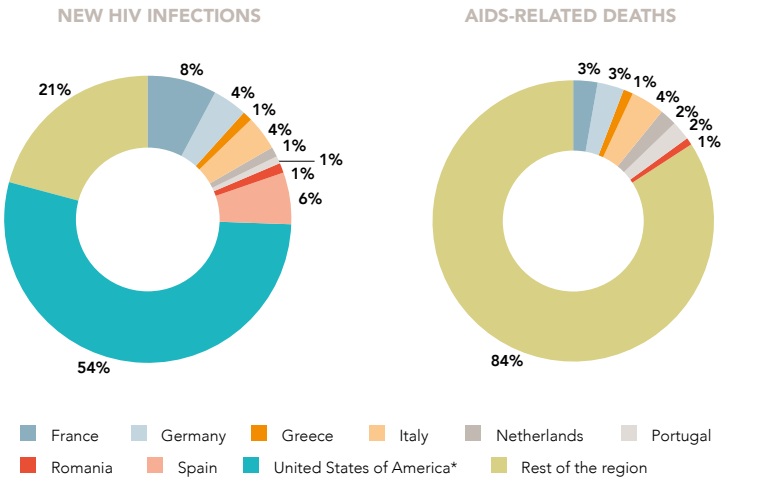
High coverage of HIV services for much of the last two decades has resulted in steady progress towards ending the AIDS epidemic in the region, hitting the epidemic transition benchmark of 0.03 [0.03–0.04] in 2017. Already low rates of HIV incidence and AIDS-related mortality have declined even further since 2010: in 2017, they reached about 70 000 [57 000–84 000] and 13 000 [10 000–18 000], respectively.

FIGURE 20.7 *Distribution of new HIV infections, by population group, western and central Europe and North America, 2017*



Source: UNAIDS special analysis, 2018.

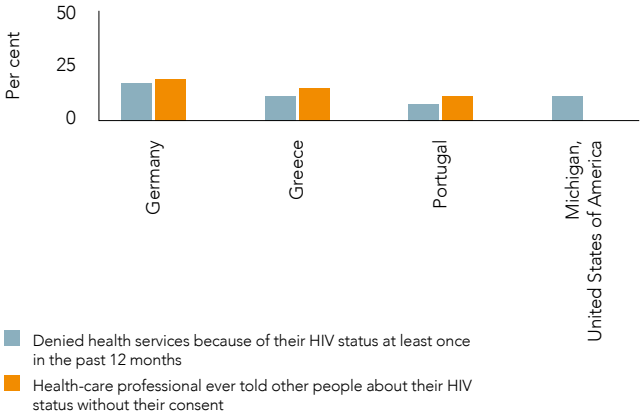
FIGURE 20.8 *Distribution of new HIV infections and AIDS-related deaths by country, western and central Europe and North America, 2017*



* Estimates of new HIV infections for the United States of America are as of 2015. Estimates for AIDS-related deaths for the United States were not available at the time of publication, but are included in the overall regional estimates for 2017.

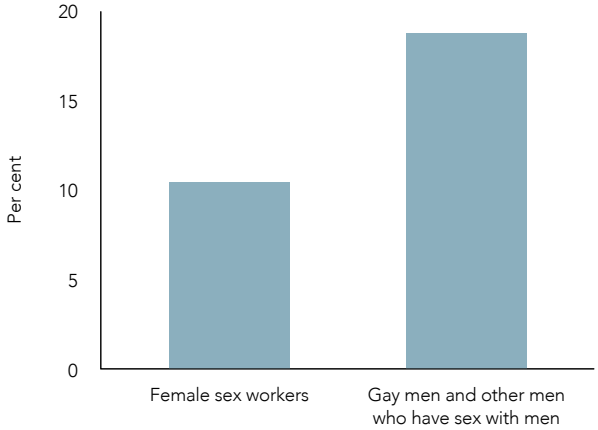
Source: UNAIDS 2018 estimates.

FIGURE 20.9 *Percentage of people living with HIV who experienced discrimination in health-care settings, countries with available data, western and central Europe and North America, 2013–2017*



Source: People Living with HIV Stigma Index surveys, 2013–2017.

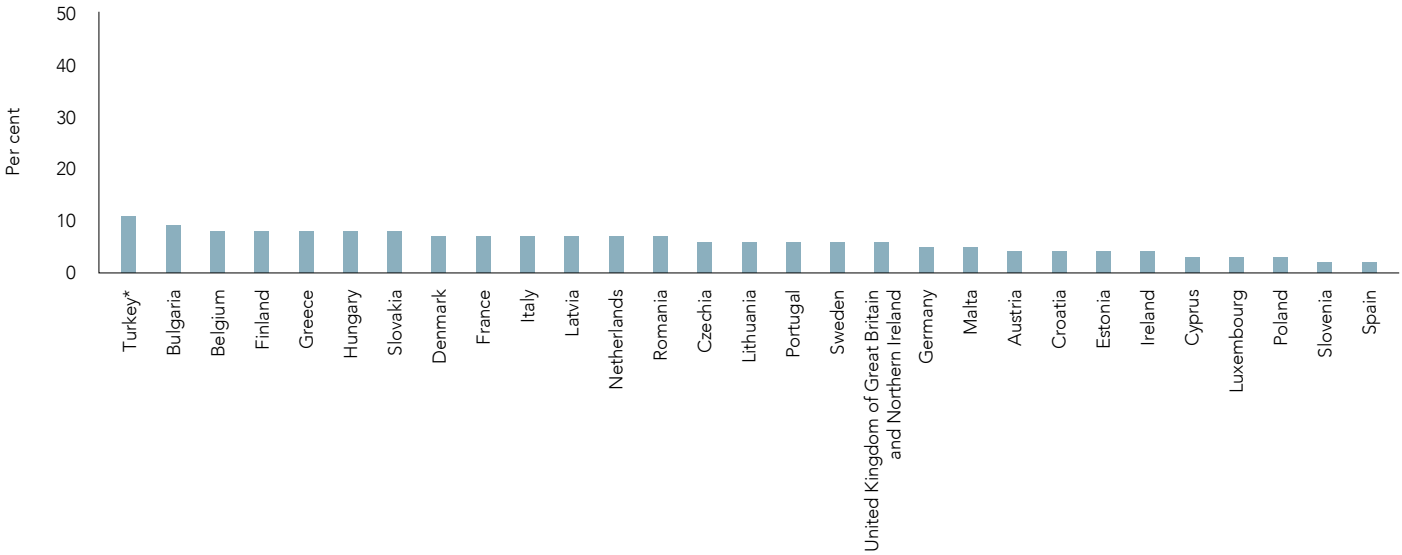
FIGURE 20.10 *Percentage of key populations who reported having avoided health-care services in the past 12 months due to stigma and discrimination, Serbia, 2013*



Source: Integrated biological and behavioural surveys, 2013.

Stigma and discrimination within health-care settings—particularly with respect to sex workers, gay men and other men who have sex with men, and people who inject drugs—persists across western and central Europe, and it plays a role in preventing these key populations from accessing HIV prevention, testing and treatment services *(1)*. Data from Stigma Index surveys conducted in Germany, Greece, Portugal and the state of Michigan in the United States show that more than one in 10 people living with HIV have experienced at least one form of stigma and discrimination at the hands of health-care professionals (Figure 20.9). A biological and behavioural survey in Serbia suggests that nearly one in five gay men and other men who have sex with men in the country avoided health-care services due to stigma and discrimination (Figure 20.10).

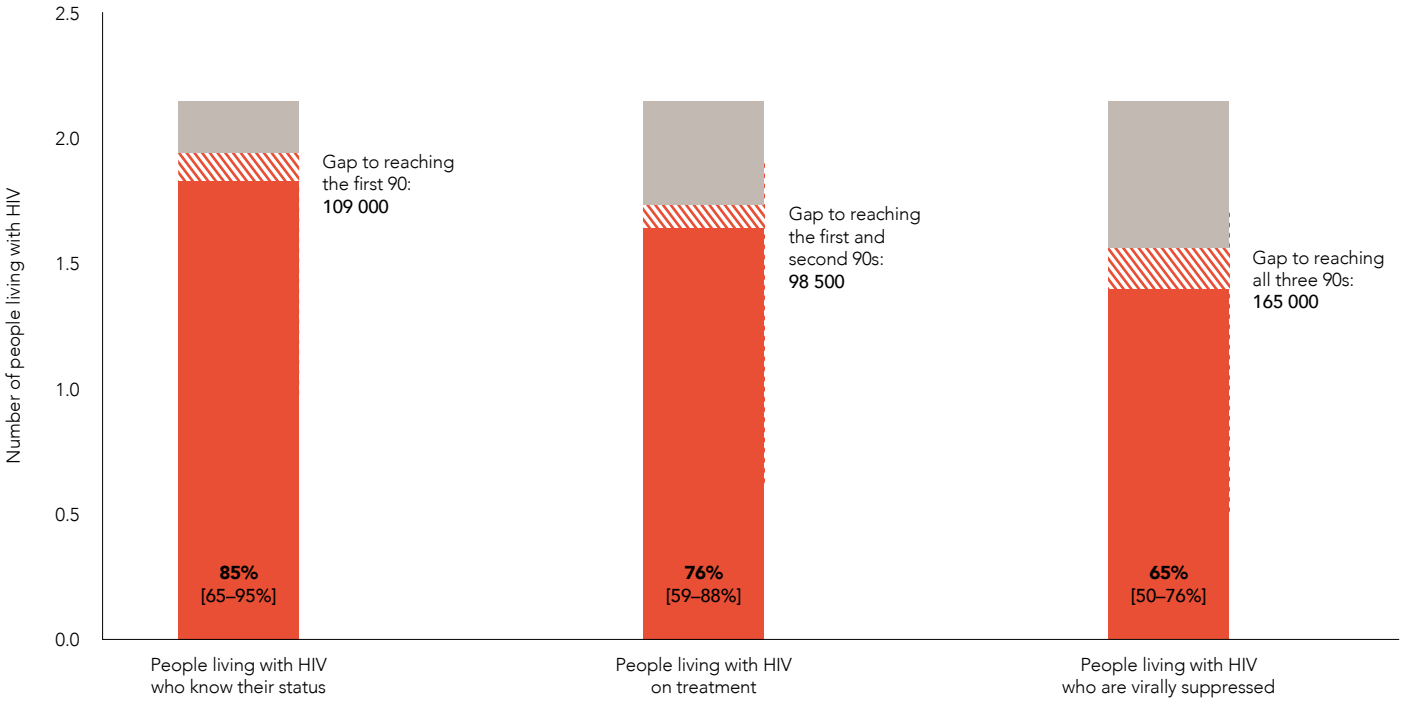
FIGURE 20.11 *Percentage of ever-married or partnered women aged 18–49 years who experienced physical and/or sexual violence by an intimate partner in the past 12 months, countries with available data, western and central Europe and North America, 2012–2014*



*Women aged 15–59 years.

Source: United Nations Statistics Division, SDG Indicators Global Database. Accessed 29 June 2018 (https://unstats.un.org/sdgs/indicators/database/).

FIGURE 20.3 *HIV testing and treatment cascade, western and central Europe and North America, 2016*



Source: UNAIDS special analysis, 2018; see annex on methods for more details.

Among 2.1 million [1.9–2.4 million] people living with HIV in the region at the end of 2016, 85% [65– >95%] were aware of their HIV status, similar to the estimated percentage who knew their status in 2015. The gap to achieving the first 90 of the 90–90–90 targets in 2016 was 1 109 000 people living with HIV.

About 1.6 million [1.4–1.7 million] people in the region were accessing antiretroviral therapy in 2016, or 76% [59–88%] of all people living with HIV. The gap to achieving the first and second 90s of the 90–90–90 targets in 2016 was 98 500 people living with HIV.

The estimated percentage of people living with HIV who achieved viral suppression increased from 63% [49–73%] in 2015 to 65% [50–76%] in 2016. The gap to achieving all three 90s in 2016 was the viral suppression of an additional 165 000 people living with HIV.

In the European Union and European Economic Area, there were 29 444 HIV diagnoses reported by 31 countries in 2016. Of these, 40% were reported to be due to same-sex sexual relations between men, 32% were due to heterosexual sexual intercourse and 4% were due to injecting drug use. A further 23% were the result of unknown reasons *(4)*. Late diagnosis remains a challenge. Nearly half (48%) of newly diagnosed individuals had CD4 cell counts below 350 cells per mm3 *(4)*.

In the United States, the percentage of people interviewed through National HIV Behavioral Surveillance System (NHBS) who reported taking an HIV test in the 12 months preceding the interview increased over time among gay men and other men who have sex with men (from 63% in 2008 to 71% in 2014), people who inject drugs (from 50% in 2009 to 58% in 2015) and heterosexual people at increased risk for infection (from 34% in 2010 to 41% in 2016) *(5)*.

Two thirds of the estimated 350 000 people who have ever started PrEP globally are in the United States (60). In the second quarter of 2017, 61 298 people in the United States had active PrEP prescriptions *(2)*. PrEP was added to San Francisco's city programmes, which also include HIV testing, rapid linkages to antiretroviral therapy and boosted support for retention in care. A 43% decrease in new HIV diagnoses in the city (from 392 in 2013 to 223 in 2016) is being attributed both to quicker achievement of viral suppression among people who test HIV-positive and to increased uptake of PrEP *(3)*.

While still not implemented widely in Europe, the use of formal and informal PrEP may also have played a role in the decline of HIV diagnoses observed in at least some of these settings *(1, 4)*.

Intimate partner violence remains a serious issue in many countries in western and central Europe. Among surveyed ever-married or partnered women (aged 18–49 years), the percentage who said they experienced physical and/or sexual violence by an intimate partner within the past 12 months was 11% in Turkey, 9% in Bulgaria and 8% in Belgium, Finland, Greece, Hungary and Slovakia (Figure 20.11).

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ANNEX ON METHODS

1. Methods for deriving UNAIDS estimates

INTRODUCTION

UNAIDS annually provides revised global, regional and country-specific modelled estimates using the best available epidemiological and programmatic data to track the HIV epidemic. Modelled estimates are required because it is impossible to count the exact number of people living with HIV, people who are newly infected with HIV or people who have died from AIDS-related illness in any country: doing so would require regularly testing every person for HIV and investigating all deaths, which is logistically impossible and ethically problematic. Modelled estimates—and the lower and upper bounds around these estimates—provide a scientifically appropriate way of describing HIV epidemic levels and trends.

PARTNERSHIPS IN DEVELOPING METHODS FOR UNAIDS ESTIMATES

Country teams use UNAIDS-supported software to develop estimates annually. The country teams are primarily comprised of demographers, epidemiologists, monitoring and evaluation specialists, and technical partners.

The software used to produce the estimates is Spectrum, which is developed by Avenir Health, and the Estimates and Projections Package, which is developed by the East–West Center.[1] The UNAIDS Reference Group on Estimates, Modelling and Projections provides technical guidance on the development of the HIV component of the software.[2]

A BRIEF DESCRIPTION OF METHODS USED BY UNAIDS TO CREATE ESTIMATES

For countries where HIV transmission is high enough to sustain an epidemic in the general population, available epidemiological data typically consist of HIV prevalence results from pregnant women attending antenatal clinics and from nationally representative population-based surveys. Many countries have historically conducted HIV sentinel surveillance among women attending antenatal clinics, which requires collecting data from a selection of clinics for several months every few years. More recently, many countries have stopped conducting sentinel surveillance and are now using the data from the routine HIV tests conducted when pregnant women at antenatal clinics are tested as part of programmes for the prevention of mother-to-child transmission. These data avoid the need to conduct a separate surveillance effort, and they provide a complete set of data from all clinics instead of samples from specific sites.

The prevalence trends among pregnant women at antenatal clinics, whether determined from surveillance or routine data, can be used to inform estimates of national prevalence trends, whereas data from population-based surveys—which are conducted less frequently but have broader geographical coverage and also include men—are more useful for informing estimates of national HIV prevalence levels. Data from these surveys also contribute to estimating age- and sex-specific HIV prevalence levels and trends. For a few countries in sub-Saharan Africa that have not conducted population-based surveys, HIV prevalence levels are adjusted based on comparisons of antenatal clinic surveillance and population-based survey data from other countries in the region. HIV prevalence trends and numbers of people on antiretroviral therapy are then used to derive an estimate of HIV incidence trends.

Historically, countries with high HIV transmission have produced separate HIV prevalence and incidence trends for rural and urban areas when there are well-established geographical differences in prevalence. To better describe and account for further geographical heterogeneity, an increasing number of countries have produced subnational estimates (e.g. at the level of the province or state) that, in some cases, also account for rural and urban differences. These subnational or rural–urban estimates and trends are then aggregated to obtain national estimates.

In the remaining countries, where HIV transmission largely occurs among key populations at higher risk of HIV and the epidemic can be described as low-level, the estimates are derived from either surveillance among key populations and the general low-risk population, or from HIV case reporting data, depending on which data are most reliable in a particular country. In countries with high-quality HIV surveillance data among the key populations, the data from repeated HIV prevalence studies focused on key populations are used to derive

[1] More information on Avenir Health can be found at www.avenirhealth.org. The East–West Center website can be found at www.eastwestcenter.org.

[2] For more on the UNAIDS Reference Group on Estimates, Modelling and Projections, please visit www.epidem.org.

national estimates and trends. Estimates of the size of key populations are increasingly derived empirically in each country; when studies are not available, they are derived based on regional values and consensus among experts. Other data sources—including HIV case reporting data, population-based surveys and surveillance among pregnant women—are used to estimate the HIV prevalence in the general low-risk population. The HIV prevalence curves and numbers of people on antiretroviral therapy are then used to derive national HIV incidence trends.

For most countries in western and central Europe and North America—and many countries in Latin America, the Caribbean and the Middle East and North Africa that have insufficient HIV surveillance or survey data, but which have robust disease reporting systems—HIV case reporting and AIDS-related mortality data from vital registration systems are used directly to inform trends and levels in national HIV prevalence and incidence. These methods also allow countries to take into account evidence of underreporting or reporting delays in HIV case report data, as well as the misclassification of deaths from AIDS-related illness.

In all countries where UNAIDS supports the development of estimates, assumptions about the effectiveness of HIV programme scale-up and patterns of HIV transmission and disease progression are used to obtain age- and sex-specific estimates of (a) people living with HIV, (b) people newly infected with HIV, (c) people dying from AIDS-related illness and (d) other important indicators (including treatment programme coverage statistics). These assumptions are based on systematic literature reviews and analyses of research study data by scientific experts. Demographic population data, including fertility estimates, are derived from the United Nations Population Division's World Population Prospects 2017 data.

Selected inputs into the model—including the number of people on antiretroviral therapy and the number of women accessing services for the prevention of mother-to-child transmission of HIV by type of regimen—are reviewed and validated in partnership with the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), the Global Fund to Fight AIDS, Tuberculosis and Malaria (the Global Fund), and selected technical partners.

Final country-submitted files containing the modelled outputs are reviewed at UNAIDS to ensure that the results are comparable across regions and countries and over time.

UNCERTAINTY BOUNDS AROUND UNAIDS ESTIMATES

The estimation software calculates uncertainty bounds around each estimate. These bounds define the range within which the true value lies (if it can be measured). Narrow bounds indicate that an estimate is precise, while wide bounds indicate greater uncertainty regarding the estimate.

In countries using HIV surveillance data, the quantity and source of the data available partly determine the precision of the estimates: countries with more HIV surveillance data have smaller ranges than countries with less surveillance data or smaller sample sizes. Countries in which a national population-based survey has been conducted generally have smaller ranges around estimates than countries where such surveys have not been conducted, while countries producing subnational estimates at the provincial level have wider ranges. In countries using HIV case reporting and AIDS-related mortality data, the number of years of data and the magnitude of the cases reported or the deaths from AIDS-related illness observed will contribute to the precision of the estimate.

The assumptions required to arrive at the estimate also contribute to the width of the ranges around the estimates: in brief, the more assumptions that are made, the wider the uncertainty range, since each assumption introduces additional uncertainties. For example, the ranges around the estimates of adult HIV prevalence are smaller than those around the estimates of HIV incidence among children, which require additional data on prevalence among pregnant women and the probability of mother-to-child HIV transmission, each of which have their own additional uncertainty.

UNAIDS is confident that the actual numbers of people living with HIV, people who are newly infected with HIV or people who have died from AIDS-related illness lie within the reported ranges. Over time, more and better data from countries will steadily reduce uncertainty.

IMPROVEMENTS TO THE 2018 UNAIDS ESTIMATES MODEL

Country teams create new Spectrum files every year. The files may differ from one year to the next for two reasons. First, new surveillance and programme data are entered into the model; this can change HIV prevalence and incidence trends over time, including for past years.

Second, improvements are incorporated into the model based on the latest available science and statistical methods that lead to the creation of more accurate trends in HIV incidence. Due to these improvements to the model and the addition of new data to create the estimates, the results from previous years cannot be compared with the results from this year. However, a full historical set of estimates are created each year, enabling a description of trends over time.

Between the previous estimates and the 2018 estimates, the following changes were applied to the model under the guidance of the UNAIDS Reference Group on Estimates, Modelling and Projections and based on the latest scientific evidence.

- Demographic data in the models were updated from the World Population Prospects 2015 estimates to the 2017 estimates.
- Assumptions about retention on antiretroviral therapy among pregnant women living with HIV were included.
- Aggregate routine data on prevalence among women attending antenatal clinics are now used to estimate the number of women living with HIV who are giving birth.
- Assumptions about the trends in HIV prevalence among pregnant women versus trends among the general population were updated.
- Annual HIV mortality probabilities among people on treatment in western and central Europe and North America were revised based on a special analysis conducted by the Antiretroviral Therapy Cohort Collaboration.
- An option was added in the model to prioritize allocation of treatment to individuals with the lowest CD4 count who had not yet initiated treatment.
- A new approach to fitting more complex incidence patterns for countries using case reporting and vital registration data is available.
- New methods to estimate the proportion of people dying before diagnosis and time from infection to diagnosis were incorporated into the model for countries using case reporting data to estimate incidence.

More detailed information on revisions to the 2018 model and Spectrum generally can be found at www.epidem.org.

MEASURING ANTIRETROVIRAL THERAPY COVERAGE

Since 2013, UNAIDS has provided the number and estimates of the proportion of all adults and children living with HIV who are on antiretroviral therapy (as opposed to those eligible for therapy according to national or international guidelines). This approach to estimating coverage reflects the WHO recommendations of starting antiretroviral therapy among everyone diagnosed as HIV-positive.

Countries report the number of people on treatment through the Global AIDS Monitoring (GAM) tool and Spectrum. Although those values come through routine data, they are likely to have some level of uncertainty if the country cannot deduplicate individuals who might receive medication from two different clinics or if there are delays in reporting data. Using results from data quality reviews through 2016, an estimated uncertainty—0.88 and 1.04 for the lower and upper bounds, respectively—was added to the number of people on treatment at the regional and global levels.

PUBLICATION OF COUNTRY-SPECIFIC ESTIMATES

UNAIDS aims to publish estimates for all countries with populations of 250 000 or more in 2017. For countries with populations of 250 000 or more that did not submit estimates, UNAIDS developed estimates using the Spectrum software that were based on published or otherwise available information. These estimates contributed to regional and global totals but were not published as country-specific estimates.

In countries with low-level epidemics, the number of pregnant women living with HIV is difficult to estimate. Many women living with HIV in these countries are sex workers or people who use drugs—or they are the sexual partners of gay men and other men who have sex with men or people who use drugs—making them likely to have different fertility levels than the general population. UNAIDS does not present estimates of mother-to-child HIV transmission, including estimates related to children in some countries that have concentrated epidemics, unless adequate data are available to validate these estimates. UNAIDS also does not publish these estimates for countries where the estimated number of pregnant women living with HIV is less than 100.

With regard to reporting incidence trends, if there are not enough historical data to state with confidence whether

a decline in incidence has occurred, UNAIDS does not publish data other than that from the most recent year; this prevents users from making inaccurate inferences about trends. Specifically, incidence trends are not published if there are fewer than four data points for the key population or if there have been no data for the past four years for countries using repeated survey or routine testing data. Trends prior to 2000 are not published for countries using case surveillance models if there is no early case surveillance or mortality data available.

Finally, UNAIDS does not publish country estimates when further data or analyses are needed to produce valid estimates. More information on the UNAIDS estimates and the individual Spectrum files for most countries can be found on the UNAIDS website (www.unaids.org). Resulting estimates can be found in the Aidsinfo section of the UNAIDS website (http://aidsinfo.unaids.org/).

2. Methods for deriving the 90–90–90 targets

INTRODUCTION

Starting in 2016, UNAIDS has provided estimates of global, regional and country-specific progress against the 90–90–90 targets. Progress towards these targets is directly monitored using three basic indicators:

- Indicator 1 (the first 90): the percentage of all people living with HIV who know their HIV status.
- Indicator 2 (the second 90): the percentage of people who know their HIV-positive status and are accessing treatment.
- Indicator 3 (the third 90): the percentage of people on treatment who have suppressed viral loads.

Metrics related to Indicators 2 and 3 can also be expressed as a percentage of all people living with HIV. When numbers or coverage of the treatment target are expressed relative to the total number of people living with HIV, this is called the "HIV testing and treatment cascade." Using this approach, the second and third targets of the 90–90–90 targets translate into 81% coverage of antiretroviral therapy and 73% of people achieving viral suppression by 2020.

UNAIDS published its first set of global and regional testing and treatment cascades in 2015. Estimates of antiretroviral therapy coverage among people living with HIV are available going back to when treatment was first introduced. Results presented in this report supersede the previously published 2015 and 2016 values.

Since 2015, UNAIDS has also tracked progress towards the 90–90–90 targets by monitoring viral load testing access among people on treatment. If most people in the country are receiving a viral load test annually, as recommended by WHO, we can have confidence in the accuracy of the estimate of viral suppression among all people living with HIV.

METHODS FOR MEASURING THE 90–90–90 TARGETS

To describe country-level progress against the 90–90–90 targets, UNAIDS analysed data on the number of people who knew their HIV status, the number of people on treatment and the number of people who were virally suppressed among those tested, as reported through the GAM tool and Spectrum.

A description of the GAM system and the treatment target-related indicators that countries report against are provided in the UNAIDS GAM 2018 guidelines *(1)*. All programme data submitted to UNAIDS—including the number of people reported to know their status, the number of people accessing treatment and the number of people on treatment who are virally suppressed—were validated by UNAIDS and its partners prior to publication.

Country-submitted data that did not meet the required validation checks for quality either at the indicator level or across the treatment cascade were not published. Not all countries were able to report against all three prongs of the 90–90–90 targets.

The final set of country measures of progress against the 90–90–90 targets for 2015 through 2017 are available at http://aidsinfo.unaids.org. Complete treatment cascades were available for 53 countries in 2017. Upper and lower ranges of uncertainty for country-level estimates were calculated from the range of estimated numbers of

people living with HIV. This range may not fully capture uncertainty in the reported programme data.

To estimate regional and global progress against the 90–90–90 targets, UNAIDS supplemented the country-supplied data submitted through GAM with data obtained from a review of other published and unpublished data sources, including grey literature and Demographic and Health Survey results. There were insufficient reported data from countries in western and central Europe and North America in 2017 to present results for the region, although the country values that were available in the region were used to construct the global totals. Upper and lower ranges of uncertainty for global and regional estimates were calculated from the range of numbers of people living with HIV and the lower and upper ranges of the numbers of people on treatment in the region. This range may not fully capture uncertainty in the reported or missing programme data for the first and third indicators.

DATA SOURCES AND INDICATOR-SPECIFIC METHODS FOR DERIVING GLOBAL AND REGIONAL METHODS

Estimates of people living with HIV

Unless otherwise stated, all progress measures in this report are based on UNAIDS global, regional and country-specific modelled estimates of the numbers of people living with HIV from Spectrum. Estimates of people living with HIV were available for 169 countries. More details about how UNAIDS derives estimates and uncertainty bounds around the number of people living with HIV and those accessing antiretroviral therapy can be found under "Measuring antiretroviral therapy coverage" (above, in Part 1 of this annex).

Knowledge of HIV status among people living with HIV

Global and regional measures of the number of people living with HIV who know their status were derived using the most recent HIV surveillance, programme data, nationally representative population-based survey data and modelled estimates for 102 countries in 2017. Where data were available separately for children (aged 0–14 years) and adults (aged 15 years and older), age-specific measures were first calculated and then aggregated to produce a national measure.

For 80 countries in 2017, the number of people living with HIV who knew their HIV status is based on HIV surveillance systems, programme registers or modelled estimates derived from case surveillance and programme data. If the measure from these sources was lower than the number of people accessing antiretroviral therapy, the reported value was excluded from the analysis and replaced by a regionally-derived estimate. For countries using HIV surveillance or programme data, a country's measure was included only if the HIV surveillance system had been functioning since before 2008. Countries with more recent systems may not have captured all people living with HIV who were diagnosed prior to 2008.

Although HIV surveillance systems, including those based on programme registers, can be a reasonably robust source of data to estimate the number of people living with HIV who know their status, biases in the reported numbers may still exist. For example, a country's measure of the knowledge of status may be underestimated if not all people diagnosed are reported to the surveillance system in a timely manner; the measure also may be overestimated if people are reported to the system or included on a register more than once and these duplicates are not detected. Similarly, if people die or emigrate but are not removed from the system, the number of people living with HIV who are reported to know their HIV status also will be overstated.

The estimated numbers of people living with HIV who knew their status for 14 countries in sub-Saharan Africa in 2017 were derived from nationally representative population-based surveys conducted since 2011 and from treatment data reported through GAM. Four countries with surveys through 2017 directly asked respondents who tested HIV-positive whether they knew their HIV status as part of the survey, and this proportion was applied to the total number of people estimated to be living with HIV in the country. In the remaining 10 countries with a survey that did not directly ask participants about knowledge of their HIV status, a stepwise approach was used to estimate knowledge of status.

- In the first step, the total percentage of people who could know their status in the year of the most recent survey is estimated. For adults, this percentage is estimated by calculating the percentage of those who tested HIV-positive in the survey who had reported ever having been tested for HIV and had received the last test result. For children, who are not included in the survey, a proxy measure of treatment coverage in the survey year is used to estimate knowledge of status among children. This is a conservative measure,

as some children may not have initiated treatment. To estimate knowledge of status for all people in the year of the survey, the child and adult estimates are combined, weighted by the numbers of children and adults living with HIV.

- In the second step, the percentage of people who could know their status in the current or previous reporting year is derived by projecting the results from the first step forward. To do this, an assumption is made that the rate of testing scale-up in the era of test-and-treat was the same as the rate of scale-up of people starting treatment, calculated by the percentage point difference in total treatment coverage (for both adults and children) between the survey year and the treatment coverage value for either the current or previous year. For surveys conducted in 2017, the 2015 and 2016 values are estimated for previous years using a similar process as the one described above.

- In the third step, the estimate of people living with HIV who know their status for the year is derived by using the midpoint between the percentage of people living with HIV who could know their status (i.e. the second step) and the percentage of people living with HIV on treatment.

The measurement of knowledge of HIV status based on survey data when participants are not directly asked if they know their HIV status has several limitations. Typically, estimates derived from these surveys will underestimate knowledge of status for three reasons:

1. In settings where stigma and discrimination is or has been high, people may be reluctant to disclose that they have ever tested for HIV and received their results.

2. People who report ever testing may have seroconverted after their last test result and are therefore incorrectly counted as aware of their HIV status.

3. Most surveys that do not directly ask respondents about their HIV status occurred prior to 2017. Although surveys conducted prior to 2011 were excluded, it is possible that the adjustment method based on treatment scale-up does not accurately capture increases in the knowledge of status that occur over time among people living with HIV.

Underestimation of the reported number of people living with HIV who know their status can also occur in countries where survey respondents are directly asked about their HIV status. In these instances, the risk is that survey participants do not disclose their HIV status to interviewers and are incorrectly classified as unaware of it. While it is impossible to measure the exact magnitude of this bias, in previous surveys in Kenya, Malawi and Uganda, anywhere from one tenth to one third of HIV-positive participants misreported their HIV status as negative *(2)*. Underestimation of knowledge of status also can occur at the national level if people living with HIV learn their status either as a result of—or subsequent to—the survey, although this proportion of the total number of people in a country who know their status will be small.

For 34 countries without a current measure of knowledge of status in 2017, UNAIDS used published and unpublished grey literature and historical estimates reported through GAM to inform the regional and global values. A similar method used to project estimated knowledge of status for direct surveys from historical data was applied to estimates from such countries before 2017.

For 40 countries without any estimate of the number of people living with HIV who know their status—countries that are home to just 8% of the total estimated number of people living with HIV worldwide—the regional average of the ratio of the number of people who know their status and the number on treatment was calculated from available data submitted by countries in the region and weighted according to the number of people living with HIV by country. Knowledge of status was capped at 95%. The total number of people estimated to know their HIV status in countries was added across the region and globally to construct the numerator of the first 90 and the denominator of the second 90.

People accessing antiretroviral therapy

Global and regional measures of antiretroviral therapy numbers are calculated from country-reported programme data through GAM and the UNAIDS-supported Spectrum software. For a small number of countries where reported numbers of people on treatment are not available—primarily in western and central Europe and North America—estimates of the number of people on treatment are developed either in consultation with the public health agency responsible for monitoring the national treatment programme or based on published sources.

In partnership with UNICEF, WHO and other partners that support treatment service delivery in countries, UNAIDS reviews and validates treatment numbers reported through GAM and Spectrum on an annual basis. UNAIDS staff also provide technical assistance and training to country public health and clinical officers to ensure the quality of the treatment data that are reported. Nevertheless, this measure may overestimate the number of people on treatment if people who transfer from one facility to another are reported by both facilities. Similarly, coverage may be overestimated if people who have died, disengaged from care or emigrated are not identified and removed from treatment registries. Treatment numbers also may be underestimated if not all clinics report the numbers on treatment completely or in a timely manner.

In 2016, UNAIDS completed a triangulation of data to verify the UNAIDS global estimate of people accessing antiretroviral therapy at the end of 2015. In 2018, UNAIDS has partnered with WHO, the Global Fund, selected technical partners and ministries of health in 28 countries (most in sub-Saharan Africa) to conduct data quality reviews of reported treatment numbers. For more details about how confident UNAIDS is in reported treatment numbers, please see *How many people living with HIV access treatment?*[3]

People who have achieved viral suppression

Progress towards the viral suppression target among people on treatment and as a proportion of all people living with HIV is derived from data reported to GAM. For the purposes of reporting, the threshold for suppression is a viral load of less than 1000 copies per ml, although some countries may set lower thresholds or require persons to achieve an undetectable viral load. This guidance also specifies that only a person's last test result from the reporting year be submitted, so the reported number suppressed among those tested should represent people and not tests performed.

UNAIDS GAM 2018 guidelines were updated from those of 2017 to include a threshold for reporting viral load suppression outcomes, such that testing coverage should be accessible to all or nearly all (>90%), or that it is nationally representative of people on treatment (typically 50–90% testing coverage). For countries with nationally representative but not universally accessible access to treatment, the estimate of viral suppression among those tested (i.e. the third 90) was multiplied by the number of people on treatment nationally to obtain overall viral suppression levels in the country.

Based on the more stringent coverage threshold, 88 countries reported viral load suppression data from case-based surveillance or laboratory-based reporting systems in 2018 (compared with 70 in 2017). Five countries had estimates based on nationally representative population-based surveys, where viral load testing was done only among those who self-reported that they were on treatment.

Estimates for the remaining countries were constructed using the regional average of the number of people on antiretroviral therapy who are virally suppressed, weighted according to the number of people on treatment in a country. The total number of people suppressed was added across the region and globally to construct the third 90 and the overall estimate of viral suppression among people living with HIV. The same approach also was used to construct historical regional and global estimates.

A number of challenges exist in using country-reported data to monitor the viral load suppression target.

- Routine viral load testing may not be offered at all treatment facilities, and those facilities where it is offered may not be representative of the care available at facilities without viral load testing. By assuming that the percentage of people suppressed among those accessing viral load testing is representative of all people on treatment in countries with incomplete viral load testing uptake, the measure may be either overestimated or underestimated depending on the characteristics of the reporting clinics where testing is available.

- Reported access to viral load testing varies considerably across each region, and it is difficult to know whether the experience in countries that reported data to UNAIDS is similar to that of countries in the same region that did not report data. In western and central Africa, for example, only 7 of 14 countries reported estimates of viral load suppression in 2017, representing just 14% of all people on treatment in the region. In Asia and the Pacific, nationally representative estimates of viral load suppression are not available for China and India in 2017. As a result, estimates for that region are constructed based on the remaining quarter of all

[3] This document is available at http://www.unaids.org/en/resources/documents/2016/how-many-people-living-with-HIV-access-treatment.

people accessing treatment in the region where viral load suppression data are available.

- UNAIDS guidance requests routine (annual) viral load testing results only for people who are on treatment and eligible for testing. If people newly initiated on treatment achieve viral suppression but have not yet been offered viral load testing, they will be incorrectly classified as not suppressed and the resulting viral suppression estimate will be understated. UNAIDS also requests that countries only report results from routine viral load testing; if countries report test results that are primarily performed because of suspected treatment failure, the number of people virally suppressed in these countries will be underestimated. UNAIDS validates country submissions for quality, but it is not always possible to identify cases where both routine and other types of testing are occurring.

- UNAIDS guidance recommends reporting viral load test results only for people on antiretroviral treatment; persons who naturally suppress the virus and are not on treatment will not be included in this measure.

As access to viral load testing coverage expands and routine monitoring systems are strengthened to compile and report these data, the ability to quantify and eventually reduce bias in the 90–90–90 targets will improve.

3. Distribution of new HIV infections by subpopulation

The distribution of new HIV infections by region was estimated based on data for 169 countries using five data sources.

For countries that model their HIV epidemic based on data from subpopulations, including key populations, the numbers of new infections were extracted from Spectrum 2017 files. This source provided data for sex workers from 58 countries, for people who inject drugs from 36 countries, for gay men and other men who have sex with men from 56 countries, and for transgender people from 15 countries (all of which were located in Latin America, the Caribbean and Asia). Additionally, 21 countries (mostly from Asia) had data from clients of sex workers.

The second source was mode of transmission studies conducted in countries between 2006 and 2012. The proportions of new infections estimated for each subpopulation, calculated by modes of transmission analyses, were multiplied by the number of total new gender-specific adult infections (among those aged 15–49 years) to derive an estimated number of new infections by subpopulation. This source provided data for sex workers from 18 countries, for people who inject drugs from 25 countries, and for gay men and other men who have sex with men from 22 countries.

New HIV infections for European countries with neither of the aforementioned data sources were derived from the European Centre for Disease Prevention and Control (ECDC) and World Health Organization Regional Office for Europe *HIV/AIDS surveillance in Europe 2017–2016 data (3)*. The proportions of new diagnoses for each region in Europe (West, central and East) were applied to UNAIDS estimates of new infections in each country for people who inject drugs and gay men and other men who have sex with men. Data for sex workers were not available from the ECDC report. New HIV infections in China, the Russian Federation and the United States were taken from the most recent available national reports of new diagnoses.

New HIV infections among countries without a direct data source were calculated from regional benchmarks. The benchmarks were set by the median proportion of new infections in the specific subpopulation in all available countries in the same region. The majority of these countries were located in sub-Saharan Africa. There were 73 countries that used benchmark values for the sex work estimate, 95 countries for the people who inject drugs estimate, 33 countries for the gay men and other men who have sex with men estimate, and 36 countries for the transgender people estimate.

The calculated proportions of infections for each key population include the sex partners of members of key populations. New infections among sex partners of key populations were estimated using the number of sex partners and transmission probabilities from the literature.

4. Laws and policies scorecards

The regional laws and policies scorecards were constructed based on data reported by countries through the 2017 and 2018 National Commitments and Policy Instrument (NCPI), a component of GAM *(1)*.

Data submitted by countries through the NCPI are reviewed by UNAIDS. During this review process, UNAIDS liaises with national GAM focal points to request clarification or revise the data submitted in the tool.

Data reported through the NCPI have been complemented in the scorecards with data available through other sources, including from global databases and primary sources.

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