

How to get to zero:

***Faster.
Smarter.
Better.***

0

**ZERO NEW HIV INFECTIONS.
ZERO DISCRIMINATION.
ZERO AIDS-RELATED DEATHS.**

UNAIDS WORLD AIDS DAY REPORT | 2011

**UNAIDS HAS MAPPED A NEW FRAMEWORK
FOR AIDS INVESTMENTS, FOCUSED ON
HIGH-IMPACT, HIGH-VALUE STRATEGIES.**

⁰⁵ ***Foreword***

⁰⁶ ***We are here.***

How to get to zero:

¹² ***Faster.***

²⁴ ***Smarter.***

³⁶ ***Better.***

TRANSFORMING THE RESPONSE

We are on the verge of a significant breakthrough in the AIDS response. The vision of a world with zero new HIV infections, zero discrimination, and zero AIDS-related deaths has captured the imagination of diverse partners, stakeholders and people living with and affected by HIV. New HIV infections continue to fall and more people than ever are starting treatment. With research giving us solid evidence that antiretroviral therapy can prevent new HIV infections, it is encouraging that 6.6 million people are now receiving treatment in low- and middle-income countries: nearly half those eligible.

Just a few years ago, talking about ending the AIDS epidemic in the near term seemed impossible, but science, political support and community responses are starting to deliver clear and tangible results.

Yet, to be effective, the AIDS response must be transformed. We need to move from a short-term, piecemeal approach to a long-term strategic response with matching investment. The road map for this vision is clear. The United Nations General Assembly set bold new targets in its historic 2011 *Political Declaration on HIV/AIDS: Intensifying Our Efforts to Eliminate HIV/AIDS*, with a focus on clear, time-bound goals designed to bring about the end of HIV and also improve human health across diverse communities.

To reach these targets and bring the end of AIDS in sight we must step on the accelerator. Joining with partners, UNAIDS has mapped a new framework for AIDS investments, focused on high-impact, high-value strategies.

The world cannot live up to the targets and spirit of the Political Declaration unless countries and donors commit to using the tools available, focusing them on the most effective programmes and investing accordingly.



Michel Sidibé
UNAIDS Executive Director
Under Secretary-General of the United Nations

> We are here.

21%

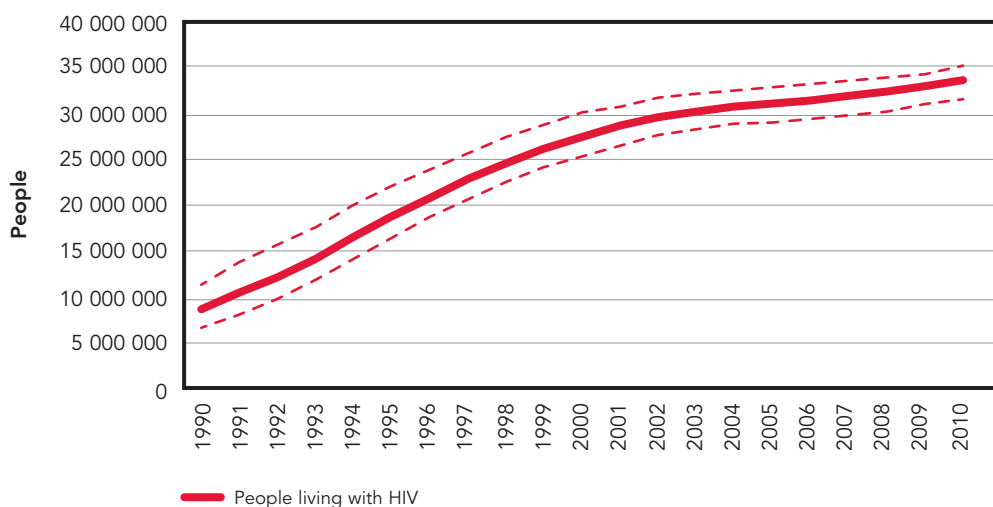
Annual new HIV infections fell 21% between 1997 and 2010.

THE STATE OF THE AIDS EPIDEMIC

More people than ever are living with HIV, largely due to greater access to treatment.

At the end of 2010, an estimated 34 million people [31.6 million–35.2 million] were living with HIV worldwide, up 17% from 2001. This reflects the continued large number of new HIV infections and a significant expansion of access to antiretroviral therapy, which has helped reduce AIDS-related deaths, especially in more recent years.

PEOPLE LIVING WITH HIV



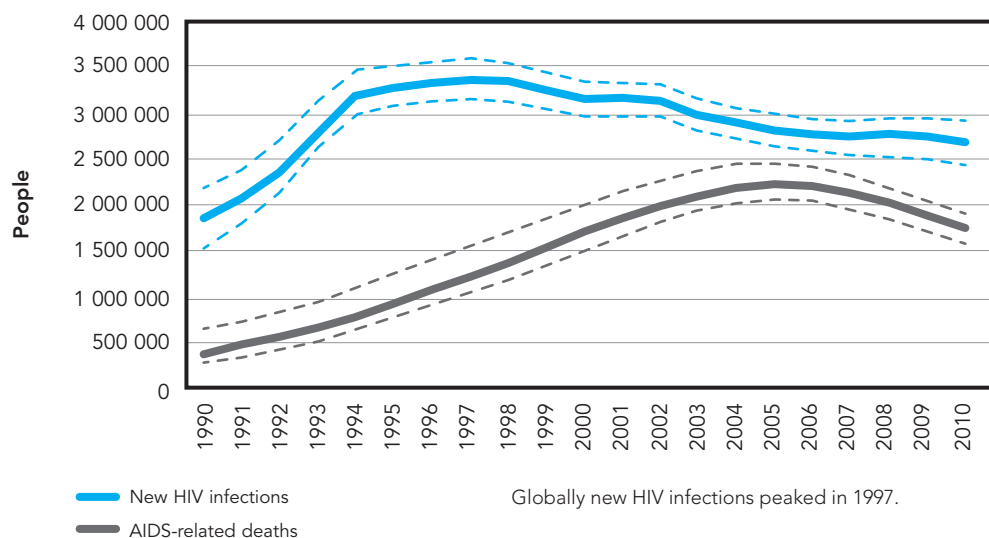
The number of people dying of AIDS-related causes fell to 1.8 million [1.6 million–1.9 million] in 2010, down from a peak of 2.2 million [2.1 million–2.5 million] in the mid-2000s. A total of 2.5 million deaths have been averted in low- and middle-income countries since 1995 due to antiretroviral therapy being introduced, according to new calculations by UNAIDS. Much of that success has come in the past two years when rapid scale-up of access to treatment occurred; in 2010 alone, 700 000 AIDS-related deaths were averted.

The proportion of women living with HIV has remained stable at 50% globally, although women are more affected in sub-Saharan Africa (59% of all people living with HIV) and the Caribbean (53%).

There were 2.7 million [2.4 million–2.9 million] new HIV infections in 2010, including an estimated 390 000 [340 000–450 000] among children. This was 15% less than in 2001, and 21% below the number of new infections at the peak of the epidemic in 1997.

The number of people becoming infected with HIV is continuing to fall, in some countries more rapidly than others. HIV incidence has fallen in 33 countries, 22 of them in sub-Saharan Africa, the region most affected by the AIDS epidemic.

NEW HIV INFECTIONS AND AIDS-RELATED DEATHS



Sub-Saharan Africa

Sub-Saharan Africa remains the region most heavily affected by HIV. In 2010, about 68% of all people living with HIV resided in sub-Saharan Africa, a region with only 12% of the global population. Sub-Saharan Africa also accounted for 70% of new HIV infections in 2010, although there was a notable decline in the regional rate of new infections. The epidemic continues to be most severe in southern Africa, with South Africa having more people living with HIV (an estimated 5.6 million) than any other country in the world.

Almost half of the deaths from AIDS-related illnesses in 2010 occurred in southern Africa. AIDS has claimed at least one million lives annually in sub-Saharan Africa since 1998. Since then, however, AIDS-related deaths have steadily decreased, as free antiretroviral therapy has become more widely available in the region.

The total number of new HIV infections in sub-Saharan Africa has dropped by more than 26%, down to 1.9 million [1.7 million–2.1 million] from the estimated 2.6 million [2.4 million–2.8 million] at the height of the epidemic in 1997. In 22 sub-Saharan countries, research shows HIV incidence declined by more than 25% between 2001 and 2009. This includes some of the world's largest epidemics in Ethiopia, Nigeria, South Africa, Zambia and Zimbabwe. The annual HIV incidence in South Africa, though still high, dropped by a third between 2001 and 2009 from 2.4% [2.1%–2.6%] to 1.5% [1.3%–1.8%]. Similarly, the epidemics in Botswana, Namibia and Zambia appear to be declining. The epidemics in Lesotho, Mozambique and Swaziland seem to be levelling off, albeit at unacceptably high levels.

Caribbean

The Caribbean has the second highest regional HIV prevalence after sub-Saharan Africa, although the epidemic has slowed considerably since the mid-1990s.

In the Caribbean region, new HIV infections were reduced by a third from 2001 levels. HIV incidence has decreased by an estimated 25% in the Dominican Republic and Jamaica since 2001, while in Haiti it has declined by about 12%. Slowing HIV incidence and increasing access to HIV prevention services for pregnant women have led to a steep decline in the number of children newly infected with HIV and in AIDS-related deaths among children.

Unprotected sex is the primary mode of transmission in the Caribbean. The number of people living with HIV has also declined slightly since the early 2000s. Increased access to antiretroviral therapy has led to a considerable drop in mortality associated with AIDS.

250%

In Eastern Europe and Central Asia, the number of people living with HIV rose 250% from 2001 to 2010.

Asia

Although the rate of HIV prevalence is substantially lower in Asia than in some other regions, the absolute size of the Asian population means it is the second largest grouping of people living with HIV.

In South and South-East Asia, the estimated 270 000 [230 000–340 000] new HIV infections in 2010 was 40% less than at the epidemic's peak in 1996. In India, the country with the largest number of people living with HIV in the region, new HIV infections fell by 56%.

The prevalence of HIV among key populations at higher risk of infection – notably sex workers, people who inject drugs and men who have sex with men – is high in several Asian countries although over time, the virus is spreading to other populations. The overall trends in this region hide important variations in the epidemics, both between and within countries. In many Asian countries, national epidemics are concentrated in relatively few provinces. In China, for example, five provinces account for 53% of the people living with HIV¹, while a disproportionately large share of Indonesia's burden is found in its Papua and West Papua provinces.²

Eastern Europe and Central Asia

In Eastern Europe and Central Asia, there was a 250% increase in the number of people living with HIV from 2001 to 2010. The Russian Federation and Ukraine account for almost 90% of the Eastern Europe and Central Asia region's epidemic. Injecting drug use remains the leading cause of HIV infection in this region, although considerable transmission also occurs to the sexual partners of people who inject drugs.

There is little indication that the epidemic has stabilized in the region, with new HIV infections and AIDS-related deaths continuing to increase. After slowing in the early 2000s, HIV incidence in Eastern Europe and Central Asia has been accelerating again since 2008.

Unlike most other regions, AIDS-related deaths continue to rise in Eastern Europe and Central Asia.

Middle-East and North Africa

HIV-related trends in the Middle East and North Africa vary, as incidence, prevalence, and AIDS-related deaths are on the rise in some countries, while in others the epidemic is stable. Generally, HIV prevalence in the region is low, except in Djibouti and Southern Sudan, where the epidemic is becoming generalized.

Latin America

The HIV epidemics in Latin America are generally stable. A steady decrease in new annual HIV infections since 1996 levelled off in the early 2000s and has remained steady since then at 100 000 [73 000–135 000] each year.

The total number of people living with HIV in this region continues to grow. That increase is partly attributable to the increase in people living with HIV who receive antiretroviral therapy, which has helped reduce the number of annual AIDS-related deaths. More than one third (36%) of adults living with HIV in this region in 2010 were women.

The number of children younger than 15 living with HIV in this region has declined. There was a considerable decrease in new HIV infections and AIDS-related deaths among children between 2001 and 2010.

Oceania

The number of annual new HIV infections in Oceania increased slowly until the early 2000s, and then declined. The number of people living with HIV in this region reached an estimated 54 000 [48 000–62 000] at the end of 2010, about 34% more than the estimate for 2001. AIDS-related mortality has decreased considerably.

North America, and Western and Central Europe

The HIV epidemic in North America and Western and Central Europe remains stubbornly steady, despite universal access to treatment, care and support and widespread awareness of the epidemic and the causes of HIV infection. HIV incidence has changed little since 2004.

The total number of people living with HIV in North America and Western and Central Europe reached an estimated 2.2 million [1.9 million–2.7 million] in 2010, about one third (34%) more than in 2001. More than half (about 1.2 million) of the people with HIV in this region live in the United States of America.

The rising number of people living with HIV reflects the wide-scale availability of antiretroviral therapy, especially in the countries with the largest epidemics, which has significantly reduced AIDS-related mortality. The number of AIDS-related deaths has varied little since 2000, despite the 34% increase in the number of people living with HIV.

Recent trends vary across the region. Rates of diagnosed HIV cases doubled between 2000 and 2009 in Bulgaria, Czech Republic, Hungary, Lithuania, Slovakia and Slovenia and increased by more than 50% in the United Kingdom. On the other hand, new HIV diagnoses decreased by more than 20% in Latvia, Portugal and Romania.³

Regional HIV and AIDS statistics, 2010 and 2001

Regional estimates of adults and children newly infected with HIV, people living with HIV, and AIDS-related deaths

		Adults and children living with HIV	Adults and children newly infected with HIV	Adult prevalence (%)	Adult and child deaths due to AIDS	Young people (15–24) prevalence (%)	
						Male	Female
SUB-SAHARAN AFRICA	2010	22.9 million [21.6–24.1 million]	1.9 million [1.7–2.1 million]	5.0 [4.7–5.2]	1.2 million [1.1–1.4 million]	1.4 [1.1–1.8]	3.3 [2.7–4.2]
	2001	20.5 million [19.1–22.2 million]	2.2 million [2.1–2.4 million]	5.9 [5.6–6.4]	1.4 million [1.3–1.6 million]	2.0 [1.6–2.7]	5.2 [4.3–6.8]
MIDDLE EAST AND NORTH AFRICA	2010	470 000 [350 000–570 000]	59 000 [40 000–73 000]	0.2 [0.2–0.3]	35 000 [25 000–42 000]	0.1 [0.1–0.2]	0.2 [0.1–0.2]
	2001	320 000 [190 000–450 000]	43 000 [31 000–57 000]	0.2 [0.1–0.3]	22 000 [9700–38 000]	0.1 [0.1–0.2]	0.1 [0.1–0.2]
SOUTH AND SOUTH-EAST ASIA	2010	4.0 million [3.6–4.5 million]	270 000 [230 000–340 000]	0.3 [0.3–0.3]	250 000 [210 000–280 000]	0.1 [0.1–0.2]	0.1 [0.1–0.1]
	2001	3.8 million [3.4–4.2 million]	380 000 [340 000–420 000]	0.3 [0.3–0.4]	230 000 [200 000–280 000]	0.2 [0.2–0.2]	0.2 [0.2–0.2]
EAST ASIA	2010	790 000 [580 000–1.1 million]	88 000 [48 000–160 000]	0.1 [0.1–0.1]	56 000 [40 000–76 000]	<0.1 [<0.1–<0.1]	<0.1 [<0.1–<0.1]
	2001	380 000 [280 000–530 000]	74 000 [54 000–100 000]	<0.1 [<0.1–0.1]	24 000 [16 000–45 000]	<0.1 [<0.1–<0.1]	<0.1 [<0.1–<0.1]
OCEANIA	2010	54 000 [48 000–62 000]	3300 [2400–4200]	0.3 [0.2–0.3]	1600 [1200–2000]	0.1 [0.1–0.1]	0.2 [0.1–0.2]
	2001	41 000 [34 000–50 000]	4000 [3300–4600]	0.2 [0.2–0.3]	1800 [1300–2900]	0.1 [0.1–0.2]	0.2 [0.2–0.3]
LATIN AMERICA	2010	1.5 million [1.2–1.7 million]	100 000 [73 000–140 000]	0.4 [0.3–0.5]	67 000 [45 000–92 000]	0.2 [0.1–0.4]	0.2 [0.1–0.2]
	2001	1.3 million [1.0–1.7 million]	99 000 [75 000–130 000]	0.4 [0.3–0.5]	83 000 [50 000–130 000]	0.2 [0.1–0.6]	0.1 [0.1–0.2]

		Adults and children living with HIV	Adults and children newly infected with HIV	Adult prevalence (%)	Adult and child deaths due to AIDS	Young people (15–24) prevalence (%)	
						Male	Female
CARIBBEAN	2010	200 000 [170 000–220 000]	12 000 [9400–17 000]	0.9 [0.8–1.0]	9000 [6900–12 000]	0.2 [0.2–0.5]	0.5 [0.3–0.7]
	2001	210 000 [170 000–240 000]	19 000 [16 000–22 000]	1.0 [0.9–1.2]	18 000 [14 000–22 000]	0.4 [0.2–0.8]	0.8 [0.6–1.1]
EASTERN EUROPE AND CENTRAL ASIA	2010	1.5 million [1.3–1.7 million]	160 000 [110 000–200 000]	0.9 [0.8–1.1]	90 000 [74 000–110 000]	0.6 [0.5–0.8]	0.5 [0.4–0.7]
	2001	410 000 [340 000–490 000]	210 000 [170 000–240 000]	0.3 [0.2–0.3]	7800 [6000–11 000]	0.3 [0.2–0.3]	0.2 [0.1–0.2]
WESTERN AND CENTRAL EUROPE	2010	840 000 [770 000–930 000]	30 000 [22 000–39 000]	0.2 [0.2–0.2]	9900 [8900–11 000]	0.1 [0.1–0.1]	0.1 [<0.1–0.1]
	2001	630 000 [580 000–690 000]	30 000 [26 000–34 000]	0.2 [0.2–0.2]	10 000 [9500–11 000]	0.1 [0.1–0.1]	0.1 [0.1–0.1]
NORTH AMERICA	2010	1.3 million [1.0–1.9 million]	58 000 [24 000–130 000]	0.6 [0.5–0.9]	20 000 [16 000–27 000]	0.3 [0.2–0.6]	0.2 [0.1–0.4]
	2001	980 000 [780 000–1.2 million]	49 000 [34 000–70 000]	0.5 [0.4–0.7]	19 000 [15 000–24 000]	0.3 [0.2–0.4]	0.2 [0.1–0.3]
TOTAL	2010	34.0 million [31.6–35.2 million]	2.7 million [2.4–2.9 million]	0.8 [0.8–0.8]	1.8 million [1.6–1.9 million]	0.3 [0.3–0.3]	0.6 [0.5–0.6]
	2001	28.6 million [26.7–30.9 million]	3.1 million [3.0–3.3 million]	0.8 [0.7–0.8]	1.9 million [1.7–2.2 million]	0.4 [0.4–0.4]	0.8 [0.7–0.8]

Methodologies

In collaboration with country partners, UNAIDS used the Spectrum software package to develop the epidemiology estimates for countries and regions cited in this report. Spectrum incorporates all pertinent, available data, including: surveys of pregnant women attending antenatal clinics; population-based surveys (conducted at the household level); sentinel surveillance among populations at higher risk of HIV infection; case reporting; demographic data; and information on antiretroviral treatment programmes and programmes to prevent mother-to-child transmission. Taking these diverse data sources into account, Spectrum generates estimates of new HIV infections, the number of people living with HIV both for adults and children, the number of people eligible for antiretroviral therapy and for services to prevent mother-to-child transmission, and the number of AIDS-related deaths.

These new HIV estimates (including the estimates for previous years) supersede those published previously and should not be compared to earlier reports. Previously published UNAIDS estimates for Latin America did not include Mexico, which is now included in this region.





**> Faster.
Smarter.
Better.**

>Faster.

20%

Antiretroviral coverage rose 20% in sub-Saharan Africa between 2009 and 2010.

Accelerating the epidemic's decline

The world faces a clear choice: maintain current efforts and make incremental progress, or invest smartly and achieve rapid success in the AIDS response.

The unparalleled global response of the past decade has already forced the epidemic into decline. The rate of new HIV infections has fallen, the number of AIDS-related deaths has decreased and unprecedented funding has been mobilized for HIV programmes. Historic political agreements had a demonstrable impact on the AIDS epidemic, including the 2001 Declaration of Commitment on HIV/AIDS and the 2006 Political Declaration on HIV/AIDS which endorsed the goal of universal access to HIV prevention, treatment, care and support.

A decade ago, when world leaders convened in New York for the United Nations General Assembly Special Session on AIDS – the first time they did so for a health issue – only three countries, Senegal, Thailand and Uganda, stood out as having successfully responded to HIV. Today almost every country in sub-Saharan Africa, Asia and Latin America has a success story to tell, a story of lives saved through stopping new HIV infections and preventing AIDS-related deaths. In a decade, committed political leadership, social change, innovation and rapid injection of new resources have transformed the AIDS response into a vanguard of global health success. The AIDS response has reinvigorated interest in global health and now has a new face of hope, resilience, courage and responsibility.

BEHAVIOUR CHANGE IS AVERTING NEW HIV INFECTIONS, ESPECIALLY AMONG YOUNG PEOPLE

Declines in new HIV infections across the world have been spurred by changes in behaviour among young people, sex workers and their clients, people who inject drugs, men who have sex with men and transgender people. Access to HIV prevention services has empowered individuals and communities to act in earnest against the disease.

In countries with generalised epidemics, a combination of behaviour changes, including reductions in numbers of sexual partners, increases in condom use, and delayed age of first sex, have reduced new infections (incidence) in several countries. HIV incidence in urban Zimbabwe fell from an extremely high peak of almost 6% in 1991 to less than 1% in 2010.⁴

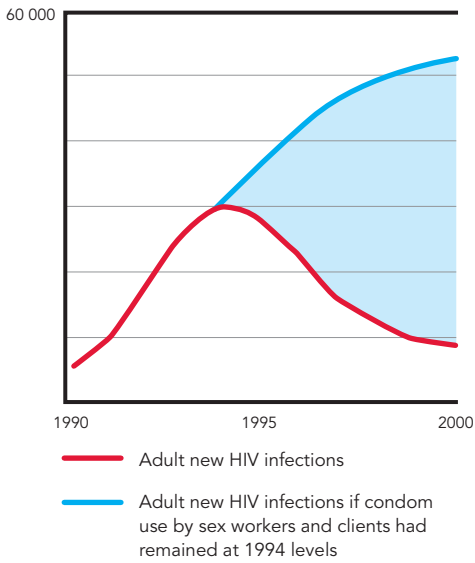


**THE WORLD FACES A CLEAR CHOICE:
MAINTAIN CURRENT EFFORTS AND
MAKE INCREMENTAL PROGRESS, OR INVEST
SMARTLY AND ACHIEVE RAPID SUCCESS
IN THE AIDS RESPONSE.**

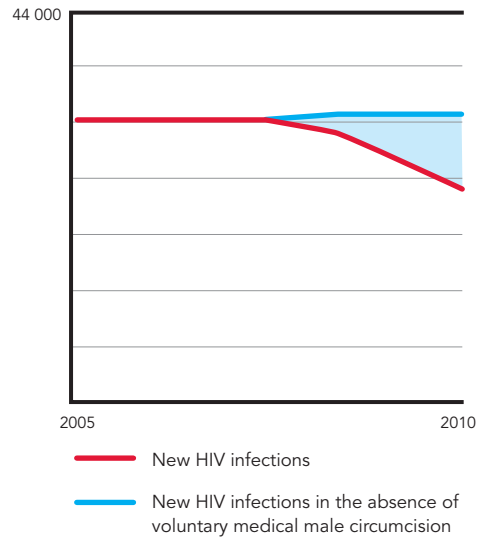
New HIV infection trends

The course of new HIV infections, compared to estimates if key changes had not happened

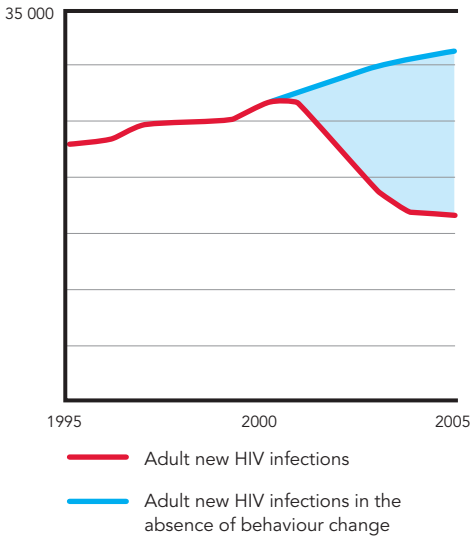
CAMBODIA



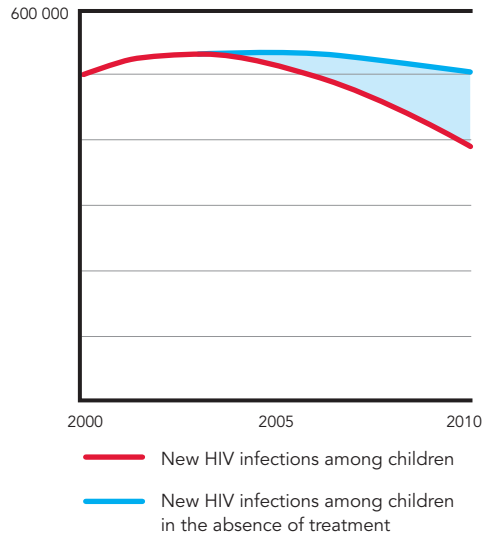
NYANZA PROVINCE, KENYA



URBAN MALAWI



GLOBAL NEW HIV INFECTIONS AMONG CHILDREN



Modelling suggests that without behaviour change, HIV incidence would have remained twice as high as current levels, resulting in an additional 35 000 new infections annually. A similar story can be seen in urban areas of Malawi, where in the absence of changes in sexual behaviour, the rate of new HIV infections would have stabilised at about 4% annually but instead dropped to less than 1% in 2010, avoiding about 15 000 new infections annually.⁵

A new generation of young people are taking charge of their destinies and are protecting themselves against HIV. Encouraging trends are evident among young people in several countries with large HIV burdens.

HIV prevalence declined among young people (aged 15–24 years) in at least 21 of 24 countries with national HIV prevalence of 1% or higher. The drop in HIV prevalence was statistically significant among pregnant women attending antenatal clinics in 12 countries: Burkina Faso, Botswana, Congo, Ethiopia, Ghana, Kenya, Malawi, Nigeria, Namibia, the United Republic of Tanzania, Togo, and Zimbabwe. Four of those countries (Botswana, Malawi, Tanzania and Zimbabwe) also had statistically significant declines in the general population, according to results from population-based surveys (among women in Botswana, Malawi and Zimbabwe, and among men in Tanzania). Three other countries had statistically significant declines in the general population, but showed no significant declines among antenatal clinic attendees (among women in Zambia, and among men in Lesotho and South Africa).

These declines have occurred amid signs of encouraging changes in sexual behaviour among young people. The percentage of young men with multiple partners in the past 12 months decreased significantly in 11 of the 19 countries with sufficient data, and among women it decreased in six countries. The proportion of young people who said they used a condom the last time they had high-risk sex increased significantly in seven (for men) and five (for women) of the 17 countries with sufficient data. The percentage of young men and women who have had sex before their 15th birthday decreased significantly in eight of the 18 countries with sufficient data.

Important dimensions of social change have also reinforced measured changes in behaviour and incidence. For example, community-based participatory learning approaches can be effective in changing social gender norms, including violence, when HIV and violence prevention programming are paired with community mobilization and engaging men to challenge harmful gender norms. A landmark study in South Africa recently suggested that nearly one in seven cases of young women acquiring HIV could have been prevented if the women had not been subjected to intimate partner violence.⁶

Behavioural changes have been particularly notable in countries with high HIV prevalence, although variations exist across these countries as behavioural patterns continue to evolve, sometimes for the worse. For example, in Rwanda and Zimbabwe, the proportion of young women with multiple partners increased and a similar trend was observed among young men in Guyana and Lesotho. Condom use by young men in Uganda and Zimbabwe appears to have decreased and the proportion of young people having sex before the age of 15 increased in Guyana, Lesotho and Haiti, and among young men in Rwanda.

Additionally, in many countries with high HIV prevalence, young men are beginning to get circumcised. Clinical trials in Kenya, South Africa and Uganda indicate that voluntary medical male circumcision reduces the risk of female-to-male sexual transmission by about 60%.⁷⁻⁹ Preliminary results from cross-sectional surveys of the Orange Farm community in South

Africa that is introducing voluntary medical male circumcision programmes demonstrate the effectiveness of this approach.¹⁰ An estimated 2000 new HIV infections were averted through 2010 among men in Kenya's Nyanza province, after scale-up of voluntary medical male circumcision programmes.

VOLUNTARY MEDICAL MALE CIRCUMCISION IN KENYA

Kenya could prevent 73 000 new HIV infections in 2011–2025 if 80% of uncircumcised adult males were circumcised by 2015, and that coverage level is maintained. Achieving this will require 860 000 circumcisions. By the end of 2010, 232 287 circumcisions had already been performed, which was 27% of the national target, and Nyanza Province achieved 62% of its 2015 target.¹¹

Continued investments in behaviour change programmes have the potential to further accelerate the drop in new HIV infections.

While young men have proved the most ready to take up the option of medical male circumcision, to maximize its benefits older men also need to be reached. To achieve the population-wide prevention benefit of voluntary medical male circumcision in Eastern and Southern Africa, 20 million more males need to be circumcised. If this goal is achieved, it will avert approximately 3.4 million new HIV infections by 2015.

ACCELERATION THROUGH A FOCUS ON PEOPLE AT HIGHER RISK OF HIV INFECTION

A focus on people at higher risk of HIV infection in countries with concentrated epidemics has borne fruit, although in many cases, these gains are limited and much more can be done. In Cambodia consistent condom use among sex workers and their clients increased from about 40% in 1997 to current levels of over 90% and new HIV infections have dropped to fewer than 2000 per year. Had condom use rates remained at 1994 levels, before the increase in condom use, the annual number of new HIV infections is likely to have been more than 50 000.¹² Similar success has been observed in Cotonou, Benin, where there is estimated to be 3000–4000 fewer new infections annually as a result of an intensive behaviour change programme with sex workers.¹³

INVEST IN YOUNG LEADERS

With the aim of slowing the spread of HIV, the 2011 Political Declaration calls on all countries to encourage and support the active involvement of and leadership by young people in the global, regional and national responses. Particular steps are needed to ensure robust participation by young people in Country Coordinating Mechanisms and national AIDS coordinating bodies. In addition, the 2011 Political Declaration pledges specific steps to engage young people living with HIV, and to engage young people on HIV in communities, families, schools, recreation centres and workplaces. The HIV Young Leaders Fund is enabling new leadership among young people most affected by HIV. The Fund has provided 23 grants to community projects in 19 countries since 2010 and is encouraging youth-led initiatives in advocacy, peer-based services and community mobilization. Young people determine where grants go and also provide technical support.

In Dhaka, Bangladesh, harm-reduction programmes have been credited with slowing the spread of HIV among people who inject drugs. HIV prevalence in this population rose from 1.4% in 2000 to 7% in 2007, but thereafter dropped to 5.3% in 2011, well below the levels observed in areas without prevention programmes. Where countries ignore harm-reduction programmes or do not take HIV prevention programmes to scale, the consequences have been severe. In St Petersburg, Russia, HIV prevalence has doubled in the past five years, with estimates of almost 60% HIV prevalence among people who inject drugs.¹⁴

People who inject drugs also need equitable access to non-discriminatory health and social services. Studies in Eastern Europe and Central Asia show many people who inject drugs actively avoid seeking health services due to the risk of ostracism or fears that their health providers will report them to law enforcement authorities.¹⁵ Such obstacles limit individuals' access to basic health services, such as counselling in sexual risk reduction and treating sexually transmitted infections, as well as antiretroviral therapy for people who are HIV-positive.

REDUCING HARM IN IRAN

An estimated 15% (5%–25%) of people who inject drugs in Iran are living with HIV.¹⁸ In response, the country has created a network of more than 600 clinics that address drug injection, HIV and sexually transmitted infections.¹⁹ About half of all people who inject drugs in Iran receive opioid substitution, while 40 clean syringes and needles are distributed each year per person who injects drugs.²⁰ With this national network in place, HIV prevalence has declined steadily since peaking in 2005.²¹

ANTIRETROVIRAL TREATMENT IS KEY TO FASTER PROGRESS

While declines in new infections resulting from changes in behaviours show a clear return on the investments made in the HIV prevention response, initial declines are often followed by a stabilisation of rates of new infections. A pattern is emerging of initial peaks in new infections, followed by a reduction in new infections as prevention efforts are taken to scale and behaviours change, followed by a plateauing of rates of new infections, often at relatively high levels. Recent evidence suggests this plateau effect can be broken by the added prevention benefit of high levels of treatment coverage.¹⁶

The most dramatic increases in antiretroviral therapy coverage have occurred in sub-Saharan Africa, with a 20% increase between 2009 and 2010 alone. It is estimated that at least 6.6 million people in low- and middle-income countries are receiving HIV treatment. This is an increase of more than 1.35 million over the previous year. In low- and middle-income countries 47% of the 14.2 million eligible people living with HIV were on antiretroviral therapy at the end of 2010, compared to 39% at the end of 2009.

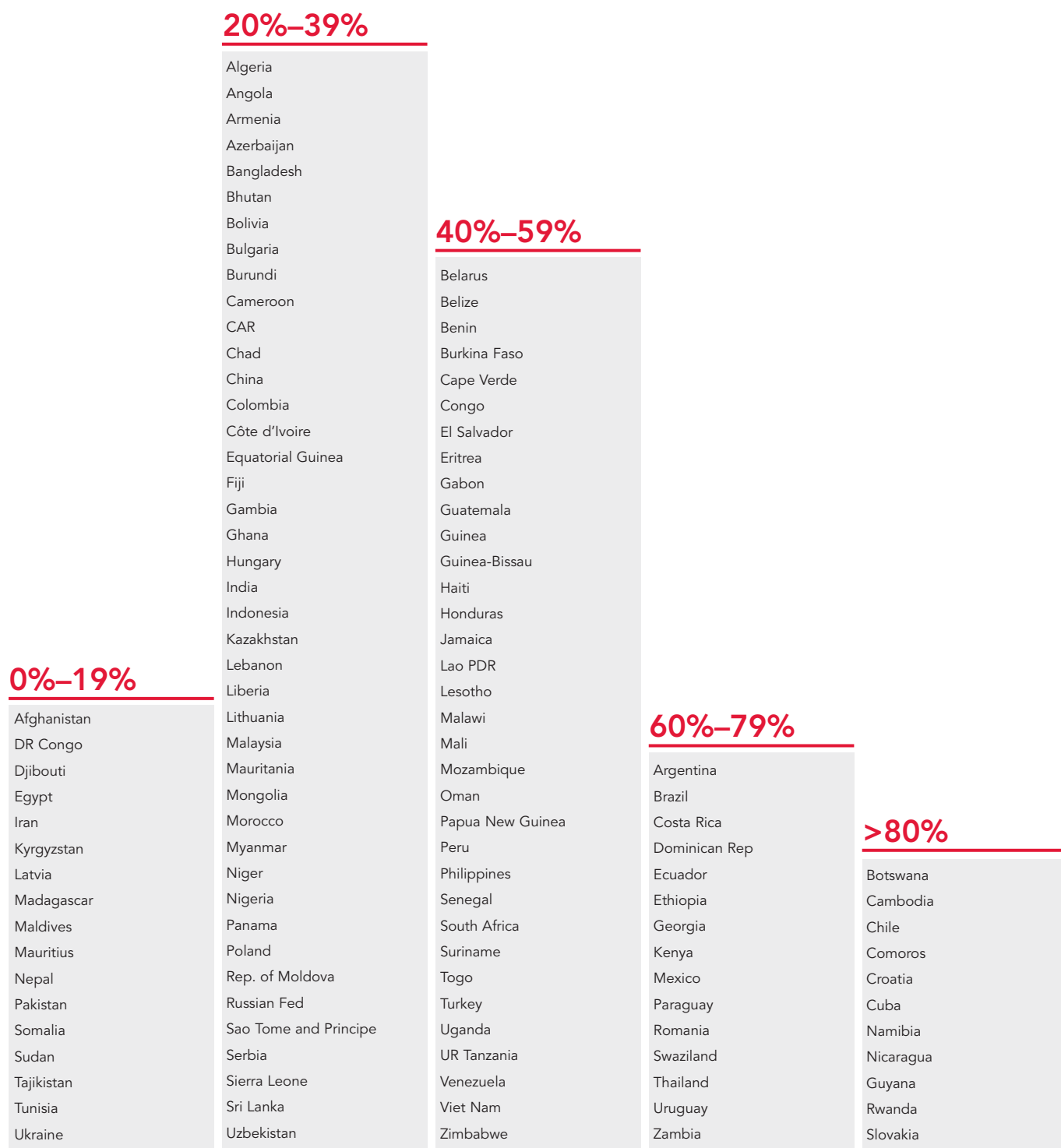
Universal access to treatment (defined as 80%, or greater coverage) has been achieved in Botswana, Namibia and Rwanda, while Swaziland and Zambia have achieved coverage levels between 70% and 80%. Across cities and villages in sub-Saharan Africa, from Harare to Addis Ababa to rural Malawi and South Africa's Kwazulu Natal province, introducing HIV treatment has dramatically reduced AIDS-related mortality.¹⁷ In low- and middle-income countries globally, treatment has averted 2.5 million AIDS deaths since 1995, the majority in the past few years.

ACCESS TO TREATMENT BOOSTS THE SUCCESS OF COMBINATION HIV PREVENTION PROGRAMMES

In addition to improving quality of life and reducing AIDS-related deaths, antiretroviral treatment is now recognized as preventing HIV transmission by reducing viral load and hence reducing the potential for transmission. Coupling treatment access with combination prevention options is pushing new HIV infections down to record levels. In countries with adult HIV prevalence in excess of 10%, HIV treatment in combination with

Proportion of eligible population receiving antiretroviral therapy in low- and middle-income countries at the end of 2010

Rapid increases in ART coverage are helping more countries achieve universal access to treatment, care and support.



Source: UNAIDS and WHO, 2011.

behaviour-change programmes and medical male circumcision programmes may be the key to achieving rapid declines in new HIV infections.

Namibia is in the forefront of reaping benefits of such an approach. Over the last decade there has been a concurrent scale-up of HIV prevention and treatment programmes. Condom use has increased to nearly 75% among men; fewer than 11% of men and 2% of women had multiple partners; and young people, particularly boys, were starting to have sex at an older age. Treatment access has reached an all-time high of 90%. The combined impact contributed to a 60% drop in new HIV infections by 2010, from 22 000 in 1999.

Data from hyperendemic countries suggest that behaviour change programmes are crucial to bring down new HIV infections. However after initial dips, the numbers of new HIV infections tend to stabilize, sometimes at relatively high levels. The introduction of new HIV prevention tools such as male circumcision and HIV treatment can break this stalemate.

In countries that have achieved high levels of treatment coverage, new infections may be declining even in the absence of any significant changes in patterns of sexual behaviour. In Zimbabwe, for example, a decline in new HIV infections took place between 1995 and 2000. This was followed by a period of relatively stable HIV incidence of 1% – more than 50 000 new HIV infections per year. However in recent years new HIV infections have begun to decline, coinciding with scale-up of HIV treatment and no significant national level changes in sexual behaviour. Similarly, recent declines in new HIV infections in Lesotho are particularly noteworthy as they have occurred in conjunction with an increase in risk-taking behaviour among some populations. The drop in new HIV infections can, at least in part, be attributed to the increased number of people accessing treatment alongside the prevention effect of current HIV prevention programmes.²²

In countries where universal access to treatment has been achieved, the results are more pronounced. In Botswana, early declines in new HIV infections may be explained by the natural course of the epidemic together with a dramatic increase in condom use between 1988 and 2000 (according to the 1988 Demographic and Health survey in Botswana only 10% of adult women reported ever having used a condom). Since 2000, patterns of sexual behaviour have remained relatively stable leading to a slowing of the declines in new HIV infections. However in this period, Botswana

THE CASE FOR HOME HIV TESTING

The fact that fewer than half of those living with HIV do not know it is a huge barrier to treatment scale up and realizing the benefits of treatment for prevention. The situation in some of the worst affected areas is even more dire: a recent national study in Kenya showed only 16% of HIV-infected adults knew that they were infected.²³

A variety of tests, from finger pricks to mouth swabs, can now produce results in 1–20 minutes. The cost of these tests is now measured in cents.

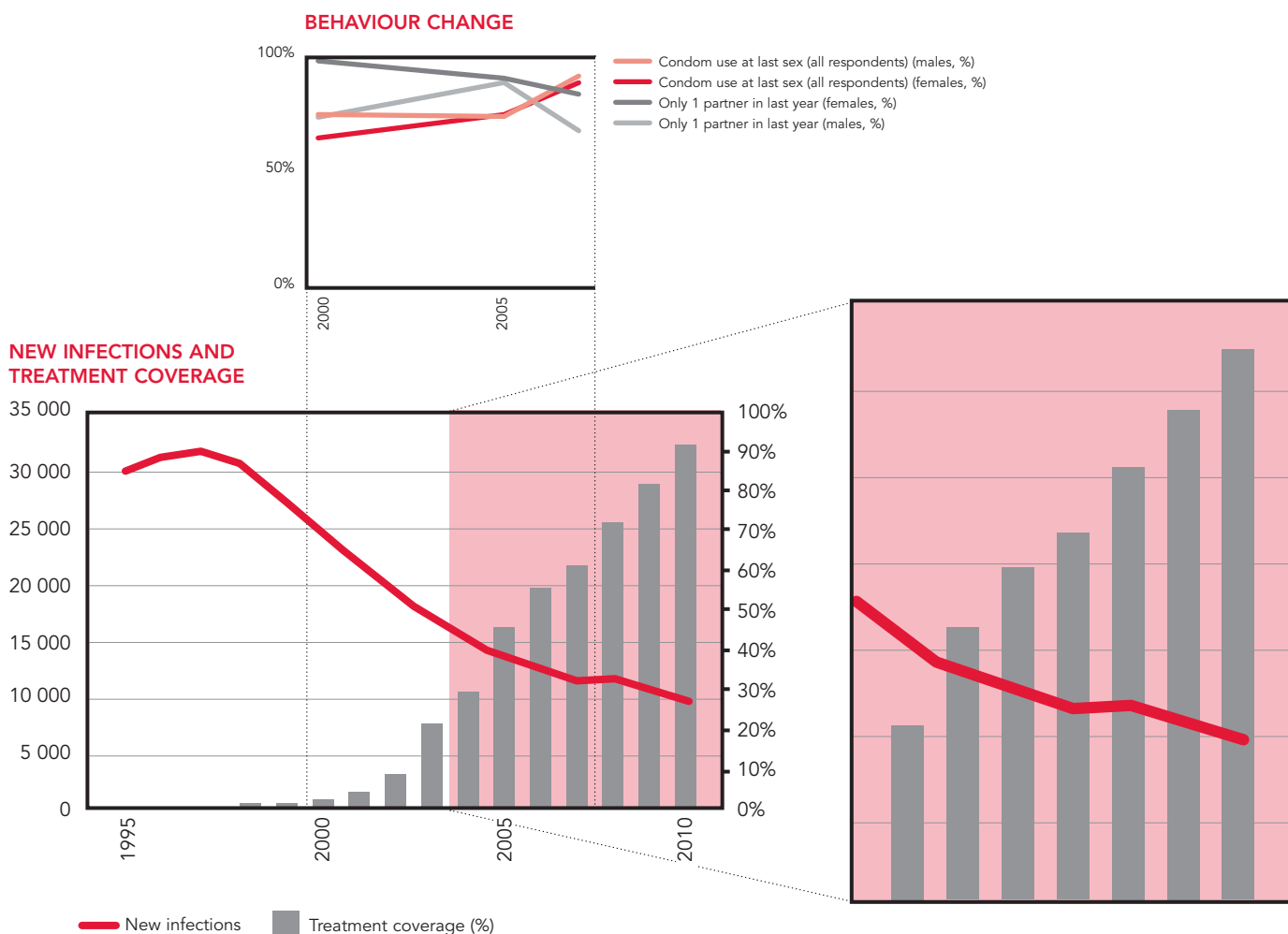
Despite the advances in technology, testing is still approached with fear, accessing clinics is inconvenient and the experience of HIV testing is often stigmatizing.²⁴ Stigma or anticipated stigma has been found to be a powerful barrier to testing uptake with a negative impact on programmes such as those designed to eliminate new HIV infections in children.²⁵

One option to radically shift test access is self-testing at home. Information and support could be provided remotely. Most importantly, those who tested positive would need a clear access path to health care, starting with a confirmatory test.

In September 2011, the United Kingdom's House of Lords select committee on AIDS recommended repealing laws that prohibit home HIV testing.²⁶ The Terrence Higgins Trust has found "a clear bedrock of support" for legalizing HIV home-testing kits, particularly among gay men.²⁷ iTeach, an outreach programme at Edendale Hospital in KwaZulu-Natal in South Africa, has been grappling with self-testing models for one of the world's hardest hit locations²⁸ and they have pointed to the irony that test kits are kept under lock and key because otherwise health care workers would access them informally – an issue examined by the World Health Organization earlier this year.²⁹

Edwin Cameron, Justice of the Constitutional Court in South Africa, is an advocate for home testing and has said that knowing your HIV status "simply ought to be a part of life". He has said that people have a right to access accurate tests and use them in the privacy of their own home; that it won't solve every problem of accessing treatment and care or negotiating safe sex, but is "a simple and affordable way to take the first step."

New infections, behaviour change and treatment coverage in Botswana



Source: Botswana AIDS indicator surveys; UNAIDS; WHO.

has also rapidly increased provision of antiretroviral treatment. Botswana was the first African country to implement a free national antiretroviral therapy programme. Treatment for HIV is now available in 30 hospitals and 130 satellite clinics countrywide. Since 2009, Botswana has maintained more than 90% of eligible people on treatment.³⁰

There are early signs that this increase in access to treatment is contributing to acceleration of the decline in new HIV infections. Data from modelling suggests that the number of new HIV infections is 30% to 50% lower now than it would have been in the absence of universal access to treatment for eligible people living with HIV.

The full preventive effect of HIV treatment will be seen in the next 1–5 years, as increasing numbers of hyperendemic countries reach high levels of coverage. The massive increases in the numbers of people receiving treatment in South Africa between 2009 and 2010, for example, are likely to be reflected in substantially fewer new infections in the near future.

A major factor limiting the prevention dividend of HIV treatment, however, is that more than 60% of people living with HIV are unaware of their HIV status. This limits access to treatment and care services and hampers prevention efforts. New approaches to HIV testing need to be explored to increase knowledge of HIV status. While integrating HIV testing into routine health services has helped to increase testing, it is insufficient. Introducing community-based approaches to testing may help to increase accessibility and uptake, and therefore, increase levels of knowledge of HIV status.

ACCELERATING THE DECLINE IN TUBERCULOSIS DEATHS

Without treatment and prophylaxis, people living with HIV have a 20–30 times higher lifetime risk of developing active tuberculosis, compared with people without HIV.³¹ In 2010, people living with HIV accounted for about 13% of all new tuberculosis cases worldwide, and about 360 000 people died from HIV-related tuberculosis.³²

The number of tuberculosis deaths among people living with HIV has been declining since 2004. Close collaboration between HIV and tuberculosis programmes can accelerate this decline further to meet the global goal of halving the number of HIV-related tuberculosis deaths by 2015.

Tuberculosis care, cure and prevention should increase among people living with HIV. Less than a third of people living with HIV sought care for tuberculosis at a clinic in 2010. Halving HIV-related tuberculosis deaths requires this rate to double, together with an increase in tuberculosis cure rates from 70% to 85%, detection of at least 80% of tuberculosis cases among people living with HIV, and isoniazid preventive therapy reaching at least 30% of people living with HIV who do not have active tuberculosis.

Regular screening and testing should be offered in countries with high prevalence of HIV and tuberculosis, and more sensitive and specific diagnostic tools and algorithms should be used. An inexpensive daily dose of isoniazid significantly reduces the risk that latent tuberculosis will progress to active disease.³¹ At least 30% of people living with HIV who do not have active tuberculosis should receive isoniazid preventive therapy.

Antiretroviral therapy should be initiated in a timely manner, because earlier treatment substantially reduces the odds of HIV-related tuberculosis illness and death. Meeting the global goal on halving the number of HIV-related tuberculosis deaths by 2015 will also require the goal of universal access to HIV treatment to be met.³³

SOUTH AFRICA BOOSTS COLLABORATIVE TB/HIV CARE

South Africa suffers the world's greatest burden of HIV and tuberculosis, yet it is making great strides to address both diseases. About 210 000 people with tuberculosis were tested for HIV in 2010 and 60% were identified as HIV-positive. More than half were started on antiretroviral therapy and three quarters received cotrimoxazole preventive therapy. In the same year, almost 60% of the 3.9 million people in HIV care were screened for tuberculosis, with 12% given isoniazid preventive therapy. An HIV counselling and testing campaign that included tuberculosis screening also resulted in 760 000 people with HIV being screened for tuberculosis, of which 120 000 were provided with isoniazid preventive therapy.³⁴





Faster.
> Smarter.
Better.

SMART INVESTMENTS THAT DRIVE INCREASED PROGRAMME IMPACT

The AIDS epidemic is not over yet, but the end may be in sight if countries invest smartly. In the next five years, smart investments can propel the AIDS response towards achieving the vision of zero new HIV infections, zero discrimination and zero AIDS-related deaths. To ensure value for money, lessons learned from the past three decades must be effectively applied.

Investing smartly, investing for results

The current economic crisis and dwindling international resources have reduced the financial resources made available for the AIDS response. At the end of 2010 about US\$ 15 billion was available. International assistance has declined from US\$ 8.7 billion in 2009 to US\$ 7.6 billion in 2010. The resilience of the AIDS response has somewhat cushioned the adverse impact of this reduction in resources, but the accumulated deficit in funding is one of the factors that prevented the world from reaching all the goals set in 2001 for 2010. The future of AIDS resourcing depends on smart investing: spending now to curtail the need to 'spend more – forever'.

In June 2011, Member States agreed on a new set of global targets, including making at least US\$ 22–24 billion available for the global HIV response annually by 2015. This level of resourcing is critical if the new global goals are to be achieved. Even more critical is that these resources are invested wisely in order to maximise return, to achieve value for money. A new UNAIDS Investment Framework provides a roadmap for such an approach, tying investments to concrete results.

The Investment Framework for the global HIV response starts with the premise that, while there have been tremendous gains in the global response to HIV, a systematic effort to match investment to needs has so far been largely lacking. The resulting mismatch has stretched scarce resources too thinly over too many objectives.

The framework represents a radical departure from current approaches, and has four clear aims:

- Maximizing the benefits of the HIV response
- Using country-specific epidemiology to ensure rational resource allocation
- Encouraging countries to implement the most effective programmes based on local context
- Increasing efficiency in HIV prevention, treatment, care and support.

**THE FRAMEWORK REPRESENTS A RADICAL
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1.

**MAXIMIZING THE BENEFITS OF THE HIV
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2.

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ENSURE RATIONAL RESOURCE ALLOCATION**

3.

**EFFECTIVE PROGRAMMES BASED ON
LOCAL CONTEXT**

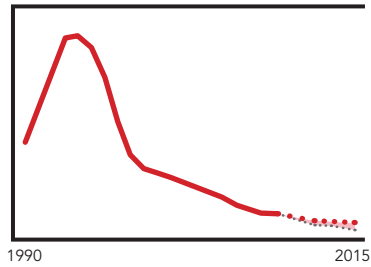
4.

**INCREASING EFFICIENCY IN HIV PREVENTION,
TREATMENT, CARE AND SUPPORT.**

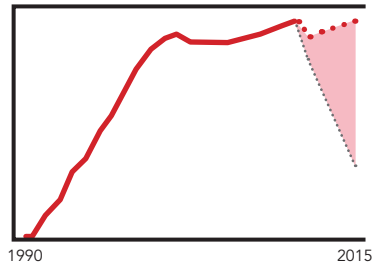
Investment framework projections for new HIV infections

Optimized investment will lead to rapid declines in new HIV infections in many countries.

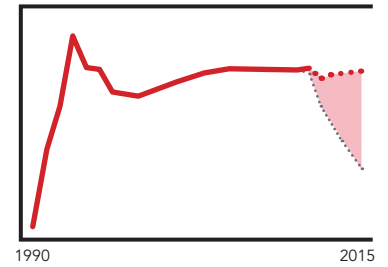
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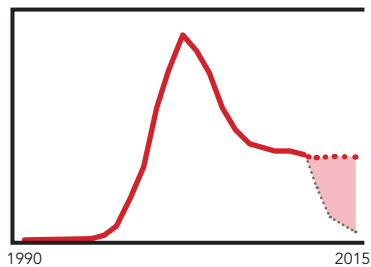
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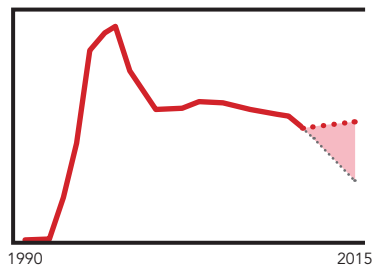
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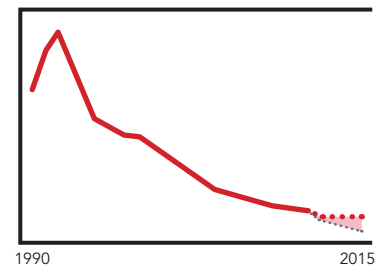
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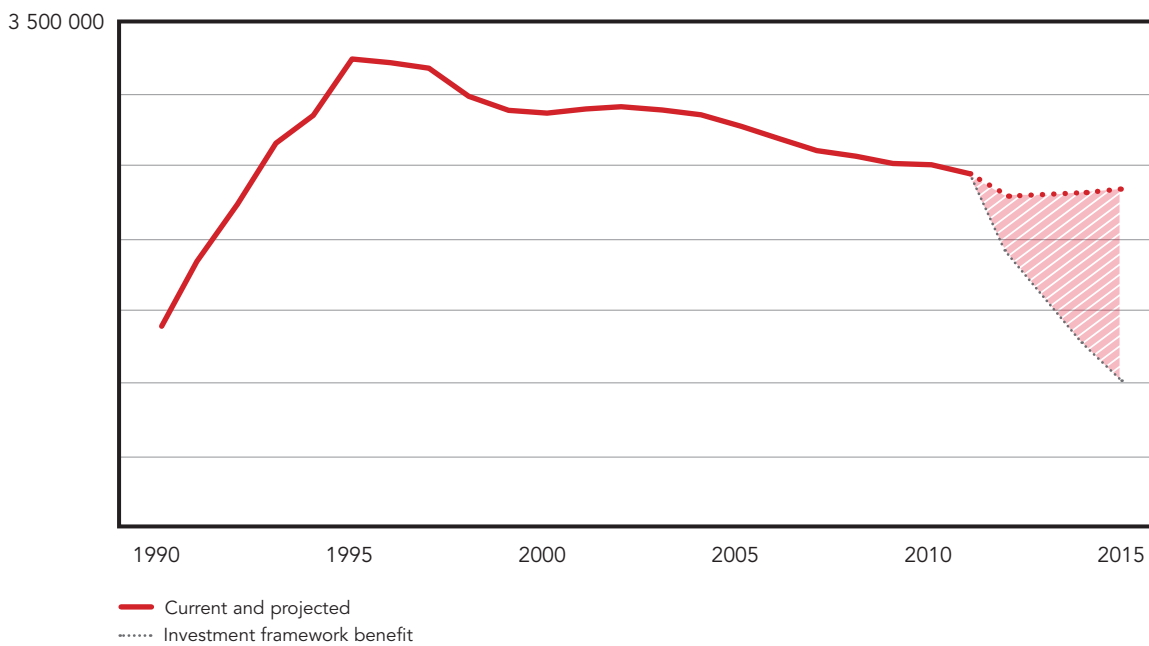
SOUTH AFRICA



ZIMBABWE



GLOBAL NEW HIV INFECTIONS



Return on investment

A more strategic approach to spending would achieve extraordinary results, averting at least 12.2 million new HIV infections, including 1.9 million among children, and 7.4 million AIDS-related deaths between 2011 and 2020 compared with a continuation of current approaches.³⁵ Under the Investment Framework, the additional investment of US\$ 1060 per life-year gained would be largely offset by savings in treatment costs alone. To achieve universal access to HIV treatment, prevention, care and support by 2015, and to maintain it, HIV programme funding needs to be scaled up from US\$ 16.6 billion in 2011 to US\$ 24 billion in 2015, before declining to US\$ 19.8 billion in 2020.

Value for money is best obtained when national AIDS responses make timely investments that are in the right places; utilize the right strategies; increase efficiency, reduce costs and promote innovation. Each of these tactics are critical, but when combined, they can lay the foundations for a sustainable AIDS response.

Supporting countries in the ongoing task of optimizing their responses through a clearer focus on investment has been embraced by major providers of international development assistance in AIDS. The investment approach is in the forefront of the new strategy being developed by the Global Fund to Fight AIDS, Tuberculosis and Malaria, as well as the HIV prevention strategy recently issued by the US President's Emergency Fund for AIDS Relief. An agenda is emerging which clearly aligns donor interests in value for money with implementing country interests in optimal results.

Invest adequately, in the right places, with the right strategies

A full and early investment in the AIDS response can reap long-lasting dividends. Brazil has for years invested adequately and been at the forefront of ensuring access to HIV prevention and treatment services for the most vulnerable and marginalized. In 2008, the country invested more than US\$ 600 million, close to the estimate of what is needed for a full-scale response. The Russian Federation makes an allocation of similar magnitude, but the value for money realized is not as high as that of Brazil, as its investment strategy is not optimized.

In the Russian Federation, annual HIV-related investments in 2008 were close to US\$ 800 million, roughly equal to the total amount required in 2015. Yet new HIV infections are increasing, as little of the invested total goes towards harm-reduction programmes for people who inject drugs, men who have sex with men or sex workers. Of the US\$ 181 million spent on HIV-prevention programmes in 2008, only US\$ 8 million was invested for these populations. A shift in strategy to embrace harm reduction and reprioritize existing resources could substantially cut new HIV infections.

Ukraine is beginning to adopt effective programme approaches, but the scale of investments remains inadequate, incommensurate with the scale of the epidemic. Ukraine invested nearly one third of its prevention budget in 2008 towards key affected populations, yet the need is double that available for people who inject drugs, men who have sex with men and sex workers. UNAIDS modelling suggests that a doubling of annual AIDS-related investments in Ukraine and increased coverage of HIV prevention

and treatment programmes for people who inject drugs, sex workers and men who have sex with men could slash 65% off the annual number of new HIV infections by 2015.

A similar comparison can be made between Cambodia and Viet Nam. Cambodia is another example of a country where HIV investments matched the scale of the epidemic and were aligned to epidemiological trends, resulting in a dramatic reduction in HIV incidence. If this trend continues, Cambodia may be able to gradually reduce its HIV investments without compromising the gains made over the last decade. In Viet Nam, however, investments are not similarly aligned. The epidemic is primarily driven by injecting drug use and sex between men but coverage and investment in effective harm reduction programmes for these populations remain insufficient. An alignment of investments based on the principles of the investment framework could halve new HIV infections in the country by 2015.

In the case of South Africa, the country with the largest number of new HIV infections, HIV-related investments have grown significantly in the past two years and the impact is beginning to show. The rate of new HIV infections decreased by 22% between 2001 and 2009 and AIDS-related mortality has decreased by 21% between 2001 and 2010. A stagnation in levels of investments would lead to a stabilization of the new HIV infections at about 500 000 per year. However, if South Africa continues to increase its AIDS investments with domestic and international support, the annual number of new HIV infections could be reduced to less than 250 000.

Nigeria has the second largest number of new HIV infections in the world and has insufficient HIV-related investments, severely curtailing its capacity to address the magnitude of the epidemic. Total HIV investment in 2008 was about US\$ 400 million, against a projected annual need of three times more than that figure by 2015. There is massive potential to reduce new HIV infections if these investments were to be made in line with epidemiological trends and appropriate programmatic approaches.

Over the past few years, many countries have begun to taken steps to examine the epidemiological dynamics and direct resources towards populations most in need. A recent analysis in Morocco found that only 27% of prevention resources were invested in services for the populations that accounted for more than two thirds of new HIV infections. The 2012–2016 National Strategic Plan for Morocco proposes allocating 63% of AIDS resources towards prevention among key affected populations, including 13% for people who inject drugs, 13% for men having sex with men, and 23% for sex workers and their clients. Such an approach is consistent with the investment framework and, as country after country has shown, adequate investment while epidemic levels remain low saves decades of escalating costs in the future.

Invest in reducing costs

Significant gains can also be made by reducing tariffs and other trade barriers that increase the unit cost of delivery of HIV treatment and prevention services. Rigidities and inefficiencies need to be eliminated. At the urging of UNAIDS, South Africa recently opened its procurement processes for life-saving antiretroviral drugs and by benchmarking its price expectations to the lowest available prices internationally, it reduced its costs for AIDS drugs by an average 50%. In turn, the country channelled

the savings into making HIV treatment accessible to more people. Many countries have integrated programmes to stop new HIV infections among children in existing maternal, newborn and child health services, reducing costs and maximising efficiencies.

Invest in innovation

Current programme approaches have reached their limits. To increase efficiencies as well as reduce costs, innovation in programme delivery methods as well as investing in new HIV prevention and treatment tools is required.

To provide additional options for HIV treatment and prevention programmes, the quest for effective vaccines, easy-to-use drugs, with fewer side effects and less chance of resistance developing, microbicides, pre-exposure prophylaxis drugs and better diagnostic tools must continue. At the same time, it is necessary to reassess programme delivery models that have outlived their utility. Almost 60% of all people living with HIV do not know their status, thereby impeding their ability to look after their own health and that of their loved ones. To change this, HIV testing must become simple and as ubiquitous as home-based pregnancy test kits. This will drive down the high costs of maintaining dedicated HIV testing and counselling centres as well as empowering individuals to access HIV treatment and care services in a timely and confidential manner.

Innovative service models which deliver on multiple objectives can also drive improved investment. For example responses to gender based violence need to integrate HIV components.

Investment Framework for HIV

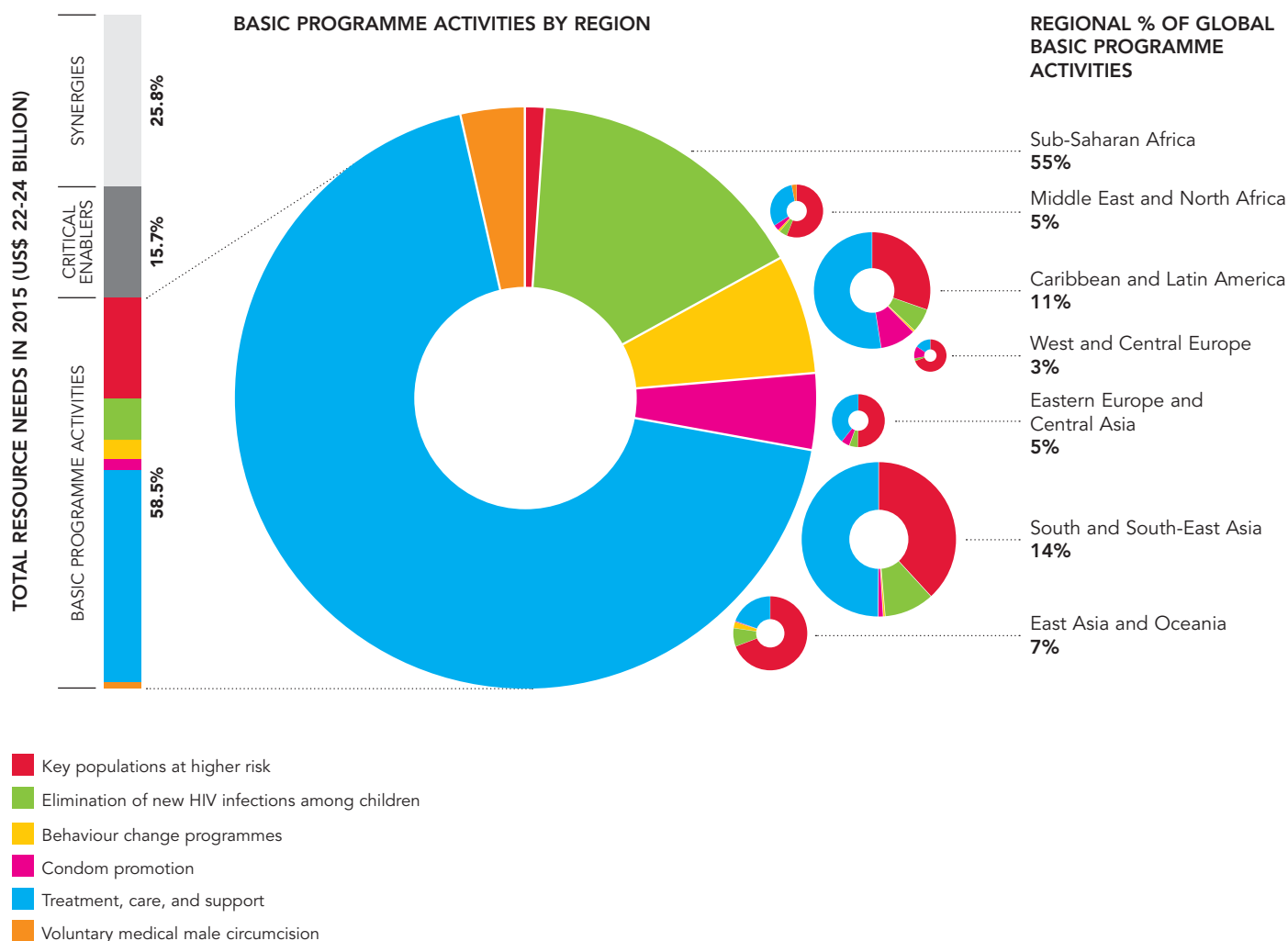
To ensure that this investment generates maximum results, the HIV response must focus on the most effective strategies, the critical enablers that are crucial to the success of HIV programmes, and synergies with other development sectors.

Just six basic programme activities are essential to an adequate HIV response and need to be delivered at scale according to the size of the relevant population. These activities work together for maximum impact and therefore have to be delivered as a package, where each element reinforces the other. Underlying the success of these basic activities are the enablers which make programme access possible and success more likely and respond to local context. Together with the directly delivered basic activities and enablers, AIDS-sensitive efforts within wider social and development sectors can be strategically placed within these broader efforts to maximize their impact on AIDS outcomes.

SOUTH AFRICA POST-RAPE CARE

The **Refentse Model for Post-Rape Care** in South Africa is a multisectoral approach to post-rape care. Relatively inexpensive changes significantly improved service quality and health outcomes, with one-stop lab tests, violence counselling and testing services around the clock, and nursed-dispensed post-exposure prophylaxis (PEP). Integrating services reduced delays in accessing PEP and collecting medical evidence for legal purposes, and this resulted in improvements in care, the quality of clinical history and exams, provision of pregnancy testing and emergency contraception; STI treatment; HIV counseling and testing; trauma counseling, and referrals. This intervention was relatively inexpensive: when one-off development costs were excluded, the incremental cost per case was US\$58.³⁶

Investment framework allocation in 2015



The pattern of necessary expenditure on basic programme activities is driven by the size of the population in need in relation to each activity in each country. The spending pattern on basic programme activities therefore varies markedly region to region.

Basic programme activities

The Investment Framework calls for the rational allocation of resources to six basic programme activities that are required to deliver substantial and sustainable progress in the HIV response:

1. Focused interventions for key populations at higher risk (particularly sex workers and their clients, men who have sex with men, and people who inject drugs);
2. Elimination of new HIV infections among children;
3. Behaviour change programmes;
4. Condom promotion and distribution;
5. Treatment, care and support for people living with HIV;
6. Voluntary medical male circumcision in countries with high HIV prevalence and low rates of circumcision.

Key populations, by definition, predominate in concentrated epidemics, but they also contribute to generalized epidemics, and account for a substantial portion of the epidemic in some countries. Behaviour change interventions are more complex and context-dependent, so they are less clearly defined than other basic programme activities, but they have a major impact on the trajectory of both concentrated and low-scale epidemics. Access to antiretroviral therapy is a key activity because it enables people living with HIV to be healthier and live longer, reduces the incidence of AIDS-related tuberculosis and has broader population benefits by reducing onward transmission of HIV. Basic programme activities need to be sufficiently flexible to accommodate evolving technologies and approaches.

Critical enablers and synergies with development sectors

Critical enablers propel the success of basic activities and respond to the local risk context. They empower and enable communities, reduce social stigma, increase health literacy, and address the negative impact of punitive laws and policies on the ability of people to use HIV services. Advancing the human rights of those affected by or vulnerable to HIV is a key strategy which helps assure both access to and impact of AIDS services and programmes. The Investment Framework provides for substantial up-front investment in critical enablers, with essential resources amounting to US\$ 5.9 billion in 2011 and US\$ 3.4 billion projected for 2015.³⁵

Critical enablers can be divided into two categories: social enablers that create environments conducive to rational HIV responses; and programme enablers that create demand for programmes and improve their performance. Critical enablers vary greatly according to context, and the evidence base supporting them is less consistent – results are so often locally determined – but they are crucial to overcoming the barriers to effective programmes.

Examples of social enablers are outreach for HIV testing, stigma reduction, human rights, addressing the fear of violence addressing gender inequality in access to information and services, advocacy and community mobilization. Programme enablers include strategic planning, programme management and capacity-building for community-based organizations. These organizations can foster innovation and community approaches in the long term can bring down costs and ensure sustainability.

CRITICAL ENABLERS

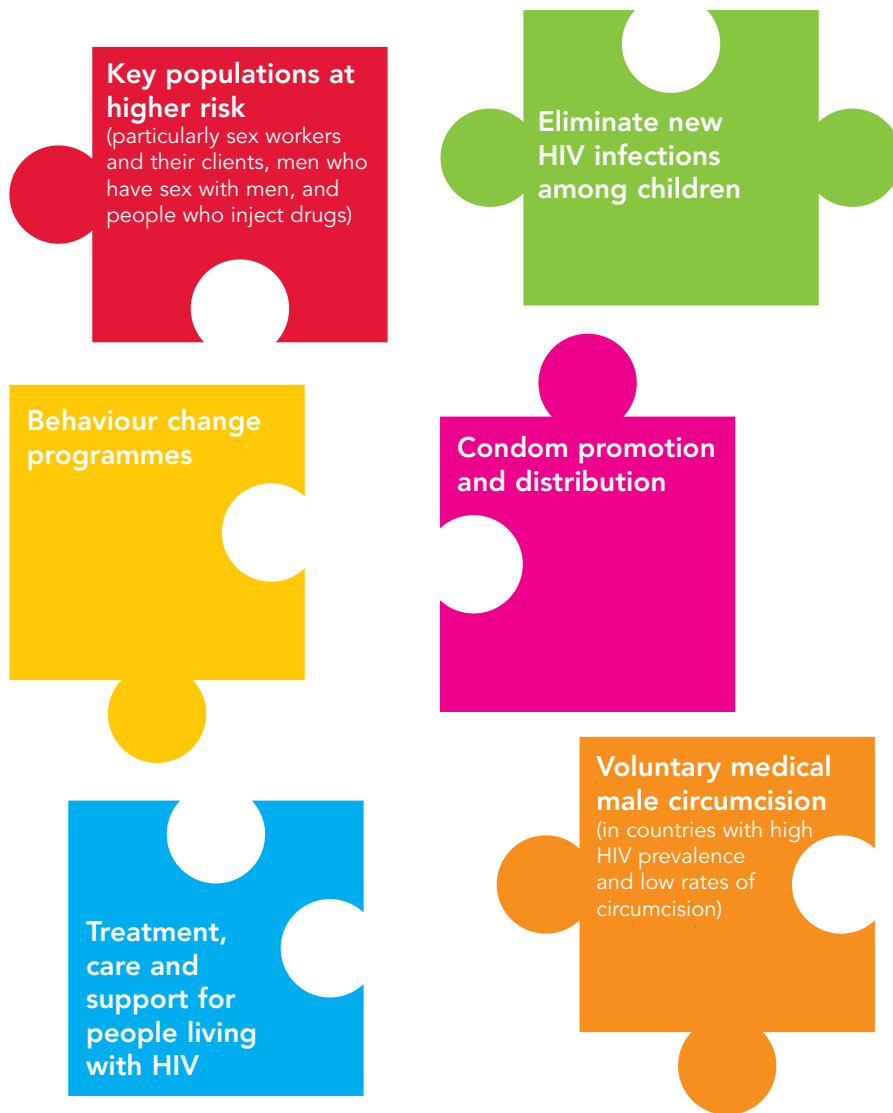
Social enablers

- Political commitment and advocacy
- Laws, legal policies and practices
- Community mobilization
- Stigma reduction
- Mass media
- Local responses to change risk environment

Programme enablers

- Community centered design and delivery
- Programme communication
- Management and incentives
- Procurement and distribution
- Research and innovation

BASIC PROGRAMME ACTIVITIES



SYNERGIES WITH DEVELOPMENT SECTORS

Social protection, Education, Legal reform, Gender equality, Poverty reduction, Gender-based violence, Health systems (incl. STI treatment, Blood safety), Community systems, and Employer practices.

OBJECTIVES

Stopping new infections



Keeping people alive

National AIDS programmes should be aligned to country development objectives and thereby support the strengthening of social, legal, and health systems to enable sound and effective responses. AIDS programmes are not implemented in isolation and should not be planned in isolation. Increasingly, chronic care of patients with HIV has much the same challenges as have other diseases. Key development areas in which synergies with AIDS-specific efforts exist include those efforts addressing HIV as one of many health issues, gender equality, education and justice sectors, social protection and welfare, and community systems.

AIDS funding in these areas can be used as a catalyst to achieve synergies within the broader health and development programme and to promote intelligent investment across several sectors.





***Faster.
Smarter.
> Better.***

A SHIFT IN GEARS WILL PUT THE END OF AIDS IN SIGHT

Uniting behind shared responsibility for common goals

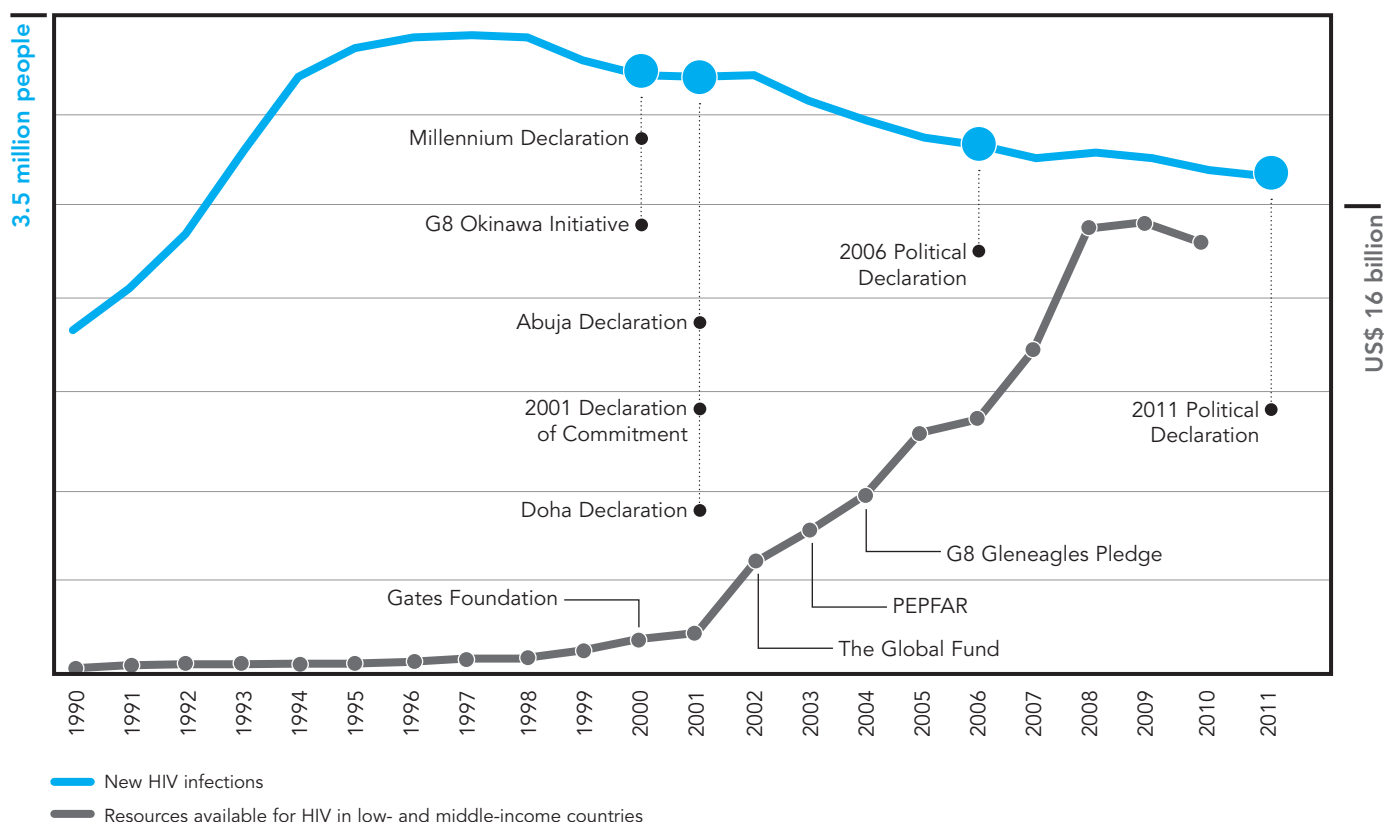
United Nations Member States demonstrated solidarity and a renewed commitment in June 2011 when they agreed on the *Political Declaration on HIV/AIDS: Intensifying Our Efforts to Eliminate HIV/AIDS*.

The 2011 Political Declaration calls for greater efforts to end the epidemic and it recommit Member States to the goal of universal access to HIV prevention, treatment, care and support. The Declaration contains ambitious targets for 2015 and reflects unified support for the vision of zero new HIV infections, zero discrimination and zero AIDS-related deaths.

The 2011 Political Declaration recognized resource mobilization as a shared responsibility. The international community provides a substantial amount of investment in AIDS responses, with bilateral donors (Member States that provide development assistance directly to recipient countries) providing 31% of investments, multilateral institutions 12%, and the philanthropic sector 5%. However, the majority of AIDS expenditures in low- and middle-income countries (52%) were provided by domestic sources. Most low- and middle-income countries are expected to see strong economic growth in the immediate future, suggesting an increased capacity to devote additional resources to health, including HIV programmes.

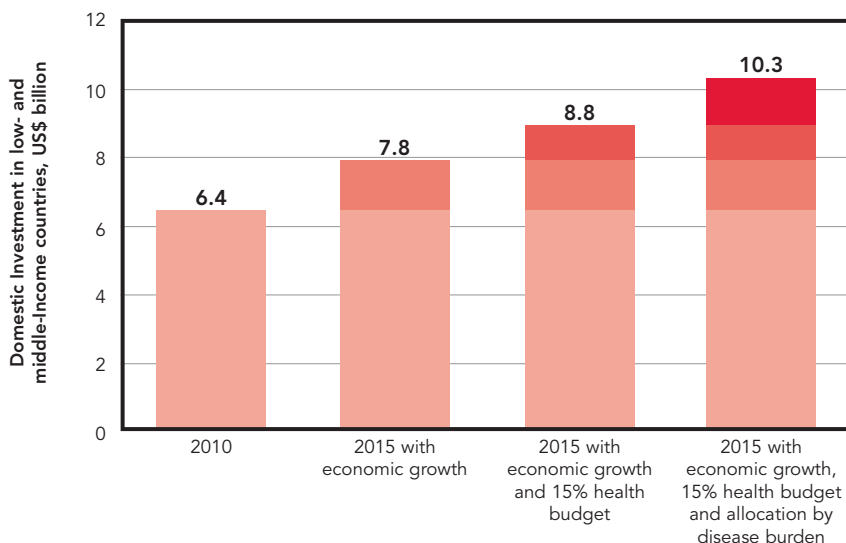
New HIV infections, global political responses and investments

Political commitment has helped drive increased HIV investment and turn the curve of new infections downwards. If all low- and middle-income countries were to allocate resources in proportion to their HIV burden, domestic public-sector allocations would double by 2017 and continue to rise thereafter. Economic growth alone should add 22% to AIDS investment by 2015, while moving closer to health expenditure of 15% of government revenue (as per the Abuja Declaration for Africa) could add a further 15%. Finally, allocating these health budgets to HIV according to disease burden could add an additional 24%. All of these measures taken together could add as much as 62% to investments by 2015, with increases continuing thereafter.



Projected HIV domestic resources available under various scenarios

While countries in all regions can expand their allocations for HIV, those hardest hit are also often those with least resources. Hence, there is the need for international donors to continue supporting programmes, especially in the poorest and worst affected countries. After an increased initial investment of US\$ 2.6 billion annually, the donor funding required is estimated to decline after 2015.



A better future: the global plan to eliminate new HIV infections among children

The world has embarked on a course to virtually eliminate new HIV infections among children.

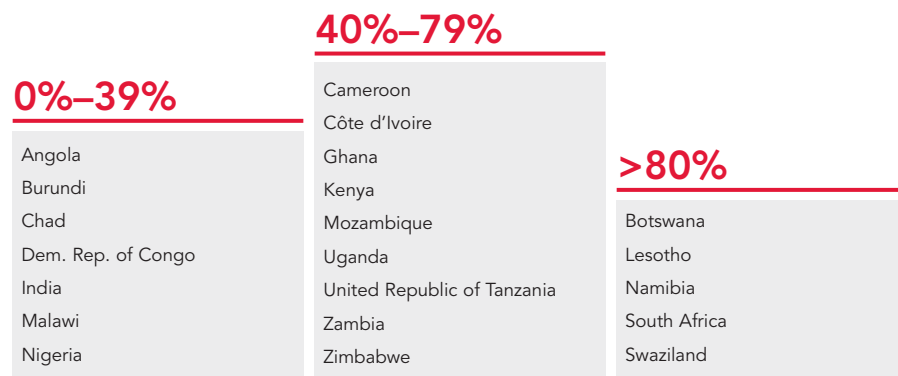
The Kesho Bora (“better future”) study from Africa demonstrated that when mothers took a triple antiretroviral drug regimen during pregnancy and breastfeeding, the risk of HIV transmission was almost halved compared with women who took two drugs only.³⁷ This approach is already being implemented in countries, reflecting swift translation of research into action.

With improved treatment regimens and strengthened commitment to a comprehensive response, it now seems feasible by 2015 to eliminate new HIV infections among children and to keep their mothers alive. New HIV infections among children have already been virtually stopped in high-income countries, with the number of new infections among children falling by 93% between 1992 and 2005 in the United States of America.³⁸ Comparable results can be achieved in low- and middle-income countries.

Progress to date is already considerable. More than 350 000 new HIV infections among children have been averted by providing antiretroviral prophylaxis to pregnant women living with HIV. New child infections were rising until 2002 when they reached their peak of 560 000 [500 000–630 000]. By 2010 they had fallen to an estimated 390 000 [340 000–450 000]. The majority of child infections averted (86%) were in sub-Saharan Africa. The pace of progress has been increasing. In the past two years alone, rapid increase of coverage of HIV treatment and prevention services for pregnant women resulted in a doubling of cumulative HIV infections averted. In 2010, 48% of pregnant women living with HIV received effective regimens to prevent new HIV infections among children.

Estimated percent of pregnant women living with HIV who receive effective antiretroviral regimens, in 22 priority countries

Too many of the 22 countries in the *Global Plan* still have significant gaps in their coverage of basic programmes to give pregnant women access to antiretrovirals to prevent new HIV infections among children.

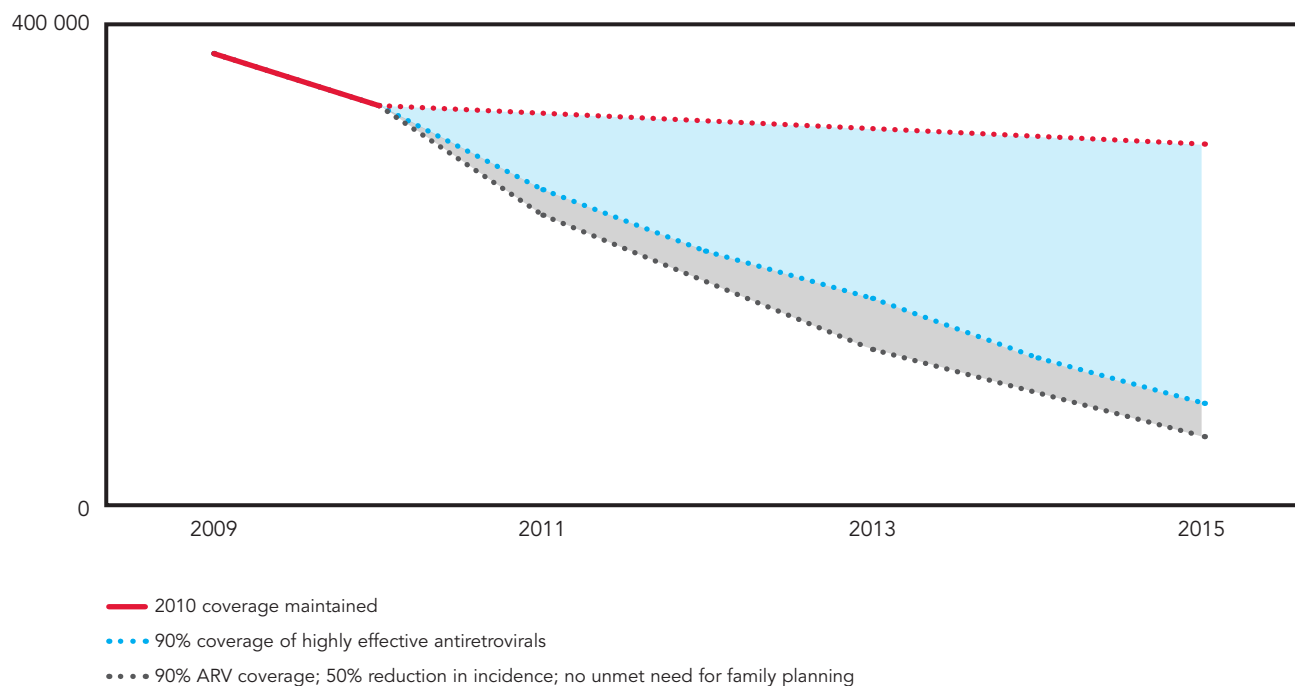


Source: UNAIDS, UNICEF and WHO, 2011.

Note: no estimate is available for Ethiopia.

New HIV infections among children: Scenarios for 21 priority countries

New infections among children would be cut dramatically by expanding antiretroviral coverage, reducing adult incidence and meeting family planning needs.



Note: These 21 countries, plus India, comprise the 22 priority countries in the *Global Plan Towards the Elimination of New HIV infections Among Children and Keeping Their Mothers Alive*.

Botswana reports that the percentage of infants who are born HIV-positive to mothers living with HIV has declined from 21% in 2003 to 4% in 2010.³⁹ Countries with a high burden of new HIV infections among children – Lesotho, Namibia, South Africa and Swaziland – have likewise achieved universal access to services to prevent new HIV infections among children.

AIDS-related deaths among children younger than 15 also have declined. There were 20% fewer AIDS-related deaths among children in 2010 than in 2005. This is due both to fewer new HIV infections among children and to an increase in HIV treatment for children (albeit at a slower rate than the increase in treatment for adults).

As outlined in the *Global Plan Towards the Elimination of New HIV Infections Among Children by 2015 and Keeping Their Mothers Alive*, action is required in four areas. First, intensified efforts are needed to prevent HIV infection in women of reproductive age by stopping sexual and injecting-drug-related transmission. Primary HIV prevention efforts should also be integrated in antenatal care, postpartum care, and other health and HIV service-delivery channels.

Second, the access gap for women's family-planning services must be closed. These services enable women to avoid unintended pregnancies and optimize other health outcomes.

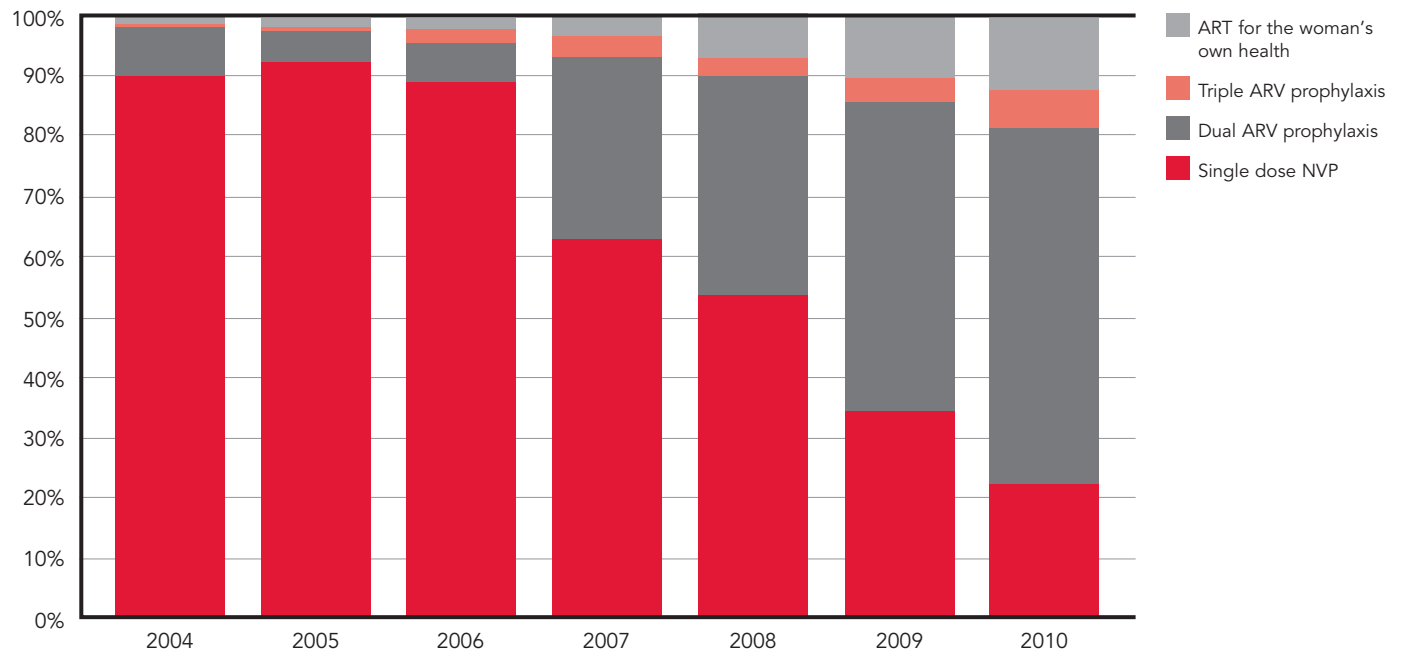
Third, pregnant women should routinely be offered HIV testing and counselling, and pregnant women living with HIV and their newborns should have guaranteed access to antiretroviral drugs to reduce the odds of HIV transmission during pregnancy, delivery or breastfeeding. Infant feeding counselling and support should be provided.

Fourth, HIV care, treatment and support should be universally available to women, children living with HIV, and their families. Success in this area will demand efforts to close gaps in children’s access to early infant diagnosis and paediatric care and treatment services, as well as initiating lifelong antiretroviral therapy for HIV-positive pregnant women.

Currently the distribution of regimens in the 22 priority countries from the *Global Plan* includes about 13% single dose NVP, 32% on dual prophylaxis and the remaining 7% on highly effective ARVs or ART. This has resulted in a mother to child transmission rate of approximately 27%. If the 22 priority countries shifted all women in their PMTCT programmes from their current regimens to the recommended regimens there would be an immediate 20% drop in the number of new HIV infections among children. Using only recommended regimens in the 22 priority countries would have limited the number of new HIV infections among children to 280 000 instead of 350 000 in 2010.

Distribution of antiretroviral regimens to prevent new HIV infections among children: 22 priority countries, 2004–2010

The proportion of women receiving more optimal antiretroviral therapy has increased rapidly since the initial recommendation of 2006 that programmes should where possible move beyond single dose nevirapine.



Source: Aggregated data from national HIV estimates files, UNAIDS 2011.

Programmes should view their interactions with pregnant women as an opportunity to reach families, including offering couples counselling and testing, and support for mutual disclosure. About half of all people with HIV who are in a long-term stable relationship have a sero-negative partner, with such couples accounting for a substantial share of new infections in Rwanda, Uganda, Zambia, and other countries with mature epidemics.⁴⁰⁻⁴²

Globally, the amount needed to eliminate new HIV infections among children is estimated to be an additional US\$ 1.5 billion annually by 2015.

Innovation in ART to deliver better population outcomes

Biomedical innovation – in particular through accelerated use of antiretrovirals – has the potential to dramatically increase the progress of the AIDS response.

In 2011, a trial among couples in which one partner was HIV-positive confirmed that antiretroviral therapy significantly contributes to HIV prevention. The nine-country trial randomized the couples into two groups: one in which the partner living with HIV received early antiretroviral therapy (when the CD4 count was between 350 and 550 cells per cubic millilitre); and the other in which treatment would be initiated at the then standard point of initiation (when the CD4 count fell to 250 cells). The trial found that treatment reduced the relative risk of HIV transmission by 96%.¹⁶

Antiretroviral therapy, therefore, has the dual benefit of reducing the risk of HIV-related illness and death for people living with HIV, and significantly reducing the likelihood of onward HIV transmission. To strengthen HIV prevention, urgent efforts are needed to scale up antiretroviral therapy programmes to reach the 7.6 million people who were eligible for treatment at the end of 2010 (those with CD4 counts less than 350) but who were not receiving it.

SUPPORTING PREGNANT WOMEN IN SOUTH AFRICA

South Africa now provides an estimated 95% of eligible women with antiretrovirals to prevent new HIV infections among children, up from 57% coverage in 2007. This achievement reflects political commitment, strong civil society engagement, decentralized service delivery, and empowerment of nurses to administer antiretroviral prophylaxes.

Using antiretrovirals for people not infected with HIV, to prevent acquisition

Recent research reveals the efficacy of pre-exposure use of antiretroviral drugs to prevent HIV infection. In 2010, a multi-country study among men who have sex with men found that daily antiretroviral tablets reduced the risk of becoming HIV positive by 44%, with substantially greater protection afforded to those who rigorously adhered to the daily preventive regimen.⁴³ In 2011, two additional trials determined that such daily oral pre-exposure prophylaxis, known as PrEP, reduced the likelihood of HIV transmission among heterosexual adults by more than 60%.^{44,45}

COMMUNITY TRIALS OF ART TO BOOST PREVENTION

The HPTN 052 trial has shown that treating an HIV-infected individual with ART reduces the risk of sexual transmission of HIV to an uninfected partner, and mathematical modeling indicates that important prevention benefits can be expected from scaled-up antiretroviral treatment in communities. However, the epidemiological evidence of such impact at the level of entire countries may not be clearly apparent from national surveillance data, as it may be difficult to distinguish the specific impact on incidence of antiretroviral treatment from that of other prevention activities.

Further research is needed to unequivocally establish and quantify the effect of antiretroviral treatment on HIV incidence in communities and countries. Several such studies are now being prepared, including the 'Population ART' study, which is scheduled to start in 2012. The study will test the impact of a combination prevention strategy that combines community-wide house-to-house voluntary testing for HIV, the offer of medical circumcision to men who test HIV-negative, and the offer of immediate initiation of antiretroviral therapy (ART) for all those testing HIV-positive in communities in Zambia and South Africa. Similar studies are planned in Botswana, South Africa and the United Republic of Tanzania.

New research indicates pre-exposure prophylaxis is effective when applied topically as a vaginal microbicide. In 2010, South African researchers reported that 1% tenofovir gel lowered the risk of male-to-female sexual transmission by 39%, rising to 54% in women who used the vaginal gel for more than 80% of their sex acts.⁴⁶

Ongoing trials aim to confirm the South Africa microbicide trial results, with the hope of making an effective microbicide widely available as early as 2014. Trials are also under way to investigate the efficacy of intermittent oral pre-exposure prophylactic regimens that allow for less-than-daily use of tablets. Additional research is assessing the long-term safety of antiretroviral prophylaxis, the possibility that such use could increase levels of antiretroviral drug resistance, and the population-level benefits of PrEP programmes.

While the results of pre-exposure prophylaxis trials have not been as clear-cut as the results of ART use to prevent transmission, modelling suggests that scale-up of these new methods would prevent a substantial share of incident infections, hastening the overall decline in HIV incidence.⁴⁷⁻⁴⁹

Vaccine research

As efforts are made to introduce new HIV prevention tools, continued investment in research and development for a preventive vaccine is essential. In 2009, results from a large community trial in Thailand found that recipients of a combination vaccine regimen were 31.2% less likely over 42 months to become infected than trial participants who did not receive the vaccine.⁵⁰ Although this degree of efficacy did not warrant immediate licensing of the vaccine, the trial demonstrated for the first time that an HIV vaccine is feasible. Research is underway to assess the effects of additional doses of vaccine to boost immunity and to determine whether this vaccine regimen is equally effective against HIV subtypes found in sub-Saharan Africa.

Delivering a better package

Maximising the impact of AIDS programme efforts and incorporating innovation to further drive down new infections and save lives requires programme efforts that function together. The new HIV prevention breakthroughs confer partial protection and depend on behaviour for their uptake. Ability to adhere to a treatment regimen, for example, is a crucial determinant of whether ARVs will work to prevent either transmission or acquisition of HIV. Equally, male circumcision efforts would be undermined if they resulted in condom use being abandoned. Fortunately to date this has not been observed in circumcision roll-out programmes. Similarly, stigma can fatally undermine HIV efforts across the board. This emphasizes the continuing need for a combination of approaches, including biomedical, behavioural and structural components, all directed at the objectives of reducing HIV risk and reducing morbidity and mortality.

AN INCIDENCE MEASURE IS URGENTLY NEEDED TO GUIDE BETTER HIV RESPONSES

Prevalence gives little insight into the contemporary dynamics of HIV transmission or the outcomes of prevention programmes. Indeed, prevalence measures the cumulative toll of an epidemic including the number of people who have been infected in past years and the effect that antiretroviral therapy has by keeping people living with HIV alive for longer. Instead, incidence reflects changes in HIV transmission and the effects of prevention programmes including the effect of antiretroviral treatment programmes. Currently, most population-wide incidence data are derived from mathematical models.

As the UNAIDS High Level Commission on HIV Prevention argued in 2010, "Countries, donors, researchers and multilateral institutions should shift from prevalence data to assessing incidence for policy decisions and assessing the effectiveness of programmes." Indeed, investments to reduce new infections could be better targeted to the most effective programmes if a quick, easy, valid, and precise method of estimating incidence in populations was available.

However, despite more than a decade of development of incidence tests, today there is still no validated incidence assay that can be used to estimate population-level incidence. In a world where we need to be able to assess in a timely manner the real-world impacts that different prevention programmes are having, developing and validating a reliable incidence assay is essential. Appropriate levels of funding should be directed to this effort.

WINNING THE RACE AGAINST AIDS

The visionary goals adopted at the United Nations General Assembly in the 2011 Political Declaration on HIV/AIDS heralded a moment of truth in the global AIDS response. By uniting to achieve the stated targets for 2015, the global community can move towards a world with zero new HIV infections, zero discrimination and zero AIDS-related deaths.

Adopting a more focused and strategic approach to AIDS is essential for success. The world will succeed in meeting the targets for 2015 if sufficient and strategic investments are made in efficient and effective programmes.

Now is the time for action, the time to translate words of commitment into meaningful and lasting results for people. By mobilizing the political will, showing international solidarity and commitment, improving the strategic use of resources, and effectively deploying available tools, it will be possible to arrive at a world in 2015 that is decidedly healthier, more just and more inclusive than today.

The knowledge and the tools to defeat AIDS now exist. Decisions made now will determine whether this is truly the beginning of the end of AIDS.

1. Wang L et al. The 2007 estimates for people at risk for and living with HIV in China: progress and challenges. *Journal of Acquired Immune Deficiency Syndromes*, 2009, 50(4):414–18.
2. *Country report on the follow-up to the Declaration of Commitment on HIV/AIDS*. Jakarta, National AIDS Commission Indonesia, 2008.
3. *HIV/AIDS surveillance in Europe 2009*. Stockholm, European Centre for Disease Prevention and Control, and WHO Regional Office for Europe, 2010.
4. Updated analyses based on Hallett TB et al. Assessing evidence for behaviour change affecting the course of HIV epidemics: a new mathematical modelling approach and application to data from Zimbabwe. *Epidemics*, June 2009, 1(2):108-17.
5. Bello G et al. Evidence for changes in behaviour leading to reductions in HIV prevalence in urban Malawi. *Sexually Transmitted Infections* 2011, 87:296–300.
6. Jewkes RK et al. Intimate partner violence, power inequity, and incidence of HIV infection in young women in South Africa: a cohort study. *The Lancet*, 2010, 376:41–48.
7. Bailey RC et al. Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomized controlled trial. *The Lancet*, 2007, 369:643–656.
8. Gray RH et al. Male circumcision for HIV prevention in men in Rakai, Uganda: a randomized trial. *The Lancet*, 2007, 369:657–666.
9. Auvert B et al. Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: the ANRS 1265 trial. *Public Library of Science Medicine*, 2005, 2:e298.
10. Auvert B et al. *Effect of the Orange Farm (South Africa) male circumcision roll-out (ANRS-12126) on the spread of HIV*. 6th IAS Conference on HIV Pathogenesis, Treatment, and Prevention, Rome, 17–20 July, 2011. Abstract No. WELBC02.
11. *Progress in scale-up of male circumcision for HIV prevention in eastern and southern Africa: focus on service delivery*. Geneva, World Health Organization, 2011.
12. Based on: Report of a Consensus Workshop: HIV Estimates and Projections for Cambodia, 2006 – 2012. National Center for HIV/AIDS, Dermatology and STD, Ministry of Health, Royal Government of Cambodia. Phnom Penh, 2007.
13. Williams JR et al. Assessing the impact of a FSW targeted HIV intervention programme on incidence and prevalence in Cotonou, Benin. *Sexually Transmitted Infections*, July 2011, 87(Suppl 1):A46–A47 (In addition, we acknowledge Michel Alary and Catherine Lowndes, Université Laval, Québec; Enias Baganizi, Honoré Meda, Marguerite Ndour and Isaac Minani, of Projets Sida-1-2-3 (funded by CIDA from 1993–2006); and all staff of the National AIDS Control Program of Benin for the implementation of the intervention and the conduct of the field surveys).
14. Shaboltas A et al. HIV incidence, gender and risk behaviors differences in injection drug users cohorts, St. Petersburg, Russia. *XVIII International AIDS Conference, Vienna, Austria, 18–23 July 2010* (Abstract TUPE0331; <http://www.iasociety.org/Default.aspx?pageid=11&abstractid=200740055>, accessed 15 October 2011).
15. Curtis M. *Delivering HIV care and treatment for people who use drugs: lessons from research and practice*. New York, Open Society Institute, 2006.
16. Cohen MS et al. Prevention of HIV-1 infection with early antiretroviral therapy. *New England Journal of Medicine*, 2011, 365:493–505.
17. Dlodlo RA et al. Adult mortality in the cities of Bulawayo and Harare, Zimbabwe: 1979–2008. *Journal of the International AIDS Society*, 2011, 14(suppl 1):S2–S9.
Jahn A et al. Population-level effect of HIV on adult mortality and early evidence of reversal after introduction of antiretroviral therapy in Malawi. *Lancet*, 2008, 371:1603–1611.
- Reniers G et al. Steep declines in population-level AIDS mortality following the introduction of antiretroviral therapy in Addis Ababa. *AIDS*, 2009, 23:511–518.
- HERBST, Abraham J et al. Adult mortality and antiretroviral treatment roll-out in rural KwaZulu-Natal, South Africa. *Bull World Health Organ* [online]. 2009, vol.87, n.10, pp. 754-762.
18. Mathers BM et al. Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review. *The Lancet*, 2008, 372(9651):1733–45.
19. *Country report on monitoring of the United Nations General Assembly Special Session on HIV and AIDS*. Tehran, Government of the Islamic Republic of Iran, 2010 (http://www.unaids.org/en/dataanalysis/monitoringcountryprogress/2010progressreportsubmittedbycountries/iran_2010_country_progress_report_en.pdf).
20. Reference Group to the United Nations on HIV and Injecting Drug Use, 2010 (http://www.idurefgroup.org/results/Iran,+Islamic+Republic_compiled.pdf).
21. Shahbazi M et al. The trend of HIV/AIDS prevalence among IDUs in Iranian prisoners (1997–2007). *Retrovirology*, 2010, 7(Suppl 1):P101.
22. UNAIDS analysis of Spectrum output and Demographic Health Surveys, country reported programme data and behavioural data.
23. *Kenya AIDS Indicator Survey 2007*. Nairobi, Government of Kenya, 2009 (http://nascop.or.ke/library/3d/Official_KAIS_Report_20091.pdf).

24. Painter TM et al. Women's reasons for not participating in follow up visits before starting short course antiretroviral prophylaxis for prevention of mother to child transmission of HIV: qualitative interview study. *British Medical Journal*, 2004, 329(7465):543.
25. Turan J et al. HIV/AIDS Stigma and Refusal of HIV Testing Among Pregnant Women in Rural Kenya: Results from the MAMAS Study, *AIDS Behav* (2011) 15:1111–1120.
26. *No vaccine, no cure: HIV and AIDS in the United Kingdom*. London, House of Lords Select Committee on HIV and AIDS, September 2011 (<http://www.publications.parliament.uk/pa/ld201012/ldselect/lddaids/188/188.pdf>).
27. Geen J. Home HIV tests 'should be legalised'. *Pink News*, 11 October 2011 (<http://www.pinknews.co.uk/2011/10/11/home-hiv-tests-should-be-legalised/>).
28. iTEACH-SA Facebook page (<http://www.facebook.com/pages/iTEACH-SA/98675643113?sk=info>).
29. Mavedzenge SN et al. *HIV self-testing among health workers*. Geneva, World Health Organization, 2011 (http://libdoc.who.int/publications/2011/9789241501033_eng.pdf).
30. *Progress report of the national response to the 2001 Declaration of Commitment on HIV and AIDS*. Gaborone, Government of Botswana, 2010 (http://www.unaids.org/en/dataanalysis/monitoringcountryprogress/2010progressreportsubmittedbycountries/botswana_2010_country_progress_report_en.pdf).
31. *Time to act: save a million lives by 2015*. Geneva, Stop TB Partnership, Joint United Nations Programme on HIV/AIDS, World Health Organization, 2011.
32. *Global Tuberculosis Control*. World Health Organization, Geneva, 2011.
33. *Antiretroviral therapy for HIV infection in adults and adolescents: recommendations for a public health approach (2010 revision)*. Geneva, World Health Organization, 2010.
34. *TB Day Newsletter*. South African National AIDS Commission. March 2011. (www.sanac.org.za/files/uploaded/6996_Newsletter_TB%20Day_Mar28_ALL.pdf)
35. Schwartlander B et al. Towards an improved investment approach for an effective response to HIV/AIDS. *The Lancet*, 2011, 377:2031–2041.
36. Kim J et al. *Developing an integrated model for post-rape care and HIV post-exposure prophylaxis in rural South Africa*. New York, Population Council, November 2007.
37. Kesho Bora Study Group. *Triple-antiretroviral prophylaxis during pregnancy and breastfeeding compared to short-ARV prophylaxis to prevent mother-to-child transmission of HIV-1: the Kesho Bora randomized controlled trial in five sites in Burkina Faso, Kenya and South Africa*. 5th IAS Conference on HIV Pathogenesis, Treatment and Prevention, Cape Town, 19–22 July 2010.
38. *Pregnancy and childbirth*. Atlanta, Centers for Disease Control and Prevention, 2007 (<http://www.cdc.gov/hiv/topics/perinatal/index.htm>).
39. *Progress report of the national response to the 2001 Declaration of Commitment on HIV and AIDS*. Gaborone, Botswana National AIDS Coordinating Agency, 2010 (http://www.unaids.org/en/dataanalysis/monitoringcountryprogress/2010progressreportsubmittedbycountries/botswana_2010_country_progress_report_en.pdf).
40. Gray R et al. The contribution of HIV-discordant relationships to new HIV infections in Rakai, Uganda (research letter). *AIDS*, 2011, 25:863–865.
41. Eyawo O et al. HIV status in discordant couples in sub-Saharan Africa: a systematic review and meta-analysis. *The Lancet Infectious Diseases*, 2010, 10:770–777.
42. Dunkle KL et al. New heterosexually transmitted HIV infections in married or cohabiting couples in urban Zambia and Rwanda: an analysis of survey and clinical data. *The Lancet*, 2008, 371:1183–2191.
43. Grant RM et al. Pre-exposure chemoprophylaxis for HIV prevention in men who have sex with men. *New England Journal of Medicine*, 2010, 363:2587–2599.
44. *Pivotal study finds that HIV medications are highly effective as prophylaxis against HIV infection in men and women in Africa* [press release]. Seattle, University of Washington International Clinical Research Center, 2011 (http://depts.washington.edu/uwicrc/research/studies/files/PrEP_PressRelease-UW_13Jul2011.pdf).
45. *CDC trial and another major study find PrEP can reduce risk of HIV infection among heterosexuals* [press release]. Atlanta, Centers for Disease Control and Protection, 2011 (<http://www.cdc.gov/nchhstp/newsroom/PrEPHeterosexuals.html>).
46. Karim QA et al. Effectiveness and safety of tenofovir gel, an antiretroviral microbicide, for the prevention of HIV infection in women. *Science*, 2010, 329:1168–1174.
47. Smith RJ et al. Evaluating the potential impact of vaginal microbicides to reduce the risk of acquiring HIV in female sex workers. *AIDS*, 2005, 19:413–421.
48. Pretorius C et al. Evaluating the cost effectiveness of pre-exposure prophylaxis (PrEP) and its impact on HIV-1 transmission in South Africa. *Public Library of Science ONE*, 2010, 5:e13646.
49. Foss A et al. *Modeling the potential impact on HIV transmission of rectal microbicide use by men who have sex with men, and the effects of condom substitution*. XVIII International AIDS Conference, Vienna, 18–23 July 2010.
50. Rerks-Ngarm S et al. Vaccination with ALVAC and AIDSVAX to prevent HIV-1 infection in Thailand. *New England Journal of Medicine*, 2009, 361:2209–2220.



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